May 24, 2021

Via E-mail (EDTariffUnit@cpuc.ca.gov)
Energy Division
California Public Utilities Commission
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102

Re: Comments of the California Efficiency + Demand Management Council on Draft Resolution E-5150 which Adopts Updates to the Avoided Cost Calculator for Use in Demand-Side Distributed Energy Resource Cost-Effectiveness Analyses

Dear Energy Division,

The California Efficiency + Demand Management Council ("Council")[1] appreciates the opportunity to respond to the request for comment on the Draft Resolution E-5150 ("Draft Resolution") which adopts updates to the Avoided Cost Calculator for use in demand-side distributed energy resource (DER) cost-effectiveness analyses.

I. BACKGROUND

The Council is a statewide trade association of non-utility businesses that provide energy efficiency, demand response, and data analytics services and products in California.[2] Our member companies employ many thousands of Californians throughout the state. They include energy efficiency ("EE"), demand response ("DR"), and grid services technology providers, implementation and evaluation experts, energy service companies, engineering and architecture firms, contractors, financing experts, workforce training entities, and manufacturers of EE products and equipment. The Council's mission is to support appropriate EE and DR policies, programs, and

[1] The views expressed by the California Efficiency + Demand Management Council are not necessarily those of its individual members.
[2] Additional information about the Council, including the organization's current membership, Board of Directors, antitrust guidelines and code of ethics for its members, can be found at http://www.cedmc.org. The views expressed by the Council are not necessarily those of its individual members.

technologies to create sustainable jobs, long-term economic growth, stable and reasonably priced energy infrastructures, and environmental improvement.

II. SUMMARY

The Draft Resolution's proposed revisions to the Avoided Cost Calculator ("ACC") will substantially reduce the avoided cost of capacity and, by extension, the cost-effectiveness of all behind-the-meter distributed energy resources ("DERs") including energy efficiency, demand response, and other DERs. This will in turn suppress the State's ability to meet SB 350 and SB 100 goals. Instead, it will likely have the perverse effect of promoting new carbon-emitting supply-side resources.

In addition, several of the proposed revisions were clearly not "minor" in nature, as the Draft Resolution asserts, and therefore should not be approved through the resolution process.[3] In Decision ("D.") 19-05-019, the Commission established a bifurcated approach to making changes to the ACC, with "major" changes to be addressed in even years through a formal evidentiary process, while "minor" changes are to be made in odd years through the Commission's resolution process. Decision 19-05-019 states, "We clarify that minor changes include data and input updates as indicated in D.16-06-007 but can also include changes to the modeling method that most parties can reasonably agree are minor in scope and impact."[4] Consistent with this bifurcated approach, the Draft Resolution says that it is solely proposing "minor" changes to the ACC. As demonstrated below, several of the recommended changes are anything but minor, and involve significant changes to the modeling methods, including the use of a new integrated resource plan ("IRP") scenario that has not been vetted by parties, nor more importantly approved by the Commission in the IRP proceeding (R.20-05-003). The Draft Resolution also uses a new scarcity pricing and benchmarking methodology which is not minor in scope and impact and to which most parties have not agreed. The Commission must reject such major changes to the ACC as beyond the established scope and process for a minor update.

Finally, there have been significant procedural deficiencies in the process which led to the issuance of the Draft Resolution. The transparency that the Commission envisioned when it established the bifurcated review process has simply not occurred. For instance, D.19-05-019 specifically stated that a workshop should be held where proposed changes to the ACC are distributed beforehand, parties provided the opportunity to provide feedback following the workshop, and that party feedback addressed in the Resolution.[5] As discussed further below, a workshop was held on December 9, 2020, but the proposed changes to the ACC were never discussed.

[3] Draft Resolution, at p. 3.
[4] D.19-05-019, at pp. 49-50.
[5] D.19-05-019, at pp. 53-54.

The result of these shortcomings is a Draft Resolution that contains changes to the ACC that would result in a substantial and unwarranted decrease in the value of DERs in California, including the value of EE and DR measures.

The Commission should continue to use in the 2021 ACC the same components that were derived from the approved Reference System Plan ("RSP") in the IRP proceeding, including the greenhouse gas ("GHG") shadow prices used in the ACC's GHG Adder and the marginal heat rates based on the Strategic Energy Risk Valuation Model ("SERVM") production cost modeling of the adopted RSP portfolio, using the scarcity pricing and benchmarking methods approved in D.20-04-010 and Resolution E-5077.

III. THE COMMISSION SHOULD CONSIDER THE BROADER IMPACTS OF THE PROPOSED CHANGES TO THE ACC ON THE DER MARKET

The Draft Resolution's proposed revisions to the ACC will substantially reduce the avoided cost of capacity and, by extension, the cost-effectiveness of all behind-the-meter DERs, including EE and DR. It is critical that the Commission understand the practical outcomes of such a drastic reduction in DER cost-effectiveness on DERs. Devaluation of DERs will limit the State's ability to meet SB 350 and SB 100 goals and could have the perverse effect of pushing DERs out in favor of new carbon-emitting supply-side resources. To illustrate this, the Council examines the potential impact on Residential HVAC measures, which are critical in dealing with peak load constraints on the grid.

Avoided costs are one input among many in a cost-effectiveness calculation. Because the Commission has not yet updated the cost-effectiveness tool ("CET"), stakeholders cannot use this tool to assess the impacts of the avoided cost updates on cost-effectiveness. However, as a proxy, Recurve's open source FLEXvalue cost-effectiveness tool has incorporated the proposed 2021 ACC and can be used for this purpose.[6]

To provide an example of the impact of the 2021 avoided cost updates the Total Resource Cost ("TRC") and Program Administrator Cost ("PAC") ratios, as well as the TRC electric and gas benefits were calculated with the following input parameters:[7]

[6] Recurve has shown that FLEXvalue closely matches the current California CET across a wide variety of cost-effectiveness calculations. For more information on FLEXvalue see https://flexvalue.recurve.com/ and the GitHub library at https://github.com/recurve-methods/flexvalue.

[7] $100 Admin, $2,200 Measure, and $1,100 Incentive are included as costs.

Inputs

Annual Electricity Savings	Load Shape	Annual Gas Savings	Gas Savings Profile	NTG	EUL	Climate Zone
1 MWh	DEER:HVAC_Duct_Sealing	100 Therms	Annual	1	15 Years	13

Key results are as follows:

Outputs

	TRC	PAC	Electric Benefits	Gas Benefits
2020 ACC	1.26	2.41	$1,588	$1,256
2021 ACC	0.92	1.77	$1,094	$988

The TRC and PAC calculated with the 2021 ACC are 27% lower with electric avoided costs down 31% and gas avoided costs down 21%. In addition, Figures 1-3 illustrate the 2020 vs. 2021 comparison for this residential HVAC example.

Figure 1: Residential HVAC Savings Load Shape (Summer, Shoulder, and Winter)

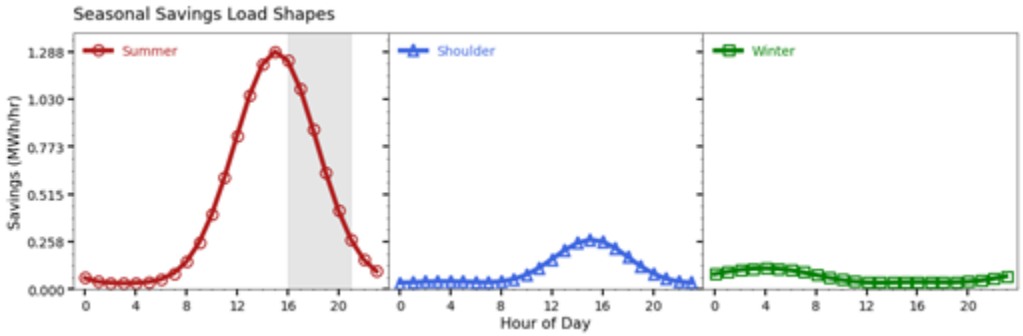


Figure 2: Resulting 2020 Avoided Cost Profile (Summer, Shoulder, and Winter)

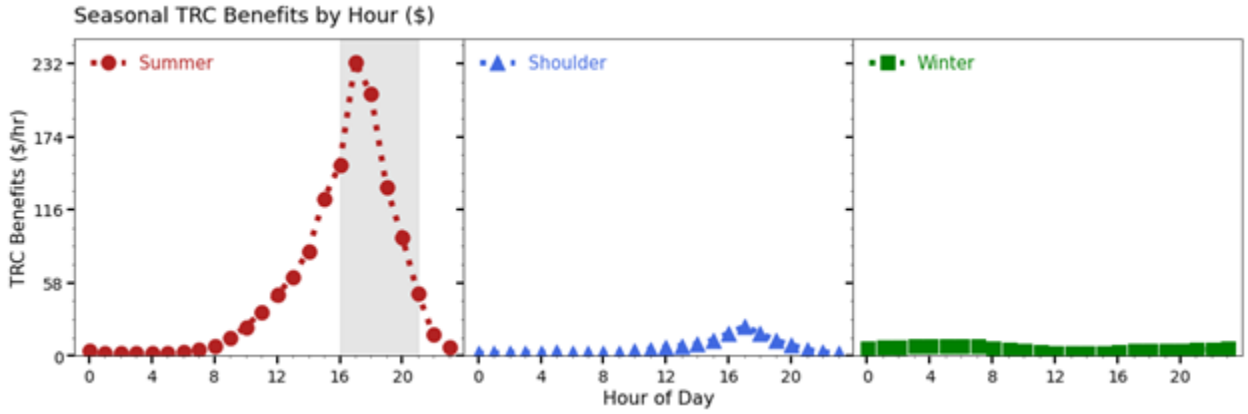
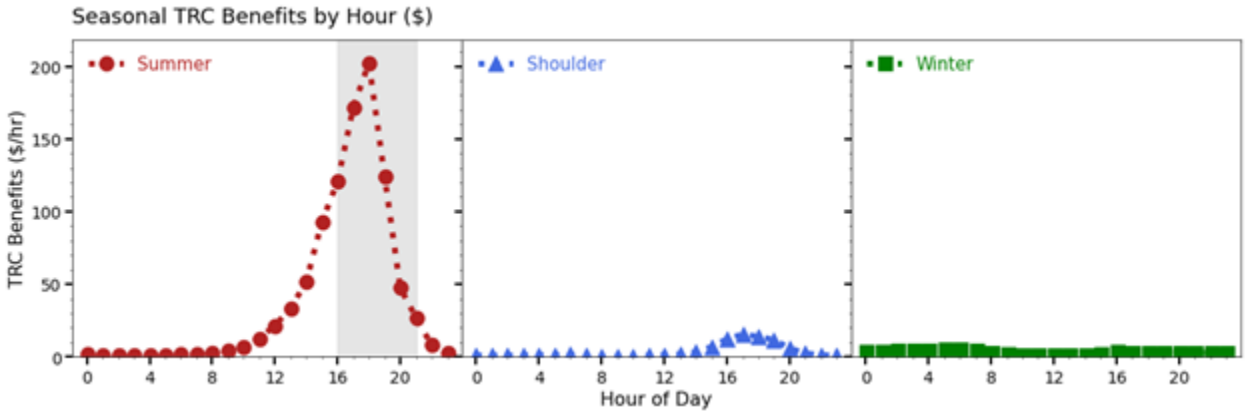


Figure 3: Resulting 2021 Avoided Cost Profile (Summer, Shoulder, and Winter)



The 2020 avoided cost profile (top) has a higher and broader peak compared to 2021 (note the y-axis ranges differ for 2020 vs. 2021). This example clearly demonstrates that the proposed "minor" changes to the ACC would have a major impact on cost-effectiveness of DERs.

These impacts can also be seen in the avoided costs of other EE measures. Reproduced below is a table depicting Figure 4 from the Documentation file for the draft 2021 ACC, which shows the single-year change in the value of selected DERs in 2030. The value of EE measures would drop substantially and many would see a reduction on the order of 50%. In addition, the value of solar PV drops by 74%, from 11.7 cents per kWh to 3.1 cents per kWh. There is nothing that has occurred in the California energy market over the last year that justifies such a major drop in the value of DERs.

Table 1: Average Annual Avoided Cost for Illustrative Normalized Load Shapes

Average Avoided Cost for Normalized Load Shape				
	2020 ($/MWh)	2021 ($/MWh)	Change ($/MWh)	Change (%)
Residential Cooling	$ 180	$ 102	$ (78)	-43%
Residential Heating	$ 167	$ 86	$ (81)	-49%
Small Retail	$ 154	$ 78	$ (76)	-49%
Solar	$ 117	$ 31	$ (86)	-74%
Flat	$ 165	$ 83	$ (82)	-50%

The Council supports the Commission's effort to integrate the valuation of demand- and supply-side resources into a unified valuation methodology by using key values from the IRP in the ACC. However, the market uncertainty generated by wild fluctuations in the values of DERs from year-to-year based on modeling and methodology changes will only slow the deployment of these technologies and programs, not to mention introducing uncertainty into the Commission's own program approval processes. To avoid this outcome, the IRP values used in the ACC must

reflect the most recent Commission-approved resource plan that has been thoroughly vetted in the IRP proceeding, not unvetted values from whatever is the latest model run by Commission staff or its consultants. Changes in resource scenarios and modeling methods should occur only in conjunction with fully-litigated "major" updates to the ACC.

IV. SEVERAL OF THE PROPOSED CHANGES IN THE DRAFT RESOLUTION ARE NOT MINOR IN NATURE AND USE A NEW, UNVETTED IRP SCENARIO

The changes to the ACC in 2021 were supposed to be confined to minor changes in data and inputs, and not to include major changes in methodology. One of the key changes in the draft 2021 ACC that does not comply with this standard is a new and unvetted IRP scenario that was never formally approved by the Commission.

The 2020 ACC approved in D.20-04-010 was based on the No New DER scenario of the IRP modeling for the IRP RSP that the Commission formally approved in D.20-03-028. In doing so, the Commission emphasized the importance of aligning the ACC with a Commission-approved RSP from the IRP proceeding:

> "The Commission previously expressed its intention to align the cost-effectiveness work in this proceeding with the efforts to develop a Common Resource Valuation Method in the Integrated Resource Planning proceeding. [D.19-05-019, at p. 57] Hence, aligning the Avoided Cost Calculator with the Integrated Resource Planning proceeding should be the obvious next step. The Reference System Portfolio provides the Commission with a capacity expansion plan that is the least-cost path to meeting future capacity needs, reliability needs, greenhouse gas targets, and renewable requirements. We note that use of the Reference System Portfolio, **as adopted by the Commission**, should allay concerns expressed by parties that the previously released draft Reference System Portfolio should not be the basis for the 2020 Avoided Cost Calculator update."[8] (emphasis added)

In specifically addressing the fact that the IRP scenario to be used in the ACC must be the Commission-approved RSP, the Commission was addressing concerns expressed by the major investor-owned electric utilities ("IOUs"). Specifically, the IOUs commented:

> The 2020 ACC major update should use the final version of the IRP RSP that will be adopted by the Commission in the IRP proceeding and not the proposed version. The proposed RSP, issued on November 6, 2019, has not yet been subject to party comments and analysis, includes a number of disputed issues (e.g., the addition of 2,000 MW of "perfect capacity" in 2026, the limits on imports imposed in both the RESOLVE and SERVM models, and the treatment of once-through cooling units, and has not yet been

[8] D.20-04-010, at p. 32.

approved by the Commission. Thus, the proposed RSP should not be the version used for the 2020 ACC major update.[9]

Since then, nothing has changed to warrant a different approach. The IRP scenario which Staff proposes to use as a "minor" change to the ACC is a new IRP scenario from a new run of RESOLVE, apparently performed on April 2, 2021.[10] On its face, the new IRP scenario differs greatly from the adopted RSP, and results in significantly lower avoided GHG values than those used in the 2020 ACC. The following Table 2 compares the 2045 resource portfolios in the No New DER cases from (1) the draft 2021 ACC, and (2) the adopted RSP used in the 2020 ACC. The new IRP scenario used in the 2021 ACC includes more than 19 GW of out-of-state wind and 10 GW of offshore wind that was not in the RSP portfolio, as well as major reductions in solar (72 GW less – a 62% reduction) and storage (33 GW less – a 57% reduction) by 2045.

Table 2: Comparison of 2045 Resource Portfolios in No New DER Case

2045 Selected Resources, in GW		
No New DER cases	**2021 ACC**	**2020 RSP**
Geothermal & Biomass	2.3	3.5
Wind	36.7	8.3
instate	4.3	5.2
OOS New Tx	22.2	3.0
offshore	10.2	-
Solar	44.5	116.5
Total Renewables	**83.5**	**128.3**
Storage	28.0	61.2
Battery	25.4	59.2
Pumped Storage	2.6	2.0
Total Additions	**111.5**	**189.5**
In State Renewables	61.3	125.2
OOS Renewables	22.2	3.0
Total Renewables	83.5	128.2
Gas Retirement	(5.4)	(3.7)

The release of the Draft Resolution is the first time that parties have had any exposure to this new IRP scenario. Even though the ACC Documentation is more than

[9] See *Joint Opening Comments on Staff Proposal for Major Updates to the Avoided Cost Calculator and Joint Opening Brief of Southern California Edison Company, Pacific Gas and Electric Company and San Diego Gas & Electric Company*, R.14-10-003 (December 17, 2019), at p. 3.

[10] This is based on the "2021-04-02" element in the title of the RESOLVE output file posted by Staff.

100 pages, the only explanation of the new IRP portfolio is the following statement on page 11: "Over the last year, the IRP proceeding performed analysis with updated inputs and assumptions, including updated resource cost and build inputs and results from the Final 2019 CEC IEPR issued after the 2019 RSP was finalized." To the Council's knowledge, however, none of these "updated resource cost and build inputs" has been released publicly or vetted among stakeholders in the IRP proceeding.[11] Nor does the ACC Documentation include any of these input assumptions or any discussion of the reasonableness of the assumed build-out. Though the Energy Division released additional information on May 19, this should have been done in advance of the December 9 workshop so that parties would have had an opportunity to provide feedback.

Whether changes to IRP input assumptions justify these substantial long-term resource changes has yet to be examined publicly in the IRP proceeding, nor have these changes been approved by the Commission as part of a new RSP or a Preferred System Portfolio. They must receive the same extensive, multi-month public process used in the IRP docket R.16-02-007 to develop and approve the RSP. Such a process was the foundation for the subsequent approval of the 2020 ACC.

The Council estimates that a very significant impact of the reduction in DER value is due to a lower 2030 GHG Adder. The GHG Adder is the key metric from the IRP used in the ACC. It measures the cost of the utility-scale renewable generation needed to meet California's 2030 GHG goal (currently 46 MMT). The single-year 2030 GHG Adder actually sets the avoided costs of meeting the state's GHG goals in all 30 years modeled in the ACC, because the 2030 value is discounted back to the first year and escalated to years after 2030 using the IOUs' weighted average cost of capital as the discount or escalation rate. The 2021 ACC Documentation provides only a one-sentence explanation of the lower GHG Adder, on page 2, stating that the lower GHG Adder is "due primarily to lower costs for utility scale solar and energy storage." In reviewing the output file for the 2021 ACC's RESOLVE run, it appears that almost all of the 30,000 MW of the solar and storage resources required to be on-line by 2030 to meet the 46 MMT GHG constraint are assumed to be installed in the next four years, i.e., by 2025, and thus presumably to qualify for the 26% or 22% federal solar investment tax credit (ITC).[12] This is a major and unreasonable modeling change in the

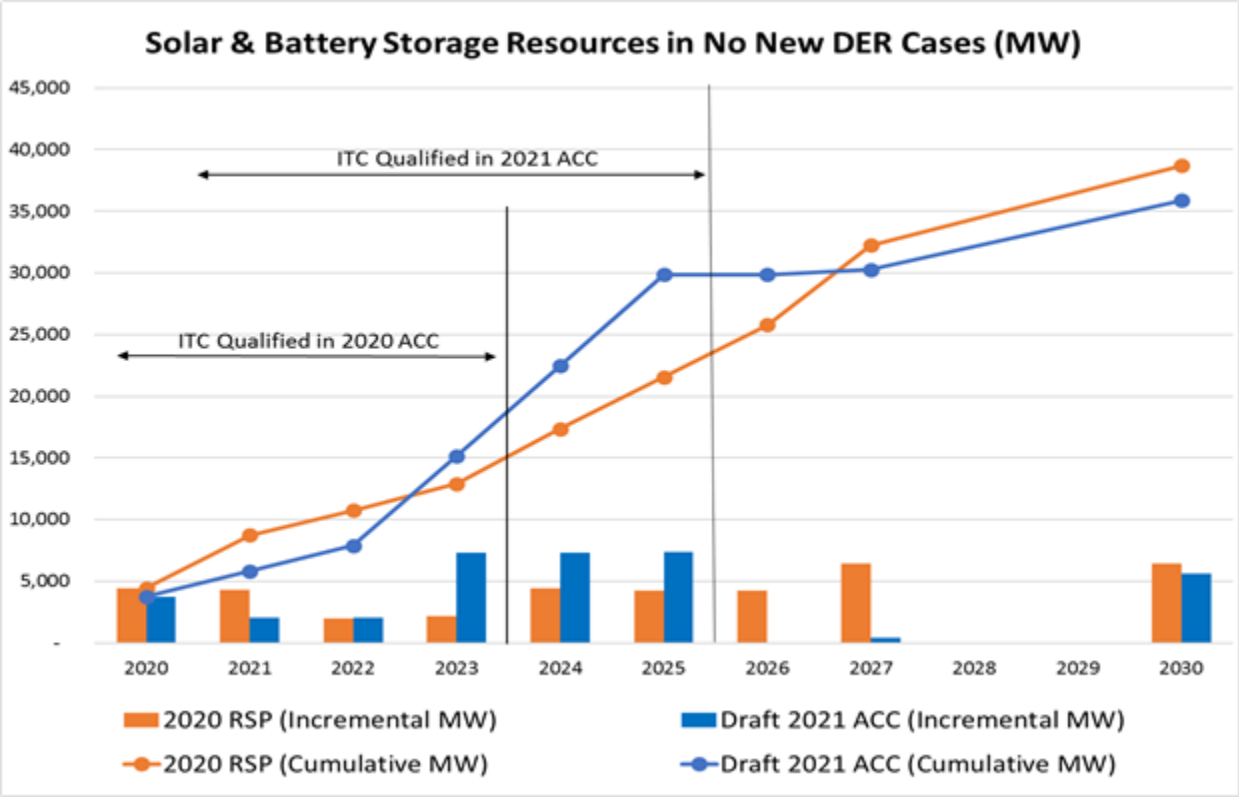
[11] There have been modified versions of the 2020 RSP released for comment by the parties in the IRP proceeding (R.20-05-003) in conjunction with transmitting resource portfolios to the CAISO for the 2021-2022 Transmission Planning Process (TPP), but the changes made in these scenarios were limited to use of the 2019 CEC IEPR demand forecast, updates to certain load shapes, and a new gas forecast. The Commission reviewed and approved these changes in D. 21-02-008. For example, consistent with the 2020 RSP, none of the TPP portfolios include any offshore wind, and they have just limited amounts of out-of-state wind on new transmission.

[12] Although the solar ITC drops from 22% in 2023 to 10% in 2024, projects completed by the end of 2025 can receive the higher ITC if they comply with the "commence construction" requirements by the end of 2023.

build-out of the solar and storage resources expected to be installed by 2030, compared to the 2020 RSP which limited the solar build-out to no more than 2.0 GW per year. This limitation was put in place because RESOLVE tends to install most of the solar in the years when solar qualifies for the ITC, resulting in infeasible installation scenarios.

Figure 5 below compares the solar and storage build-outs in the 2020 and draft 2021 ACCs, showing that the draft 2021 ACC assumes that almost 85% of the solar and storage needed in 2030 – a full 30 GW – is installed in the next four years, by 2025, compared to 33% in the 2020 ACC.[13] This 30 GW includes 18 GW of solar and 12 GW of storage. This change in the timing of solar and storage may account for much of the reduction in the 2030 GHG Adder and in the value of DERs in the draft 2021 ACC.

Figure 5: Solar & Battery Storage Resources in No New DER Cases



The Council is certainly supportive of expanded utility-scale solar in the state, but it is not realistic to assume that 18 GW of new utility-scale solar – 150% more than the state's entire existing utility-scale solar fleet – and 12 GW of new storage – perhaps ten times the existing battery storage capacity – could be built in California in the next four years.

[13] The figure includes both solar and storage, although the storage only receives the ITC if paired with solar. Without the input assumptions for the new IRP scenario, we are unsure of the extent to which solar and storage are assumed to be paired in the draft 2021 ACC.

The Council respectfully suggests that the important resource planning issues concerning a new IRP scenario cannot and should not be litigated in the 20-day comment period of a draft resolution on what is characterized as "minor" updates to the ACC. These are important resource planning issues that should be debated and decided in future proceedings in the IRP and other dockets. When a major update of the ACC is litigated in 2022, how to update and incorporate the GHG Adder and other values from the most recent Commission-approved RSP or PSP should be an important issue. But the Commission should not try to update the IRP modeling or the IRP-based values used in the ACC in this off-year, minor update.

Finally, the Commission needs to appreciate the "Catch 22" situation that it would confront if it were to approve the No New DER scenario modeled in the draft 2021 ACC. The result would be a dramatic reduction in the value of DERs. If the values of energy efficiency and distributed solar are so low that these DERs are no longer economic and customers will not invest in them, then the No New DER case becomes the operative resource plan for California. But if the No New DER scenario that causes the loss of DERs is the one modeled in the Draft Resolution, that scenario is not feasible for the State to pursue. No reasonable planner expects California to install 30 GW of new solar and storage resources in the next four years.

III. THE DRAFT RESOLUTION FAILS TO FOLLOW THE APPROPRIATE PROCESS

In D.19-05-019, the Commission described in detail the process that was to be used to make minor changes to the ACC:

> The Commission strives for transparency in all processes. A workshop to allow for parties to comment prior to the resolution should provide the requested transparency and allow for agreed-upon minor changes to the modeling methods. A workshop also provides parties a reasonable opportunity to give feedback prior to the resolution being drafted. Accordingly, the Commission should retain the resolution process adopted in D.16-06-007, and, beginning with the 2019 process, hold a public workshop prior to the drafting and issuance of the draft resolution. To further improve transparency, *a list of proposed changes will be sent to the appropriate service lists prior to the workshop, parties will be given an opportunity to provide informal comments on the proposed changes following the workshop, and the draft resolution will incorporate language regarding the discussion at the workshop*."[14] (emphasis added)

The Energy Division held a workshop on December 9, 2020 but it was not dedicated to potential minor changes to the ACC, but rather was entitled "Integrated

[14] D.19-05-019, pp. 53-54.

Distributed Energy Resources Workshop" and covered several topics. No proposed changes to the ACC were distributed prior to the workshop. The workshop presentation made by Commission staff dedicated a sole slide for approximately 15 minutes at the end of the workshop to proposed minor updates to the ACC. Specifically, the Proposed Minor Updates for 2021 ACC were presented as:

1. Minor bug fixes

2. Update Gas Prices

3. Update CARB Refrigerant data and GWP recommendations

4. Possible update of IRP resource costs, RESOLVE No New DER scenario and SERVM energy and AS prices

5. Possible update of GNA and DDOR inputs for distribution avoided cost, if needed

These possible changes were presented only in concept and were described as "simple updates" –"nothing too controversial."[15] Moreover, there were no details provided on exactly what the changes would be or their impact on the 2021 ACC compared to the 2020 ACC.

Following the workshop, contrary to the process contemplated by D.19-05-019, the Energy Division Staff did not establish a process for the submittal of informal comments on the proposed minor changes to the ACC presented at the workshop, but merely informed the parties that if they had any questions or concerns they should email Staff.[16] Then, three months later, Staff presented parties with "a list of minor updates which will be made to the 2021 Avoided Cost Calculator."[17] While parties were told that if they had "any questions or comments about the list" to contact staff, there was no solicitation of comments, with established due dates. Moreover, the list given to parties on March 11 still provided little or nothing in the way of specifics and no indication of the impacts of the proposed changes on the ACC and no workshop was held subsequent to the distribution of this list, as envisioned by D.19-05-019. By circumventing the Commission-ordered process of providing parties with the specific intended changes prior to the workshop, there was no "reasonable opportunity" for parties to provide feedback. This lack of opportunity is evidenced in the Draft Resolution itself. While the Commission stated in D.19-05-019 that "the draft resolution will incorporate language regarding the discussion at the workshop," the Draft Resolution contains no such

[15] *See Integrated Distributed Energy Resources Workshop,* starting at 2:06:51.
[16] *Id*, at 2:18:30.
[17] See March 11, 2021 E-mail from J. Morgenstern to R.14-10-003 Service List.

language because there was no basis to have a substantive discussion of the proposed changes at the workshop, because no details were presented.

Moreover, certain of the language used in the Staff's presentation at the December 9 workshop and again in the list of changes sent to parties on March 11 indicated certain of the contemplated changes were not to be made in a 2021 update to the ACC but would be made at a future time. For example, the first section of the December 9 workshop was entitled "Overview of 2020 Avoided Cost Calculator and discussion of issues, possible future improvements, and questions" ("Overview Section"). This section was distinct from the last section which, as noted above, was entitled "Proposed Minor Updates for 2021 ACC." Given this delineation, it could be reasonably interpreted that the first section was discussing possible future "major" changes that might be pursued for the 2022 ACC. This interpretation was buttressed by the fact that the items discussed as part of the Overview Section were described at the workshop as issues that E3 ran into when performing the 2020 Major ACC update and for which additional research was needed; that any changes from such research were not "written in stone" but could have a "substantial impact" on the results of the ACC.[18] Despite the delineation made at the workshop between "possible future improvement" and "proposed minor updates to the ACC," the draft 2021 ACC has included a number of the "possible future improvements," such as the new benchmarking and the "Updated Scarcity Pricing Methodology," discussed above.

Finally, the Council would highlight that the March 11 list of changes distributed to parties provides that the ACC will "incorporate any enhancements to IRP and SERVM *made in IRP proceeding*". (emphasis added) This language clearly states that the ACC will incorporate changes to IRP and SERVM which have been made – and therefore approved by the Commission – in the IRP proceeding. Neither the December workshop nor the March 11 list included any details on the "enhancements to IRP and SERVM."

Commission Staff did not adhere to the process established by the Commission for minor updates to the ACC. The result is that parties have been denied an opportunity to be heard in a meaningful manner. Specifically, they have not been provided a meaningful opportunity to analyze and comment upon the IRP scenario which is at the heart of the draft 2021 ACC, nor have they been afforded the opportunity to address the impact of any and all methodological changes prior to their inclusion in the Draft 2021 ACC.

[18] *See Integrated Distributed Energy Resources Workshop*, starting at 4:18.

CONCLUSION

Based on the arguments presented above, the Council recommends that the Commission decline to adopt the most impactful changes to the ACC that are addressed above.

Respectfully submitted,

May 24, 2021

/s/ GREG WIKLER__
Greg Wikler
Executive Director
California Efficiency + Demand Management Council
1111 Broadway, Suite 300
Oakland, CA 94607
Telephone: (925) 286-1710
E-mail: gwikler@cedmc.org

Enclosure: Certificate of Service and Service List