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BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Revisit Net Energy Metering Tariffs Pursuant to Decision D. 16-01-044, and to Address Other Issues Related to Net Energy Metering.	Rulemaking 20-08-020 (Filed August 27, 2020)

OPENING BRIEF OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION AND VOTE SOLAR

VOTE SOLAR
Susannah Churchill
Senior Reginal Director, West
360 22nd St., Suite 730
Oakland, California 94612
Telephone: (415) 817-5065
Email: susannah@votesolar.org

SOLAR ENRGY INDUSTRIES ASSOCIATION
Jeanne B. Armstrong
Senior Regulatory Counsel
Sacramento, California
Telephone:(916)-276-5706
Email: jarmstrong@seia.org

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SUMMARY OF RECOMMENDATIONS

The Solar Energy Industries Association and Vote Solar respectfully request that the California Public Utilities Commission do the following in its decision adopting a successor Net Energy Metering Tariff:

- For residential customers who are not low-income, adopt the residential general market tariff proposal advanced by SEIA and Vote Solar comprised of the following elements:
    - For imports from the utility, the residential NEM customers of Pacific Gas and Electric Company and San Diego Gas & Electric Company ("SDG&E") would be required to take service from one of the utility's available untiered time-of-use ("TOU") rates designed to promote beneficial electrification. This requirement would take effect at the outset of the NEM 3.0 program. The residential customers of Southern California Edison Company ("SCE") would continue to be allowed to use the residential default TOU rates, as well as SCE's electrification rate, because the design of SCE's rates has more aggressive TOU pricing. If there is a delay in the approval of an electrification rate for SDG&E, the existing schedules DR-SES and EV-TOU-5 should be made available to the initial NEM 3.0 customers in SDG&E's territory.
    - Compensation for exports for residential DG customers under NEM 3.0 would be gradually reduced over time from the level set in the current NEM 2.0 tariff, in a series of steps until the benefits (avoided costs, plus a resiliency adder for solar + storage systems) of behind the meter distributed generation approximately equals the cost.
        - The first step will occur in 2023 with PG&E and SDG&E residential customers required to use the electrification rate.
        - The remaining steps will reduce the export rates for all three IOUs (a specified percentage of the NEM 2.0 export rate based on retail rates), with each step triggered when specific aggregate capacities of residential systems are installed under NEM 3.0 on each IOU system.
        - A customer will retain their year-specific export compensation percentage for 20 years.
    - Interval netting of imports and exports should be retained, with the continued use of today's one-hour interval for residential customers.
    - NEM 3.0 customers should be billed on a monthly basis, with the option to retain the current annual billing. The true-up of NEM charges and credits should

continue to occur annually, with all NEM customers moving to an annual true-up in April each year.

- A customer should be allowed to oversize their system by 50%, with annual net surplus generation compensated at avoided costs.

- Retain the current NEM 2.0 compensation structure for all non-residential customers.

- Adopt the proposals for Environmental Justice and Social Justice Communities, including low-income customers, advanced by Grid Alternatives, the Sierra Club and Vote Solar:

  - Decouple the savings on the NEM exports of qualifying low-income residential customers (defined as those with household income at or below 80% of Area Median Income) from their effective underlying retail rate and assign them a time-varying rate for their exports that is equal to the current default residential TOU rate offered by the customer's IOU in 2021.

  - Allow clean distributed generation projects located in Environmental Justice and Social Justice Communities and owned and controlled by the community to retain the NEM 2.0 structure.

- Adopt an implementation period for the successor tariff which allows sufficient time for (1) the required regulatory process; (2) customer education; (3) industry transition; and (4) billing system changes, approximately 14 months.

- Reject all proposals to modify the terms and conditions pursuant to which customers under the NEM 1.0 and NEM 2.0 tariffs take service.

- Allow all NEM customers – residential and non-residential – in all three IOU service territories, to elect Critical Peak Pricing or Peak Day Pricing rates on any rate option that they select.

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OPENING BRIEF OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION AND VOTE SOLAR

In accord with Rule 13.1 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the Solar Energy Industries Association ("SEIA") and Vote Solar ("VS") submit their Opening Brief in the above captioned proceeding.

I. INTRODUCTION

In crafting a successor to the current Net Energy Metering ("NEM") tariff, the Commission is statutorily obligated to account for all the mandates under Public Utilities Code Section 2827.1. The successor tariff which emerges from this proceeding must reflect each of those mandates. While the mandates can be balanced, they cannot be conflated.[1] Nor can one be given precedence over another.[2]

In this proceeding, significant emphasis has been placed on two of the statutory directives: (1) ensure that the standard contract or tariff made available to eligible customer-

[1] For example, TURN believes the requirement that "customer-sited" renewable resources have the opportunity to "grow sustainably" may be satisfied if a successor tariff is found to be cost effective for certain participants over a reasonably defined timeframe. *See* Exh. TURN-01 (Chait), p. 31, lines 19-21.

[2] Decision 16-09-036, p. 13 (agreeing with Pacific Gas and Electric Company that none of the statutory objectives has priority over another).

generators ensures that customer-sited renewable distributed generation continues to grow sustainably;[3] and (2) ensure that the total benefits of the standard contract or tariff to all customers and the electrical system are approximately equal to the total costs.[4] In short, the battle lines have been drawn between ensuring market growth versus eradication of whatever cost shift may exist between customers who participate in the NEM tariff and those who do not. The record of this proceeding, however, shows that these two requirements for a successor tariff can be reconciled, but such reconciliation can not occur overnight. Dramatic cuts to the export compensation afforded to NEM customers, coupled with significant new charges, as proposed by certain parties to this proceeding, will render the installation of solar no longer economic in California. The Commission does not have to guess what will happen to the solar market if the product they are forced to sell is not economic, they only need look to what occurred in other states such as Nevada and Hawaii where the significant and abrupt restructuring of NEM compensation caused the industry to crash. Rather, balancing these two obligatory components of the successor tariff *requires* a transition to a point where the industry is sustainable, *and* the cost and benefits of the successor tariff are "approximately equal." In other words, at a point in time when these two goals are in equilibrium.

This equilibrium will only be reached, however, if the successor tariff allows the industry to move away from one primarily reliant on standalone solar installations to one primarily reliant on solar + storage. Storage significantly increases the value and reliability of the solar output to the electric system, by allowing a substantial portion of solar output to be shifted to the on-peak

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[3] Public Utilities Code Section 2827.1(b)(1).

[4] Public Utilities Code Section 2827.1(b)(4).

period. Thus, the successor tariff must incentivize, not create economic barriers to storage installation.

Finally, the Commission is not designing the new successor tariff in a vacuum. This proceeding provides the Commission a unique opportunity to advance other state policy goals such as electrification. California is doubling down on its commitment to address climate change, with Governor Newsom's announcement on July 9, 2021 that he has asked this Commission and the California Air Resources Board "to accelerate California's progress toward its nation-leading climate goals," including the possible advancement to 2035 of the state's current goal of carbon neutrality by 2045.[5] The Commission has recognized that these goals are only achievable in a "High DER" future in which most or all Californians make personal, long-term commitments (via cash purchases, loans or financed) in distributed energy resources ("DERs") – including rooftop solar, on-site storage, electric vehicles ("EVs"), and electric heat pumps – that will be needed to reduce carbon pollution.[6] This proceeding presents a major opportunity for the Commission to craft a successor tariff that incents electrification in a manner that is consistent, measured, and broadly acceptable to the millions of Californians who must invest in these DERs to meet the state's climate goals.

The NEM successor tariff proposal offered by SEIA and Vote Solar for general market residential customers allows for the Commission to meet the required statutory directives while

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[5] See https://www.gov.ca.gov/2021/07/09/governor-newsom-holds-virtual-discussion-withleading-climate-scientists-on-states-progress-toward-carbon-neutrality/

[6] Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Modernize the Electric Grid for a High Distributed Energy Resources Future, R. 21-06-017 (June 24, 2021).

advancing the state's overall climate goals.[7] The proposal does so in a manner that is consistent with the Commission's Rate Design Principals including transparency and customer understanding.

The key to the NEM successor tariff proposed by SEIA and Vote Solar is the use of a net billing structure, under which the customer would pay a different rate for energy received from the utility (i.e., imports) than what they are paid for the excess generation that the customer delivers to the grid to be consumed by neighboring utility customers. The two principle pillars of the SEIA/ VS proposal are designed to address the balance between cost effectiveness and sustainability and the overarching policy framework in which the state is operating.

- *Step down in compensation, focused on reducing the export rate*. The export compensation for residential DG customers under NEM 3.0 would be gradually reduced over time from the level set in the current NEM 2.0 tariff, in a series of steps until the benefits (avoided cost-plus resiliency adder for solar + storage) of behind the meter distributed generation approximately equals the cost. The first step will occur in 2023 with PG&E and SDG&E residential customers required to use the electrification rate. The remaining steps will reduce the export rates for all three IOUs to specified and declining percentages of the NEM 2.0 export rate (i.e., retail rate less nonbypassable charges) with each step triggered when specific aggregate capacities of residential systems are installed under NEM 3.0 on each IOU system.[8] The steps that SEIA/VS propose would reduce the export compensation for Pacific Gas and Electric Company ("PG&E") and San Diego Gas & Electric Company ("SDG&E") NEM customers by 80% by 2030; for Southern California Edison

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[7] The SEIA/VS proposal does not address low-income customers. In this regard we support the proposals advanced by Grid Alternatives, Sierra Club and Vote Solar. *See* Exh. GRD-01.

[8] See Exh. SVS-03 (Beach), Attachment RTB-2, p. 11 (setting forth the MW capacity to be achieved in each step by each IOU, averaging 780 MW across all three).

Company ("SCE) NEM customers, by 50% by 2030.[9] Moreover, key to the stepdown construct is that a customer will retain its year-specific export percentage for 20 years. The Commission should re-evaluate periodically when the stepdown in export rates should end, and at what level, depending on fluctuations in avoided costs.

- *Service under an electrification rate.* For imports from the utility, the residential DG customers of PG&E and SDG&E would be required to take service from one of the utility's available untiered time-of-use ("TOU") rates designed to promote beneficial electrification. The structure of these rates will provide a strong incentive for new DG - customers to include storage, which will significantly increase the value of these systems. to the grid. This requirement would take effect at the outset of the NEM 3.0 program. The residential customers of SCE would continue to be allowed to use the residential default TOU rates, as well as SCE's electrification rate, because the design of SCE's rates has more aggressive TOU pricing. If there is a delay in the approval of an electrification rate for SDG&E, the existing schedules DR-SES and EV-TOU-5 should be made available to the initial NEM 3.0 customers in SDG&E's territory.

The goal of both the electrification rates and the export stepdowns is to bring the bill savings for residential DG customers into alignment with the benefits of their renewable generation, as measured by the Commission's Avoided Cost Calculator ("ACC"). The stepdown (with locked in stepdown percentages) will provide customers who install solar and solar + storage systems with a reasonable opportunity to earn a return of and on their investment, thus keeping the market sustainable, while the industry transitions from one that is primarily standalone solar to one which is primarily solar + storage. The required use of an electrification rate will both incent electrification and storage installation. With respect to the former, it allows

[9] Exh. SVS-04 (Beach), pp. 22-25 (SEIA/VS extended their step-down proposal from that made in their opening testimony to account for the impact of the 2021 Avoided Cost Calculator as discussed herein).

for charging of EVs and the use of heat pumps in off-peak periods which have significantly lower rates than the on-peak period – rates that are competitive with fossil fuels such as gasoline and natural gas. With respect to the latter, it allows for storing electricity in the off-peak periods and discharging that stored energy to serve on-peak demands when it is most valuable to the system.

There are other elements of the SEIA/VS general market proposal which the Commission should adopt: (1) monthly billing, with an option to retain annual billing; (2) interval netting; and (3) oversizing of systems. The first two are necessary consumer protections, with the first allowing customers to avoid large bills at the annual true up and the latter allowing the customer to have access to the data that the utility uses to bill them. The third item is key to advancing electrification – allowing the customer to oversize its solar system in the anticipation of increasing their load due to increased electrification of their home.

Finally, SEIA and Vote Solar recommend that there be no changes to the NEM tariff for non-residential customers. As illustrated on the record, there has been a significant drop in installations in this market segment, endangering its sustainability. In addition, the evidence shows that these customers pay more than the cost to serve them.

In contrast to the proposal advanced by SEIA and Vote Solar, other parties to this proceeding have presented proposals that have one goal in mind – immediate (or near immediate) elimination of what they have calculated to be the cost shift between customers that take service under the NEM tariff and those who do not. Hallmarks of these proposals are (1) export compensation rates based on avoided costs directly from the Avoided Cost Calculator, rates which will change annually in unpredictable ways, and (2) a grid benefits charge which

assesses grid costs for power which the customer generates and uses behind the meter and will also change annually.[10]

The problems with these proposals are manifold. First, the ACC was not intended to be a rate design tool and has never been used to design rates. It is designed to measure the grid-related benefits of demand-side programs, and it does not capture the "total benefits" referenced in Section 2827.1(b)(4). Second, the concept of a grid benefits charge violates the fundamental rate design principle of cost causation. Power that a customer generates on-site and then immediately uses behind the meter never touches the grid and does not cause the utility to incur grid-related costs. Third, the combination of these two components results in untenably long payback periods which makes solar not economic in the IOUs service territories. Fourth, the ever-changing nature of these charges will render it near impossible for solar developers to provide a reasoned estimate of bill savings to customers, something which they are required to do under Commission order. Fifth, the complexity of the structures which these parties propose to embed in the successor tariff are counter to the rate design principles that rates should be stable, transparent and understandable.

In sum, these proposals will not only act as a barrier for sustainable growth in the solar industry in California but will inflict economic harm on those who do attempt to participate in the market.

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[10] Certain parties such as TURN and the Natural Resources Defense Council propose a Market Transition Credit to blunt the impact of this proposed construct on some or all customers. As discussed herein, this only serves to add more complexity to their proposals which are not resolved by the record of this proceeding.

II. ISSUE 2: WHAT INFORMATION FROM THE NET ENERGY METERING 2.0 LOOKBACK STUDY SHOULD INFORM THE SUCCESSOR AND HOW SHOULD THE COMMISSION APPLY THOSE FINDINGS IN ITS CONSIDERATION

As stated therein, the objectives of the Net Energy Metering 2.0 Lookback Study were "to examine the impacts of NEM 2.0 and to compare how different metrics have changed following the transition from NEM 1.0 to NEM 2.0."[11] This was done by evaluating PG&E's, SCE's, and SDG&E's NEM 2.0 tariffs, including a cost-effectiveness analysis consistent with the Commission's Standard Practice Manual and Decision (D.) 19-05-019 and a cost of service analysis to compare the cost to serve NEM 2.0 customers against their total bill payments.[12] Although SEIA and Vote Solar do not agree with all of the details of the Lookback Study's analysis, we do agree that the Study illustrates the need for reform of the current NEM structure in the residential market. There seems to be little debate on this point among parties to this proceeding. There also does not appear to be any debate that reduction of the impact of solar adoption on non-participating ratepayers should be addressed through the successor tariff. The controversy among the parties lies with the scope and degree of the necessary change and how fast these changes should be implemented. On this point the Lookback Study is not as useful. The study looks at only one element - cost effectiveness - of the many elements that the Commission is required to consider in formulating a successor tariff as discussed in this Brief. And even with respect to the one element it does address, cost effectiveness, it is backwards

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[11] *Net Energy Metering 2.0 Lookback Study*, Verdant Associates LLC (January 21, 2021) ("Lookback Study"), p. 2.

[12] *Id.*

looking – addressing the cost effectiveness of a structure that no one is advocating to keep for general market residential customers.

Moreover, the Lookback Study, given its narrow objectives, does not encompass the many successes of the NEM program as recognized across a broad spectrum of parties.[13] These successes include the amount of private investment that the program has drawn into California, the number of jobs created in the state and the major contribution to the growth of renewable generation in the state's electric resource mix. The need for continued growth of the roof top solar market to support the state's greenhouse gas ("GHG") goals does not appear to be in question.[14] Therefore, not only from a statutory perspective, but a practical perspective as well, the sustainability of the industry must be a major driver of the successor tariff.

The Lookback Study does include some information which can be useful to assessing various proposals in this proceeding. First, it shows modest increases in recent years in the percentages of clean DG systems installed by customers in lower- and middle-income zip codes and by customers living in disadvantaged communities.[15] These are meaningful gains in expanding access to onsite clean energy, but the Lookback Study shows that there remains a gap between the penetration of solar among low- and moderate-income ratepayers compared to the penetration among all ratepayers. This proceeding should build on this start and should craft the

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[13] *See, e.g.*, Exh. IOU-01(Peterman), pp. 8-10.

[14] *Id.* (Tierney), p. 46, lines 17-23; *see, in general*, Exh. SVS-04 (Beach), p. 5, lines 1-7.

[15] See Lookback Study, at Figure 3-8, which shows that zipcodes with annual median incomes of $74,000 or less accounted for about 40% of residential NEM installations in recent years. The report also observes, at page 39, that "[b]etween 2007 and 2014, eight percent of residential solar systems were installed in disadvantaged communities," while "[b]eginning in 2015 through 2019, the proportion of systems installed in DACs increased to 12 percent."

successor tariff to make more substantial progress toward providing all Californians with the environmental and economic opportunity to install solar where they live.

Second, the Lookback Study shows that the cost-effectiveness of solar in the nonresidential market should not be the focus of concern today. The study states that non-residential distributed solar in the commercial, agricultural, and industrial sectors generally passes the Total Resource Cost test. Further, from a cost-of-service perspective, after installing solar, nonresidential customers continue to pay rates that fully cover their costs.[16] As discussed below, given the recent slowdown in the commercial market, coupled with the statutory directive to design a successor tariff that will allow the industry to grow sustainably, the Commission should maintain the current NEM compensation structure for nonresidential customers.

Finally, the Lookback Study shows that, on average, the residential NEM 2.0 solar customers in PG&E's and SDG&E's territories increased their electric usage by about 30% after adding solar.[17] This result illustrates the solar industry's common experience that a customer's investment in a solar system is often the precursor and catalyst for their adoption of other types of DERs such as EVs and electric appliances, a fact which the study acknowledges.[18]

This result highlights that the Commission should not view distributed solar as simply one type of DER whose adoption is unrelated to other types of DERs. Solar is a basic and integral component of the broad suite of electrification measures that will be essential to meeting the state's goals for reducing greenhouse gas emissions. The economic evaluation of net-

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[16] *See* the Lookback Study, p. 98, Table 5-11, showing that non-residential NEM customers pay more than their cost of service (i.e., 152% for PG&E, 108% for SCE, and 166% for SDG&E).

[17] *Ibid*., at Table 3-1.

[18] *Ibid*., at p. 62: "Customers often install solar PV while at the same time investing in an electric appliance, an electric vehicle, or making an expansion to the home. All of these decisions will result in an increase in consumption relative to the pre-interconnection consumption levels (see Table 3-1)."

metered solar in this proceeding must consider solar's role as a foundational catalyst and essential resource for California's electrification effort.

III. ISSUE 3: WHAT METHOD SHOULD THE COMMISSION USE TO ANALYZE THE PROGRAM ELEMENTS IDENTIFIED IN ISSUE 4 AND THE RESULTING PROPOSALS, WHILE ENSURING THE PROPOSALS COMPLY WITH THE GUIDING PRINCIPLES?

The Commission's analysis of the NEM program should start with the suite of cost-effectiveness tests from the California *Standard Practice Manual* (*"SPM"*). However, the Commission's analysis should not end there, as distributed solar and solar + storage systems provide important additional benefits for the ratepayers and citizens in the IOU service territories that are not included in the avoided costs used in many of the *SPM* tests. Further, the Commission should recognize that the costs for solar and storage are continuing to decline, which means that the deployment of these resources today, at any scale, will result in a certain level of above-market costs in the future. Finally, the maintenance of the current pace of DER deployment is essential because of constraints on the deployment of utility-scale resources.

A. Cost Effectiveness – the *SPM* Tests and the Broader Benefits of DERs

1. The Effectiveness of Total Resource Cost Test has been Complicated by the Results of the 2021 ACC

Decision 21-02-007 issued in this proceeding on February 17, 2021 reaffirmed, over the objections of the Joint IOUs and other parties to this proceeding,[19] that that cost-effectiveness analysis should be conducted in the manner directed by D.19-05-019, with the Total Resource

[19] *See* D. 21-07-021, p. 35. noting that the Joint Utilities, National Diversity Coalition, CalWEA, and SBUA submit that AB 327 and Public Utilities Code Section 2827.1 require the Commission to analyze the cost-effectiveness of the successor to the net energy metering tariff through the use of the Ratepayer Impact Measure test. The Joint IOUs maintained this position in testimony. Exh. IOU-01 (Wray), p. 88, lines 1-12.

Cost ("TRC") test[20] as the primary cost-effectiveness test, except where prohibited by statute or Commission Decision.[21] The Decision further determined that use of the TRC as the primary cost effectiveness test for the NEM successor tariff was not precluded by law or Commission Decision.[22] SEIA and Vote Solar supported the Commission in this determination.

In the TRC test, the costs are the lifecycle levelized cost of energy ("LCOE") from solar and solar + storage resources. The benefits used in the test are the utilities' long-run avoided costs as determined by the ACC, also levelized over the life of the resources. Through analysis presented in its opening testimony, SEIA and Vote Solar demonstrated, using 2020 ACC values, that both solar and solar + storage pass the TRC test, with an average TRC ratio of benefits to costs over the period 2022 to 2030 of 1.30 for solar and 1.23 for solar + storage.[23]

This picture has been complicated by the Commission's subsequent adoption of much lower ACC values in the 2021 ACC. Using the 2021 ACC values, solar alone does not pass the TRC under any parties' proposal,[24] and more valuable solar + storage systems will only pass the TRC later in the 2020s after solar and storage costs have declined further.[25] However, there are other important factors that should temper drawing conclusions about the cost-effectiveness of these resources based on the TRC results using only the 2021 ACC.

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[20] The TRC test measures whether the benefits of renewable DG to all customers and the electrical system approximately equal or exceed the costs of these facilities.

[21] D.21-02-007, p. 35.

[22] *Id*., pp. 35-36.

[23] Exh. SVS-03 (Beach), Attachment RTB-2, pp. 5-7.

[24] *Cost Effectiveness of the NEM Successor Rate Proposals Under Rulemaking 20-08-020*, Energy, Environmental Economic (May, 28, 2021, updated June 15, 2021), p .5

[25] Exh. IOU-02 (Wray), p. 22, Figure III-1, showing that the benefits of solar-plus-storage systems, including resiliency, will equal the costs in 2028. Without resiliency, the benefits are close to the costs by 2030.

First, the Commission has acknowledged that the lower long-term 2021 ACC results are driven by a forecast of continued rapid declines in utility-scale solar and storage costs.[26] These declines mean that solar and storage built today – at any scale – will result in above-market costs in the future if these cost declines materialize as expected. Given the cost assumptions that appear to be behind the 2021 ACC, it is not surprising that distributed resources do not pass the TRC until later in this decade. But California does not have the luxury of pausing the distributed solar and storage market to wait for those cost drops to happen. Today there is a pressing need to adapt to the new extremes of weather and wildfires driven by climate change and to respond to the strong and growing customer demand for solar +storage systems to provide resilient electric service when the grid is down.[27] Further, a major disruption in a DG market as large as California would reduce the demand for solar and storage that is the key driver of the cost reductions. Finally, California needs new electric capacity now, with a continuing need in every year through at least 2026, with a cumulative need over these years that totals almost 15 GW.[28] The record shows that the sustained growth of distributed solar + storage systems can contribute 4.6 GW of much-needed new capacity to the CAISO grid by 2030.[29]

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[26] *See* Resolution E-5150, p. 30: "These modeling changes… (particularly the decreases in solar and storage costs), resulted in much lower 2021 avoided cost values." Also see Exh. SVS-06, the documentation for the 2021 ACC, at p. 2: "Lower GHG value from IRP RESOLVE modeling, due primarily to lower costs for utility scale solar and energy storage."

[27] The Joint IOUs acknowledge that resiliency is a major driver of solar and storage adoption today. *See* Exh. IOU-01 (Tierney), p. 43, line 5 to p.44, line 7.

[28] For the state's immediate and continuing needs for new capacity in 2021-2023, see the blackouts that occurred on the CAISO system on August 14-15, 2020, as well as the record in R. 20-11-003 on emergency capacity needs for the summers of 2021 and 2022, D. 19-11-016 directing LSEs to procure 3.3 GW of new system resource adequacy (RA) capacity in 2021-2023, and D. 21-06-035 ordering an additional 11.5 GW of capacity over the 2023-2026 years, in part to replace retiring nuclear and fossil thermal units.

[29] Exh. SVS-03 (Beach), at p. 40, footnote 32.

Second, as discussed further in Section III.A.2.b.ii below, distributed resources have significant societal benefits – largely from mitigating the impacts of climate change – that offset any above-market costs that may be incurred over the next several years.[30] California is depending on these DG resources to produce these benefits in the coming years. Additional utility-scale resources could provide many of these same benefits, but it is doubtful that the state could shift quickly enough to replace the expected DG resources with utility-scale resources if DG installations fall below the levels assumed in the state's current Reference System Portfolio (RSP). Significant time would be lost before policymakers can obtain the data for and recognize a significant drop in DG adoption, then take steps to increase utility-scale procurement (which in turn requires much longer lead times, particularly for the associated transmission).[31] The Commission's recent mid-term procurement order for 11.5 GW of new utility-scale clean resources by 2026 repeatedly acknowledges this level of mid-term procurement as challenging and ambitious. Yet this order continues to assume that the DG market will make the consistent 1.0 GW per year contribution of nameplate renewable capacity that the state has counted on for the last five years.[32]

Finally, the importance of a viable DER market is underscored by the infeasibility of the "No New DER" case that the Commission uses as the basis for the ACC's avoided costs. The No New DER case obviously could not be built, as it would require more than doubling the

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30 Exh. SVS-04 (Beach), p. 26, lines 12-18.

31 *Id*, p. 7, line 22 to p.8, line 3.

32 *Id.* p. 8, and D. 21-06-035, at p. 15, finding that the ALJ's proposed mid-term procurement "closely approximates the 18,000 MW of new nameplate capacity by 2026 included in the Reference System Portfolio (RSP) adopted in D.20-03-028." The RSP, of course, assumes a continuation of the current pace of installations of customer-sited solar. See Exh. SVS-04, p. 5, citing D. 20-03-028.

state's nameplate capacity of renewable generation in just the next five years.[33] The Joint IOUs try to discount this argument, asserting that DERs "will continue to be a part of utility planning and portfolios."[34] But it is not "utility planning" that will maintain a vibrant DER industry in California – it is the decisions of millions of customers who must make long-term investments in DERs. As discussed in III.B. 2 of this brief, the Joint IOUs' proposals would make distributed solar and solar + storage uneconomic for customers in their service territories. The record shows that similar precipitous changes in net metering in Nevada and Hawaii had severe negative impacts the DER markets in those states.[35] The IOUs have failed to show, if their proposals are adopted, why customers would make uneconomic investments in these resources and how the state would avoid the No New DER scenario.

Third, a sustainable market for distributed renewables and storage is essential if the state is to balance its need for clean energy with its ambitious land conservation goals. Both the Joint IOUs and CalPA cite a Nature Conservancy study which they assert states that "California can achieve renewable and carbon-free electricity goals with minimal impacts to the west-wide network of natural and working lands."[36] This is a misquote of the study's conclusion, which actually says "By accounting for siting impacts in planning processes for renewable energy deployment, it is possible for California to achieve its renewable and carbon-free electricity goals

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33 *See* Exh. SVS-04 (Beach), p. 8, lines 15-17: "[t]he 34 GW of new renewables that would be needed by 2026 [in the No New DER case] exceeds the 30 GW of nameplate capacity from the renewable generation now on the CAISO grid.

34 *See* Exh IOU-02 (Wray), p. 35, lines 6-7.

35 *See* Section IV.B.1.a.ii of this Brief.

36 Exh. IOU-02, p. 35, referencing the Nature Conservancy study *Power of Place, Land Conservation and Clean Energy Pathways for California*. An academic paper summarizing this study is in the record as Exh. SVS-14.

with minimal impacts to the west-wide network of natural and working lands."[37] The Nature Conservancy study makes clear that there is the potential for serious land use conflicts from utility-scale renewable deployment, unless land use constraints not in place today are implemented.[38] These constraints will either raise costs for utility-scale development in California, or force the state to obtain its renewable resource over a wider geographic footprint, i.e. from other states, with attendant land use impacts and new issues from the siting, cost, and timing risks of interstate transmission development.[39] Moreover, the study's modeling shows that the more stringent land use constraints that it recommends result in the displacement of utility-scale renewables by distributed renewables,[40] and the study concludes with the policy recommendation that increased incentives for and investments in DERs are a key mitigation for land use constraints.[41] Further, the study did not examine a case in which there is lower DER deployment than now expected, as would result if the proposals in this case for drastic change are adopted; it only examined a sensitivity in which DER adoption is 35% greater than now

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37 Nature Conservancy study, at p. 43, cited in Exh. IOU-02, p. 35.

38 Exh. SVS-14, p. 6: "Without land protections, new solar and wind projects are likely to have sizable land impacts."

39 Exh. SVS-14, pp. 5-6: "Siting Levels are also a key determinant of total costs. All else equal, more land conservation increases the total resource cost," and "Generally, procuring renewable electricity from more states can offset the cost increase associated with increasing land protections." Also see p. 9: "transmission projects are known to have disproportionate siting impacts due to landscape fragmentation, have long lead times for permitting and construction, and suffer from interstate permitting and cost allocation uncertainties."

40 Nature Conservancy study, at p. 28, Figure 5 showing the results for the Selected Capacity in the SL3 and SL4 cases with additional land use constraints.

41 Exh. SVS-14, p. 9: "High rooftop solar adoption can play an important role in reducing solar land use, but large quantities of utility-scale capacity are still needed in the scenarios examined." Also see the Policy Recommendations in the Executive Summary of the Nature Conservancy study, at p. 8: "Pursue policies and programs to increase energy efficiency, demand response, and distributed energy resources. To reduce the amounts of natural and agricultural lands needed to achieve clean energy policies, we recommend increasing incentives and investments in energy efficiency, demand response, and DERs."

planned.[42] The Nature Conservancy study thus supports the importance of maintaining the current level of DER deployment as a key mitigation strategy to minimize the land use impacts of meeting the state's climate goals, not the opposite as asserted by the Joint IOUs and CalPA. As attested by Sierra Club witness Vespa:

> [T]o the extent we decrease our deployment or reduce our deployment of rooftop solar, below the levels anticipated in the [SB 100] report, that development will go somewhere, and, in fact, create greater pressure, which is already significant on our open space.[43]

2. The Commission Must Balance the RIM and PCT Tests

While Decision 21-07-002 reaffirmed that the Total Resource Cost test would be the primary test for analyzing the cost effectiveness of successors to the net energy metering tariff, it also stated that the Commission would review the Ratepayer Impact Measure ("RIM") test and Participant Cost Test ("PCT") as part of the analysis.[44] The RIM test looks at the cost-effectiveness of a DER from the perspective of non-participating ratepayers; the PCT examines cost-effectiveness for customers who adopt the DER. The bill savings for the DER customer under applicable NEM policies are the principal cost in the RIM test[45] but are also the major benefit in the PCT.[46] Thus, the results in the RIM and PCT move in opposite directions when changes to NEM policies impact a customer's bill savings. The difficult task for the

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42 Exh. SVS-14, pp. 5 and 9.

43 Tr. Vol 10 (Sierra Club-Vespa), p. 2169, lines 1-7.

44 D.21-02-007, p. 36.

45 In the RIM test, the principal costs are the bill savings for the DER customer, which are also the revenues that the utility loses as a result of the DER installation. The principal benefits in the RIM test are the long-run costs avoided by the utility.

46 In the PCT, the bill savings are the primary benefit for the DER customer, while the costs are the capital and operating costs of the DER.

Commission is to find the right, equitable balance between the interests of participating and non-participating customers. The PCT must be high enough to encourage customers to make long-term investments in DERs, without RIM results so low that they indicate an undue burden on non-participating ratepayers.

Significantly, all parties to this case agree that, in the residential market, the balance between participating and non-participating customers needs to be reset. No party is proposing a continuation of NEM 2.0 for non-low-income residential customers. The SEIA/Vote Solar successor tariff proposal would make an immediate change to accomplish this, by requiring the NEM 3.0 general market residential customers of PG&E and SDG&E to take service under an electrification rate that has TOU rates that are much closer to marginal costs than the IOUs' default residential rates.[47] The second key component of the SEIA/Vote Solar proposal is to reduce gradually over time the export compensation for residential DG customers, by lowering the rate for exports in a series of steps.[48] Figures 2 to 4 of and Figures 1 to 3 of the direct and rebuttal testimony of witness Beach, Exh. SVS-03 and Exh. SVS-04, respectively, show both the significant magnitude of the initial step to electrification rates and the impact of the export rate reductions over time, as illustrated in the below example:

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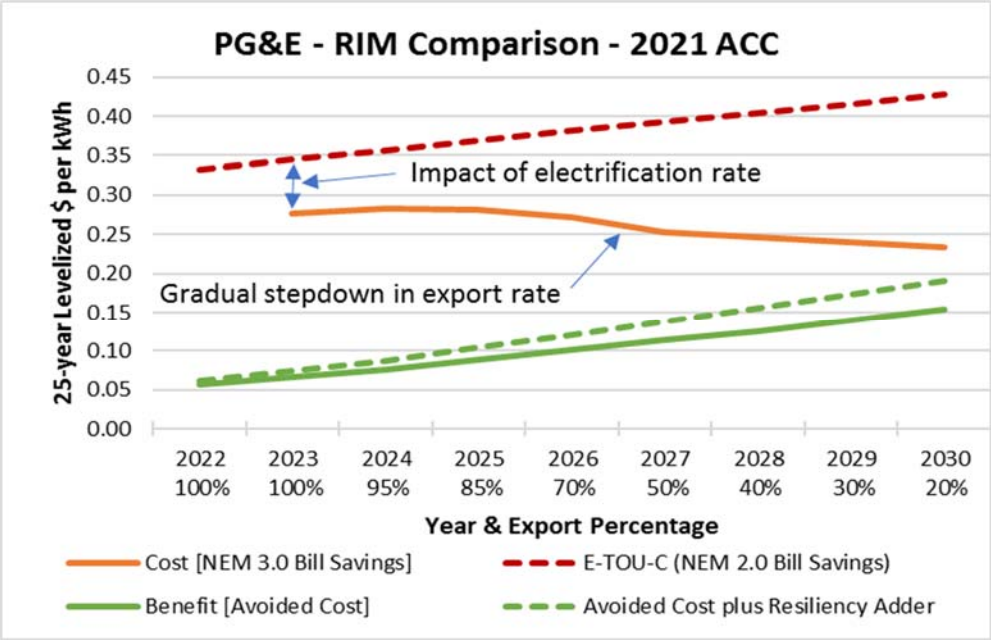
[47] See Exh. SVS-03 (Beach), Attachment RTB-2, p. 8. NEM 3.0 residential customers also would be allowed to use SCE's residential default TOU rates, TOU-D 4p-9p and 5p-8p, as well as SCE's electrification rate TOU-D-PRIME. SCE's residential default rates have more aggressive TOU pricing, and the utility's lower overall rates present significantly reduced concerns with non-participant impacts than the other two IOUs

[48] *Id.*, as modified in Exh. SVS-04 (Beach), p.23 to account for impact of 2021 ACC.

Figure 2[49]



Through this analysis, Vote Solar and SEIA have demonstrated that this two-step proposal achieves a gradual and significant improvement in the balance of the benefits and costs of distributed solar and solar + storage systems, by improving the RIM scores over time.[50]

It is in this context the role of the ACC in the SEIA / Vote Solar proposal comes into play. The role of the ACC should be to determine when and at what level to end the stepdown in export compensation for general market residential customers. Based on the 2020 ACC, our opening testimony projected an end to the stepdown in 2027. But if avoided costs remain at the lower level of the 2021 ACC, SEIA and Vote Solar project that stepdown in export rates for residential customers will need to extend for a few more years, with a further 10% reduction in

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[49] Exh. SVS-03 (Beach), Attachment RTB-2, p. 15. For the RIM analysis, SEIA/VS assumed a portion of the systems were solar + storage, and for that portion included a resiliency adder. *See* Tr. Vol 8 (SEIA/VS -Beach), p. 1293, lines 10-16.

[50] Exh. TRN-10, SEIA response to Q9. These results are shown graphically in Figure 1 to 3 of Exh. SVS-04.

the export rate as percentage of the retail rate for each annual tranche of capacity. Thus, the export rate stepdowns would continue until about 2030, as illustrated in Table 3 of Exh. SVS-04.

The Commission, however, cannot ignore the other side of this balance – the impact on participating DER customers. The PCT and payback analyses performed by SEIA and Vote Solar on our proposal, [51] show that it will maintain a positive investment environment for general market DER customers, in a range that is significantly lower than the NEM 2.0 PCT results reported in the Lookback study, but that is adequate to support the sustainable growth of the DER market, as AB 327 requires.[52]

Finally, it is important for the Commission to recognize that the *SPM* tests, including the TRC, RIM, and PCT, require a long-term, lifecycle analysis of the DER resource. That is why the *SPM* test results presented have used 25-year levelized values. The DER solar and solar + storage resources to be installed beginning in 2023 under NEM 3.0 will have a useful life of 25 years, and thus will be in place until beyond the 2045 date when California has set a goal of 100% clean energy. The purpose of the ACC, with its avoided costs out to 2050, is to capture the long-term benefits of long-lived resources. Some parties to this case would have the Commission assess the cost-effectiveness of these long-term resources based on much shorter analyses of their benefits.[53] The Commission should discount these results as not reflective of the long-term benefits of these resources.

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[51] Exh. SVS-03 (Beach), Attachment RTB-2, pp. 29-31, and Table 9.

[52] The PCT analysis for our proposal shows that the PCT results are significantly lower than the ratio of 1.8 for NEM 2.0 reported in the Lookback Study's Tables 1-2 and 5-4. After the federal ITC drops to zero for residential customers in 2024, the PCT ratios for our proposal are in the range of 1.4 to 1.5.

[53] *See, e.g.*, Exh. NRDC-01 (Chhabra) pp. 26-27.

(a) SEIA/VS RIM Analysis is More Accurate than that Performed by E3

At the direction of the Commission, E3 provided a common analysis of the proposals in this proceeding, including its application of the *SPM* tests to those proposals. The RIM analysis performed on the SEIA/Vote Solar proposal produced results significantly lower than what SEIA and Vote Solar demonstrated in Exh. SVS-04 and discussed above. The difference results from (1) E3's use of the SEIA/Vote Solar proposal as presented on March 15, 2021, which, as discussed above, has been modified to account for the 2021 ACC, and (2) errors in certain inputs. With respect to the former, as a result of the 2021 ACC, SEIA/VS modified their proposal to include a possible extension in the stepdown in export rates from 2028 to 2030, such that the PG&E and SDG&E export rates in 2030 would be 20% of retail, with SCE's export rates at 40% of retail. This increases the 2023 and 2030 RIM scores.[54] With respect to the latter, there are errors in E3's input assumptions, the two most impactful which are the assumed percentage of long-term escalation in retail rates and the assumption that the customer will use of the same rate schedule both before and after solar or solar +storage adoption.[55]

Rate escalation. A key assumption in any long-term 25-year analysis of the bill savings of DER customers is the long-term escalation in retail electric rates. E3 has assumed 4.0% per year rate escalation over the next 30 years. This is not a reasonable or sustainable assumption for an electrifying world in which the use of electricity – in particular, off-peak power – continues to grow strongly, is competitive with fossil fuels, and assumes a much larger percentage of

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[54] *Id*. p. 27, lines 7-10

[55] *Id.* p. 27, line 12 to p. 28, line 6.

California's primary energy use.[56] With electricity use growing and serving new loads in the transportation and building sectors, electric system costs will be spread over greater volumes, moderating rate increases. The Commission staff prepared a rate forecast for the February 24, 2021 *en banc* hearing on electric rates shows overall rates – including distribution, wildfire, and other costs – increasing at close to the inflation rate from 2021 to 2030 for PG&E and SCE, with only SDG&E experiencing rate escalation significantly higher than inflation.[57] This presentation also noted that expanding electrification will moderate future rate increases.[58] Annual rate escalation as high as 4% per year is also inconsistent with the 2021 ACC, which models a world in which the long-run marginal cost of adding new electric resources is dramatically lower than the marginal cost estimated just a year earlier. The RESOLVE model run used in the 2021 ACC shows average retail rates in California escalating at 2.0% per year from 2020 to 2045, which is 0.2% per year below the assumed inflation rate of 2.2% per year from 2020 to 2045.[59] The focus of the RESOLVE model is limited to utility-scale generation and transmission costs, but those costs comprise about one-half of the electric revenue requirement.[60] Thus E3's use of a 4% annual rate escalation is not supportable.

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56 Exh, SVS-03 (Beach) pp. 36-37 and Table 3.

57 Exhibit SVS-04 (Beach), p. 30, lines 2-4, citing CPUC Staff, *Utility Costs and Affordability of the Grid of the Future: An Evaluation of Electric Costs, Rates and Equity Issues Pursuant To P.U. Code Section 913.1* (February 2021), at Figures ES-1 to ES-3, and pp. 48-56 (hereafter, "Rates *En Banc* Presentation").

58 Exhibit SVS-04 (Beach) p. 30, citing Rates *En Banc* Presentation, at pp. 83-85: "The proportional increase in electricity sales is greater than the increase in costs" [in the High Electrification scenario].

59 *See* Exh. SVS-04 (Beach) p. 29, lines 6-8 and Figure 4. RESOLVE provides a detailed model only of generation and bulk transmission costs, which are about one-half of the revenue requirement.

60 *Id.,* p. 29, lines 9-10.

Use the same rate pre- and post-solar. The E3 analysis calculates the customer's pre-solar costs assuming service on the residential default TOU rate, not on the rate on which solar customers are required to take service. As a result, a significant portion of bill savings can result not from solar adoption, but from the switch to a more favorable rate schedule. This is a particular problem for E3's analyses for SDG&E: E3 shows much larger bill savings (and shorter paybacks) for SDG&E's proposed E-DER rate than for the other two IOUs due to the benefits of switching to E-DER. [61] Analyses of bill savings from NEM 3.0 should focus only on solar adoption and should not include savings that result from the ability of customers to arbitrage different rate designs. Residential customers will be able to choose electrification rates even if they do not adopt solar; accordingly, any benefits from that choice should not be included as part of the savings from adding solar Therefore, calculations of bill savings should assume the same rate both before and after a solar or solar-storage system is adopted.

There are a number of other deficiencies in E3's analysis including assuming no degradation in solar output, application of the minimum bill to the entire rate, not just the distribution component and use of load and solar profiles that are not representative of the areas in which most of the states' population resides.[62]

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[61] Further, PG&E and SDG&E have proposed that other, non-solar residential customers would be allowed to choose their proposed E-DER rates. See Exh. IOU-01, at pp. 111-112: "PG&E proposes a new non-tiered TOU rate in this proceeding that will serve as the default rate for residential Reform Tariff customers. This rate would be available to all residential customers," and p. 114: "SDG&E proposes a new, more cost-based, non-tiered TOU rate ("TOU-DER") as the default rate for residential Reform Tariff customers. This rate would also be available with no eligibility restrictions on an opt-in basis to other, non-Reform Tariff customers."

[62] Exh. SVS-04 (Beach), pp. 27-28.

(b) The Commission Should Take a Broader View of RIM Scores

The Commission is charged with equitably balancing the interests of participants and nonparticipants. This balance must look beyond the precise score on a stringent RIM test and factor in other considerations, certain which adhere to the benefit of all Californians and others which highlight the deficiencies of a strict application of the RIM test.

First, as will be addressed below, there are substantial quantifiable societal benefits from distributed solar. Some of these benefits are specific to distributed renewables, and are not provided by utility-scale renewables, while others also could be provided by utility-scale solar projects but are incremental to the currently planned and reasonably-feasible levels of utility-scale solar deployment.[63] These societal benefits accrue to all ratepayers, including non-participants. As the RIM test is a measure of equity for non-participants, the Commission should weigh these societal benefits in its assessment of the impacts on non-participants.

Second, California needs the clean generation that distributed solar provides in order to meet its GHG emission reduction goals. The state's current Integrated Resource Plan ("IRP") includes the growth of distributed solar at its current rate of growth of 1 GW per year for the remainder of the decade, doubling the installed capacity of this resource from 2020 to 2030.[64] This level of growth is included in both of the scenarios for the state's GHG emissions target in 2030 (38 and 46 MMT).[65] A sudden drop in DER adoption resulting from an overly stringent application of the RIM test would disrupt the state's planning process, and, as discussed above, it is plainly not feasible to procure utility-scale resources in a timely way to replace the distributed

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63 Exh. SVS-3 (Beach), pp. p. 20, line 8 through p. 21, line 31.

64 Exh. SVS-04 (Beach), p. 5, lines 9-11.

65 *Id.,* p. 5, lines 11-12.

solar and storage now included in the state's IRP. Even more important is the fact that California desperately needs the capacity that can be provided by the growth of solar-and-storage systems that can shift solar generation to the critical hours of the net load peak.[66] As noted above, we project that this growth will add 4,600 MW of additional storage capacity by 2030 if deployment continues at the rate assumed in the IRP.

The RIM test is not used in California, or virtually any other state, to assess the cost-effectiveness of energy efficiency (EE) programs.[67] The Joint IOUs assert, without citation, that "NEM, unlike EE measures, creates a persistent, regressive transfer of wealth from middle class and lower income customers to wealthier customers."[68] To determine whether this is true would require the review of RIM tests for EE programs, to see if they pass. As noted, such tests are not performed for EE programs in California, so there is no basis for this assertion. The Joint IOUs and other parties also assert that the manner which solar installations reduce usage of the grid is dissimilar to energy efficiency measures and less reliable.[69] Yet the essence of the Joint IOUs' complaint is that "[b]y serving a portion of their own energy requirements, NEM customers avoid paying for and shift their share of the cost of service to nonparticipating customers."[70] When a NEM customer uses a portion of their solar output to serve their own energy requirements behind the meter, this power never touches the grid, and from the grid perspective the customer just appears to have lower usage. This is in no way different than a customer who

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66 *See* D. 19-11-016 authorizing 3.3 GW of near-term procurement in 2021-2023 and D. 21-06-035 authorizing 11.5 GW of mid-term procurement in 2023-2026.

67 Exh. SVS-03 (Beach), p. 47, lines 12-13.

68 Exh. IOU-02 (Tierney), p. 125, lines 4-5.

69 *Id.* (Tierney), p. 125, lines 3-4 and (Morien), p. 62, lines 17-21.

70 Id., (Tierney), p. 125, lines 9-11.

reduces their load by buying more efficient appliances, or by going on vacation. The only real difference is that energy efficiency customers are not castigated for shifting costs to other customers, even though they have similar impacts on the grid.

The stringency of the RIM test is an important reason why it is not used for other demand-side programs. For a program to pass the RIM test means that all ratepayers will benefit from the program, including non-participants. This strict "No Losers" requirement is a recipe for inaction; as the well-known energy expert Amory Lovins has observed, the RIM test should be called the "Hardly Any Winners" test.[71] A better approach is not to insist on programs passing the RIM test, but to improve RIM scores over time and ensure that all ratepayers have a reasonable opportunity to participate in DER programs. This underscores the importance of focusing on a successor tariff with a major equity component that can make more substantial progress toward providing all Californians with the environmental and economic opportunity to install or to use solar and storage where they live.

(i) Resiliency Adder

Solar + storage systems provide resiliency benefits to the electric system.[72] As a threshold argument, certain parties, such as CalPA, argue that SEIA/Vote Solar's request to incorporate resiliency benefits as a quantitative adder to the cost effectiveness test should be denied by the Commission on the grounds that SEIA's and Vote Solar's proposed quantification of the resiliency benefit has been previously reviewed and rejected by the Commission in the Integrated Distributed Energy Resource ("IDER") proceeding.[73] These parties are missing the

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71 See Exh. SVS-03 (Beach), Attachment RTB-2, at p. 32.

72 Exh. SVS-03 (Beach), p. 18, line 2.

73 *See* Exh. PAO-02 (Rounds), p. 3-9, lines 3-10.

point. SEIA and Vote Solar are not contending that the resiliency benefit is an avoided cost to the utility that should be included in the ACC – which was the issue before the Commission in the IDER proceeding – a point conceded by CalPA.[74] As explained by SEIA / Vote Solar witness Beach:

> It is important to recognize that resiliency benefit accrues when the grid is down, it is not working; people are not getting services, the utility is not providing power…
>
> So in some ways it does not make sense not to include the benefit in the avoided cost calculator, which is looking at the benefits when the grid is working and when utilities can avoid costs on their own system due to people producing their own power.
>
> But the reality we're facing today is that there are going to be times when the grid is not working [sic] to extreme weather events: wildfires, earthquakes, cold snaps that we have all seen. So, you need to take a somewhat larger view of the system. The system doesn't just include times when the grid is working. It also has to include times when the grid is not working. And that is when resiliency come into play.[75]

The fact that resiliency benefits are not a utility avoided cost and accrue when the grid is not operating for a lengthy period also has implications for the issue of whether resiliency is a benefit for all ratepayers or, as some parties contend, just a private benefit realized only by the DER customer.[76] A prolonged grid outage will occur during a time of extreme conditions – so-called "dark sky" events – for example, when wildfire conditions are extreme, after an earthquake, or in the aftermath of another sort of extreme weather event such as the prolonged cold weather in Texas and surrounding states in February 2021. Few would dispute that a resilient solar + storage system at the local fire

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74 Tr. Vol. 5 (CalPA-Rounds), p. 881, line 28 to p.882, line 3.

75 Tr. Vol. 8 (SEIA/VS-Beach), p. 1279, lines 7-27.

76 See e.g., Tr. Vol 5 (CalPA-Rounds), p. 891, lines 10-19.

station or emergency response center will provide benefits to the entire local community during such an event. But these dark sky events are also the circumstances in which it is well-documented that individual customers are most likely to reach out and assist each other.[77] It would be a mistake for the Commission to assume away such altruism, by finding that the resiliency of a residential solar + storage system will benefit only the customer who installs it. Instead, the Commission should find that the broad and increasing diffusion of solar + storage systems across California will benefit all ratepayers who face an increasing frequency of extreme conditions that may cause the grid to be down for extended periods.

The Commission should find that solar + storage systems provide the additional resiliency benefits that are quantified in Attachment B of the SEIA / Vote Solar proposal.[78]

(ii) Societal Benefits

There are substantial quantifiable societal benefits from distributed solar and solar + storage.[79] While some of these societal benefits are produced by both distributed energy resources and utility-scale solar, some of them are attributed solely to distributed energy resources.[80] With respect to the former group, however, distributed energy resources will

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77 The altruism of ordinary people during extreme circumstances is well documented, for example, in Rebecca Solnit's book *A Paradise Built in Hell: The Extraordinary Communities That Arise in Disasters*, which is referenced in Exh. TRN-10, at Q11(c). *See also* Tr. Vol. 7 (SEIA/VS-Beach), p. 1235, line 18 to p.1236, line 11.

78 Exh. SVS-03 (Beach), Attachment RTB-2, Attachment A.

79 Exh. SVS-03 (Beach), p.20, line 3-6.

80 *Id.,* p. 20, line 8 through p. 21, line 31.

produce incremental societal benefits, beyond those provided by utility-scale renewables.[81] No party appears to be contesting that there are societal benefits from distributed energy resources,[82] or that they have a value greater than zero.[83] The question lies with how much greater than zero and how the Commission should use that information in this case.

First, societal benefits expected from NEM 3.0 systems are significant regardless of whether the 2020 or 2021 ACC is used, as shown Exh. SVS-03, Table 3 ($3.8 billion per year using the 2020 ACC) and Exh. SVS-04 Table 4 of our rebuttal ($1.7 billion per year using the 2021 ACC). The 2021 ACC reduces the calculated societal benefits as a result of lower marginal emissions during the mid-day hours of peak solar output, [84] but this drop can be mitigated through the use of storage that shifts solar output to the high-emission hours around the evening net load peak.

Second, to be clear, SEIA and Vote Solar are not proposing that DER customers should be compensated directly for these benefits. However, these benefits should be one of a number of policy reasons why the Commission should allow for a measured, gradual change in NEM compensation and should not adopt NEM policies and rates premised on either the immediate elimination of any cost shift that may exist or the immediate achievement of a stringent 1.0 score on the RIM test. SEIA and Vote Solar have sought to quantify these benefits because the process

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81 *Id*., p. 22, lines 3-4.

82 Tr. Vol 5 (CalPA-Rounds), p. 875, lines 17-20; Exh. IOU-02 (Wray), p. 118, line 15 to p.119, line 2.

83 Tr. Vol 5 (CalPA-Rounds), p. 875, lines 21-23.

84 Exh. SVS-04 (Beach) p.30, lines 9-13.

of quantification provides the Commission with additional useful information on the relative magnitude of the various societal benefits that DER systems provide.[85]

The Joint IOUs' rebuttal goes to great lengths to minimize the societal benefits of distributed resources.[86] However, many of these benefits are also important drivers of California's programs to develop utility-scale renewables and to move to clean energy in general. When viewed in that light, the implication of the Joint IOUs' rebuttal is to discount the importance and urgency of California's pursuit of clean energy. For example, the Joint IOUs continue to support the outdated "social cost of carbon" ("SCC") metric developed almost a decade ago in the Obama administration to measure the damages from uncontrolled climate change, a metric that the Biden Administration will be updating using the best available science.[87] The SCC metric that SEIA and Vote Solar have proposed is a prominent example of the latest peer-reviewed science.

Similarly, the Joint IOUs try to minimize the societal benefits from reducing leakage of methane in the natural gas system.[88] It should not escape the Commission's attention that two of the IOUs are also natural gas utilities. The Joint IOUs do not contest the facts that (1) the ACC includes as a direct benefit only the methane leakage associated with the production and deliveries to power plants of natural gas produced in California,[89] (2) only 8.7% of the natural

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85 See Exh. SVS-03 (Beach), p.26, lines 1-19.

86 *See* Exh. IOU-02 (Wray), pp. 28-36,

87 Exh. IOU-02 (Wray), p. 30, line 4 to p.31, line 2. *See* Exh. SVS-07, pp. 3-4 for the plans to update the societal cost of carbon.

88 Exh. IOU-02 (Wray), p.32, lines 1-12.

89 *See* D. 20-04-010, p. 64; Resolution E-5077, p. 10: "The impacts of methane leakage will be estimated by increasing avoided GHG emissions for all DERs, using an upstream in-state methane leakage adder."

gas consumed in California is produced within the state,[90] and (3) reducing methane leakage associated with out-of-state production of natural gas consumed in California is a societal benefit, and not a direct benefit, because these emissions are not in the state's official GHG inventory.[91] Thus, the ACC does not cover the methane leakage associated with the 91.3% of California's gas supplies that are produced out-of-state and that are transported on a pipeline system that also is mostly out-of-state. The clear conclusion to be drawn from these facts is that the societal benefits from reductions in out-of-state methane leakage are about ten times greater than the methane leakage adder included in the ACC (91.3% / 8.7% = 10.5). This is how SEIA and Vote Solar have calculated this benefit. The Joint IOU assertion that this multiplier should be 3x instead of 10x makes no sense,[92] and could only be true if out-of-state gas supplies had less than one-third the leakage rate of gas produced within the state. The Joint IOUs have provided no data to indicate that this is true. Similarly, the ACC includes the ability to select the climate impacts of methane leakage over either a 20- or a 100-year period. Methane leakage has its greatest climate impacts in the first 20 years. The DERs that are the subject of this case do not have 100-year economic lives; their useful life is closer to 20 years, which is the appropriate ACC value that SEIA/VS used for the climate impacts of methane leakage. The fact that the California Air Resources Board uses the 100-year methane leakage value for other purposes should not be determinative here. In this proceeding, the task is to evaluate the benefits and costs of DERs whose useful life is just 25 years.

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90 Exh. SVS-04 (Beach), Attachment RTB-3, p. 2.

91 See D. 20-04-010, p. 64.

92 Exh. IOU-02 (Wray) p. 3, lines 6-7.

Finally, the Joint IOUs criticize SEIA/VS's use of the best and most recent available study on the health impacts of the air emissions from gas-fired power plants, on the inaccurate grounds that SEIA and Vote Solar applied this value equally to all hours.[93] The Joint IOUs provide no citation to our workpapers, which we provided to them, to support this incorrect assertion. Obviously, the air emissions in any hour depend on the extent to which gas-fired power plants are on the margin, and we correctly scaled this benefit based on the marginal emissions from gas plants in each hour.[94] The Joint IOUs rebuttal actually concedes this point, probably inadvertently, by stating that the Joint IOUs' re-calculation of our societal benefits changed this value to reflect the change in hourly marginal emissions from the 2020 ACC to the 2021 ACC, thus acknowledging that we correctly scaled this benefit based on marginal emissions in each hour.[95]

B. Payback Periods as a Means of Assessing Participant Impacts

1. Consumers consider payback periods as well as bill savings, in deciding whether to invest in DERs, but it is important to recognize the limits of simple payback metrics.

This proceeding has generated a substantial record on what is a reasonable "payback" periods for customers who invest in solar and solar + storage systems. It is important to recognize the different payback metrics that parties have used, and how they relate to each other. Many parties, as well as the E3 comparative analysis, used "simple" paybacks, defined as the capital cost of a system divided by the first-year bill savings. The simple payback metric

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93 *Id*.

94 *Id*.

95 *Id*, stating that "The utilities did not make any updates to SEIA/VS's calculation of this benefit [for the 2021 ACC], other than updating to use the 2021 ACC's marginal avoided emissions."

assumes that the customer pays cash for the system and does not consider ongoing maintenance costs, the time value of money, or the need for the customer to earn a return on (in addition to a return of) their investment. Financing costs alone add as much as 40% to the simple payback period. Thus, a simple payback that is significantly shorter than the economic life of the DER system do not indicate that the customer is being overcompensated. The record shows that simple paybacks longer than 10 years are unlikely to attract significant customer interest.[96] For example an analysis undertaken by SBUA witnesses Chernick and Wilson demonstrates that increasing the payback period from about five years to nine years would reduce solar uptake by about 55% and increasing payback to 12 years would reduce solar uptake about 85%.[97]

2. IOUs, TURN, and CalPA propose paybacks that are too long for a sustainable market.

The SEIA / Vote Solar rebuttal testimony provides an analysis of the simple paybacks proposed by the major parties to this case.[98] This update is important, as a number of parties have proposals to link NEM compensation directly to the ACC, and the adoption of the much lower 2021 ACC has resulted in significantly longer paybacks under these proposals. This analysis shows that CARE, the Joint IOUs, and TURN propose an immediate increase in 2023 in the simple payback for residential solar from 5 years to more than 20 years; CalPA's simple payback is only slightly lower, at 17 years.[99] As a result, these parties propose to increase paybacks by three to four times in one step, compared to the paybacks under NEM 2.0. NRDC's

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96 Exh. SVS-04 (Beach), p. 37, noting that an investment that has equal annual returns and a 10-year simple payback will have an internal rate of return (IRR) of about 8.8%, which is close to the customer discount rate of 8% recommended in the NEM 2.0 Lookback Study.

97 Exh. SBU-01(Chernick/Wilson), p.24, lines 21-23 and Figure 3.

98 *Id.*, pp. 34-37.

99 *Id*., p. 36 and Table 5.

payback is lower only because it has proposed that the Commission approve whatever level of upfront incentive is needed to reduce the simple payback to 10 years.[100] And while the Joint IOU witness Peterman attests that the sustainable growth of distributed generation requires a reasonable payback period,[101] the payback period for solar installations resulting from the Joint IOUs proposal would be anything but reasonable (15-19 years depending on the utility and using the IOUs own numbers) – lasting far longer than the average Californian stays in their home. And while the Joint IOUs continue to assert that such protracted payback periods are reasonable, they did not do any research or produce any documentation on the record that showed that payback periods of approximately 15 to 19 years would incent customers to invest in solar.[102]

Moreover, the 15–19-year payback periods that the Joint IOUs cite are the result of inaccurate inputs. The Joint IOUs used a questionably low price of solar of $2.34 per watt which is derived from the NREL Annual Technology Baseline (ATB).[103] As explained by CALSSA witnesses Plaisted and Heavner, the NREL price results from a bottom-up analysis, adding up the costs of components and estimated labor costs, rather than an analysis of actual market prices.[104] The NREL estimate does not include several key factors such as financing costs, the costs of panel upgrades, or California specific installation and permitting costs.[105]. In contrast, the analysis performed by SEIA/VS witness Beach relied on 2019-2020 actual costs reported in

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100 Exh. NRD-01 (Chhabra), pp. 14, 16, and 19: "A critical part of the NRDC Successor Tariff proposal is to ensure that distributed generation systems have at most a ten-year payback period."

101 Tr. Vol. 1 (Joint IOUs-Peterman), p. 91, lines 11-16.

102 Tr. Vol. 3 (Joint IOUs-Morien), p. 440, lines 15-21.

103 *Id.,* p. 442, lines 5-20.

104 Exh. CSA-01(Heavner/Plaisted), p 65, lines 5-7.

105 Exh. CSA-01(Heavner/Plaisted), pp. 65 -66; Exh. SVS-03 (Beach), p. 15, lines 14-14. *see also* Tr. Vol. 3 (Joint IOUs-Morien), p. 444, lines 12-18 and p. 447, lines 11-18.

Lawrence Berkeley National Lab's (LBNL) 2020 data update for its annual *Tracking the Sun* reports and in the California Distributed Generation Statistics website to derive the capital costs of residential solar, with an annual decline in costs of approximately 6 % a year.[106] Using the $3.63 per watt/DC derived from this analysis results in a payback period of 23 years for standalone solar under the Joint IOUs proposal.[107]

For context, the Nevada commission's precipitous end to NEM in that state in 2015, an action which shut down the rooftop solar market in Nevada, resulted in a doubling of paybacks in that state.[108] The result of the drastic changes that the Joint IOUs, CalPA, and TURN are proposing could be devastating to the economics of both distributed solar and solar-plus storage systems in California.

3. States which have modified their NEM tariffs have payback periods in line with SEIA/Vote Solar proposal

The record shows that paybacks are 11 years or less in the states that have significantly reformed their net metering programs – Arizona, Hawaii, Nevada, and South Carolina – as shown in Figure 14 from Exh. SVS-03.

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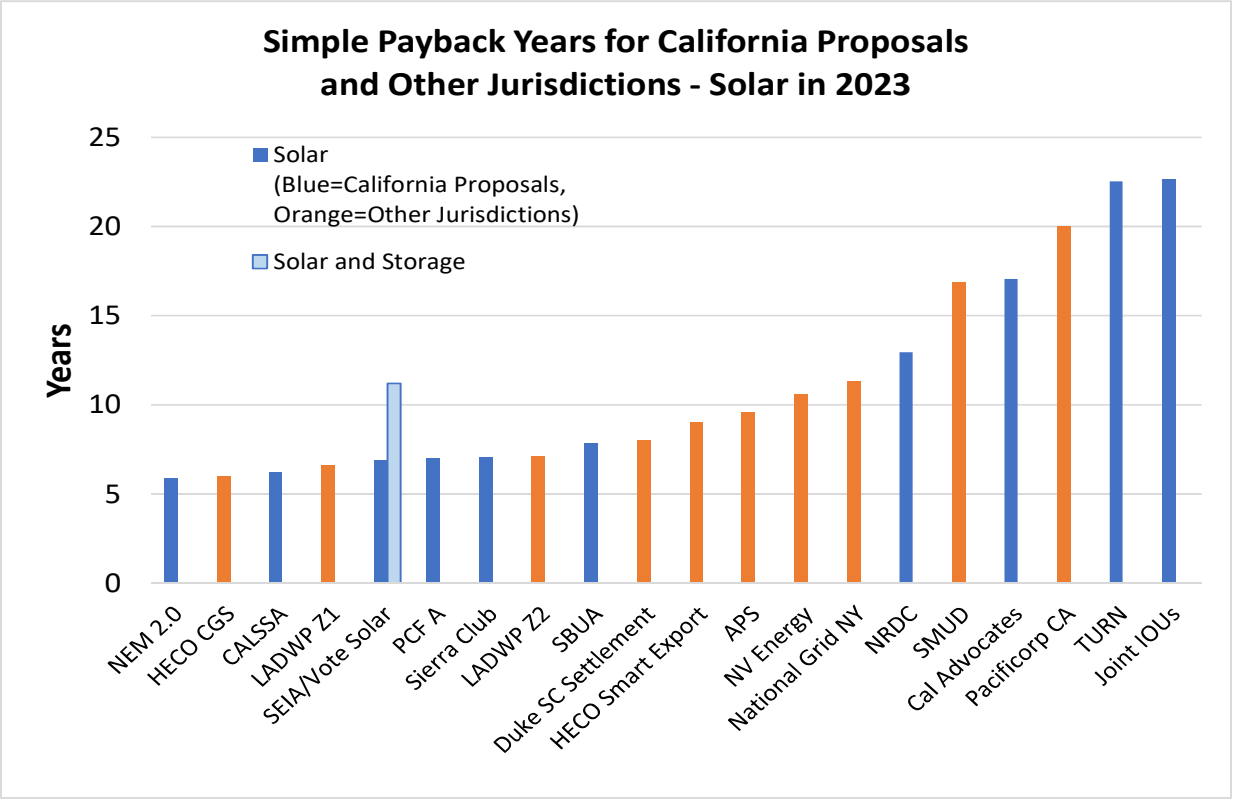
106 Exh. SVS-03 (Beach), p. 15, lines 5-9.

107 *Id.,* p. 54, lines 10-13.

108 See *Prepared Direct Testimony of R. Thomas Beach on behalf of The Alliance for Solar Choice*, filed February 1, 2016, in PUCN Dockets Nos. 15-07041 and 15-07042, at Table 1 and 2. The paybacks discussed in this testimony are not simple paybacks, but longer discounted payback periods that consider the time value of money, rate escalation, and output degradation. In terms of simple paybacks, the PUCN's December 2015 order that shut down the rooftop solar market in Nevada increased simple paybacks from 11 to 17 years in the southern Nevada market.

Figure 14: *Simple Solar Paybacks in 2023*



The Joint IOUs assert that states with NEM reform have experienced market growth even with long payback periods. The fact is that even if you relied on the data cited by the IOUs,[109] the only utility that has undergone NEM reform that has a payback period for standalone solar that is even in the ball park of the payback periods for standalone solar under the IOUs' proposal are the Duke utilities in South Carolina with a purported payback period of 19.2 years.[110] However, while Joint IOU witness Tierney included that number in her testimony, she could not attest to its accuracy.[111] In contrast to witness Tierney's second-hand knowledge, which she did not attempt

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[109] Exh. IOU-1 (Tierney), p. 35, lines 3-4 and p. 35, Table II-4 (relying on the NETCC study).

[110] Compare Exh. IOU-01 (Tierney), p,.36, Table II-4 (showing payback periods in other states of 9.6 to 19.3 years) to Exh. IOU-01(Morien), p. 105 Table 15 (showing paybacks of 15 to 19 years for standalone solar under Joint IOUs proposal).

[111] Tr. Vol. 1 (Joint IOUs-Tierney) p. 136, line 22 to p.137, line 15.

to verify, SEIA/Vote Solar witness Beach, who was directly involved in the settlement with Duke and in the proceeding before the South Carolina commission, attested to the fact that the NEM reform tariffs adopted for the two Duke utilities – Duke Energy Progress and Duke Energy Carolinas – resulted in simple paybacks of 7.8 years and 10.0 years, respectively.[112] SEIA and Vote Solar provided the workpapers for Mr. Beach's calculations of the payback periods. Ms. Tierney failed to review them.[113]

IV. ISSUE 4: WHAT PROGRAM ELEMENTS OR SPECIFIC FEATURES SHOULD THE COMMISSION INCLUDE IN A SUCCESSOR TO THE CURRENT NET ENERGY METERING TARIFF?

A. Changes to the Compensation Structure Should be Made Over Time

Given the enormity of the record in this proceeding, it may be easy to overlook the white paper that the Commission contracted E3 to write to support the development of proposals for a successor tariff that that would be compliant with statute.[114] The focus of the study was the development of a framework that better aligns compensation for customer-sited renewable generation with the net benefits that it provides to the electric system, while preserving sustainable growth of behind the meter renewable generation in California.[115] As concluded by E3, preservation of a viable market is likely to require a "glide path" including both a gradual rate reform and an external transitional support mechanism designed specifically to enable a

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112 Exh. SVS-03 (Beach), p. 54, lines 14-19.

113 Tr. Vol. 1. (Joint IOUs -Tierney), p. 137, line 28 to p.138, line 3.

114 "*Alternative Ratemaking Mechanisms for Distributed Energy Resources in California Successor Tariff Options Compliant with AB 327*," Energy Environmental + Economic (January 28, 2021) ("E3 January Study).

115 *Id.*, 3.

reasonable payback period for customers investing in onsite renewable generation."[116] Indeed, E3 went so far as to state:

> *This white paper has illustrated that immediate elimination of the cost shifting under the current NEM program is not acceptable*, as it could be in violation of California legislation and cause severe bill impacts. Accordingly, a MTC or similar transparent ratemaking tool has the potential to assist in gradually reducing the cost shift over time while preserving the health of the customer-sited renewable generation industry.[117]

E3's conclusion is mirrored in the testimony of CALSSA witnesses Heavner and Plaisted who attest that:

> It is not possible to make major changes abruptly without causing devastating impacts on the market. A glidepath from the current structure to the transition end point is necessary to uphold the statutory requirement to ensure that the distributed energy continues to grow sustainably and to maintain the small business workforce that will install local clean energy storage.[118]

While SEIA and Vote Solar do not support the concept of a MTC, for reasons discussed below, the concept of a glide path is embedded in our proposal through a stepdown of the export compensation rate over a period of time. This stepdown, similar to a MTC which phases out over time, will assist in gradually reducing any cost shift that exists over time while preserving the health of the customer sited renewable generation industry. The use of such glide path should produce a reasoned payback for customers as the market transitions.[119]

The need for a glide path – i.e., a gradual stepdown in the export compensation- is illustrated by the events that transpired in Nevada in 2015 and Hawaii in 2016. In Nevada,

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116 *Id.*

117 *Id*., p. 32 (emphasis added)

118 Exh. CSA-01 (Heavner/ Plaisted), p.38, lines 20-24.

119 Exh. SVS-03 (Beach), p.27, line 22 to p.28, line 3.

customers went from full retail NEM to an export credit valued at an energy-only wholesale rate of just 2.6 cents per kWh, with an increased fixed charge.[120] Customers in Hawaii went from full retail NEM to being compensated for their exported power at the "average on-peak avoided cost for the 12 months ending in June 2015." [121] The result of these changes was a dramatic downturn in the Hawaii and Nevada markets, with the loss of jobs as companies either downsized or exited the market.[122]

B. Export Compensation Rate Should be Based on Easy-to-Understand Concept

Embedded within the Commission's rate design principle is the concept that rates should be understandable. Whatever shape the NEM 3.0 successor tariff ultimately takes, it will be substantially different from the net metering structure which has been in place for over 25 years. Customer's willingness to invest in solar or solar + storage is ultimately tied to their ability to understand the basis upon which they will be compensated.

While certain parties bemoan the fact that NEM is tied to retail rates as they assert such has created a cost shift, the fact remains that the link to retail rates has afforded a broader understanding of NEM – i.e., customers are more apt to understand the retail rate as they have had experience with it over time.[123] Most of the states that have reformed NEM successfully have maintained the link to retail rates, by allowing customers to offset their on-site usage at the

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120 Exh. SVS-01 (Gallagher), p. 11, lines 7-9.

121 Exh. SVS-02 (Giese), p 5, lines 10-15. Customers were also offered the option of a non-exporting program designed to encourage participants to self-consume all energy generated from their installed systems. *See Id.*, p. 6, lines 3-4.

122 Exh. SVS-01 (Gallagher), p.11, lines 17-20; Exh. SVS-02 (Giese), p. 8, lines 14 to p.9, line 3.

123 Exh SVS-04 (Beach), p. 41, lines 4-6.

retail rate, by indexing the export rate to a percentage of the retail rate, or both.[124] The SEIA/Vote Solar proposal would maintain that linkage – both by allowing customers to offset their on-site usage using a standard electrification rate and by setting export rates at a defined percentage of the retail rate.

Proposals advanced by other parties that call for compensation of exports at the ACC value and the layering on of other charges such as grid access charges, break that link with retail rates, thus requiring customers to understand a whole host of new concepts. Not only are these concepts new, but, as will be addressed below they, are far from understandable and therefore contradict one of the Commission's rate design principles.

C. Customers on the Successor Tariff Should Have a Monthly Billing Option

Both SEIA/VS and CALSSA have proposed that customers on the NEM successor tariff should be placed on monthly billing, with the option to have annual billing.[125] Under the NEM program in California to date, customers have been allowed to carry forward credits from one month to the next, at the dollar value of the credits based on the TOU period in which the net credit was produced. Then there is an annual true-up, at which time the customer pays any net bill for the year, adjusted for the monthly minimum bills that the customer has already paid.[126] This process has resulted in customers who have smaller systems relative to their usage ending up with a big bill at the end of the year. But this can be remedied by replacing the annual bill with monthly billing.

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124 *Id.,* p. 41, lines 6-8.

125 Exh. SVS-03 (Beach), pp. 64-65; Exh. CSA-01(Heavner/Plaisted), p. 119, lines 4-10.

126 Exh. SVS-03 (Beach), p. 64, line 21 to p.5, line 4.

Under monthly billing, if consumption exceeds generation in a month and the customer does not have credits from previous months to offset that consumption, then they pay the amount owed. In other words, they can carry credits forward, but not amounts owed.[127] This alleviates the risk of bill shock at the end of the year.

While monthly billing will be the default, an annual billing option should be maintained for customers who so choose. There are customers with seasonal usage that benefit from this approach,[128] as the Commission found when it rejected the idea of monthly true ups for NEM 2.0 in D. 16-01-044:

> The annual true-up should be continued in the NEM successor tariff. It preserves the value of net metering for all customers but is particularly important for customers that have large seasonal variations in their electricity usage, such as agricultural operations and schools. Requiring true-ups on a monthly basis would cause significant losses for those customers, who rely on the annual cycle to even out the economic impact of their highly variable usage. Even customers without such sharp variations in their usage would stand to lose value under a monthly true-up, since some seasonal variation is present in all customers' usage patterns. No compelling reason has been presented by the IOUs to change this intuitively sensible feature of the existing NEM tariff.[129]

D. The Successor Tariff Should Advance the State's Electrification Goals

1. NEM 3.0 Customers Should be Required to Take Service Under an Existing Electrification Rate

Requiring customers on the new successor tariff to take service under an existing electrification rate will integrate the NEM 3.0 program into the state's efforts to encourage beneficial electrification. As explained by SEIA/Vote Solar witness Beach:

> Economic electrification in California will require a dramatic expansion of off-peak electric use. There is a critical need for long-term, stable rate designs that

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127 Exh. CSA-01(Heavner/Plaisted), p. 119, lines 4-7.

128 Exh. SVS-3(Beach), p. 66, lines 15-16.

129 *See* D. 16-01-044, p. 95.

> feature low off-peak electric rates that can compete with liquid fossil fuels to charge EVs and to supply heat pumps that displace natural gas use in buildings.[130]

The fact is that for California to reach its GHG reduction goals, the state's reliance on electricity in lieu of other fuel sources will need to double.[131] In order to incentivize the purchase of electric vehicles and electric heat pumps, consumers need to have the ability to charge those devices at lower off-peak rates that offer savings compared to the use of fossil fuels. If the differential between off and on-peak rates is minimal, that opportunity will not exist. As attested to by SEIA/Vote Solar witness Beach, average residential electric rates for PG&E and SDG&E already may be too high to provide EV charging customers with consistent savings compared to gasoline prices. [132]

A link has already been established between solar installation and EV purchases.[133] The Commission should strengthen this link by adopting a successor tariff which requires all new customers to be placed on an *existing* electrification[134] rate (not one dedicated to solar customers). If there is a delay in the approval of an electrification rate for SDG&E, the existing schedules DR-SES and EV-TOU-5 should be made available to the initial NEM 3.0 customers in SDG&E's territory.

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130 Exh. SVS-04 (Beach), p. 57, lines 1-8.

131 Exh SVS-03 (Beach), p. 36, lines 13-19 and Table 3, *citing* Source: J.H. Williams et al., "The Technology Path to Deep Greenhouse Gas Emission Cuts by 2050: the Pivotal Role of Electricity," *Science* 335, 53 (2012).

132 Exh. SVS-04 (Beach), p. 57, lines 4-6.

133 *Id.,* p. 57, lines 15-19 and footnote 89.

134 This includes PG&E's E-ELEC rate which is currently pending approval in A. 19-11-019.

2. The Successor Tariff Should Not Impede Electrification

In adopting a successor tariff, the Commission must assure that it is not inadvertently creating barriers to electrification. Certain parties' proposals, such as TURN's and CalPA's, allow for successor tariff customers to take service on any TOU rate offered by the utility.[135] However, certain of these tariffs create a barrier to beneficial electrification. The current default TOU rates for both PG&E and SDG&E have relatively high off-peak rates.[136] As noted above, this creates a minimal differentiation between on and off-peak rates. Lower off-peak rates are important for EV charging and heat pumps that must compete with fossil fuels. If customers do not have the opportunity to charge these DERs at lower rates, then it acts as a disincentive to their purchase of EVs and other devices such as heat pumps.

3. Placing NEM 3.0 Customers on an Electrification Rate Will Mitigate any Cost Shift

In what can only be seen as counterintuitive, TURN and CalPA, whose proposals are premised on what they see as a significant cost shift between participating and non-participating customers, do not support requiring successor tariff customers to take service on a rate which could substantially help mitigate such shift. As noted above, they support allowing successor tariff customers to choose whatever TOU rate schedule they want, even what have become known as TOU-Lite schedules[137] The hallmark feature of electrification rates is that they have low rates during the off-peak hours – the hours during which solar only systems are producing most of their power and exporting some of it to the grid. In other words, the value of the export

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135 Exh. TRN-01 (Chait), p. 43, lines 2-3; Exh. PAO-01 (Gutierrez/Chau), p. 3-13, lines 15-16.

136 Exh. SVS-04 (Beach), p.56, lines 14-19.

137 Exh. TRN-01 (Chait), p. 43, lines 2-3; Exh. PAO-01 (Gutierrez/Chau), p. 3-13, lines 15-16.

decreases. Allowing successor tariff customers to remain on TOU-Lite rates will provide for a higher export value during the off-peak hours. As admitted by TURN witness Chait, if customers of the successor tariff were required to take service on a tariff which had on-peak and off-peak rates set closer to marginal costs, such as an electrification rate, it would help mitigate any cost shift between participants and non-participants.[138]

4. The Commission Should Not Establish Separate Rate Schedules for NEM Customers

Part of the SEIA and Vote Solar proposal is that NEM 3.0 customers take service under currently existing or soon to be established electrification rate schedules which are designed to be available to all customers. SCE currently offers the TOU-D-Prime residential electrification rate. And indeed, this is the rate schedule on which SCE proposes that customers of the successor tariff in its service territory should take service. [139] As stated by SCE witness Thomas:

> PRIME is SCE's technology agnostic electrification rate to encourage the adoption of new GHG reducing technologies by reflecting cost-based price signals to discourage usage during high GHG production periods and encourage usage in periods where there are fewer GHG producing resources online.[140]

SEIA and Vote Solar agree and would request that the Commission approve the use of TOU-D PRIME as the underlying rate schedule for NEM 3.0 customers in SCE's service territory.

SDG&E and PG&E deviate from SCE's approach and are asking the Commission to approve brand-new rate schedules under which successor tariff customers would be obligated to take service; namely E-DER and E-TOU-DER, respectively.[141] It would appear that the primary

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138 Tr. Vol. 9 (TURN-Chait), p.1576, lines 20-28.

139 Exh. IOU-01(Thomas), p. 120, lines 6-7.

140 *Id*., p. 120, lines 7-10.

141 Exh. IOU-01 (Morien), p.114, lines 20-25, and (Kerrigan,) p. 111, lines 26-27.

reason that SDG&E and PG&E have proposed new rate schedules is so that they can impose a higher fixed charge on NEM customers than those which currently exist under any of their existing electrification rate schedules.[142] Moreover, while PG&E attests that its E-DER rate would be available to all residential customers,[143] the reality is that given its structure, with a fixed charge significantly higher than is imposed under any other currently operable PG&E tariff, it is highly unlikely that other customers will opt in to it. In practice, it will be confined to NEM customers.

If customer adoption of multiple types of DERs is to be encouraged – and it must not only be encouraged but become a reality if California to reach its decarbonization goals - it is counterproductive to segregate utility customers into groups based on whether or not they adopt a single type of DER (solar) – i.e., into NEM and non-NEM customers – or to adopt rates specific to a single type of DER.[144] Customer-sited solar is just one kind of DER. The goal is for customers to adopt multiple types of DER – solar, storage, EVs, heat pumps for water and space heating, and smart thermostats – in multiple combinations of these new technologies. Having one rate schedule geared toward EV adopters, another towards electric heat pump adopters, another towards solar adopters, etc. does not facilitate customer adoption of multiple types of DERs. It would be difficult, if not impossible, for a customer to determine which rate schedule best works for its desired portfolio of DERs.[145]

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142 *Id.* (Morien), p. 115, line 15 to p.116 line 1 and ft. note 184; (Kerrigan), p. 112, line 2 and lines 16-17.

143 *Id.,* p. 111, line to p.112, line 1.

144 Exh. SVS-03 (Beach), Attachment RTB-2, p. 19.

145 Exh. SVS-04 (Beach), pp. 57-59.

This phenomenon is illustrated in Exh. SVS-04. Thus, if PG&E's proposed E-DER rate were in place, a PG&E residential customer who purchases an EV then would be discouraged from considering solar or solar + storage – even if they would like to be able to fuel their vehicle at home from 100% renewable electricity – because adding solar would force them to use the E-DER rate with its high fixed and grid benefit charges instead of the more beneficial PG&E EV2 electrification rate.[146]

5. To Advance Electrification, Customers on the Successor Tariff Should be Allowed to Oversize their Systems.

In addition to requiring customers to be placed on a widely available electrification rate, the successor tariff should allow the customer to oversize their solar or solar + storage systems by up to 50 percent. This allowance should be accompanied by a reform of the rate for net surplus compensation so that it is set equal to current avoided costs for DERs.[147] The ability to oversize will facilitate beneficial electrification over time, by allowing solar customers to grow their loads through the purchase of electric appliances and EVs gradually over time, as their personal finances permit.[148] The 50% allowance is based on a residential customer with usage of 10,000 kWh per year adding an EV and an efficient electric water heater, both of which can be fueled primarily with off-peak solar electricity.[149]

The ability to oversize a system to support future electrification, with exports compensated at avoided costs, is supported by CalPA, with the caveat that after five years, the

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146 *Id*., p. 58, lines 1-18.

147 Exh. SVS-03 (Beach), p. 40, lines 3-5. *See also* Sierra Club-01 (Vespa), pp. 33-34 (Commission should allow over sizing to promote electrification).

148 Exh. SVS-03 (Beach), p. 40, lines 5-7.

149 *Id*., Attachment RTB-2, p. 24.

compensation would drop to wholesale rates.[150] CalPA asserts that the drop in compensation would incentivize customers toward more rapid electrification.[151] SEIA and Vote Solar do not disagree and would support such a modification to their proposal.

In contrast, despite recognizing the benefits of oversizing to advance electrification, the Joint IOUs suggest that the Commission exercise "extreme caution" when considering whether to allow the oversizing of systems by NEM customers, raising a variety of concerns.[152] The reality is that the Joint IOUs already allow for some oversizing of systems, accounting for such in their Commission approved tariffs. For example, in its "Net Energy Metering System Residential Customer System Size Acknowledgement 30 kW or Less,"[153] SCE allows for the customer to attest to oversizing their system provided that the customer also attests that it expects to increase its usage accordingly in the next year. The concept advanced by SEIA and Vote Solar, as modified by CalPA, to advance electrification, merely expands upon an opportunity that the Joint IOUs already allow.

E. The Successor Tariff Must Advance the Installation of Storage

The primary offering of the solar industry in California must transition to solar + storage – a point on which parties to this proceeding can agree.[154] This trend is being nurtured by a couple of critical drivers. First, customers are asking for storage, to increase the resiliency of

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150 Exh. PAO-02 (Gutierrez/Chau), p. 5-16, lines 21-26.

151 *Id.,* p. 5-16, line 26 to p.5-17, line 1.

152 Exh. IOU-02 (Chacon), pp. 69-71.

153 https://www.sce.com/sites/default/files/inline-files/FINAL%2BNET%2BENERGY%2BMETERING%2B%28NEM%29%2BRESIDENTIAL%2BCUSTOMER%2BSYSTEM%2BSIZE%2BACKNOWLEDGEMENT%2B30%2BKW%2BOR%2BLESS.pdf

154 See, e.g., Exh. IOU-01 (Morien), pp. 103-104; Exh. SVS-03 (Beach), p. 10, lines 6-18.

their electric service, as reliable service from the grid becomes less of a certainty, and to serve their own evening loads under time-of-use rates. Second, California has a pressing near- and mid-term need for generating capacity in the evening hours when the state's critical peak loads net of solar and wind generation occurs.[155] Thus it is imperative that the successor tariff support the growth of solar + storage.

A key element of the SEIA/VS general market residential proposal is that customers on the successor tariff will be required to take service on an electrification rate. As discussed above, electrification rates have high peak-to-off-peak rate differentials. These differentials are important support for the deployment of solar paired with storage, because these rate differences are the key economic driver encouraging customers to cycle their storage regularly, charging in off-peak hours and discharging the stored energy to meet peak demands when they will receive a higher compensation.[156]

What the Commission cannot do is to adopt a successor tariff that acts as a deterrent to the installation of storage. Thus, while the Joint IOUs also propose that successor tariff customers take service on an electrification rate, their proposal also contains elements that would act as a deterrent to storage installation.

First, while parties assert that using the ACC to set the export compensation will result in lower compensation for exports and thus incent storage, that is only true to a degree. If the export rate is low, the customer has an incentive to use the solar behind the meter, but the

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[155] Exh. SVS-03 (Beach), p. 40, lines 19-23; Exh. SBU-01(Chernick/Wilson), p. 19, line 23 to p.20, line 2.

[156] *Id.,* p. 41, lines 13-17.

proposals which would assess solar + storage customers a grid benefit charge essentially take away a substantial portion of the benefit of using the power behind the meter.[157]

Second, the Joint IOUs proposed GBC has a "bait and switch" element for potential storage customers. In discussing the GBC, the Joint IOUs state:

> We believe that the Reform Tariff should encourage customers to adopt solar-paired storage installations over standalone solar installations, and therefore are proposing to initially set the Grid Benefits Charge for both standalone solar and solar-paired storage installations at the same level. This initial tariff design will create more onsite consumption bill savings for customers who choose to pair their solar system with a battery than those who choose standalone solar systems.[158]

While this may appear to be a good thing, the problem is that the IOUs admit that the GBC for solar+ storage customers ultimately will be set at an higher level than for solar customers at some unknown time in the future.[159] This uncertainty of when and by how much the GBC on solar + storage customer will increase will discourage adoption of these high-value systems,[160] as the economics of their installation will become even murkier for the prospective customer.

Finally, the Joint IOUs' proposal for monthly true ups[161] would negate the benefit derived from a solar+ storage system of being able to fill storage with solar output during the midday off-peak hours, then fully discharging it during the evening on-peak hours. The IOU monthly true up proposal would price any net exports in a time-of-use period at low net surplus compensation

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157 Tr. Vol. 8 (SEIA/VS-Beach), p. 1369, lines 6-12.

158 Exh. IOU-01 (Morien), p. 138, line 10-15.

159 *Id.*, p. 138, line 24 to p.139, line 6.

160 Exh. SVS-04 (Beach), p. 52, lines 7-9.

161 Exh. IOU-01 (Morien), p. 134, lines 14 -15.

rates, even if those exports happen during the valuable on-peak hour. The result is that under the IOUs' proposed monthly true-up, a solar + storage customer would see their average export credit drop by 6% to 13%, for PG&E and SCE, and only increase minimally for SDG&E in comparison on to a solar only system.[162] Decreased compensation for a more expensive system creates a barrier to installation.

F. Existing Compensation Structure Should be Maintained for Non-Residential Customers

The record of this proceeding shows that the commercial and industrial ("C&I") market is not growing and in fact is declining. Over the last two years (2019-2020), C&I NEM installations for the three IOUs have declined by 27% compared to the prior three years.[163] This decline has coincided with the implementation of the statewide 4p-9p on-peak period with lower off-peak rates in the midday hours.[164] C&I TOU rates are markedly lower than residential rates, as most C&I rates include demand charges that solar customers are unlikely to be able to reduce significantly. The all-volumetric small commercial rates, or the medium & large C&I rates with reduced demand charges (such as the Option R rates available to solar customers), are less attractive today due to the change to the 4p-9p on peak rate.[165] If the Commission were to adopt changes that further diminish the value proposition for C&I customers, that will further erode the C&I market. In order to sustain the commercial solar market in California new non-residential NEM customers should continue to receive the NEM 2.0 compensation structure.

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[162] Exh. SVS-04 (Beach), p. 52, line 23 to p.53, line 5 and Table 9.

[163] *See* Exh. SVS-03 (Beach), p 56, lines 19-20; Exh. CSA-01 (Heavner/Plaisted), p. 18, lines 1-4 and Figure 3.

[164] Exh. CSA-01(Heavner/Plaisted), p.17, lines 9-14.

[165] Exh. SVS-03 (Beach), p.56, lines 21-26: Exh. CSA-01, p. 17, Figure 2.

Moreover, altering the NEM compensation structure for non-residential customers is not urgent. The Lookback Study showed that these customers more than cover their average cost of service.[166] The Joint IOUs, however, are eager to dismiss that fact,[167] arguing that the Commission should not focus on whether these customers actually pay their cost of service but rather on the results of the standard practice manual tests for these customers.[168] Interestingly, however, the data that the Joint IOUs highlight shows that agricultural, commercial and industrial customers all pass the TRC test – the primary cost effectiveness test.[169]

Finally, parties that support changing the NEM 2.0 construct for new C&I customers fail to account for the fact that the Commission has the statutory duty to ensure the continued sustainability of the market. The market needs time for further development of the larger solar + storage systems that are needed to serve C&I customers effectively.[170]

G. Program Elements that Should *Not* be Included in the Successor Tariff

1. The Export Compensation Rate Should Not Be Based on the ACC

The Commission describes the purpose of the ACC as follows:

> The Avoided Cost Calculator is used to determine the primary benefits of distributed energy resources across Commission proceedings, the primary benefits being the avoided costs related to the provision of electric and natural gas service. The Avoided Cost Calculator calculates six types of avoided costs: generation capacity, energy, transmission and distribution capacity, ancillary services, renewable portfolio standard, and greenhouse gas emissions. *The outputs of the*

166 Lookback Study, p. 96, Table 5-10.

167 Exh. IOU-02 (Kerrigan), p. 86, lines 12-13.

168 *Id.,* p. 86, lines 20-21.

169 *Id.,* p. 87, Figure V-5.

170 Exh. SVS-04 (Beach), p. 53 line 21 to p.54 line 1.

Avoided Cost Calculator feed into the cost-benefit analysis for distributed energy resources.[171]

The ACC was not developed as a rate design tool. Despite this fact, several parties, including the Joint IOUs, TURN, CalPA and NRDC, propose to use the ACC's hourly values (all 8760 of them) as basis for establishing the export compensation rate; they do such even while acknowledging that when the ACC was developed the "specific intention was that it *wouldn't* inform rate design."[172]

The concept being advanced by parties supporting the use of the ACC as the export compensation rate is that the value of behind the meter solar rests solely in specific costs it allows the utility to avoid. As illustrated above, however, such position is ill-conceived. There are other benefits, such as societal benefits and resiliency, not captured within the confines of the ACC, which enhance the value of solar.

Moreover, the volatility of the ACC was made evident with the Commission's adoption of the 2021 ACC through Resolution E-1550. The value of any DER that reduces or shifts loads, including energy efficiency and demand response as well as solar and storage, were dramatically reduced in the 2021 ACC in comparison to the 2020 ACC.[173] The impact of this significant value change on parties' proposals which base the export compensation rate on the ACC values was demonstrated in the rebuttal testimony of witness Beach. Specifically, he demonstrated a substantial reduction in the bill savings available to customers considering investments in either solar or solar + storage systems due solely to the substantial differences in the value of solar

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171 D. 20-04-010, p.4 (emphasis added).

172 Tr. Vol. 5 (Joint IOUs -Kerrigan), p.822, lines 16-18 (emphasis added).

173 *See* Resolution E-5150; Exh. SVS-04 (Beach), p.4, lines 3-4.

resulting from the 2021 ACC compared to the 2020 ACC. If customers had commenced receiving service under the Joint IOUs proposed successor tariff in 2020, then, in 2021 they would have seen a significant drop in their export compensation rate (a decline of 32 to 48 percent, depending on the IOU), while correspondingly, their grid access charge would have increased (bu8 to 18 percent depending on the IOU).[174]

The concern regarding the volatility exhibited between the 2020 and 2021 ACCS was not confined to solar parties but also resulted in CalPA modifying its export compensation rate proposal. In its Opening Testimony, CalPA proposed to compensate exports under the successor tariff using single year avoided costs from the most recently adopted ACC. In rebuttal testimony, CalPA equivocated stating "single year avoided costs from the ACC can exhibit considerable year-to-year variability" and "many customers likely would have little to no understanding of the reasons for annual changes in avoided costs, which could lead to customer confusion." [175] And while other parties cited to the significant deviations between the 2020 and 2021 ACC as an" outlier,"[176] that simply is not accurate. There were significant differences between the 2019 and 2020 ACC as well.[177] Moreover, the potential for significant differences in value emerging from the 2022 ACC is real. The 2022 ACC will be a fully litigated case. As highlighted in Mr. Beach's testimony, Resolution E-5150 and other current Commission

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174 Exh. SVS-04 (Beach), p. 15, line 3 to p.16, line 12 and Tables 1 and 2.

175 Exh. PAO-2 (Gutierrez), p. 5-4, lines 17-20.

176 Tr. Vol. 5 (Joint IOUs -Kerrigan), p. 875, lines 1-8.

177 Exh. SVS-04 (Beach), p.17, lines 16-18.

proceedings that impact the ACC include significant open issues that have the potential to cause volatility in the 2020 update and beyond.[178]

The ACC was not intended as a rate design tool or as the basis for setting prices for power purchases. The ACC undervalues the solar export and it is highly volatile. The Commission should not adopt it as the basis for setting the export compensation rate under the successor tariff.

2. The Energy Portion of the Export Rate Should Not be Based on Wholesale Market Prices

TURN recommends crediting the energy value of exports based on actual recorded hourly wholesale electricity prices.[179] TURN asserts that the use of actual market prices would provide premium compensation to participating customers for exports during hours when real-world market prices are high.[180] While that may be true, the fact remains that residential customers have no direct experience or information on wholesale market prices, and cannot be expected to become, in essence, merchant solar plants on dynamic rates.[181]

In rebuttal testimony, TURN recognized certain impracticalities with its proposal, [182] explaining that they did not "see how that it could be implemented without the billing infrastructure that would go along with the real time pricing."[183] TURN's proposal for crediting the energy value of exports based on actual recorded hourly wholesale electricity prices is yet

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178 *Id.,* p. 18, line 4 to p.19, line 8.

179 Exh. TRN-01 (Chait), p. 46, lines 4-5.

180 *Id*., p. 46, lines 12-13.

181 Exh. SVS-04 (Beach), p. 41, lines 23-25.

182 Exh. TRN-02 (Chait), p. 40, lines 17-20.

183 Tr. Vol. 9 (TURN- Chait), p.1569, lines 16-26.

another in the multiple portions of TURN's NEM successor tariff proposal that are not fully fleshed out. Like the others, which are addressed below, it should be rejected.

3. The Export Compensation Rate Should Not Continually Change

Several parties, such as the Joint IOUs and CUE, suggest that the export compensation rate be changed annually to ensure that NEM 3.0 customers are not overpaid for their exports, as dictated by the latest version of the ACC.[184] As stated above, SEIA and Vote Solar do not agree with setting the export rate based on the ACC, but even if the Commission determined that was the appropriate measure, allowing that rate to change every year would have a negative impact on the sustainability of the residential solar market in California.

The reality is that when determining to purchase a solar installation, a vast majority of customers look at the expected long-term return on their investment, either through annual bill savings or payback period. As Joint IOU witness Morien testified, the most important element in customer investment in solar is the economics.[185] This statement is borne out by Exhibit PAO-11 which contains excerpts from an NREL Study "Diffusion into New Markets: economic returns required to adopt rooftop photovoltaics."[186] This study discusses the significance of bill savings and payback periods in customer decision making. CALSAA witness Heavner, in response to questions by the ALJ, explained how these components factor heavily into customer calculations when considering a solar purchase.[187]

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184 Exh. IOU-01, p. 129, lines 11-23; Exh. CUE-01(Earl), p. 14, lines 8-13.

185 Tr. Vol 3 (Joint IOUs-Morien), p. 437, lines 19-23.

186 Exh. PAO-11, pp. 41-42.

187 Tr. Vol. 7 (CALSSA-Heavner) p.1215, line 1 to p.1216, line 1.

Customers need to be able to understand whether their investment will provide a reasonable return. This determination cannot be made with an export compensation rate that fluctuates each year.[188] Indeed, as the parties that are advancing yearly changes to the export compensation rate pair these proposals with grid access charges which would also change, at minimum, on an annual basis, it would be very difficult to provide customers a reasonable estimate of bill savings or payback period. The Commission has recognized the importance of bill savings estimates to the purchase of solar installations, recognizing that "[o]ne of the primary advantages of distributed solar to a customer is bill savings."[189] In this regard, as an element of consumer protection, the Commission has determined that "it is reasonable to require that all prospective solar customers be provided an estimate of the electric bill savings they can anticipate from installing a solar energy system "[190] and thus requires every solar provider who intends to enter into a photovoltaic solar transaction with a residential customer in the state of California (except for new housing construction where a solar system is installed prior to sale) to calculate and present estimated electric bill savings to the customer which consists of (1) average electric utility bill savings for the first year following interconnection, and (2) net electric bill savings for the first 20 years following interconnection (i.e., incorporating degradation rates, utility escalation rates, etc.)[191] It is simply not possible provide an estimate of net electric bill savings for the first 20 years following interconnection with an ever fluctuating export rate.

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188 Exh. SVS-04 (Beach), p. 20, lines 4-6 ("Solar companies that install DERs will not be able to provide customers with any assurance as to their future economics.").

189 Decision 20-08-001, p. 7.

190 *Id.*

191 *Id.,* p.5.

Moreover, other proposals to set export rates based on multiple years of ACC values, such as those offered by TURN, NRDC, and CalPA, may have somewhat less volatility than the proposals of the Joint IOUs and CUE, but they still present the same problems. The most certain of these proposals is TURN's proposal to offer 5- or 10-year fixed export rates based on the current ACC.[192] Yet even 10-year levelized avoided costs decreased by 54% to 64% from the 2020 ACC to the 2021 ACC, as shown in Exh. SVS-04.[193] Given that residential customers export about one-half of their output, even this level of volatility in a 10-year fixed export rate would result in a "boom-and-bust" market where the economics of installing solar could fluctuate substantially from year to year.

4. Solar Only Charges Must be Rejected

Several parties to this proceeding have proposed significant new charges to levy on customers with behind the meter solar or sola + storage. Thus, parties such as the Joint IOUs, CalPA, CUE, and NRDC have requested the Commission to impose on these customers what they call a "Grid Benefits Charge" ("GBC"), a $ per kW charge based on the nameplate kW capacity of the system, to purportedly recover grid costs associated with the power that the NEM customer self-generates and uses behind the meter. In a similar vein, TURN has proposed an even more complex charge known as the Nonbypassable, Unavoidable, Shared Cost Charge ("NUS") which it asserts should be assessed on all generation consumed behind the meter.[194] While these types of charges are different in their calculations, they both impose significant costs on solar customers for the energy that the solar customer generates and then immediately

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192 Exh. TRN-01, at pp. 5 and 37.

193 Exh. SVS-04, at pp. 41-42 and Table 8.

194 Exh. TRN-01(Chait), p. 48, lines 16-18.

consumes behind the meter, without the power ever touching the grid or using any utility facilities. There are significant problems associated with the application of a GBC or NUS charge to customers. Both type of charges should be rejected by the Commission.

(a) Grid Benefits Charge

As detailed below, the use of a $ per kW GBC will result in curbing the size of solar and solar + storage installations. Moreover, it is not cost justified and, despite the Joint IOUs' assertions to the contrary, has not been an effective tool in the reform of NEM in other states.

(i) GBCs Limit the Economic Size of Solar Installations

Using a fixed GBC based on system size will effectively limit the economic size of solar and solar + storage systems, thus impacting the growth of the solar market.[195] Looking first at smaller systems, when a solar customer installs a small system relative to their usage, they will use most of the solar generation on-site, with little exported. Thus, the customer will have a lower GBC (due to its smaller system size) and most of the customer's savings will come from offsetting their on-site use at the retail rate. The customer will receive less compensation from exporting at the very low export rate proposed by the same parties that support GBCs. In contrast, as the size of the solar system increases, customers generally export an increasing percentage of their solar output. These exports will be at a very low export rate. However, given the increased system size, the monthly GBC also will increase. As a result, at larger system sizes, the solar customer will realize few, if any, incremental savings, because the increased compensation from the low export rate is entirely offset by the larger grid access charge. In short,

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[195] *See* Exh. SVS-03 (Beach), pp. 29-31.

as demonstrated in the direct testimony of Mr. Beach, under the Joint IOUs proposal systems sized at over 50% of usage will not be economic.[196]

Under NEM 2.0, residential customers have been installing systems sized, on average, to 90% to 100% of their usage. Because this structure – using a fixed GBC based on system size – will limit the economic size of solar and solar + storage systems to about one-half or less of current system sizes, it would limit the growth of the market to 50% or less of what it has achieved in recent years.[197]

(ii) GBCs Are Not Cost Justified

Parties supporting the imposition of GBCs argue that such a charge is necessary as "distributed generation solar customers use and rely on the grid at all times: when the sun is not shining (at night and during cloudy/rainy days), during peak grid conditions, and during the day in order to export excess generation,"[198] yet are able to avoid distribution, transmission, nonbypassable charges, and generation by consuming their self-generation onsite. This argument is significantly flawed from a cost causation perspective.

First, when a solar customer is using energy from the grid, "at night and during cloudy/rainy days", they are importing that energy, their meter is running forward and accurately recording those imports, and they are paying the full retail rate for those imports. [199] In other words, solar customers are paying for the grid when they are using the grid, just like all other customers.

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196 *Id*., p.31, lines 5-6.

197 *Id*., p. 32, lines 3-7.

198 Exh. IOU-01(Morien), p. 137, lines 14-18.

199 Tr. Vol 3 (Joint IOUs – Morien), p. 431, line 20 to p.432, line 3.

Second, a solar customer does not use the grid when they export power.[200] The utility takes title to the exported power at the customer-generator's meter. Solar customers are not responsible for and do not have to pay the utility to deliver the generation that they sell to the utility at the meter. Once the power passes the meter, the kilowatt-hours are the utility's to be delivered to other customers.[201] The utility is fully compensated for this delivery service by the customers who consume the exported power.

Third, arguments that NEM self-consumption creates temporary, intermittent declines in the utility load, and therefore the utility must maintain the same system capacity necessary to meet demand in case the customer's solar output completely stops, are entirely out of touch with utility planning. The fact is that the dependability of solar is factored into all utilities' capacity planning.[202] Indeed, when questioned about her statements that solar is completely unreliable, Joint IOU witness Morien admitted that "utility planning has to account for rooftop solar in some way,"[203] but she had no idea how that is done.[204]

In addition, this argument ignores the large number (over one million) of distributed solar systems and the geographic diversity of solar output. When one rooftop solar system suffers an outage, the added load will be small and is likely to be offset by another system that is being placed into service. The utilities reliably serve residential electric loads that are subject to similar fluctuations. Like electric loads, the large number and diversity of solar installations has

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200 Tr. Vol. 8 (SEIA/VS -Beach), p. 1378, lines 1-14.

201 Tr. Vol. 11 (CalPA- Gutierrez), p. 1954, lines 15-18.

202 Decision 19-05-020, p. 45 (discussion of factoring PV dependability into the utility distribution planning process).

203 Tr. Vol 3 (Joint IOUs -Morien), p. 430, lines 18-22.

204 *Id.,* p. 430, line 23 to p.431, line 2.

allowed the development of reliable models of hourly solar output by season and time-of-day, such as the industry-standard National Renewable Energy Lab PVWATTS and System Advisor (SAM) models used by many parties to this case.[205]

(iii) GBCs Are Not Equitable

The actual GBC assessed on each customer will be determined by multiplying the nameplate capacity of their system by a percentage of the IOU rate on which they are taking service. This percentage is the "observed estimated average export percentage of [their] customer class over the previous year."[206] Thus, for example, if the average export percentage of residential customers in SDG&E's service territory is 60 percent, then all residential customers on the NEM 3.0 tariff will charged as if they were consuming 40 percent of their output behind the meter. While the Joint IOUs admit that this use of an average will result in some customers being overcharged, they shrug it off by saying "that is how it works with rate design today." [207] While that may be true, the critical difference is that the customer has expended significant funds to install a solar or solar + storage system. The IOUs would then be inequitably charging the customer for the use of that system.

(iv) GBCs May Be Illegal under PURPA

Solar customers are qualifying facilities (QFs) under the Public Utility Regulatory Policies Act of 1978 ("PURPA").[208] In Order No. 69 implementing PURPA, the Federal Energy

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[205] Exh. SVS-03 (Beach), pp. 15-16 and Table 1; Exh. TRN-01 (Chait), p. 61; and Exh Joint-01 (Morien), p. 105.

[206] Exh. IOU-01(Morien), p.138, lines 6-10.

[207] Tr. Vol. 3 (Joint IOUs-Morien), p. 420, line 20 to p.421, line 1.

[208] For a customer installing a renewable DG facility with a net power production of 1 MW of less, the designation as a qualifying small power production facility (and therefore a QF) is automatic with no filing at the Federal Energy Regulatory Commission (FERC) required.

Regulatory Commission recognized that partial requirements QFs are "likely to have the same characteristics as the load of other non-generating customers of the utility," in which case "the appropriate rate for sales to such a facility is the rate that would be charged to a comparable customer.[209] To charge a different rate to QFs, the rate must (1) be "based on accurate data"; (2) be established using "consistent system wide costing principles"; and (3) "apply to the utility's other customers with similar load or other cost-related characteristics."[210] The GBCs and NUS charges advanced by certain parties to this proceeding would impose higher fixed charges on NEM customers (i.e., QFs) if those customers have exactly the same usage and load profile for sales from the utility as do other, non-NEM customers.[211] This is clearly contrary to PURPA. The illegality of such charges under PURPA are already under scrutiny at FERC.[212]

(v) GBCs Implemented in Other States Are Not Analogous

The Joint IOUs also rely on the fact that "[u]tilities in some other jurisdictions have been allowed to introduce GBCs as part of successor tariff structures to NEM."[213] While that is true, it was readily shown on cross examination of Joint IOU witness Tierney that none of the cited examples are in anyway analogous to what the Joint IOUs are proposing in this proceeding.

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209 *Small Power Production and Cogeneration Facilities; Regulations Implementing Section 210 of the Public Utility Regulatory Policies Act of 1978*, Order No. 69, FERC Stats. & Regs. ¶ 30,128, at 30,888, *order on reh'g sub nom.* Order No. 69-A, FERC Stats. & Regs. ¶ 30,160 (1980), *aff'd in part & vacated in part sub nom. Am. Elec. Power Serv. Corp. v. FERC*, 675 F.2d 1226 (D.C. Cir. 1982), *rev'd in part sub nom. Am. Paper Inst. v. Am. Elec. Power Serv. Corp.*, 461 U.S. 402 (1983).

210 18 C.F.R. § 292.305(a)(2).

211 Exh. SVS-03 (Beach), p. 71, lines 1-4.

212 *See Joint Statement by Chairman Glick and Commissioner Clements concurring with the June 1, 2021, Notice of Intent Not to Act re James H. Bankston, Jr. et al v. Alabama Public Service Commission* Docket EL21-64. (Commissioners concurred that the Alabama Public Service Commission may be violating FERC's PURPA regulations by approving a monthly "Capacity Reservation Charge" of $5.00/kilowatt (kW) based on the nameplate capacity of the customer's system.)

213 Exh. IOU-2 (Tierney), p. 66, lines 7-8.

First, Dr. Tierney cites to the fact that South Carolina's "Solar Choice" tariff includes a $/kW monthly Grid Access Fee for residential systems sized greater than 15 kW-dc.[214] A 15 kW system, however, is more than twice the average residential system, [215] meaning that the grid access charge would apply to very few residential customers.

Second, Dr. Tierney points to the fact that the New York Public Service Commission approved a "Customer Benefit Contribution" DG capacity-based charge estimated at $0.69 to $1.09 per kW of installed DG capacity, depending on the utility.[216] Even setting aside that the GBCs approved by the New York Public Service Commission are only a fraction of what the Joint IOUs are requesting in this proceeding, the funds collected from the GBCs are used to fund public benefit programs[217] – not the primary purpose of the GBCs proposed in this proceeding, which would principally recover distribution, transmission and generation costs.

Dr. Tierney also notes that the Arizona Corporation Commission approved rate options that include either a grid access charge or a demand charge for DG customers.[218] First, it should be noted that Arizona's GBC was not put in place as part of NEM reform.[219] More importantly the GBC is only $0.93 per kW, again only a fraction of what the Joint IOUs are requesting in this proceeding.[220]

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214 *Id.,* p. 66, lines 11-12.

215 Tr. Vol 1 (Joint IOUs-Tierney), p. 106, lines 14-24.

216 Exh. IOU-2 (Tierney), p. 66, lines 13-15.

217 Tr. Vol. 1 (Joint IOUs-Tierney), p. 107, lines 6-14; Exh. CSA-06, pp. 26-27.

218 Exh. IOU-2 (Tierney)., p. 66, lines 17-19.

219 Exh. SVS-01(Gallagher), p. 20, lines 20-22.

220 *Id*., p.21, lines 1-2.

(b) Nonbypassable, Unavoidable and Shared Charges

TURN proposes a separate monthly charge to recover "Nonbypassable, Unavoidable and Shared" (NUS) costs based on behind the meter energy consumption.[221] TURN sets forth a laundry list of costs that it asserts should be recovered through the NUS, but ultimately leaves it to the Commission to pick and choose.[222] TURN's proposed NUS differs from the proposed GBCs in that that it would be *individually* assessed based on each customer's behind the meter consumption.[223] This consumption would be determined by either (1) the customer installing a second meter on the BTM resource and providing production data to their utility, or (2) estimating hourly production from the BTM resource based on engineering estimates that account for system capacity, location, orientation and any other relevant factors[224] TURN's proposal offers the appearance of precision which does not exist across the board. In addition, it has not been fully thought through, so the Commission would not know exactly what it was adopting.

First, on a most basic level, while TURN has offered the option of the customer having a second meter on their behind the meter resource, it recognizes that installation of that meter by the utility could take quite a while,[225] yet if a third party installed the meter there may be some issues with the transmission of the production data to the utility.[226] In addition, the meter would

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221 Exh. TRN-01 (Chait), p. 48, lines 16-18.

222 *Id*., p. 49, line 8 to p.50, line 13.

223 *Id*., p. 48, lines 19-23.

224 *Id.,* p 50, lines 15 to p.51, line 2.

225 Tr. Vol. 9 (TURN-Chait), p. 1527, lines 16-22.

226 *Id.,* p 1526, lines 19-24.

add, at minimum, $900 to the cost of the solar installation.[227] With respect to the other alternative offered by TURN – engineering estimates of behind the meter usage – witness Chait explained that it would necessitate an engineering estimate of each of the 8760 hours of the year.[228] Moreover, TURN asserts that this degree of granularity is necessary because:

> This is actually exactly the way that the self-consumption would be well calibrated to the customers' actual ·usage and the customers' generation. Just as an example if the customer were on vacation, they would likely have little usage. And most of the generation would then be exports[229]

But when asked whether these export profiles would be updated every year, Witness Chait responded:

> Only to the extent that degradation impacted them, and I would expect the degradation rate to be a discount on all of the generation hours.[230]

Thus, for all its supposed precision, TURN's proposal does not actually track self-consumption as a customer's consumption patterns can certainly change over the 20-year life of its system as the customer buys more efficient appliances, adds other DERs, and increases and then decreases the family's size (and electric load) as children are born, grow up, and move away.

Moreover, TURN has left several the elements of its NUS charge to be determined in an implementation phase. These are described as:

- Clarifications to the methodology for calculating Nonbypassable, Unavoidable and Shared costs to be collected from NEM customers for self-consumption quantities;

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227 *Id*., p. 1524, lines 9-16.

228 *Id*., p. 1518, line 28 to p.1519, line 3.

229 *Id*., p.1519, lines 5-11.

230 *Id*., p. 1519, line 27 to p.1520, line 5.

- Rules governing the calculation of estimated production from BTM generation for purposes of calculating self-consumption quantities assessed NUS costs; [231]and
- Selections regarding the components of the NUS charge.[232]

Decisions on these issues will have a significant influence the size and ultimate impact of a NUS charge. Thus, in essence, TURN is asking the Commission to approve a new charge without knowing how that charge will be calculated or its impact on the customers to whom it will be applied. TURN's proposed NUS charge has all the problems of a GBC while also being coupled with implementation issues and several yet to be determined factors. The Commission must reject this proposed charge

5. Market Transition Credits

Certain parties to the proceeding, primarily TURN and NRDC have included Market Transition Credits ("MTC") as a key component of their successor tariff proposals. Essentially a MTC is an upfront incentive paid to the customer to achieve a targeted payback period. [233] Both TURN and NRDC have determined that 10 years is a reasonable payback period. However, they differ in that while NRDC would offer the MTC to all customers installing solar, TURN limits it to CARE customers, unless it were funded from a source other than utility rates. Even setting aside the fact that the use of MTC is a completely new market construct to which the industry would need to build into their business models, the fact is that both TURN's and NRDC's proposals are so incomplete that it is not quite clear what they are proposing or what they want the Commission to adopt.

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231 Exh. TRN-01 (Chait), p. p.58, lines 10-14.

232 Tr. Vol. 9 (Chait), p. 1585, lines 18-19.

233 Exh. TRN-01 (Chait), p. 24, lines 1-2; NRD-01, p. 9-10.

Looking first at the TURN proposal, it appears they are offering several different flavors of the MTC, depending on whether the customer is a CARE customer or not, whether the customer installs standalone storage or solar + storage, and whether the funding will come from ratepayers or another source.[234] They will let the Commission choose which flavor of MTC to pick and where the funding will come from. However, in testimony TURN acknowledges their proposal is *not* economic for non-CARE customers who install standalone solar absent the Commission securing a source of funding for the MTC outside of utility rates.[235] On cross examination, TURN confused things even further by saying that its proposal *could* be economic for non-CARE customers who install standalone solar, but only if the Commission manipulates another aspect of their proposal – the NUS. [236] Of course, it is not clear that TURN is advancing such a proposal, or what particular manipulation by the Commission would be necessary to make economic its proposal for non-CARE customer who install stand-alone storage Finally, TURN has left several key elements of their MTC proposal up for grabs in the implementation phase, including the determination of the of inputs to the methodology for calculating and updating the MTC based on a defined target payback period."[237] The list of relevant inputs which would need to be determined includes the installed generation cost, forecasted bill savings, and discount rate – all inputs that are being debated in this proceeding – as well as "other key variables" which they leave undefined.[238]

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234 Tr. Vol 9 (TURN-Chait), p. 1548, line 5 to p.1549, line 6.

235 TRN-01 (Chait), p. 67, lines 14-15.

236 Tr. Vol. 9 (TURN-Chait), p. 1557, line 14 to p.1558, line 18.

237 Exh. TRN-01(Chait), p. 58, lines 6-7.

238 *Id.,* p. 58, lines 7-8.

NRDC's proposed MTC does not fare any better. NRDC asserts that the MTC should be calculated to achieve a payback period of 10 years. Yet NRDC did not provide any of the inputs to do such calculation. NRDC witness Chhabra agreed that the fundamental elements of calculating a payback period are cost of the system on one hand and bill savings of the system and any upfront incentives on the other, but did not offer a means to determine either installed system costs[239] or bill savings. [240] Indeed the best witness Chhabra could say about the NRDC MTC proposal is that "NRDC's testimony is clear that there will be effort needed to develop a methodology."[241] Moreover, witness Chhabra had neither an idea of how much his proposed MTC would cost ratepayers on annual basis, nor what bills savings,[242] if any, a customer who received the MTC would achieve under the NRDC proposal.[243]

The reality is that both the NRDC and TURN proposed MTCs are too opaque. The purpose of this proceeding is for the Commission to adopt a successor tariff. Both TURN's and NRDC's proposals are too speculative and leave too many blanks for the Commission and other stakeholders to fill in at some future date.

Finally, the Commission should bear in mind how TURN's and NRDC's proposed MTCs interact with other aspects of their proposals. Namely that both TURN and NRDC are supporting such high monthly GBCs and such low export rates that a solar customer will have only small

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239 Tr. Vol 10 (NRDC-Chhabra), p. 1778, line 27 to p.1779, line 5.

240 *Id*. p. 1780, lines 18 to p.1782, line 13 (explaining how bill savings could be computed and all the elements that would be needed, which NRDC did not provide).

241 Tr. Vol 10 (NRDC- Chhabra), p. 1786, lines 4-6.

242 *Id.,* p. 1813, lines 3-9.

243 *Id.,* p.1814, lines 15-27.

bill savings. As a result, a substantial MTC will be required to realize a reasonable payback.[244] Indeed, it could result in the customer receiving over 75% of the cost of the system in an MTC.[245] The result of the TURN/ NRDC proposals could be customers having their solar systems substantially paid for by other customers, but then achieving minimal bill savings.

Moreover, as the MTC is an upfront incentive there would need to be an equitable way to get the incentive money to those that are determined to be eligible. The only answer that NRDC had to this problem was that the Commission could come up with an answer—the "Commission ran many programs that offered incentives distributed either through the utility or third-party providers, and I would expect something similar to happen here."[246] The Commission knows from past experiences with incentive programs such as the California Solar Initiative, that establishing the necessary infrastructure to administer such a program is both resource and time intensive.[247]

6. Monthly True Ups

The Joint IOUs have proposed to end the annual true-up cycle and instead institute monthly true-ups.[248] The IOUs have attempted to paint this change with the consumer protection brush by asserting that changing the true-up period from an annual period to a monthly period

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244 Exh. SVS-04 (Beach), p. 49, line 9.

245 *Id*., p. 50, lines 7-8.

246 Tr. Vol 10 (NRDC-Chhabra), p. 1813, lines 20-24.

247 After the CSI program was established, it was subject to several petitions for modifications to deal with program complexity and potential budget shortfalls. *See, e.g.,* D.13-10-026 (granting, in part, and denying in part, the petition for modification of prior decisions filed by the California Center for Sustainable Energy requesting adjustments to the CSI Program to address a budget shortfall); D. 15-12-023 (addressing petition for modification regarding the complexity of managing the performance-based incentive element of the CSI program, and the high cost of doing so).

248 Exh. IOU-01 (Morien), p. 134, lines 14 -15.

will reduce unexpectedly high bills that some NEM customers face at the end of their annual true-up period that can surprise and challenge customers financially.[249] What the Joint IOUs fail to point out is that these unexpectedly high bills are not the result of the annual true up but of annual billing. This problem can be rectified through monthly billing as discussed above

The key difference between monthly billing and a monthly true up is that under the latter construct, the customer will no longer be allowed to carry forward credits from one month to the next, at the dollar value of the credits based on the TOU period in which the net credit was produced. Rather under a monthly true up, in any TOU period in which the customer has net exports *for a month*, those net exports would be compensated at the low net surplus compensation rate – they could not be carried forward. With today's TOU periods, a significant share of solar output occurs during the midday off-peak TOU period, so it is likely that customers will have excess off-peak production in many months. It is estimated that the shift from annual to monthly true ups would reduce bill savings for a typical PG&E residential solar customer by 5%.[250] The result of the Joint IOUs monthly true-up proposal is that a significant share of solar output would be priced at the net surplus compensation rate, even for solar customers whose annual output is much less than their usage.

In contrast, as explained above, under monthly billing customers would be billed monthly for the minimum bill plus any net charges for that month, less any net credits carried over from prior months. Net credits for a monthly billing period would continue to be carried over to the next month. There would be a single annual true-up in April that would continue to consider all

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[249] *Id.,* p. 134, lines 20-22; *see also* Tr. Vol. 4 (Joint IOUs- McCutchen), p. 640, line 24 to p.641, line 10.

[250] Exh. SVS-03 (Beach) p.65, lines 14-15.

payments made for the past 12 months as well as any remaining net charges or credits.[251] This approach has the benefit of spreading out the payments for customers with small systems relative to their usage,[252] without undervaluing solar or solar + storage output – which would occur under the Joint IOUs monthly true-up proposal.

The Commission should allow a monthly billing option under the successor tariff, it should not adopt a monthly true-up.

7. Instantaneous Netting

The proposal of the Joint IOUs and CalPA to determine a solar customer's imports and exports by instantaneously netting imports from exports [253] has significant consumer protection ramifications. As attested to by SEIA/ VS witness Beach, a customer should be able to understand and be comfortable with the data that the utility uses to bill them. To date, this data reflects netting over the metered interval.[254] One hour is the established metered interval for residential customers. [255] The customer does not have access to instantaneous metered data.

Similarly, as noted by CALSSA witnesses Heavner and Plaisted, contractors do not have access to instantaneous billing data.[256] If NEM billing were calculated with instantaneous netting but data were only available on an interval basis, it would be impossible to provide consumers

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251 *Id*., p. 66, lines 2-7.

252 *Id*., p. 66, lines 8-9.

253 Exh. IOU-01 (Morien), p.99, line 13; Exh. PAO-01 (Gutierrez), p. 3-5, line 25 to p. 3-6, line 1.

254 Exh. SVS-03 (Beach), p. 64, lines 6-8.

255 *See* D. 17-05-034, p. 3: (Residential NEM customers have a metered interval of one hour, while non-residential customers' metered interval is 15 minutes.)

256 Exh. CSA-01 (Heavner/Plaisted), p. 117, line 3.

with an accurate solar savings estimate - estimates, which as discussed above, are required by the Commission.[257] This point was confirmed by Aurora Solar witness Gong who testified:

> The only way to model the bill savings under instantaneous netting is by using high-frequency production estimates and high-frequency consumption readings. Weather data used for production estimates is almost always offered in 15, 30, or 60-minute intervals. A consumer has no way of obtaining a high-frequency reading of their consumption….
> Since the utilities cannot provide high frequency consumption data, and consumers or tool providers cannot obtain high-frequency weather data since it does not exist, it would be impossible to model bill savings and therefore conflict with the Commission's consumer protection guide and standardized bill savings calculations.[258]

The Joint IOU witness Kerrigan attested that the consumer protection concerns expressed by SEIA/VS and CALSSA were no longer valid. Specifically, he testified:

> As of last week, this is no longer true for PG&E. PG&E's "Share My Data" portal now allows individual meter channel data to be provided to customers. SCE is rolling out similar capabilities this month, and SDG&E's portal already allows customers to view either the net or separate imports and exports.[259]

However, when asked about this section of his testimony he conceded that he had no knowledge of how the Share My Data tool worked, whether it was designed for solar savings estimates, or whether it required the user to have an automated programming interface.[260] In short, Mr. Kerrigan had no idea whether these various portals which he asserted would address the concerns raised by SEIA/VS and CALSSA would actually do such.

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257 *Id*., p. 117, lines 3-6.

258 Exh. AOS-02 (Gong), p.16, lines 7-10 and 13-16.

259 Exh. IOU-02 (Kerrigan), p. 53, lines 6-9.

260 Tr. Vol. 5 (Kerrigan), p. 764, lines 6-24.

V. ISSUE 5: WHICH OF THE ANALYZED PROPOSALS SHOULD THE COMMISSION ADOPT AS A SUCCESSOR TO THE CURRENT NET ENERGY METERING TARIFF AND WHY? HOW DOES THE PROPOSAL MEETS GUIDING PRINCIPLES? WHAT IS THE APPROPRIATE TIMELINE FOR IMPLEMENTATION?

A. The Commission Should Adopt the SEIA/Vote Solar General Market Proposal

The Commission should adopt the SEIA/Vote Solar General Market Proposal as a successor to the current NEM tariff and retain non-residential customers on the current NEM 2.0 tariff. As has been illustrated herein, the SEIA/VS proposal allows for the Commission to balance the competing goals of market sustainability and cost effectiveness, while also advancing the state's other policy goals such as electrification. Moreover, as will be discussed below, the SEIA/VS proposal advances all the statutory goals and the guiding principles adopted by the Commission for this proceeding. In this regard, and what has not been addressed in depth so far are critical consumer protection elements – understanding, transparency and stability. All of these elements are embedded in the SEIA/Vote Solar proposal, while coming up short in the proposals advanced by such parties as the Joint IOUs, NRDC, TURN and CalPA.

B. SEIA / Vote Solar Proposal Meets All the Guiding Principles While Other Parties Proposals Do Not

1. Guiding Principle 1: A successor to the net energy metering tariff should comply with the statutory requirements of Public Utilities Code Section 2827.1

There are four statutory requirements under Public Utilities Code Section 2827.1 to which a successor tariff must adhere. The SEIA/Vote Solar proposal meets all these requirements, while other parties' proposals are lacking in one or more requirement.

(a) A Successor Tariff Must Ensure that the Market Continues to Grow Sustainably

(i) Principles of Statutory Construction Necessitate that the Commission Ensure that the Successor Tariff Does

Not Impede Industry Growth

When interpreting the words "continue to grow sustainably" the Commission must first look to the statute itself. As stated by the Court in *See Donovan v. Poway Unified School District:*

> In interpreting a statute, 'we strive to give effect and significance to every word and phrase.' 'We give the words of a statute their ordinary and usual meaning and construe them in the context of the statute as a whole.' '*We must presume that the Legislature intended `every word, phrase and provision ... in a statute ... to have meaning and to perform a useful function*."[261]

Thus, the words "ensures that customer sited generation continues to grow sustainably" must be assumed to have a function separate and apart from other provisions of the statute. While several parties would have the Commission alter the words of the statute, using it as a dictate to address the impact of the program on non-participating customers or the utility,[262] those impacts are addressed elsewhere in the statute, and thus would render the section duplicative. The Commission is obligated to avoid statutory constructions which render provisions of the statute superfluous.[263]

The word sustainably has been deemed by certain parties to be ambiguous thus allowing them to insert their own interpretation. However, if there is ambiguity then the Commission must look to legislative intent. In this regard, the AB 327 bill analysis which informed legislators when they voted to approve this language refers to "whether the changes to NEM will impact the sustained growth of the industry" and noted several matters that

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261 *See Donovan v. Poway Unified School Dist.* (2008) 167 Cal. App. 4th 567, 590-591 (citations omitted) (emphasis added)

262 *See. e.g.,* Exh. TURN-01 (Chait), p. 31, lines 19-21.

263 *The People v. Valliant* (2020) 55 Cal.App.5th 903, 909.

impact "sustainable growth" in addition to NEM, such as federal tax credits, treatment of depreciation, and customer credits for greenhouse gas reduction [264]–. i.e., factors that impact the customer economics of investing in DERs and thus the growth of the market.

Moreover, this is not the first time the Commission has faced this issue. In addressing an application for rehearing of D. 16-01-044 filed by PG&E asserting that Decision misinterpreted the statutory objective to ensure NEM continues to grow sustainably by placing it as the first priority, the Commission determined to modify the language that PG&E asserted was questionable but noted:

> *At the same time, encouraging growth and expansion of customer-sited renewable DG has been, and continues to be, a central theme behind NEM legislation* and the Legislature's expressed intent. For example, section 2827 states:
>
> > The Legislature finds and declares that a program to provide net energy metering…is one way to encourage substantial private investment in renewable energy resources, stimulate in-state economic growth, reduce demand for electricity during peak consumption periods, help stabilize California's energy supply infrastructure, enhance the continued diversification of California's energy resource mix, reduce interconnection and administrative costs for electricity suppliers, and encourage conservation and efficiency. (Pub. Util. Code, §2827, subd. (a).)
>
> In section 2827.1, the Legislature built on that objective by not only continuing the NEM program, but envisioning development of options for NEM participation to expand to disadvantaged residential communities. The Legislature also eliminated the cap on eligible DG system size so the program can grow through the inclusion of projects over one megawatt.[265]

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[264] Assembly Committee on Utilities and Commerce, Bill Analysis of AB 327 (Perea) – As Amended: September 6, 2013, available at http://www.leginfo.ca.gov/pub/13-14/bill/asm/ab_0301-0350/ab_327_cfa_20130911_131650_asm_comm.

[265] D. 16-09-036, pp. 13-14 (citation removed) (emphasis added). *See, also.,* D. 16-01-044, p. 53 (noting that looking at average growth over a 3-5 year period should be sufficient to function as a way for Energy Division staff, IOUs, and market participants to evaluate whether a major change in the tariff should be considered).

The legislative history, prior Commission decisions, and basic precepts of statutory construction. all lead to the conclusion that the statutory language "grow sustainably" refers to examining any proposed change to the tariff in light of its impact on the growth of the customer-sited renewable DG market.

(ii) Use of a Glide Path Will Help to Ensure that the Industry Continues to Grow Sustainably

The SEIA/ Vote Solar proposal is tailored to promote the continued growth of the residential market for renewable DG by utilizing a glide path from the current compensation of exports at the full retail rate (less nonbypassable charges) to compensation at a level consistent with the IOUs' avoided costs, as measured on a long-term, life-cycle basis.[266] The proposal, by providing paybacks of 7 to 11 years for customers who invest in solar and solar + storage systems will afford customers a reasonable value proposition during this transitional period. [267] When the market reaches the juncture where the installation of solar + storage is more common than standalone systems, the export compensation will play a less important role in the value of the system to customers. Storage significantly increases the value and reliability of the solar output to the electric system, by allowing a substantial portion of solar output to be shifted to the on-peak period.

1) Use of a Glide Path in Other States has Assisted in Ensuring the Sustainability of the Industry

The importance of a glide path is made apparent by the experiences of other states who have undertaken reform of their NEM tariffs. For example, when Nevada first ended NEM abruptly in

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[266] Exh. SVS-03 (Beach), Attachments RTB-2, p. 28.

[267] *Id*., p. iii.

2015, dramatically reducing the export compensation rate and adding a fixed charge, the solar market plunged.[268] A similar plunge in the market was experienced in Hawaii in 2016 when NEM was replaced with compensation at the "average on-peak avoided cost for the 12 months ending in June 2015." [269] These states had no stepdown in their compensation rates and the impact on the market, including the loss in jobs, was severe.

Where a glide path to a lower compensation has been instituted, the industry has seen more success and an ability to maintain growth. For example, in Arizona, while the Arizona Corporation Commission moved away from full retail NEM to an export compensation structure based on a Resource Comparison Proxy,[270] it limited reductions in the export rate to no more than 10% annually.[271] This glidepath has allowed time for the market to adjust, and is one reason that Arizona market has remained on a growth trajectory.[272] Similarly, in 2017, legislation was passed in Nevada to undo the damage that was done by the abrupt elimination of NEM in 2015. This legislation called for the compensation for the monthly net exports from new solar DG customers in Nevada to be set at a small (5%) discount to the retail rate, with the discount increasing in steps for every 80 MW of DG that is installed.[273] As a result, the market rebounded.[274]

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268 Exh. SVS-01 (Gallagher), p. 11, lines 13-20.

269 Exh. SVS-02 (Giese), p. 8, lines 8-21.

270 Exports are valued individually for each utility using a five-year rolling average of the utility's PPA prices of utility scale solar. Exh. SVS-01 (Gallagher), p. 18, lines 19-21.

271 Exh. SVS-01 (Gallagher), p. 20, lines 11-4.

272 *Id*., p. 19, lines 17-22. It should also be noted that the Arizona tariff allows customers to have a locked in export rate for 10 years and has a minimal grid benefits charge. *See Id.,* p. 9, lines 12-14 and p. 21, lines 1-2.

273 Exh. SVS-01 (Gallagher), p. 12, line 9-12.

274 *Id.,* p. 12, line 18 to p.13, line 4.

2) A Glide Path is Necessary to Transition the Market to Storage

Parties appear to be in almost universal agreement that the future lies in solar + storage installations. SEIA and Vote Solar agree. The issue is that the future is not now, and it will take time to realize this vision for a number of reasons explained in the testimony of CALSSA witnesses Heavner and Plaisted. Specifically, limited battery availability and high soft costs for storage projects remain barriers to full-scale storage deployment. [275] In this regard, the project database of the Self Generation Incentive Program shows that residential storage prices have been *flat* over the past year, there has been no decline.[276] Reasons lie in the fact that the global lithium supply and demand are out of balance, with demand rebounding after pandemic-related drops earlier in 2020 and now increasing much more quickly than anticipated., while at the same time, supply is limited.[277] This market dynamic will result in increased costs in the materials to make batteries. Until supply and demand reach more of an equilibrium the cost of storage will not decline, making it a more difficult value proposition for consumers.

Moreover, the installation of storage systems in households has resulted in an evolution of new national codes and standards to ensure safety of the installations. Such codes are in their formative stages and will take time to finalize.[278] In the interim, the issue is left to each municipality to address as it sees fit – adding significant time and expense to storage installations.

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[275] Exh. CSA-01(Heavner/ Plaisted), p.6, lines 14-16.

[276] Exh. CSA-02 (Heavner/ Plaisted), p. 7, lines 3-4 and Figure 3.

[277] *Id*., p. 11, lines 5-10 and Attachments 4 through 6.

[278] Exh, CSA-01, p. 42, line, 11 to p.43, line 3; Tr. Vol. 7 (CALSSA -Heavner/Plaisted), p. 1210, lines 16-12.

(iii) Adoption of Certain Parties Proposals Would Not Allow the Market to Grow Sustainably

While several parties would have the Commission alter the words of the statute, using it as a dictate to address the impact of the program on non-participating customers or the utility, those impacts are addressed elsewhere in the statute, and thus would render the section duplicative. Moreover, while these parties would have the Commission completely ignore the statutory dictate to ensure that the sustained growth of the industry, they also spend a considerable amount of time attesting that their proposals would allow for such sustained growth. The evidence they present, however, glosses over key legal restrictions, conflates national and state markets, distorts facts and, most importantly, fails to account for the impacts of their own proposals.

1) The Title 24 Solar Mandate Will Not Guarantee the Sustainability of the Solar Industry

The Title 24 New Solar Homes Mandate is the most cited means of ensuring the sustainable growth of the solar industry in California. Thus Joint IOU witness Peterman, states that "[g]oing forward, Title 24 Building Energy Efficiency Standards will further drive deployment of solar systems on California rooftops,"[279] while CalPA witness Buchholz relates that the "California Solar Mandate guarantees growth for the California solar industry"[280] and NRDC witness Chhabra asserts that the estimated annual number of new homes with solar as a result of the mandate "illustrates that the growth of the distributed solar generation in the state is

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279 Exh. IOU-1(Peterman), p.13, lines 15-16.

280 Exh. PAO-1(Buchholz), p. 5-10, lines 3-4.

guaranteed in the long run without any further regulatory action."[281] But their reliance on the New Solar Homes Mandate is misguided and their assurances to the Commission that the mandate will "guarantee" the sustainability of the rooftop solar market are ill-informed.

In adopting the New Solar Homes Mandate, the California Energy Commission ("CEC") adhered to the dictates of the Public Resources Code which require that prior to adopting an energy efficiency measure, a cost effectiveness test must be performed that ensures that the standard is "cost-effective when taken in their entirety and when amortized over the economic life of the structure."[282] Having made such a determination, the CEC is required to periodically update the standards and make any adjustments it deems necessary.[283] Moreover, the CEC has the authority on its own motion or upon written application to determine that the implementation of the solar mandate in a particular jurisdiction causes its previous cost effectiveness conclusions not to hold for new homes in that jurisdiction.[284] The CEC has acted on such authority.[285]

The cost-effectiveness analysis that E3, on behalf of the CEC, performed for the New Solar Homes Mandate in 2018 studied three structures for export compensation: (1) NEM 2.0 export compensation (full retail rate less nonbypassable charges); (2) exports to the grid valued at avoided costs; and (3) all generation (including BTM) valued at avoided costs. [286] With NEM

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281 Exh. NRD -01 (Chhabra), p. 9, line 18.

282 California Public Resources Code Section 25402 (b) (3).

283 *Id.,* Section 25402(a)(1).

284 Exh. SVS-11, 2019 *Building Energy Efficiency Standards for Residential and Nonresidential Buildings,* p. 33.

285 Exh. SVS -12.

286 Exh. PAO-7, *Building Energy Efficiency Measure Proposal to the California Energy Commission for the 2019 Update to the Title 24 Part 6 Building Energy Efficiency Standards – Rooftop Solar PV*

2.0, the benefit-cost ratio for the New Solar Homes Mandate was 2-to-1 in most climate zones.[287] However, the E3 analysis showed that the mandate *would not be* cost-effective in many climate zones, and only marginally cost-effective in others, if the compensation for all solar output were reduced to avoided costs.[288]

Cross examination of several witnesses who hailed Title 24 as the savior of the solar industry revealed that while they realized that the solar mandate was subject to a cross effectiveness test,[289] some had no real knowledge as to the details of that test,[290] and none had determined whether their proposals would render the New Solar Homes Mandate uneconomic.[291] The reality is that the cost effectiveness analysis performed by E3 for the New Homes Solar Mandate used a 30-year present value of solar avoided costs in 2020 of $2.26 per kWh[292] for the value for all generation which, as testified to by SEIA/ Vote Solar witness Beach, is equivalent to 11.5 cents/kWh with no degradation in output, or 12.3 cents/kWh with 0.5%/year degradation (with a 3% discount rate).[293] The value of generation being advanced by parties such as the Joint IOUs and CalPA is approximately 40 percent of such values. Moreover, the CEC cost effectiveness analysis did not factor in a grid benefits charge.

System (September 2017), pp. 34-35; *see also,* Exh. SVS-05, *Frequently Asked Questions 2019 Building Energy Efficiency Standards,*" p.7.

287 Exh. SVS-04 (Beach), p. 9, lines 14-15.

288 *Id.* p. 9, lines 15-18; *see also*, Exh. PAO-07, p. 35, Table 20.

289 Tr. Vol.1 (Joint IOUs-Peterman), p. 45, lines 2-14.

290 *Id*., p. 48, lines 4-10.

291 *Id*., p. 45, line 25 to p.46, line 3.

292 Exh. PAO-7, Excerpt from Rooftop Solar PV System Report: prepared by E3 for the 2019 Standards update, p. 35, Table 11.

293 Exh, SVS-4 (Beach), p. 10, footnote 21.

Even if the mandate was found to be economic under one of these parties' proposals, it is not the panacea to sustainability of the rooftop solar industry. While witnesses for CalPA and NRDC cited to the 74,000 new homes which the CEC estimated would be built in California on an annual basis as proof of the sustainability of the rooftop solar market, [294] this number is misleading. While CalPA translates 74,000 new homes into 444 MW annually based on an average system size of 6 kW, [295] the E3 Solar Mandate analysis assumes installing systems sized at about 2 kW-A which equates to 150 MW per year.[296] Installations of 150 MW per year will not sustain the California solar market.

2) NEM Reform in Other States Cannot be Used as Basis to Adopt the Radical Reconstruction of the Program Advanced by Certain Parties

Parties also assert that other states which have reformed their NEM programs have continued to see strong customer adoption of rooftop solar despite longer pay back periods,[297] and thus imply that California should expect the same if it undertakes NEM reform in the manner which they proposed.[298] But the evidence to which they point does not match the narrative they advance.

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294 Exh. NRD-01(Chhabra), p. 9, lines 18-19; Exh. PAO-1(Buchholz), p. 5-10, lines 7-8.

295 Exh. PAO-01 (Buchholz), p. 5-10, line 8 and footnote 520.

296 Exh. SVS-04 (Beach). p. 10, lines 10-12.

297 Exh. IOU-1 (Tierney), p. 31, lines 11-12 and p, 35, lines 3-4; Exhibit PAO-1 (Babka) p. 5-12, lines 14-16.

298 Exh. PAO-1 (Babka), p. 5-12, lines 8-11 ("Since other states have successfully modernized their NEM policies, this additional evidence suggests that the Commission can institute NEM policy reforms identified in this document and achieve required statutory and state goals.").

The facts underlying the reform of NEM in the states which are most often singled out– Hawaii, Nevada, New York, South Carolina and Arizona- do not support the assertions made by the Joint IOUs and CALPA that the Commission can reform NEM in the manners which they propose and still have a viable distributed generation market in California. In undertaking such comparisons, it is critical that the Commission keep in mind the elements of both CalPA's and the Joint IOUs' proposals in comparison to what was adopted in these other states. Specifically, the critical elements of their proposals include a fixed charge, compensation of all generation at avoided costs (a value which would change annually or every few years), a grid benefits charge (which would change annually), and instantaneous netting. [299] As conceded by Joint IOU witness Tierney, ***none*** of the states which she hailed as being examples of NEM reform to which California can look to for assurance that NEM reform will not have a significant impact on the market, have all those elements in their successor tariffs.[300] In addition, Dr. Tierney cites to a figure published in the February 2021 study, "Review of Net Metering Reforms Across Select U.S. Jurisdiction" prepared by the North Carolina Clean Energy Technology Center as evidence that "solar PV capacity has continued to increase in states with reformed NEM tariffs."[301] But, that study fails to substantiate her assertion.[302] For two of the states to which she cites – South Carolina (Duke Energy) and New York (National Grid)[303] – changes to the residential NEM program have not yet been implemented. For one of the examples cited – the Sacramento

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299 Tr. Vol 1 (Joint IOUs-Tierney), p. 128, line 7 to p.129, line 27.

300 Tr. Vol 1 (Joint IOUs-Tierney), p. 129, line 28 to p.130, line 7.

301 Exh. IOU-1 (Tierney), p. 35 lines 3-4, *citing* NCCETC Study, Table 3.

302 See Exh. IOU-1 (Tierney), p. 35, Figure II-10, *Residential Solar Net-Metered Capacity Over Time (Pre- and Post-NEM Reforms).*

303 Tr. Vol. 1 (Joint IOUs-Tierney), p.131, lines 5-10; p. 132, line 24 to p.133, line 11.

Municipal Utility District – no NEM reform tariff has been adopted.[304] For the remaining two – Hawaii and Nevada[305] – both of which are addressed extensively in the testimony of SEIA/Vote Solar witnesses, the impact of changes to the NEM tariff were immediately and dramatically felt by the market.

Notably when both Hawaii and Nevada ended their NEM programs - implementing new compensation mechanisms for solar customers virtually overnight – there was little to no transition period to a successor tariff. [306] Moreover, the changes to the compensation structure were significant. As noted above, in Nevada customers went from full retail NEM to an export credit valued at an energy-only wholesale rate, with an increased fixed charge.[307] Customers in Hawaii went from full retail NEM to customers compensated for their exported power at the "average on-peak avoided cost for the 12 months ending in June 2015." [308] The result of these changes was a dramatic downturn in the Hawaii and Nevada markets, with the loss of jobs as companies either downsized or exited the market.[309] Neither CalPA nor the Joint IOUs have

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304 *Id*., p. 134, lines 5-9.

305 It should be noted that CalPA also pointed to the fact that in May 2021 the Kentucky Public Service Commission issued an order approving a new export compensation rate for NEM customers based on avoided costs. *See* Exh. PAO-1 (Babka), p. 5-13, lines 5-6. However, on cross examination it was very clear that the CalPA Witness knew very little about the successor NEM tariff that was approved by the Kentucky Public Service Commission. Tr. Vol. 12 (PAO-Babka), p. 2180 line5 to p.2181, line 5.

306 Exh. SVS-02 (Giese), p. 6, lines 8-12; Exh. SVS-1(Gallagher), p. 11.

307 Exh. SVS-01 (Gallagher), p. 11, lines 7-9.

308 Exh. SVS-02 (Giese), p. 5, lines 10-15. Customers were also offered the option of a non-exporting program designed to encourage participants to self-consume all energy generated from their installed systems. *See Id.*, p. 6, lines 3-4.

309 SVS-02 (Giese), p. 8, lines 14-21 (Between 2015 and 2018, total PV permits across the state dropped by over 60%; 73% of companies surveyed by the HSEA at the time reported a 35% or greater reduction in total workforce and that the number of total PV installation companies purchasing from locally wholesale distribution companies dropped by 50%). Exh. SVS-01 (Gallagher), p.11, lines 17-20 (changes resulting in more than 1,000 immediate layoffs at solar companies, causing some of these companies to exit the market).

factored a transition period of any length into their successor tariff proposals [310]and both have proposed successor tariffs that provide even less value to solar customers than those offered in either the Hawaii or Nevada markets after the termination of NEM. [311]

As discussed above, the Nevada market recovered with the reintroduction of a revised NEM construct two years after it was abruptly ended,[312] while Hawaii's residential solar market is still 50% lower than its 2013 peak. [313] As demonstrated in the figure to which witness Tierney points as purportedly evidencing the health of the PV market in the wake of NEM reform, the Nevada market plateaued with minimal new installations[314] until it rebounded in the wake of the passage in 2017 of AB 405 which set the compensation for the monthly net exports from new solar DG customers in Nevada at a small (5%) discount to the retail rate, with the discount increasing in steps for every 80 MW of DG that is installed.[315] The Hawaii market has managed to install approximately 150 MW in the five years following the passage of NEM reform The bulk of those additions came in 2016 – which were the result of most companies working through the NEM queue backlog [316] - and in 2019 which can be attributed to false positive growth due to the anticipated reduction of the federal residential solar tax credit from 30% to

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310 *See* Exh. IOU-02 (Molnar), p.100, lines 14-18; Exh. PAO-01(Ward), p. 6-1, lines 13-16.

311 Exh.SVS-02 (Giese), pp.13-16 (comparing elements of the CalPA and Joint IOU proposals to the Hawaii successor tariff).

312 Exh. SVS-1(Gallagher), p. 11, lines 10-11.

313 Exh. SVS-2 (Giese), p. 11, lines 10-11.

314 *See* Exh. IOU-1, p. 36 Figure II-10.

315 Exh. SVS-01 (Gallagher) p. 12, lines 9-12.

316 Exh. SVS-02 (Giese), p. 8, lines 11-13.

27%, which resulted in a higher than-average permit frequency due to installers booking and installing projects in order to take advantage of the expiring 30% tax credit amount.[317]

Finally, with respect to Arizona, while it is true that the state has managed to maintain a sustainable solar market subsequent to NEM reform, the successor tariffs adopted by the Arizona Corporation Commission are not comparable to the Joint IOUs' proposal. Most important, the Arizona commission has limited the decline in the export rate to no more than 10% per year, a key provision that has resulted in a gradual decline in NEM compensation. Arizona also provides new solar customers with an export rate that is locked in for ten years and a minimal GBC of less than $1 per kW-ac for one utility, Arizona Public Service.[318] In Arizona, solar installations have remained economically viable and indeed, have a payback period of approximately 9 years, as discussed above.

3) Broad Sweeping National Trends are Not Evidence of What Would Occur in California if Certain Parties Proposals Were Adopted

Several parties point to trends in the solar market (generally on a national level)[319] as proof that the Commission can adopt their proposals for a NEM successor tariff without concern of market disruptions; that the rooftop solar market in California will remain strong.[320] SEIA and Vote Solar are not debating that the solar market has matured since the early days of NEM and

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317 *Id*., p. 9, line 18 to p.10., line 1 (This conclusion is validated by the fact that residential solar deployment in Hawaii during the first half of 2021 has been relatively flat to declining as a result of the tax credit being extended, which removed the urgency to complete projects before the end of this year). *Id.,* p. 12, lines 12-14.

318 Exh. SVS-01 (Gallagher), pp. 18-19.

319 Exh. IOU-02 (Tierney), pp.44-46; Exh PAO-01 (Babka), p. 5-9, line 3 to p. 5-10, line 2

320 *See, e.g.,* Exh. IOU-1(Tierney), pp. 36-48.

that the costs of solar have gone down. Nor are we debating that customer are interested in the resiliency that a solar plus storage product can provide. But it would be imprudent for the Commission to assume that these encouraging trends in the market will guarantee that the behind the meter solar market in California will grow sustainably irrespective of the changes to the NEM program that the Commission implements. In this regard, both the Joint IOUs and CalPA attempt to take statements made by SEIA or information put in SEIA sponsored reports as evidence of a positive outlook for the growth in the California solar market. But these examples are general statements regarding the solar market are not evidence of sustained growth in the California solar market subsequent to NEM reform.

Joint IOU witness Tierney highlighted a series of statements pulled from the SEIA website as evidencing drivers of continued growth in the market for *rooftop sol*ar:[321] However, a number of the statements are not limited to rooftop solar but include utility-scale solar as well.[322] Moreover, several of the statements refer to the national market and do not isolate the California market.[323] Finally, the statements do not assume adoption of the Joint IOUs NEM successor tariff proposal.[324]

Similarly, CalPA witness Babka asserts that "Taking into account the uncertainties that California's reform of NEM will have on the industry, Wood Makenzie expects 10% national residential growth of solar in 2023." [325] But that statement is misleading. As made clear on cross

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321 Exh. IOU-1, (Tierney), p.44, lines 15-16.

322 Tr. Vol.1 (Joint IOUs -Tierney) p. 140, lines 9-15.

323 *Id*., p. 140, lines 16-20.

324 Id., p. 142, line 23 to p.143, line 1.

325 Exh. PAO-01(Babka), p. 5-9, lines 11-12.

examination it is more accurate to state that at the time the report was released, Wood Makenzie expected that the implementation of a new NEM structure in CA will *bring down* the growth in the national market to only 10 percent; that absent changes in the NEM program in California Wood Mackenzie was forecasting an 18 percent growth in the national market [326]

4) The National Experience of a Few Solar Companies Cannot be Applied to the Entire California Market

Finally, the IOUs point to "major solar companies anticipate[d] growth in customer adoption of solar and other DERs" as evidence of the sustainability of the rooftop solar market in California if their NEM successor tariff is adopted.[327] As proof of their assertion, they cite investor statements of three large solar companies.[328] However, as admitted on cross examination, these investor statements were focused on national markets, not just California.[329]

More importantly, solar installation is a home improvement trade that is still dominated by local contractors.[330] As attested by the CALSSA witnesses Heavner and Plaisted, seventy percent of residential systems were installed by companies other than three major companies that were the focus of the Joint IOUs testimony, including more than 200 small businesses that installed at least one system per week and operate in a single local market.[331] And while the Joint IOUs witness Tierney asserts that "[t]he cost trends in solar and solar paired with storage installations will tend to support households' continued adoption of new solar installations

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326 Exh. SVS-10, pp. 9-10.

327 Exh. IOU-01 (Tierney), p. 46 lines 24-25.

328 *Id.,* p. 46, line 25 to p.47, line 9.

329 Tr. Vol. 1 (Joint IOUs-Tierney), p. 144, lines 5-14

330 Exh. CSA-2 (Heavner/Plaisted), p. 17, lines 22-23.

331 *Id.,* p. 17, lines 24-16.

through small companies that are more like local construction contractors in the home-improvement or heating, ventilation and air conditioner business, rather than the large solar companies that provide financing support and long-term power purchase agreements," there is nothing to support that assertion. Indeed, on cross examination, Dr. Tierney conceded that smaller solar companies may have a more difficult time accessing supplies of energy storage systems than larger solar companies that have been focused on developing relationships with providers of storage technologies.[332] To the extent storage becomes necessary for DER viability, the large national solar providers will likely lock up supply contracts and make storage even more out of reach for small contractors. [333] For this and other reasons, it will be more difficult for smaller solar companies to cope with a new tariff that is aimed at the installation of energy storage systems as opposed to just standalone solar systems in the near term,[334] and thus they will be the first casualties of a shrinking market if too precipitous a change is made to the NEM structure.

5) The Low-Income Market Cannot be Relied Upon to Sustain the Solar Market

Certain parties aver that, with subsidization, the low income market can be source of sustainability for the industry.[335] Indeed, TURN has contorted the statutory language that the successor tariff must "ensure[] that customer-sited renewable distributed generation continues to grow sustainably" to a requirement that the successor tariff provide the "opportunity" for these

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332 Tr. Vol 1 (Joint IOUs-Tierney), p.124, lines 1 to p.125, line 9; and Exh. CSA-6, Joint IOUs response to CALSSA Data Request 11.05 (revised).

333 Exh. CSA-01 at 42:7-9.

334 Exh. CSA-06; 1 Tr. 124:8-125:16.

335 Exh NRD-01 (Chhabra), p. 9, lines 17-18; Exh. TRN-01(Chait), p. 21, lines 19-25.

resources to grow sustainably, which, according to TURN " may be satisfied if a successor tariff is found to be cost effective for certain participants over a reasonably defined timeframe." [336] The participants who TURN selects are CARE customers.[337] While SEIA and Vote Solar support incentivizing CARE customers to install solar, reliance on this segment of the market does not ensure sustainable growth. Indeed, TURN has done no analysis of whether its proposal would indeed incent CARE customers to invest or of the level of solar uptake that would result from its proposal.[338]

Similarly, NRDC's claim that "growth of distributed generation is guaranteed…. due to the continuation of low-income initiatives such as Solar on Multifamily Affordable Housing"[339] ring false. NRDC witness Chhabra did not know how many megawatts were slated to be installed under the SOMAH program, nor did he know how many megawatts are installed under low-income programs such as MASH and SASH.[340] The reality is that the SOMAH program is a 300 MW program through 2030 (i.e., approximately 30 MW annually) and the Commission's other low-income programs combined have at most installed 12 MW annually.[341]

(b) Include Specific Alternatives Designed for Growth Among Residential Customers in Disadvantaged Communities

The SEIA / Vote Solar Proposal is a general market proposal, not directed toward lower income residential customers. However, Vote Solar, along with GRID Alternatives and the

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336 Exh. TRN-01 (Chait), p. 31, lines 19-21.

337 *Id*., p. 31, lines 23-25.

338 Tr. Vol. 9 (TURN-Chait), p. 1554, lines 10-16.

339 Exh. NRD-01 (Chhabra), p.9, lines 16-18.

340 Tr. Vol.10 (NRDC-Chhabra), p. 1807, lines 15-17.

341 California Distributed Generation Statistics https://www.californiadgstats.ca.gov/charts/li

Sierra Club (the "Joint Parties"), are advancing separate proposals crafted to increase access to distributed generation for Environmental Justice and Social Justice ("ESJ") communities as defined by the CPUC's ESJ Action Plan, including low-income households (defined as households that are at or below 80% of Area Median Income).[342] SEIA supports these separate proposals and believes they can be implemented in conjunction with its general market proposal.

Decoupling the savings on the NEM exports of qualifying low-income customers from their effective underlying retail rate and assigning them a time-varying rate for their exports that is equal to the *current* default residential TOU rate offered by the customer's IOU in 2021, as advanced by the Joint Parties' Proposal A,[343] is critical to providing low-income customers with an adequate incentive to install on-site clean energy options. By providing low-income customers with a higher value for their exports (replacing the lower export rate that results from the CARE discount), this proposal will boost their clean DG savings and reduce their energy burden to a greater degree than is provided under the current NEM structure.[344] It is imperative that we lower barriers to clean energy access for low-income households, not add barriers by making clean energy less affordable for them.

Another critical element of the Joint Parties' Proposal A is *not* requiring qualifying low-income customers to take service under an electrification rate. [345] While SEIA and Vote Solar strongly support making service on an electrification rate an element of the successor tariff for non-CARE customers, the reality is that low-income customers will have fewer financial

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342 *See* Exh. GRD-01 (Campbell).

343 *Id.*, p. 8, lines 23-29.

344 *Id,* p. 8, line 29 to p.9, line 6.

345 *Id.,* p. 11, lines 3-8.

resources to electrify their homes and thus trying to provide them the incentive to do such by placing them on an electrification rate with differential between peak on of peak rates which will lower the value of their solar export does not make sense. In the context of lower income customers, it is important to avoid reductions to NEM bill savings, because those monthly savings and the resulting protection from future rate increases are the most important considerations of a low-income household when deciding to adopt onsite solar.[346]

The Joint Parties' Proposal B allows clean DG projects located in an ESJ Community and owned and controlled by the community to retain the NEM 2.0 structure., i.e., exports are valued at the participant's full retail rate, minus nonbypassable charges.[347] As explained by Joint Parties' witness Campbell, many members of ESJ communities do not have the resources to individually access solar; they need to be able to come together, pool resources, and participate in maximizing the benefits of energy projects through democratic structures like nonprofits, cooperatives, or public entities.[348] Retaining the current NEM 2.0 compensation structure for such projects allows for a higher and more consistent revenue stream needed for such projects to advance.

The Joint Parties' proposals to promote distributed generation for low-income customers and ESJ communities can work in concert with the SEIA/Vote Solar general market proposal to maintain a vibrant distributed generation market that meaningfully expands access to onsite clean energy in ESJ communities while also addressing cost impacts to non-participants. Providing all

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346 *Id.,* p. 13, lines 10-11.

347 *Id.,* p. 21, lines 8-17.

348 *Id.,* 22, lines 2-11.

Californians with the means to access solar and storage resources should be a key element in addressing the balance of equities between participating and non-participating ratepayers.

(c) Ensure that the standard contract or tariff made available to eligible customer generator is based on the costs and benefits of the renewable electrical generation facility

The logical interpretation of this statutory mandate is that the Commission must consider the cost-effectiveness tests from the *Standard Practice Manual* that include the costs and benefits of the customer's renewable DG facility. There are two tests that include the costs of the DG facility – the TRC test and the PCT. As discussed previously, the use of the results of the TRC as an accurate measure has come into questions given that the incorporation of the 2021 ACC results into a TRC analysis results in none of the parties' proposals passing. This necessitates that the Commission look at other factors including California's need for electric capacity, the societal benefits afford by distributed generation, and the land constraints which hamper reliance on utility-scale solar, as discussed in Section III.A.1, *supra.*

The PCT examines the costs and benefits that the participant customer realizes from their choice to install a DG facility. SEIA and Vote Solar analyzed the PCT results under their proposed tariff, using a blended portfolio of solar and solar + storage resources installed in each year from 2023 to 2030. The result was a weighted average across all three IOUs for the eight-year period of 1.51,[349] meaning that the proposal is cost effective for participants.

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[349] Exh. SVS-03 (Beach). Attachment RTB-2, p. 30.

(d) Ensure that the total benefits of the standard contract or tariff to all customers and the electrical system are approximately equal to the total costs

This statutory principle requires an equitable balance of the interests of participants and non-participants in the successor tariff. Determination of the appropriate balance must be done in line with the Commission's statutory directive to ensure the industry grows sustainably. SEIA and Vote Solar's proposal is done with these two statutory directives in mind. Namely by requiring successor tariff customers to take service under an electrification rate and using a measured step-down in the export compensation rate, the proposal works to bring the costs of the successor tariff in line with the benefits by 2030.[350] As discussed herein a measured step down is necessary to ensure the sustainability of the industry.

Moreover, when applying this statutory directive, the Commission must bear in mind the language "approximately equal" – i.e., benefits must be approximately equal to costs. The legislature did not impose the requirement of ratepayer indifference used in other portions of the Public Utilities Code,[351] and indeed the legislative history made it clear that such a standard was not to apply. The legislative history of AB 327 makes clear that the Legislature was concerned with the balancing of costs and benefits to all customers, but specifically rejected the concept of ratepayer indifference in this statute. During consideration of AB 327, the Legislature deliberately stripped language from the bill that directed the Commission to "preserve nonparticipant ratepayer indifference."[352] Thus, in using the Ratepayer Impact Measure test,

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350 Exh. SVS-04 (Beach), pp. 22-24.

351 See SB 32 (2009) (amending Cal. Pub. Util. Code § 399.20(d)(3)).

352 *See* Exh. CSA-0 1(Heavner/Plaisted), Attachment 8.

which essentially weighs the bill savings for the participants against the long run costs avoided by the utility, to determine the cost effectiveness of the successor tariff to non-participants, the Commission must remember that the end goal is not rate payer indifference.

Moreover, the RIM test simply does not capture "the total benefits" provided by distributed resources. As illustrated in this Brief, the investments in distributed renewables by participating customers provides societal benefits for *all* ratepayers. Even those parties that question SEIA's and Vote Solar's valuation of these benefits, admit that distributed energy resources do provide societal benefits.[353] The arguments appear to lie with how they should be quantified, not if they should be quantified.[354] SEIA and Vote Solar are not asking that the Commission adopt a specific level of these benefits for use as direct compensation for future solar and solar + storage customers. SEIA and Vote Solar believed that an attempt at quantification was necessary to illustrate that these benefits are substantial and have value for all ratepayers. The fact that they exist and have a value above zero means that they must be considered in the Commission's evaluation of the "total benefits" of the successor tariff.[355]

Another benefit which must be considered in the Commission's evaluation of the "total benefits" of the successor tariff is the value which is afforded all ratepayers through enhanced resiliency. Solar + storage units can provide customers with an assured back-up supply of electricity for critical applications should the grid suffer an outage of any kind. But it also has broader benefits than those limited to individual customers by maintaining functions related to

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353 Tr. Vol. 5 (CalPA -Rounds), p 875. lines 17-20.

354 *Id*., p. 877, lines 4-13.

355 *Id.,* p. 26, lines 17-20.

safety, human welfare, and economic activity during grid outages.[356] Assertions by certain parties that the benefit of resiliency is confined to the owner of the solar + storage system are simply not accurate. For example, police and fire stations equipped with solar + storage systems can maintain functionality during a prolonged outage, providing service to the community.[357] Moreover, the Commission itself has recognized there is a resiliency value for solar + storage systems, and as testified by CalPA witness Rounds, is working to quantify that benefit in the Microgrid proceeding.[358] In other words, once again, the value is not zero. While SEIA and Vote Solar show that a resiliency adder can impact RIM scores,[359] even if the Commission does not accept the value assigned to resiliency in the SEIA/Vote Solar analysis, it must factor the existence of the benefit and the fact that it has a value above zero, and what SEIA/ VS witness Beach has shown to be significantly above zero, into its analysis of the "total benefits" of the successor tariff.

Finally, when looking at the "total cost" side of the cost/benefit analysis, the Commission must place the calculations of any costs shifts between and participating and non-participating customers in its proper context. Several parties to this proceeding dedicated a significant portion of their submitted testimony quantifying the existing cost shift. Any cost shift which existed under prior iterations of the NEM tariff are not relevant to the adoption of any particular proposal in this proceeding. The Commission's focus should be on the magnitude of any cost shift going forward under any particular proposal. In addition, the Commission must look at the cost shift

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356 Exh. SVS-03 (Beach), Attachment RTB-2, Attachment B, pp. B-3 – B-4.

357 Tr. Vol. 7 (SEA/VS-Beach), p.1236, line 19 to p.1237, line 12.

358 Tr. Vol. 5 (Rounds), p. 879, lines 5-15.

359 Exh. SVS-04 (Beach), Figures 1, 2 and 3.

numbers advanced by the Joint IOUs and other parties in the context of the entirety of California's renewable goals.

Specifically, pursuant to statute, a utility's renewable portfolio standard ("RPS") obligations are based on its percentage of retail sales.[360] When customers install solar, it results in a reduction in the utility's retail sales[361] and thus a reduction in its RPS obligation. In addition, a kWh of distributed solar delivered to customers in a particular hour has the same impact at reducing GHG emissions as a kWh of utility-scale solar delivered in that same hour. Thus, both distributed and utility-scale solar contribute equally to achieving the state's critical GHG reduction goals.[362] As illustrated on the record, the long-term contracts which the utilities entered to achieve their RPS obligations have resulted in above market costs – i.e., costs that exceed the current market rate.[363] Indeed, the last Padilla Report on RPS costs shows that, in 2019, the average cost of RPS generation in the IOUs' portfolio was 10.2 cents/kWh, while the market cost of new RPS contracts in that year had declined to just 2.8 cents/kWh. Thus, the IOUs' 2019 portfolios of RPS generation included about 7.4 cents/kWh of above-market costs.[364] These above market costs are recovered in the utilities' rates.[365] If over the past 15 years, the IOUs had procured utility-scale renewables instead of the 10.3 GW of distributed solar that customers have developed, the IOUs would have incurred additional above-market generation costs comparable to those in their existing portfolios of utility-scale renewables. They also

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360 Public Utilities Code Section 399.15 (a).

361 Tr. Vol. 1 (Joint IOUs-Tierney), p. 15, line 28 to p.152, line 6.

362 Exh. SVS-03 (Beach), p. 23, lines 8-11.

363 *See* Exh. SVS-03 (Beach) Attachment RTB-4, p. 4.

364 *Id.*

365 Tr. Vol. 12 (PAO-Babka), p. 2182, lines 7-11.

would have incurred additional transmission costs to move this incremental utility-scale generation to load centers.[366] These additional costs would have been recovered in the IOUs rates.

Thus, whether through the purchase of RPS compliant renewables or by the reduction of their RPS obligation by customer sided DG, these above market costs would have existed and would have been recovered through customer rates.

2. Guiding Principle 2: A successor to the net energy metering tariff should ensure equity among customers.

Ensuring equity among customers has several facets. All of which are addressed by the SEIA/ Vote Solar Proposal. First there is equity of access – all customers should have a reasoned opportunity to participate in the successor tariff. As discussed above, SEIA and Vote Solar support the low-income proposals advanced by Grid Alternatives, Sierra Club and Vote Solar which are designed to enhance the bill savings, to encourage participation in the market for clean energy, and thus to reduce the energy burden of these customers.

Second, there is equity in the treatment of customers that reduce usage from the grid. As addressed above, the Joint IOUs and other parties are proposing that NEM customers be assessed a charge to recover grid costs on their behind the meter consumption – i.e., on their reduced usage from the grid. Other customers who reduce their usage from the grid such as through the use of energy efficient appliances are not charged for that "non-usage." Certain parties argue that this is a false analogy as NEM customers use the grid differently than customers that employ energy efficiency. Thus, as testified by Joint IOU witness Tierney:

> Unlike energy efficiency measures that sustainably reduce load in a way that the utility can respond to over a long-term investment planning cycle, NEM self-

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366 Exh. SVS-03 (Beach), Attachment RTB-4, p. 4-5.

> consumption creates temporary, intermittent, declines in utility load but does not consistently decrease the demand imposed on the system. As a result, the utility must maintain the same system capacity necessary to meet demand in the event a customer's solar output is reduced or stops completely, which it does reliably, on a daily basis, when the sun sets.[367]

But this is simply not accurate. The IOUs have been actively refining their load forecasting and capacity planning to factor in the levels of behind the meter solar in various regions on their systems, a point acknowledged by the Joint IOU witness that also attested to the unreliability of solar.[368] Moreover, while the Joint IOUs attempted to show the unreliability of solar by highlighting a *single* customer's import of energy from the grid on a rainy day,[369] such a single data point is not useful. The Joint IOUs did not provide any analysis demonstrating the coincidence of such intermittency of solar resources throughout a regional planning area or the state.[370] SEIA and Vote Solar recognize that there are some differences between the hourly profiles of load reduction effected by energy efficiency and the profiles of reduced loads from behind the meter solar, these differences can be readily addressed through accurate time-varying rates. There has been no evidence on the record that those differences merit charging solar customers for their behind the meter usage (i.e., their reduced load from the utility) and allowing comparable reductions in load from other DERs such as energy efficiency to go uncharged.[371]

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367 Exh. IOU-02 (Morien), p. 62, lines 17-22.

368 Tr. Vol 1. (Joint IOUs-Tierney), p. 157, lines 1-6.

369 Exh. IOU-02 (Tierney), p. 126, lines 10-14 and Figure VI-14.

370 Tr. Vol. 1 (Joint IOUs-Tierney), p. 156, lines 17-28.

371 See Exh. ASO-02 (Gong), p. 15, lines 15-18 (noting that the amount of behind-the-meter energy offset by energy efficiency programs from 2010-2016 is nearly the same as the amount of behind-the-meter energy offset by all solar installed up to 2016, yet most would agree charging consumers to use less energy through energy efficiency is a nonstarter).

Finally, as was addressed above, when ensuring equities between all customers the Commission should bear in mind the societal benefits afforded all ratepayers by NEM customers.

3. Guiding Principle 3: A successor to the net energy metering tariff should enhance consumer protection measures for customer generators providing net energy metering services.

The Joint IOUs testify that customer understanding of the successor tariff is a key component of consumer protection.[372] SEIA/Vote Solar agree. The SEIA/Vote Solar export compensation proposal consists, in its entirety, of the use of a percentage of the full untiered TOU retail rate (less nonbypassable charges) which is then locked in for a twenty-year period. There are no additional fees or charges as a result of installing solar or solar + storage.

The SEIA/VS proposal to afford the customer the same percentage of retail rates for 20 years is consistent with the Commission's recognition that, in the context of establishing a NEM tariff, consumer protection includes customers "hav[ing a uniform and reliable expectation of stability of the NEM structure under which they decided to invest in their customer-sited renewable DG system.[373] Proposals that are geared to changing the compensation which customers on the successor tariff will receive on an annual basis (or every few years) simply do not provide that stability and certainty.

While Joint IOU witness Peterman attested that the SEIA/Vote Solar proposal was "confusing" and "complex" for consumers, when queried as to what would be complex and confusing her only response was that the locked-in period would vary for different customers

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372 Tr. Vol. 4 (Joint IOUs-McCutchen), p; 626, lines 20-23.

373 D.16-01-044, p.100.

depending on when they got their systems.[374] She failed to explain what would be confusing about that situation, which is understandable as a this is how it works today a (customers having twenty-year vintage periods that start at differing times).

Additional elements of the SEIA/VS proposal that advance consumer protection are (1) tying the export compensation rate to the retail rate, and (2) placing customers on the successor on choosing monthly billing (with the option to elect annual billing). Customers are most familiar with the rates that they pay and using retail rates as the basis for export compensation allows customers to have a basic understanding of how they will be compensated under the tariff. Monthly billing should alleviate bill shock experienced by certain NEM customers at the end of the year without devaluing their solar output.

In contrast to the relatively simple proposal offered by SEIA and Vote Solar, the Joint IOUs, as well as other parties such as CalPA and TURN, would require customers who are trying to understand the basis for their export compensation, to grasp concepts such as avoided costs and the avoided cost calculator. Indeed, the IOUs are not even taking the values from the ACC directly but instead proposing export compensation rates based on the one-year levelized avoided cost weighted by customer's export profile.[375] As explained by Joint IOU witness Kerrigan on cross examination, the value of each of the 8760 hours of the year (as determined by the ACC) are given a weight based on participating customers' metered export profile during that hour.[376] These weighted values are then assigned to each of the six time of export periods, and those would be the compensation values for exports made during each of those periods, except, if

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374 Tr. Vol. 1 (Joint IOUs-Peterman), p. 57, line 27 to p.58, line 7.

375 Exh. IOU-01 (Kerrigan), p. 125, lines 8-10.

376 Tr. Vol. 4 (Joint IOUs -Kerrigan) p. 677, lines 3-9.

during a billing period the kwh exports exceed the kWh imported within a TOU period, then the customer will be compensated at the net surplus compensation.[377] And lastly, these seven different export compensation rates will change annually based on the last ACC and on updated export profiles. [378] The complexity of this export compensation rate structure is evident on its face. And while Joint IOU witness McCutchen testified that the Joint IOUs' proposal "will provide greater transparency to customers and vendors, and will be easier to understand, which can reduce confusion about successor tariff billing and facilitate consumer protection,"[379] when asked on cross examination how she would explain the Joint IOUs export compensation rate to an average consumer, she could not. While she stated that "it would be important to clarify that the export compensation is an estimate of the value that exports provide to the grid," she did not explain how that would be clarified.[380] Moreover, the Joint IOUs have not done any customer surveys or engaged in any other customer interactions to gage the clarity of their proposal to the average consumer,[381] despite attesting to the fact their proposal would "*improve* customers' ability to understand projected and realized bill savings."[382]

The GBC component of the Joint IOUs (as well as CalPA's and NRDC's) proposal is equally opaque and would be counterintuitive to the average customer. The GBC is a charge on on-site generation that is consumed by the customer – i.e., generation that never touches the

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377 Exh IOU-1(Morien), p. 131, lines 1-2.

378 Exh-IOU (Kerrigan), p. 127, lines 5-6, p. 129, lines 11-12.

379 Exh IOU-1(McCutchen), p. 193, lines 23-25.

380 Tr. Vol. 4 (Joint IOUs-McCutchen), p. 631, lines 26-18.

381 *Id*., p. 637, lines 19-24.

382 Exh. IOU-01(McCutchen), p. 195, lines 3-5.

grid.[383] The customer can do nothing to avoid the charge except not install solar[384] and the customer can do nothing to reduce the charge. [385] Moreover, as the charge is based on a class average of on-site consumption, some customers could be significantly overcharged.[386] While the Joint IOUS attest that they have effectively balanced "the need to make sure the customer gets the right price signals that are based on cost causation with keeping things simple enough to facilitate customer understanding,"[387] there is simply no evidence on the record that customers will understand these charges in a manner that will allow a reasoned investment in solar.

Moreover, if the complexity is not bad enough, the Joint IOUs and CalPA would rush the successor tariff into action. The Joint IOUs have proposed that it go into effect three months after a Commission decision, while CalPA has proposed an effective date of April 2022. While these proposed implementation periods will be discussed in detail below, the fact is that an approximately three-month period to completely overhaul the NEM structure, adequately train the appropriate personnel (e.g., call center representatives, solar developer employees) so that they can assist customers and produce the necessary customer education material is inadequate.

4. Guiding Principle 4: A successor to the net energy metering tariff should fairly consider all technologies that meet the definition renewable electrical generation facility in Public Utilities Code Section

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383 Exh. SVS-03 (Beach) p. 69, lines 3-4.

384 Tr. Vol. 3 (Joint- IOUs-Morien), p. 451, lines 17-22.

385 *Id.,* p. 422, lines 11-20.

386 *Id.,* p. 420, lines 16-28.

387 Tr. Vol.4 (Joint IOUs -McCutchen), p. 630, lines 24-28.

2827.1

The SEIA/VS Proposal meets this guiding principle as it does not preclude participation in the successor tariff by any of the technologies that meet the definition of renewable electrical generation facility in Public Utilities Code Section 2827.1

5. Guiding Principle 5: A successor to the net energy metering tariff should be coordinated with the Commission and California's energy policies, including but not limited to, Senate Bill 100 (2018, DeLeon), the Integrated Resource Planning process, Title 24 Building Energy Efficiency Standards, and California Executive Order B-55-18

The energy policies delineated in this principle are all crafted to facilitate California's overarching objective of economy-wide decarbonization. As has been demonstrated herein and discussed more below, the SEIA/Vote Solar proposal for a successor NEM tariff will work in concert with these existing policies and programs to advance decarbonization while aspects of other parties' proposals will interfere with the state's programs to eliminate GHG emissions.

(a) Electrification

As illustrated in the *Net Energy Metering 2.0 Lookback Study*, NEM has become a foundational facilitator of electrification. The study shows that customers in PG&E's and SDG&E's service territories increased their electric usage by approximately 30% after adding solar. [388] As confirmed by the study, a customer's investment in a solar system is often the precursor and catalyst for their adoption of other types of DERs such as electric vehicles and electric appliances.[389] The process of adding solar contributes to customers' education about other electrification technologies that can reduce their carbon footprint and save them money.

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388 *Lookback Study,* Table 3-1.

389 *Id*., p. 62.

In order to support and facilitate this trend toward beneficial electrification, California must maintain a viable customer-sited renewable generation industry. This will be in danger if proposals such as the Joint IOUs and TURN are adopted as they will strip Californians of the ability to secure a reasoned return on their investment in renewable DG. In contrast, SEIA and Vote Solar's proposed reasoned step down of the export compensation under the NEM 3.0 general market tariff will help to ensure a reasonable payback period on the customer's private investment. In addition, the SEIA/Vote Solar proposal requires customers under the new successor tariff to take service under a rate designed to support electrification. The combination of these two factors should not only continue the trend towards electrification by NEM customers but should accelerate it among all utility ratepayers.

(b) Integrated Resource Planning Process

The SEIA/VS successor tariff proposal is structured to maintain a growing rooftop solar and solar + storage market, consistent with the states resource planning process. The state's Reference System Portfolio ("RSP") adopted in D. 20-03-028 in the Integrated Resource Planning docket reflects the *continued grow*th of distributed solar into the next decade.[390] The RSP reflects the optimal mix of resources for balancing achievement of the GHG target for the sector, ratepayer costs, and system reliability to give guidance for how the sector should be progressing over the next decade.[391] In the state's current RSP, distributed solar is expected to continue at its current level of growth of 1 GW per year for the remainder of the decade, doubling the installed capacity of this resource from 2020 to 2030.[392] If NEM reform were to

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390 *See* D. 20-03-028, at Table 6 and Figure 3.

391 *Id.,* p. 5

392 *Id.*

render distributed solar and solar + storage uneconomic in 2023, as certain proposals in this proceeding clearly would, the state could lose a substantial share of the distributed energy resources that are included in the state's RSP, thus endangering the state's GHG goals. It is unlikely that the market could react quickly enough to replace these resources with other resources, such as utility scale solar. For example, as explained by SEIA/VS witness Mr. Beach,

> California could not meet the solar and 8 storage build-out required in the No New DER case that is used for the 2021 ACC and that assumes no further deployment of distributed solar. The No New DER case would require the load-serving entities to bring online 34 GW of new utility-scale renewable resources by 2026, including 18.8 GW of solar, 11.1 GW of storage, 2.8 GW of wind, 0.9 GW of geothermal, and 0.5 GW of pumped storage. The 18.8 GW of utility-scale solar is 150% more than the state's entire existing utility-scale solar fleet, and the 11.1 GW of new storage is about ten times the existing battery storage capacity. The 34 GW of new renewables that would be needed by 2026 exceeds the 30 GW of nameplate capacity from the renewable generation now on the CAISO grid.[393]

Even cutting solar deployment in half would have serious resource planning repercussions; this would be the result if the Joint IOU proposal is adopted, if customers are still willing to invest under those terms (which is questionable), and then customers respond to that proposal's strong incentive to limit system sizes to below 50% of usage. Even more concerning would be the impact on the deployment of solar + storage systems, which could contribute substantially to the state's critical need for new peak capacity, but only if the present pace of deployment continues and solar + storage systems gradually replace solar-only over the coming decade.

(c) Title 24 Solar Mandate

As indicated in the principle, the Commission must be cognizant of the impact that changes in the current NEM structure could have on the "solar mandate" implemented through

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393 Exh.SVS-04 (Beach), p. 8, lines 7-14.

changes to Title 24, Part 6 of the state's Building Energy Efficiency Standards, requiring solar on all new home construction. As discussed above, in crafting the new building standards, the CEC was required to show a cost savings over the course of a 30-year mortgage. While the CEC was able to make this showing at the time that the regulations were adopted, there was an acknowledgement that changes to NEM tariff could have a big effect on the cost/benefit equation for customers.[394] While it was determined that a reasonable level of net metering reform would maintain the cost effectiveness, more severe reforms would not.[395] The SEIA / Vote Solar proposal is crafted to maintain a judicious level of reform to ensure that the solar mandate remains cost effective as the costs of solar installations continue to decline. In contrast, as demonstrated above, the proposals advanced by the Joint IOUs, CalPA, TURN and NRDC, given their low export compensation rates and high grid charges, have a high potential of rendering the New Homes Solar Mandate uneconomical.

(d) SB 100 / Executive Order B-55-18

SB 100 establishes a target for renewable and zero-carbon resources to supply 100 percent of retail sales and electricity procured to serve all state agencies by 2045. Executive Order B-15-8 expands the scope for SB 100 by setting a goal of carbon neutrality of 2045 for the entire the state. A key component of meeting both of these goals is an extensive and diverse mix of new renewable generation. The data show that much of this generation will come from utility-scale renewables. But utility-scale solar faces some hurdles, not the least of which are land

394 Exh. SVS-05, *Frequently Asked Questions 2019 Building Energy Efficiency Standards*, p. 7, Question and Answer 10.

395 *Id.*

use constraints and transmission limitation.[396] Thus, the state still needs a vibrant DG market as a hedge against the uncertainties and constraints faced by utility-scale renewables.[397] This not a position which the rooftop solar industry is alone in taking. As attested by Joint IOU witness Tierney "both the rooftop solar and utility scale solar will be need to help California meets its climate goal, even it is not clear today how much of each will be deployed using different periods of time."[398]

CalPa, however, takes the position that the record contains insufficient evidence that there is not enough available land and/or transmission for utility-scale renewables. CalPA is completely missing the point. The evidence shows that land use constraints and transmission access are factors that must be considered in the deployment of utility scale solar, and factors that could drive up the cost.[399] Indeed, as discussed above, CalPA cites to the article "Low impact land use pathways to deep de-carbonization of electricity" as support for their position that land use and transmission access are not a hindrance to the deployment of utility scale solar,[400] but that article stands for the opposite. Indeed, the abstract for the article reads:

> Here we show that California can meet its targets, but the technology mix, spatial build-out, and system costs *are sensitive to land protections* and availability of out-of-state renewable resources. *Results suggest that failure to consider land availability in energy planning could increase uncertainties, environmental impacts, and risks in meeting subnational climate targets*.[401]

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396 Exh. SVS-03 (Beach), pp. 4 and 5 and Attachment A to RTB-2.

397 Exh. SVS-03(Beach), p. 9, lines 16-17.

398 Exh. IOU-02 (Tierney), p. 116, lines 22-24; see also Exh. SBU-08 (Chernick/Wilson), p. 16, line 17 to p.17, line 2.

399 Exh. SVS-03 (Beach), Attachment RTB-2, Attachment A.

400 Exh. PAO-02 (Rounds), p. 3-7, line 21 to p.3-8, line 4.

401 Exh. SVS-14, p. 1.

The reality is that land constraints are only going to increase due to factors such the as the proposed limits on large-scale solar development to preserve Joshua trees and Governor Newsom's pledge to conserve 30% of the state's lands.[402] The need for a vibrant DG market as a hedge to the uncertainties and constraints faced by utility-scale renewables is real. As admitted by CalPA witness Rounds, rooftop solar has no land use constraints.[403]

SEIA/ Vote Solar do not attest that it is an "either/or" situation. There will need to both utility-scale deployment and distributed energy resources if the state is to reach its emission reduction goals. The SEIA/Vote Solar proposal is structured to help ensure a vibrant rooftop solar market by providing for a glide path from a market which is populated mainly by standalone storage systems to one which solar + storage will become the norm.

6. Guiding Principle 6: A successor to the net energy metering tariff should be transparent and understandable to all customers and should be uniform, to the extent possible, across all utilities

This Guiding Principle is similar to Guiding Principal 3 as transparency and understandability are hallmarks of consumer protection. By setting the export compensation rate as a percentage of the retail rate, the SEIA/ VS Proposal is utilizing the one metric of utility service (the retail rate) about which consumers already have basic knowledge. The acknowledged success of net metering to date shows that customers are willing to make significant personal, long-term investments in clean energy on the basis of compensation structured around the retail rate. By locking in a percentage of the retail rate for 20 years and not adding any solar-specific fees that might increase in future years, the customer can readily

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402 Exh. SVS-03 (Beach), Attachment RTB-2, Attachment A, p. A-4.

403 Tr. Vol. 5 (CalPA -Rounds), p 877, line 20-24.

understand the potential bill savings from, or payback period of, a solar or solar+ storage installation. There is more transparency around what the customer is investing in and when they will see a return on their investment.

As has been detailed throughout this Brief, the proposals that include a variety of complex charges with unfamiliar concepts and constant changes will create a high bar for customer understanding and do not offer the transparency necessary to calculate payback periods and potential bill savings.

In this regard, it is important to remember that the Commission has undertaken significant steps and expended considerable resources to enhance customer understanding around investments in solar installation. [404] One of the consumer protections that the Commission flagged was "lack of customer understanding of the factors impacting their actual bill savings."[405] While there has been testimony from the Joint IOUs that their proposed ACC export rate compensation and proposed GBC are "transparent" to the customer and readily understood, there is no evidence of such.

7. Guiding Principle 7: A successor to the net energy metering tariff should maximize the value of customer-sited renewable generation to all customers and to the electrical system.

Customer-sited renewable DG will provide maximum value to all customers and to the electrical system if DG output can serve the on-peak period when power is most valuable. As addressed above, an objective of the successor tariff should be to expand the use of on-site storage that can shift DG output to the peak period. The use of electrification rates with a 4p-9p

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404 *See* Decision 18-09-044.

405 *Id.*, p. 8

on-peak period and large on-peak-to-off-peak rate differentials, as included in the SEIA/VS proposal, is a key step to encourage the growth of solar + storage systems.

8. Guiding Principle 8: A successor to the net energy metering tariff should consider competitive neutrality amongst Load Serving entities

This principal was advanced by the Joint IOUs. In explaining the rationale behind this principal, the IOUs opined that any prospective tariff structure should be designed to avoid creating any skewed incentives for customers to change their load serving entity ("LSE"), or for an LSE to decline to adopt an equivalent successor tariff program as the IOUs.[406] The SEIA/VS proposal is not designed to favor generation service from one LSE over another.

C. The Commission Should Adopt SEIA/Vote Solar' s Proposed Implementation Timeline

The timeline for implementing a successor tariff after Commission adoption must take into account a variety of factors: (1) the required regulatory process; (2) customer education; (3) industry transition; and (4) billing system changes. SEIA and Vote Solar have proposed an approximate 14-month implementation timeline. Such a timelines should afford the time necessary for the regulatory process to be completed at a reasoned pace, allow time for the appropriate tools to be put in place to educate consumers, allow time for education of the industry as they work to change their business models, and allow time for the IOUs to make the necessary changes to their billing systems. In contrast, the Joint IOUs and CalPA offer a hurried implementation timeline- basically requiring customers to take service on the successor tariff

406 *Joint Comments of Southern California Edison Company, Pacific Gas and Electric Company and San Diego Gas & Electric Company on Proposed Guiding Principles*, filed in R. 20-08-020 (December 4, 2020), pp. 11-12.

approximately three to four months after a Commission decision.[407] Such a timeline greatly enhances the likelihood of errors, customer confusion and a consumer protection nightmare.

1. The Implementation Time Line Must Allow Time for a Reasonable Regulatory Process

When implementing the NEM 2.0 tariff, the Commission directed the IOUs to file Tier 2 advice letters with their respective NEM successor tariffs within 30 days of the Commission decision approving the tariff.[408] And while General Order 96-B allows for Tier 2 Advice letters to go into effect following staff approval, the number of issues raised in protests necessitated the issuance and adoption of a Commission Resolution.[409] This resolution came four months after the IOUs filed their advice letters.

Given the complexity of the issues which will need to be addressed in implementation of the NEM 3.0 tariff, SEIA and Vote Solar had proposed providing the Joint IOUs 90 days to submit their implementing advice letters. While SEIA and Vote Solar did not take a position on whether the advice letter would be designated Tier 2 or Tier 3, that designation is not important as it is more than likely the advice letters will necessitate Commission approval through a resolution, as was the case in the implementation of the NEM 2.0 tariff. Rather than allow for an orderly transition process, the Joint IOUs have proposed that 30 days after a Commission

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407 *See* Exh. IOU-02 (Molnar), p.100, lines 14-18 (propose a buffer period of three months (90 days) from the Final Decision for residential customers and five months (150 days) from the Final Decision for non-residential customers, after which no new customers would take service on the current NEM 2.0 tariff. Customers who interconnect after that would take service and be billed on NEM 2.0 temporarily, and then be transitioned to the Reform Tariff once the Reform Tariff is operationalized); Exh. PAO-01(Ward), p. 6-1, lines 13-16 (the IOUs should file advice letters within 3 months of a Commission decision to implement the proposed policy reforms. Through this process, the IOUs should be able to begin enrolling new customers on the successor tariff by April 8, 2022, depending on the timing of the Commission decision).

408 *See* D. 16-01-044, Ordering Paragraph No. 1.

409 *See* Resolution E-4792 (issued June 23, 2016).

decision in this proceeding they would file "an information-only Tier 1 Advice Letter to provide details of the Reform Tariff as directed in the Final Decision,"[410] followed a month later with a supplemental filing "containing rate factors based on the applicable revenue requirements and associated tariff sheets." The Joint IOUs are not requesting Commission approval of their information-only Tier 1 Advice Letter. Moreover, the Joint IOUs are not requesting approval of their supplemental filing prior to requiring new NEM customers be placed on the successor tariff.[411] The absurdity of this process, which to SEIA and Vote Solar's knowledge has never been used by the Commission to implement changes in rate structure, is evident on its face.

The Joint IOU witness Molnar's explanation for the Information-only Advice Filing is as follows:

> This Tier 1 Information-only advice letter will summarize *our interpretation of how the NEM tariff will be structured* and provide indicative levels of price components. This will include information regarding pricing for the underlying net billing tariff as well as the export compensation rate. The level of information provided in the Tier 1 Information-only Advice Letter *should be sufficient to allow customers and solar providers to plan for and adjust to the Reform Tariff.*[412]

Thus, it is the Joint IOUs' position that, for the purposes of completely restructuring their business model, the solar industry is supposed to rely on the IOUs' best guess of how the tariff is to be structured utilizing their interpretation of the Commission decision. When asked what would happen if the IOUs were wrong in their interpretation, all witness Molnar could say was:

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410 Exh. IOU-02 (Molnar), p. 99, lines 12-13.

411 Based on the timeline offered by the Joint IOUs, they would be required to submit the supplemental advice filing 60 days after a Commission decision, while new NEM customers would be required to take service on the successor tariff after 90 days.

412 *Id.,* p.99, lines 13-18 (emphasis added).

> Well, it is my understanding that even with a Tier 1 Advice Letter parties to the proceeding have a right to comment or protest what we file.[413]

First it should be noted that it is not entirely clear what type of submittal the IOUs are contemplating. While they designate it an "Information Only Tier 1 Advice Filing", under General Order 96-B, a Tier 1 Advice Letter is different than an Information Only Filing. While the former allows the right to protest, the latter does not.[414] As it does not appear that the Joint IOUs are seeking any Commission action on the submittal made 30 days after Commission approval of the successor tariff, it is more aptly designated an information-only submission, thus not subject to protest.

Even if protests were allowed, it would not give the industry any more clarity surrounding what they were preparing to implement. That clarity will not be afforded until a Commission resolution adopting the implementing tariffs. At a minimum, any requirement that a new NEM customer must take service under the successor tariff must await a final Commission implementing resolution. In this regard, it is apparent that the Joint IOUs do not want to await Commission approval of the new tariffs prior to requiring new NEM customers to take service under the successor tariff. It is unclear what authority the IOUs have to require customers to take service under a tariff which has not been approved by the Commission. Moreover, while SEIA and Vote Solar understand that, under the Joint IOUs proposal, until their billing systems can be completely updated, new NEM customers would continue to take service under NEM 2.0 and be switched over to new tariff at a later date,[415] that does not mitigate the underlying problem. The

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413 Tr. Vol. 4 (Joint IOUs- Molnar), p. 659, lines 8-10.

414 See General Order 96-B, Section 6.2 (Since information-only submittals do not seek relief, they are not subject to protest, as provided for applications and advice letters).

415 Exh. IOU-02 (Molnar), p.100, lines 16-19.

customer still needs to know the exact terms and conditions of the tariff under which they will be taking service for the vast majority of the life of their system in order to undertake the necessary financial analysis to make an investment decision. Without that knowledge, there either will be no investment or a consumer protection nightmare.

2. The Timeline Must Afford Adequate Time for Customer Education

The Joint IOUs acknowledge the need to raise customer awareness about the successor tariff so that customers can make informed choices about investing in DG technologies.[416] They even detail the items that they believe consumers would need to understand to make such an informed choice:

- the shift from an annual to a monthly true-up, netting within TOU intervals, and how seasonality in solar generation can impact customer bills throughout the year;
- New otherwise applicable rate requirements for NEM customers; and
- The monthly Grid Benefits Charge and what that charge covers (including the Low- Income Discount); and the annual change to the grid benefits charge.[417]

But they provide no evidence that the three-month time period which they propose between Commission decision and a requirement that all new NEM customers take service under the successor tariff is adequate time to educate consumers about the information that they attest consumers must understand before investing in DG. All they can say is that "we are preparing to hit the ground running"[418] and:

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416 Exh. IOU-01(McCutchen), p.186, lines 11-12.

417 *Id.,* p. 187 lines 7-14; Tr. Vol 4 (Joint IOUs – McCutchen), p. 628, lines 8-14 (attesting that understanding of all these elements are necessary for a customer to make an informed choice regarding DG investment).

418 Tr. Vol. 4 (Joint IOUs-McCutchen), p. 639, lines 6-7.

> We think that the proposed decision…. will narrow the possibilities of what a revised tariff will look like. So, we think at that point that will be an important time to begin focusing on the key elements … that we anticipate may come out of the final decision. And make sure we are thinking about how to educate customers about the more specific changes that are proposed at that time and that will continue to be revised obviously, as the directives become more solidified.[419]

In short, the Joint IOUs are attesting that when the proposed decision comes out it may narrow the possibilities of items on which consumers will need to be educated, but of course that could change with the issuance of the final decision.

The importance of customer education cannot be overstated as California moves to a successor tariff. The Commission has held customer education paramount when approving new rate structures. For example, in addressing the IOUs' applications for residential fixed charges, the Commission emphasized Rate Design Principal 10:

> Transitions to new rate structures should emphasize customer education and outreach that enhances customer understanding and acceptance of new rates and minimizes and appropriately considers the bill impacts associated with such transitions.[420]

In doing so the Commission determined that:

> The ME&O plans provided by the IOUs in this phase of the proceeding lack detail and do not ensure that the fixed charge proposals of the IOUs will satisfy rate design principle 10.[421]
>
> The Commission ultimately denied the applications.[422]

While SEIA/VS recognize that NEM is an optional tariff, the basic tenets of the Commission's rate design principles should hold. The transition to a NEM successor tariff should emphasize "customer education and outreach that enhances customer understanding." A

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419 *Id.,* p 639, lines 15-26.

420 *See* D.15-07-001, p. 28.

421 Decision 20-03-003, Finding of Fact 2.

422 *Id*., Conclusion of Law 1.

truncated implementation period simply does not allow such to occur. The IOUs' marketing, educating, and outreach plan for the successor NEM tariff lacks detail and certainly does not demonstrate that the necessary education can occur in three months.

Moreover, the Commission must take into account the time necessary to make the changes to its Solar Consumer Protection Guide to reflect the program modifications. Solar developers are obligated to provide a copy of this guide to all prospective customers.[423] The Commission has expended significant time and resources working with stakeholders to fashion a guide which will be consumer friendly. Significant portion of this guide will need to be modified upon approval of the successor tariff. Any adopted implementation timeline must factor in sufficient time to complete this important task.

3. The Timeline Must Allow Time for Industry Transition

While the Joint IOUs at least acknowledge that the industry will need time to adapt to the successor tariff, a point which CalPA does not concede, as noted above, they seem to think three months is sufficient. For perspective, the Commission should look to the implementation of the NEM 2.0 tariff. In that scenario, the Commission approved the IOUs' implementing tariffs in late June of 2016, four months after they were filed. However, the tariffs were not to go into effect until the statutory MW cap on the NEM program was reached in each of the IOUs' respective service territories, or July 1, 2017, whichever was earlier.[424] In other words, there was a gap between the time that the industry knew the final Commission-approved terms of the NEM 2.0 tariff, and the time when new NEM customers would be required to take service under that

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423 *See* Decision 18-09-044.

424 *See* Resolution E-4792 (issued June 23, 2016), p. 31, Ordering Paragraph No. 5.

tariff. This gap between approval and customers taking service under the new tariff gave the industry time to make the necessary preparations to offer what was, in essence, a new product. This same situation will need to replicate itself in the implementation of the NEM 3.0 tariff. As attested to by CALSSA witnesses Heavner and Plaisted, "[s]olar companies will require time to understand the regulatory framework in which they will be operating, ramp up new product offerings in response to that framework, educate and train their personnel on the new offering, and develop strategies for bringing the products to market."[425] This gap period will be even more crucial for managing the transition to the NEM 3.0 tariff. Regardless of which successor tariff proposal, or combination of proposals, is approved by the Commission, the change to the NEM structure made in this proceeding will be significantly more complex than the ones made in the NEM 2.0 proceeding. The industry simply needs time to educate itself and ensure that its employees understand the contours and ramifications of the successor tariff. While the industry can begin this process upon adoption of a successor tariff, substantial steps still will need to be taken after the Commission adopts the implementing tariffs.

4. The Timeline Must Allow Time for Billing System Modifications

The Joint IOUs admit that, regardless of how fast the Commission approves the implementing tariffs, they will not be able to actually put them into effect until 12 to 24 months later due to the necessary modifications of their billing systems.[426] While on cross examination witness Molnar stated that, irrespective of the successor tariff proposal adopted by the Commission, the billing system changes would still take 12 to 24 months,[427] in her prepared

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425 Exh. CSA-01(Heavner/Plaisted), p. 120 line 15 to p.121, line 2.

426 Exh. IOU-01 (Molnar), p. 181, lines 13-15.

427 Tr. Vol. 4 (Joint IOUs- Molnar), p. 650, lines 9 -14.

testimony she stated that "substantial changes will need to be made to each utility's billing systems and supporting platforms to bill customers on our proposed Reform Tariff, or on any other NEM proposal *of similar complexity."*[428] Thus how long it would take for the Joint IOUs to make the necessary billing changes to implement simpler proposals remains unclear. SEIA and Vote Solar note that our proposal adds only one new element that is not now in the IOUs' billing systems – the export percentage used to step down the export rate.[429]

SEIA and Vote Solar do not have insight into the complexities of the Joint IOUs billing systems and how long it will take to make the necessary changes but have concerns if the Commission requires new NEM customers to "start out" on NEM 2.0 but be switched over to NEM 3.0 once the IOUs billing systems are ready to handle it. While the IOUs have committed to not "back bill" these NEM customers upon the switchover,[430] other consumer protection issues remain such as educating customers on this two-part transition and trying to estimate a payback period or bill savings when the customer will be migrating from one compensation structure to another at some indeterminate date in the future. The approximate 14-month implementation period proposed by SEIA and Vote Solar was proposed, in part, to allow the IOUs a reasonable period to make the necessary billing system modifications.

D. The SEIA/Vote Solar Proposal Does Not Create Implementation Barriers

As discussed above, SEIA/Vote Solar's export compensation rate structure is comprised of stepdowns in the percentage off the retail rate which are triggered in each IOU's service

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428 Exh. IOU-01 (Molnar), p. 181, lines 11-13.

429 For SDG&E, their billing system will also need to add the new electrification rate that the Commission approves pursuant to SDG&E's planned September 1, 2021, filing of such a rate.

430 Tr. Vol. 4 (Joint IOUs-Molnar), p. 652, line 24 to p.653, line 2.

territory when certain MW installation levels are reached.[431] The Joint IOUs assert that "transitions triggered by capacity caps rather than clear calendar dates would create unpredictability and customer confusion."[432] But these issues have already been addressed. As described in SEIA/VS' testimony:

> To manage the end of each step, we propose that, when an IOU projects that the cumulative NEM 3.0 installations on its system are within three months of the end of each step, ***the IOU will announce a date certain in three months for the end of that step.*** A time-based end to each step will provide potential customers with longer and more certain advance notice of the end of each step and will be easier for the IOUs to manage.[433]

In response to this evidence, all the Joint IOUs could state is that "there can be significant month-to-month variability in solar capacity interconnections that limits the ability of utilities to forecast when a MW cap will be reached" and "the parties who proposed step downs did not clarify whether the transition would be triggered if the capacity reached did not match the utilities' forecast."[434] But that is not accurate. As noted above, SEIA/ Vote Solar propose that the IOU will announce a date certain for the end of the step. Thus, even if the IOU's estimate is off, the step will still end. Thus, the IOUs' arguments regarding predictability and customer confusion are negated.

The Joint IOUs also raise their infamous billing system issues, stating that utilities would have to plan well in advance of the three-month notice.[435] But they would know more than three months in advance. They would know the approved step downs in export compensation rate

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431 Exh. SVS-04 (Beach), p. 23, lines 8-9; Exh. SVS-03 (Beach), Attachment RTB-2, Table 4.

432 Exh. IOU-02 (Molnar), p. 97, lines 10-11.

433 Exh. SVS-03 (Beach), Attachment RTB-2, p. 11 (emphasis added).

434 Exh. IOU-02 (Molnar), p. 97, line 22 to p.98, line 3.

435 *Id.,* p. 98, lines 6-7.

when the Commission issues a decision. While the IOUs would not know exactly when a certain step would be triggered, their billing systems could be programed with the percentage adjustments, and then activated at the necessary time.

VI. ISSUE 6 – OTHER ISSUES THAT MAY ARISE RELATED TO CURRENT NET ENERGY METERING TARIFFS AND SUB-TARIFFS, WHICH INCLUDE BUT ARE NOT LIMITED TO THE VIRTUAL NET ENERGY METERING TARIFFS, NET ENERGY METERING AGGREGATION TARIFF, THE RENEWABLE ENERGY SELF- GENERATION BILL CREDIT TRANSFER PROGRAM, AND THE NEM FUEL CELL TARIFF.

A. Proposals to Required Mandatory Changes to NEM 1.0 and NEM 2.0 Services Should be Rejected

A number of parties to this proceeding have offered proposals that would require NEM 1.0 and/or NEM 2.0 customers to take service under specific rate schedules, would laden these customers with additional charges or would require them to transition to the successor tariff. These parties argue that the Commission has the authority to do such, with the source of authority differing depending on what action they are asking the Commission to take. All these proposals, irrespective of the Commission's legal authority to enact them, must be rejected. They constitute bad public policy which will have significant consumer protection ramifications and implications for the future growth of the markets for solar and distributed resources of all types.

1. Transitioning NEM 1.0 and 2.0 Customers to the Successor Tariff Would have Significant Consumer Protection and Market Impacts

CalPA argues that the Commission has the legal authority to require NEM 1.0 and NEM 2.0 customers to transition to the NEM 3.0 tariff.[436] CalPA has proposed that such mandatory

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[436] *See Public Advocates Office Amended Proposal for a Successor Tariff to the Current Net Energy Metering Tariffs*, R.20-08-020 (March 15, 2021) ("PAO Proposal) pp. 51-52

transition occur five years after implementation of the successor tariff.[437] CalPA recognizes that the Commission has granted both NEM 1.0 and NEM 2.0 the right to stay on these tariffs for twenty years from the date of their interconnection, but notes that this twenty year period is not required by statute.[438] So, according to CalPA, all the Commission has to do is modify their prior decisions.[439] SEIA and Vote Solar do not disagree that the Commission has the authority to modify its prior decisions. The ramifications of it doing so in the manner requested by CalPA, however, would have serious consumer protection ramifications as well as the impact the future growth of the solar market.

In this regard, SEIA and Vote Solar cannot understate the importance to the future growth of the distributed solar market in California of the Commission's commitment to "allow customers to have a uniform and reliable expectation of stability of the NEM structure under which they decided to invest in their customer-sited renewable DG systems."[440] Over one million IOU customers have invested tens of billions of dollars in distributed solar under the NEM 1.0 and 2.0 tariffs in reliance on this promise of a stable NEM structure and on the policy that changes to the NEM program would only apply to existing customers after the adopted 20-year transition period. To undermine the economic underpinnings of those investments in this proceeding would be profoundly destabilizing, and would impact adversely the market not just for solar but also for other types of DERs (including storage).

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437 Exh. PAO -01(Gutierrez), p. 4-3, lines 7-8. *See also* Exh. CUE0-01 (Earl), p. 18, line 11 to p. 9, line 12 (proposing that NEM 1.0 and NEM 2.0 customers be transitioned once their payback period expires).

438 PAO Proposal, p. 52.

439 *Id.*

440 D.16-01-044, p.100.

Moreover, the consumer protections ramifications of any attempt to retroactively change the transition periods for customers are innumerable. For the past several years, customers have been evaluating the economics of solar installations based on the Commission's explicit determination in D. 16-01-044 that they would have the right to stay on the NEM 2.0 tariff for a period of 20 years from interconnection. In marketing solar installations, solar developers have been making that representation. They also have been performing the Commission required bill savings estimates for potential customers based on the promised 20 years. A change to this basic tenet of the NEM 2.0 tariff would undermine not only these project economics, but the significant efforts that the Commission has undertaken to ensure that consumers have the information necessary to make an informed decision about installing solar and taking service under the NEM tariff. [441] Hundreds of thousands of solar customers would be placed in the position of having purchased a solar system based on what will become a misrepresentation endorsed by the Commission. The customer backlash against the IOUs, the industry and the Commission would be considerable.

Illustrative of the consumer dissatisfaction that can result from an attempt to change fundamentally the NEM structure applicable to an existing population of NEM customers is the experience that occurred in Nevada. As has been discussed in this Brief, in 2015-2016, the Nevada Public Utilities Commission ("PUCN") changed the rate structure under the NEM tariffs. The PUCN applied the changes not just to new solar customers, but also to those with existing systems, thus altering the economics of existing systems to the point where the significant investments made by customers were rendered uneconomic. The ensuing customer

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441 *See, e.g.,* D. 18-09-044 (adopting a solar consumer information packet).

backlash led to a ballot initiative, multiple law suits, and a significant statewide political issue, which ultimately resulted in the PUCN reversing course.[442] This retroactive change involved only 32,000 solar customers in Nevada.[443] There are over 1 million existing NEM 1.0 and 2.0 customers in California – about 10% of all IOU ratepayers.

2. Proposals to Require NEM 1.0 and NEM 2.0 Customers to Take Service Under Electrification Rate Schedules is not Consistent with Commission Edicts

Sierra Club proposes that all existing non-low-income residential NEM customers be required to take service under TOU rates with at least a 2:1 differential between peak summer evening and mid-day off peak periods at the beginning of the year following eight years of taking service under the NEM tariff.[444] Sierra Club asserts that this is consistent with prior Commission determinations that NEM customers do not have the right to consistency in their underlying rates or rate structures.[445] In this regard, Sierra Club points to Decision 16-01-044 adopting the NEM 2.0 tariff wherein the Commission stated:

> To avoid any misunderstanding, we reiterate our observation in D.15-07-001 that [NEM] customers do not have any entitlement to the continuation of *any particular underlying rate design, or particular rates*. The 20-year period we designate applies only to a customer-generator's ability to *continue service under the NEM successor tariff established by this decision.*[446]

SEIA and Vote Solar agree that NEM customers are not guaranteed a particular rate or a particular rate design. However, they do have the right to continued service under their NEM tariff, that is, the NEM 2.0 tariff adopted by the Commission in D. 16-01-044. As stated therein:

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442 Exh. SVS-01 (Gallagher), p. 112, lines 5-8.

443 Exh. SVS-03 (Beach), Attachment RTB-2, Attachment C.

444 Exh. SCL-01 (Vespa), p. 6, lines 30-33.

445 *Id*., p 8, lines 5-8.

446 *Id.,* p. 8. Lines 10-15 *citing* D. 16-01-044, pp. 100-101 (emphasis added).

> *A new element in the successor tariff we adopt* is the requirement that, as a condition of using the NEM successor tariff, all NEM successor tariff customers must be on a TOU rate with no option to opt out to a rate that is not time-differentiated.[447]

Thus, the NEM successor tariff established by the Commission in D. 16-01-044 contained the requirement that the customer take service on any time-of-use tariff. This requirement is embedded in the IOUs' NEM 2.0 tariffs.[448] By affording NEM 1.0 and 2.0 customers the right to stay on their respective NEM tariffs for 20 years, it also afforded them the right to stay on the underlying rate schedules reflected in those tariffs.

3. Proposals to Add Additional Fees to NEM 1.0 and NEM 2.0 Customers Are Deficient

NRDC proposes that all existing non-CARE and non-FERA NEM residential customers be required to pay an equity fee of $2.50 per kW-dc of distributed generated capacity installed per month for the purposes of funding low income solar programs.[449] Customers on the new NEM 3.0 tariff would be required to pay this fee after 10 years.[450] NRDC states that "this equity fund should be spent in consultation with community groups, environmental justice organizations, and consumer advocates to make sure the benefits realized from this fund are aligned with community needs and are spent cost-effectively to increase access to and provide clean energy benefits."[451] While SEIA and Vote Solar support efforts to bring solar to low-income customers, NRDC's proposal should be rejected.

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447 D.16-01-044, p. 91 (emphasis added).

448 See, e.g., PG&E Electric Rate Schedule NEM 2, Sheet 1. https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_NEM2.pdf

449 Exh. NRD-01 (Chhabra), p.21, lines 15-17.

450 *Id,* p. 21, lines 18-23.

451 *Id.,* p. 21, line 26 to p. 22, line 1.

NRDC's proposal would change the terms and conditions of the tariff which NEM 1.0 and NEM 2.0 customers have been guaranteed for the initial 20 years of service. As addressed above, the market and consumer protection impact of changes in those terms and conditions could be significant. Moreover, NRDC has not provided any specifics regarding how the funds would be allocated. The proposal is too opaque and even NRDC admits would need an implementation phase to figure out.[452]

B. CalPA's Proposal to Incent NEM 1.0 and NEM 2.0 Customers to Install Storage Should be Evaluated

As addressed above, CalPA's proposal to *require* all NEM 1.0 and NEM 2.0 customers to take service on the successor tariff starting five years after coming online should be rejected. However, buried within this proposal is an element that the Commission should consider - incenting existing residential NEM customers to switch over to the successor tariff by offering rebates on paired storage systems or a transition bonus.[453] As stated by CalPA "the storage rebates would generously compensate customers to switch to the new tariff with BTM systems that enhance grid benefits."[454] Moreover, as noted by SEIA witness Beach, solar customers who add storage also are more likely to adopt electrification rates, which are well-suited to cycle the storage – charging at low off-peak rates and discharging at the high on-peak rate.[455]

C. This Proceeding Provides the Opportunity to Enhance Grid Services

The transition away from retail NEM to net billing will require customers to make substantial investments in storage as well as solar, with longer payback periods. Developing new

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452 *Id.,* p. 22, lines 1-2.

453 Exh. PAO-02 (Gutierrez), p. 4-2, lines 18-19.

454 *Id*. p. 402, lines 19-20.

455 Exh. SVS-03 (Beach), p. 61, lines 25 -27.

opportunities for storage to provide innovative grid services will be an important means to support these investments as well as provide additional value to the electric system. One readily available means to enhance the value that these customers receive from their solar and solar + storage installations is to allow all NEM customers to participate in critical peak pricing ("CPP") rates. As discussed by SEIA/VS witness Beach, today, SCE allows residential NEM customers to participate in its CPP rates, while PG&E and SDG&E do not. PG&E allows some non-residential NEM customers to elect Peak Day Pricing rates (PG&E's version of CPP), but in general the IOUs do not allow their NEM customers to use CPP rates on all optional commercial and industrial rate schedules.[456] These inconsistencies among the IOUs in the availability of CPP rates makes no sense. NEM customers are more likely than other types of customers to choose CPP rates and thus to help the grid during critical peak days. NEM customers are among the more engaged and informed of utility customers, due to the significant investment they have made in renewable on-site generation and (in most cases) their significant experience living with TOU rates.[457] NEM customers should have the same opportunity as other customers to participate in CPP programs and respond to CPP price signals on extreme peak days. It is important to know that NEM customers with solar-only systems will respond to CPP events in exactly the same way as non-solar customers, by reducing their electric loads. Solar systems are not dispatchable and cannot be "turned up" by the customer; they will produce power during CPP events based on whatever solar insolation is available on that peak summer day. As a result, in a CPP event, solar-only NEM customers are no different than non-solar customers, and all will

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[456] Exh. SVS-03 (Beach), p.74, lines 4-8.

[457] *Id.,* p. 74, lines 10-12.

respond by reducing discretionary loads. Thus, NEM customers should be allowed to participate in CPP rates on the same basis as other customers.

NEM customers with solar-plus-storage systems that can be discharged during critical peak periods are different because their storage is dispatchable – and these are among the most valuable customers that the utilities have at such times.[458] It makes no sense to exclude these valuable NEM solar + storage customers from CPP rates. For these reasons, all NEM customers – residential and non-residential – in all three IOU service territories, should be allowed to elect CPP or PDP rates on any rate option that they select.

VII. REQUEST FOR ORAL ARGUMENT

In accord with Commission Rule 13.14 (b), SEIA and Vote Solar request that an oral argument in this proceeding be held before the full Commission. To render this oral argument most effective in their decision-making process, SEIA and Vote Solar request that the oral argument be held subsequent to the issuance of the Proposed Decision and be structured to address specific points of interest to the Commissioners. Providing structure to the oral argument is the best means of ensuring that the Commissioners' points of interest are addressed.

In addition, prior to the issuance of the Proposed Decision, SEIA and Vote Solar request that an all-party meeting be held. Such a meeting could be sponsored by any of the Commission offices but could be attended by all offices. Such a meeting could allow all Commission offices to become better versed in the key issues and parties positions earlier on in the deliberation process. Such knowledge could assist them in their review of the proposed decision.

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458 *Id.* p. 74, lines 14-16.

VIII. CONCLUSION

In determining the next iteration of the NEM tariff the Commission has the statutory obligation to balance what may appear to be two irreconcilable objectives: (1) ensure that the standard contract or tariff made available to eligible customer-generators ensures that customer-sited renewable distributed generation continues to grow sustainably; and (2) ensure that the total benefits of the standard contract or tariff to all customers and the electrical system are approximately equal to the total costs. The record of this proceeding, however, shows that these two requirements for a successor tariff can be reconciled, but such reconciliation cannot occur overnight. The proposal advanced by SEIA and Vote Solar for the residential general market successor tariff allows for the measured stepdown of the compensation currently received by NEM customers for their exports to the grid until the point where the benefits of the successor tariff approximate the costs. The stepdown period affords time for the market to adjust to the regulatory framework in which they will be operating, ramp up new product offerings in response to that framework, and develop strategies for bringing those products to market – in other words, it affords the time necessary for the market to continue to grow sustainably.

Balancing the statutory objectives, as the Commission is required to do, can be achieved through the adoption of the SEIA/Vote Solar NEM successor tariff proposal.

Respectfully submitted, this 31st day of August 2021, at San Francisco, California.

Jeanne B. Armstrong[459]
Solar Energy Industries Association
Sacramento, CA
Telephone: (916) 276-5706
E-Mail: jarmstrong@seia.org

By */s/ Jeanne B. Armstrong*
Jeanne B. Armstrong

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[459] In accord with Rule 1.8, the representative of the Solar Energy Industries Association has authorization to sing this Brief on behalf of Vote Solar.