



**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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Order Instituting Rulemaking to Revisit Net
Energy Metering Tariffs Pursuant to Decision
16-01-044, and to Address Other Issues
Related to Net Energy Metering.

R.20-08-020
(Filed August 27, 2020)

OPENING BRIEF OF THE PROTECT OUR COMMUNITIES FOUNDATION

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SUMMARY OF RECOMMENDATIONS

Pursuant to Rule 13.12 of the Commission’s Rules of Practice and Procedure, the Protect Our Communities Foundation provides the following summary of its recommendations.

In this proceeding, the Commission should:

- Use the NEM 2.0 Lookback Study’s cost-of-service analysis as the basis for establishing the costs of customer-sited renewable generation.
- Account for the full benefits of customer-sited renewable generation, including the avoided transmission costs, resiliency and reliability benefits, and air quality and climate benefits excluded from or inadequately credited by the Avoided Cost Calculator.
- To comply with Public Utilities Code section 2827.1(b)(4)’s mandate to account for “total” costs and benefits, use the Societal Cost Test variation of the Total Resource Cost test to analyze the cost-effectiveness of the current and proposed successor NEM tariffs.
- After consideration, reject the Ratepayer Impact Measure (“RIM”) test, which fails to comply with 2827.1(b)(4) and penalizes customers for reducing their consumption of energy from the grid and discourages energy conservation efforts.
- To comply with Public Utilities Code section 2827.1(b)(1)’s mandate to ensure that customer-sited renewable generation continues to grow sustainably, evaluate proposed successor tariffs based on whether prospective NEM participants would receive a reasonable economic value proposition sufficient to result in a BTM solar installation pace equal to or greater than the current installation rate. As shown by data from other states in which reforms undercut customers’ economic value propositions and decimated behind-the-meter adoption rates, a continued economic value proposition is essential to ensuring continued sustainable growth.

Further, in adopting a successor tariff to the current NEM tariffs, the Commission should:

- Retain the current NEM 2.0 tariff with targeted modifications to incent storage, increase access to historically under-represented groups, and maximize the benefits of customer-sited renewable generation to customers and the grid.
- Adopt modified time-of-use rates to increase incentives for standalone solar and solar + storage customers to optimize their consumption and discharge patterns to provide maximum benefits.

- Reject parties' proposals calling for regressive and unfair Grid Benefits Charges that penalize NEM customers for reducing energy use from the grid.
- Expand access to beneficial clean energy to historically under-served populations, including low-income individuals, renters, and residents of multi-unit buildings, by:
 - Adopting community solar and community storage programs.
 - Adopting a carve-out allowing low-income customers continued access to the NEM 2.0 tariff.
 - Mandating that the utilities offer a tariffed on-bill financing program tied to customer meters to remove barriers related to high upfront costs of adoption and difficulties obtaining financing.

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OPENING BRIEF OF THE PROTECT OUR COMMUNITIES FOUNDATION

I. Executive Summary

California’s Net Energy Metering (“NEM”) tariffs have encouraged the growth of customer-sited renewable generation that has benefitted the State’s electricity grid and society. Customer-sited renewable generation reduces transmission costs, increases grid reliability and resiliency, and plays a critical role in achieving California’s climate goals by eliminating greenhouse gas emissions associated with fossil fuel generation. In directing an assessment of California’s NEM tariff, the Legislature recognized the importance of customer-sited renewable generation and its continued growth. The Legislature therefore required that the Commission ensure that any successor tariff reflect the full range of benefits conferred by customer-sited generation balanced against the cost of serving those customers.¹ The successor tariff must also ensure that customer-sited, renewable generation continues to grow sustainably² and advances equity between customer classes.³

¹ Pub. Util. Code § 2827.1(b)(4).

² Pub. Util. Code § 2827.1(b)(1); D.21-02-007, Decision Adopting Guiding Principles for the Development of a Successor to the Current Net Energy Metering Tariff (Feb. 11, 2021) (“Guiding Principles Decision”) at p. 45.

³ D.21-02-007, Guiding Principles Decision at p. 45.

Under a complete and accurate accounting of the costs and benefits of customer-sited renewable generation, the current NEM tariffs already achieve the first two objectives: the current tariffs balance costs and benefits and allow customer-sited generation to grow sustainably. Accordingly, the Commission should largely retain those tariffs. Reforms should be targeted to advance equity and maximize the value of customer-sited renewable generation to the grid. These targeted refinements should include time-of-use rates modified to incentivize optimal generation and consumption patterns and community solar and storage programs that would expand access to NEM to historically underrepresented groups. The Commission should reject any attempt to eliminate net energy metering or to impose substantial fixed-rate fees that would render customer-sited renewable generation uneconomical.

A. The total benefits of customer-sited renewable generation under the current NEM tariffs, including societal benefits, outweigh the total costs.

The Public Utilities Code directs the Commission to “ensure that the *total* benefits” of any successor tariff to the current NEM tariffs “are approximately equal to the total costs.”⁴ To comply with this mandate, the Commission must assess the *actual* costs to serve NEM customers under the current and proposed tariffs and *all* known benefits of customer-sited renewable generation. The evidentiary record demonstrates that the NEM 2.0 Lookback Study’s cost of service analysis provides the most accurate accounting of the costs of customer-sited renewable generation. Relying on actual data derived from the utilities’ General Rate Case filings, the Lookback Study’s analysis provides “a transparent approach” to quantifying the costs of serving

⁴ Pub. Util. Code § 2827.1(b)(4) (emphasis added).

NEM customers.⁵ The analysis also closely tracks a foundational rate design principle: customers' rates should be based on the utilities' cost to serve them.

By comparing costs of service to aggregate customer payments, the Lookback Study finds that, in 2019, the cost of serving NEM customers exceeded their bill payments by \$500 million.⁶ This cost gap, however, is more than offset by the benefits of customer-sited renewable generation, including societal benefits. The evidence demonstrates that customer-sited renewable generation has directly reduced transmissions costs by eliminating specific transmission projects costing billions of dollars. Customer-sited renewable generation also results in quantifiable benefits from increased grid resiliency and reduced greenhouse gas emissions.

Notwithstanding the demonstrable benefits of customer-sited, renewable generation, a number of parties, including the Joint Utilities, Cal Advocates, and TURN,⁷ claim that the current NEM tariffs shift \$3.4 billion in costs from NEM participants to non-participants. These anti-NEM parties arrive at this figure not by looking at the cost to serve NEM customers, but by focusing on bill savings that NEM customers receive as a result of consuming energy from their on-site systems. However, customer bill savings reflect nothing more than lost utility revenue from customers' decreased use of grid-supplied energy. Thus, using bill savings to calculate a "cost shift" leads to the absurd result that any time a customer reduces electricity use from the grid—including by hanging clothes to dry or using a gas stove rather than an electric appliance—

⁵ PCF-15 at pp. 45-46 [Verdant, Net-Energy Metering 2.0 Lookback Study (Jan. 21, 2021) ("Lookback Study")].

⁶ *Id.* at pp. 96-97; PCF-24 at p. 4 [R.20-08-020, Rebuttal Testimony of Bill Powers, P.E., on behalf of the Protect Our Communities Foundation (July 16, 2021) ("Rebuttal Testimony of B. Powers")].

⁷ Because these parties would eliminate net metering and replace it with net billing, they are collectively referred to hereafter as the "anti-NEM parties."

they shift costs to other customers. The bill savings metric punishes NEM customers for generating and using their own clean power and discourages conservation and efficiency. Bill savings do not accurately reflect the costs of NEM systems.

The anti-NEM parties compound their overestimate of the costs of the NEM tariff by relying exclusively on the Avoided Cost Calculator to determine the benefits of customer-sited renewable generation. The Avoided Cost Calculator, however, systematically under-values the ability of customer-sited generation—particularly behind the meter solar—to avoid transmission and distribution costs and reduce greenhouse gas emissions. The Calculator also entirely ignores the resiliency and reliability benefits of customer-sited solar and storage resources. Even the anti-NEM parties agreed these benefits have a quantifiable value, but they ignore these values when assessing the benefits of customer-sited, renewable generation.

In the end, the anti-NEM parties’ approach to identifying the costs and benefits of NEM systems is simply a variation of the Ratepayer Impact Measure (“RIM”) test. The Guiding Principles decision, however, finds that the RIM test should not determine the cost effectiveness of any NEM solar tariff.⁸ Instead, “the Total Resource Cost test shall be considered the primary test for all Commission activities, including filings and submissions, requiring cost-effectiveness analysis of distributed energy resources, except where expressly prohibited by statute or Commission decision.”⁹ To comply with the Commission’s direction and the Legislature’s mandate to account for the “total” benefits of customer-sited renewable generation,¹⁰ the Commission should use the societal test variation of the Total Resource Cost test. The societal

⁸ D.21-02-007, Guiding Principles Decision at p. 7.

⁹ *Ibid.*

¹⁰ See Pub. Util. Code § 2827.1(b)(4) (calling for an analysis of “total benefits”).

test captures a broader range of benefits than the Total Resource Cost test, including avoided externalities. While the Commission has not adopted all elements of the societal test, under its statutory mandate, the Commission may not ignore the admitted value of the benefits that the societal test measures.

B. The Commission should adopt a successor tariff with a reasonable payback period to ensure that NEM solar continues to grow sustainably.

Under Public Utilities Code section 2827.1(b)(1) and the first guiding principle in this proceeding, the Commission must adopt a successor tariff that ensures customer-sited renewable generation “continues to grow sustainably.” The statute’s use of “continues” suggests that current rates of adoption of NEM resources are sustainable. To maintain these rates, as the statute mandates, the successor tariff must continue to present customers with an attractive economic value proposition.

The experience of other states demonstrates that NEM tariffs with unattractive economics resulted in significant declines in the growth of customer-sited, renewable generation.¹¹ Like the tariffs adopted in those other states, the anti-NEM parties’ proposed successor tariffs result in unreasonably long payback periods—the time it takes for NEM customers to recoup their initial investment. When taking into account a customer’s interest payments incurred to finance NEM systems, payback periods for the anti-NEM parties’ proposals would be as high as 30 years—considerably longer than the likely life of a NEM system. No economically rational customer would invest in a NEM system under those circumstances.

¹¹ SVS-01 at pp. 10-11, 13 [R.20-08-020, Prepared Direct Testimony of Sean Gallagher on behalf of the Solar Energy Industries Association and Vote Solar (July 22, 2021) (“Testimony of S. Gallagher”)] (concluding that other states’ tariffs that presented customers with unfavorable economics “decimated” the market for rooftop solar in those states).

Rather than making NEM economically unattractive to all customers, the Commission should adopt targeted reforms to expand access to NEM to lower- and middle-income customers. For example, the successor tariff should compensate CARE customers participating in NEM at the same rates received by non-CARE customers. The Commission should also implement tariffed on-bill financing tied to the meter, which would expand access to lower- and middle-income individuals and other historically under-represented groups who cannot afford the upfront cost of a NEM system. These programs should also include community solar and storage programs that maximize the benefits of distributed solar generation with paired battery storage.

Because an accurate accounting of the costs and benefits of customer-sited, renewable generation demonstrates its value to California ratepayers and the environment, any successor tariff should retain the key elements that make such generation an attractive economic investment. The Commission should also expand access to the NEM tariff so that historically underrepresented communities can enjoy the benefits of customer-sited generation. Failure to do so would violate Public Utilities Code section 2827.1 and the Commission's statutory mandate to ensure the continued growth of customer-sited, renewable generation.

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?

The Public Utilities Code directs the Commission to ensure that any NEM tariff be “based on the costs and benefits of the renewable electrical generation facility.”¹² The Commission must also “[e]nsure that the *total benefits* of the standard contract or tariff to all

¹² Pub. Util. Code § 2827.1(b)(3).

customers and the electrical system are approximately equal to the *total* costs.”¹³ Implementing this statutory directive requires an accurate assessment of the actual costs of serving NEM customers and the real benefits their systems provide. The Commission’s Guiding Principles Decision also emphasizes the need to account for the costs and benefits of NEM generation in the context of resource specific proceedings.¹⁴ Failure to properly account for both costs and benefits results in an abuse of discretion.¹⁵

To ensure that its assessment of the NEM tariff or any successor tariff complies with this statutory mandate and the Guiding Principles Decision, the Commission should rely on the Lookback Study’s cost-of-service analysis to identify the actual cost to serve NEM customers. The Commission should also give full credit to the benefits of behind-the-meter (“BTM”) generation. The Lookback Study, however, relies on the Avoided Cost Calculator as the sole

¹³ Pub. Util. Code § 2827.1(b)(4) (emphasis added).

¹⁴ See D.21-02-007, Guiding Principles Decision at p. 13 (“[R]equests for changes to the Avoided Cost Calculator in this proceeding will not be considered. However, we underscore that in D.20-04-010, the Commission concluded that ‘consideration of the benefits of grid services provided by specific distributed energy resources should be addressed in resource-specific proceedings.’”).

¹⁵ See *Center for Biological Diversity v. National Highway Traffic Safety Administration* (9th Cir. 2008) 538 F.3d 1172, 1198 (holding that an agency rule was arbitrary and capricious for failing to adequately monetize environmental factors, and stating: “even if [an agency] may use a cost-benefit analysis to determine the . . . standard, it cannot put a thumb on the scale by undervaluing the benefits and overvaluing the costs of more stringent standards.”); *National Association of Home Builders v. E.P.A.* (D.C. Cir. 2012) 682 F.3d 1032, 1040 (“[W]hen an agency decides to rely on a cost-benefit analysis as part of its rulemaking, a serious flaw undermining that analysis can render the rule unreasonable.”); see also Jonathan S. Masur & Eric A. Posner, *Unquantified Benefits and the Problem of Regulation Under Uncertainty*, 102 Cornell L. Rev. 87, 89 (Nov. 2016) (“Cost-benefit analysis is a decision procedure that requires the decision-maker to estimate both the benefits and the costs of a regulation in monetary terms. If it chooses not to monetize all the benefits or all the costs, it is not doing cost-benefit analysis. If it is not doing cost-benefit analysis, what is it doing?”); *id.* at p. 92 (“[A]gencies’ failures to quantify benefits are almost certainly masking errors of over-regulation and under-regulation.”).

determinant of the benefits of BTM generation. As detailed below, the Avoided Cost Calculator underestimates many of the concrete benefits of BTM generation, including its ability to eliminate substantial transmission and distribution costs, and its significant societal benefits, including GHG reductions and system resiliency and reliability. Therefore, the Commission should not rely on the Avoided Cost Calculator as the primary indicator of the cost effectiveness of any NEM tariff.

A. The Commission should use the cost-of-service analysis as the basis for establishing the cost of NEM solar.

The NEM 2.0 Lookback Study’s cost-of-service analysis determines the actual costs to serve NEM customers based on a comparison of “the customer bill from the analysis year to the utility’s costs of servicing the customer in that year.”¹⁶ The cost-of-service analysis includes the marginal cost of energy generation and capacity, transmission and distribution costs, regulatory costs, fixed costs, and a customers’ first-year NEM costs.¹⁷ None of the anti-NEM parties identified any elements that were improperly excluded from the Lookback Study’s final cost-of-service analysis.¹⁸

Because the cost-of-service analysis relies on the utilities’ General Rate Case filings and other Commission ratemaking proceedings,¹⁹ the analysis uses actual data that can be checked

¹⁶ PCF-15 at p. 45 [Lookback Study].

¹⁷ *Ibid.*

¹⁸ *See, e.g.*, Reporter’s Transcript Vol. 9, 1620:3-7 (Testimony of TURN witness Michele Chait) (“I did not review Verdant’s work for the cost of service results.”); Reporter’s Transcript Vol. 10, 1849:19-1850:3 (Testimony of NRDC witness Mohit Chhabra) (“Q: Did you provide any comments identifying specific deficiencies or general deficiencies in the cost of service analysis? A: . . . I didn’t submit any comments unless I’m mistaken.”); *see also* PCF-15 at pp. 124, 128 [Lookback Study] (describing steps taken to incorporate parties’ feedback regarding the cost-of-service analysis prior to the final draft of the Lookback Study).

¹⁹ PCF-15 at p. 10 [Lookback Study].

against those proceedings. As a result, the cost-of-service analysis “provides a transparent approach to approximating components of the utility’s full cost of service.”²⁰ The General Rate Case proceedings establish a utility’s revenue requirement based on the cost of service.²¹ Indeed, the cost of service is a guiding principle in ratemaking.²² As stated by one Joint Utilities witness, “[t]he basis of all rates should be the cost of service.”²³ Thus, even the Joint Utilities admit that basing rates on the cost of service should serve as “the foundation of an appropriate NEM successor tariff.”²⁴

In addition to closely tracking the Commission’s well-settled methods to establish rates, the cost-of-service analysis in the NEM 2.0 Lookback Study also provides a more accurate assessment of any cost shift occurring as a result of the NEM tariffs. By comparing the utility’s full cost of service to a customer’s bills, the Lookback Study calculated the amount that NEM

²⁰ *Id.* at pp. 45-46.

²¹ Reporter’s Transcript Vol. 2, 347:19-348:13 (Testimony of Joint Utilities’ Witnesses A. Pierce, R. Thomas, C. Kerrigan) (“Q: And so do you agree that cost of service is generally the metric for establishing customer rates? A: Cost of service sets the basis for rates. . . . [W]hen you set rates, it all starts with marginal cost and cost of service studies; . . . And then based on those cost of service studies, you then determine how much revenue’s allocated to each rate. Then the cost of service, the marginal cost then form the basis of the ratesetting itself.”).

²² Reporter’s Transcript Vol. 1, 87:12-22 (Testimony of Joint Utilities’ Witness Dr. C. Peterman) (“Q: [D]o you agree that the cost of service . . . is generally the metric used for establishing customer rates? A: It is a guiding principle. As you just talked about, it is oftentimes an aspiration.”).

²³ Reporter’s Transcript Vol. 2, 347:13-18 (Testimony of Joint Utilities’ Witnesses A. Pierce, R. Thomas, C. Kerrigan).

²⁴ IOU-01 at p. 18 [R.20-08-020, Corrected Joint IOU Opening Testimony of Southern California Edison Company (U 338-E), Pacific Gas and Electric Company (U 39-E) and San Diego Gas & Electric Company (U 902-E) on Issues 2-6 of Joint Assigned Commissioner’s Scoping Memo and Administrative Law Judge Ruling Directing Comments on Proposed Guiding Principles (June 18, 2021) (“Joint Utilities’ Opening Testimony”)].

participants are over- or under-paying relative to the utility's cost to serve them.²⁵ The study explained that, because a utility's revenue requirement is based on the utility's costs to serve all customers and is recovered from all customers, if one group is underpaying, another group must be overpaying to make up the deficit. In other words, over- and under-payments show what costs are being shifted from one group to another.²⁶ Even TURN agreed that the cost of service analysis is a method for quantifying a cost shift.²⁷

The Lookback Study concludes that the NEM 2.0 tariff results in a considerably smaller cost shift than that posited by the anti-NEM parties. Specifically, the Lookback Study demonstrates that, in the 2019 study year, non-residential NEM customers were paying approximately \$117.5 million more than the cost to serve them.²⁸ On the other hand, the Lookback Study calculates that residential NEM customers were paying \$618.6 million less than the cost to serve them that year.²⁹ Thus, when non-residential and residential customers are considered together, the Lookback Study shows that the costs shifted by NEM customers equal \$501.1 million—far less than the \$3.4 billion proposed by various parties.³⁰

²⁵ PCF-15 at p. 48 [Lookback Study].

²⁶ Reporter's Transcript Vol. 9, 1619:14-21 (Testimony of TURN witness M. Chait) ("Q: [] And because these payments by these customers were higher than the cost of service, were these payments effectively subsidizing other customers? A: Provided Verdant's analysis was performed correctly and that these quantifications are correct, I believe that that's a conclusion that you could draw.").

²⁷ Reporter's Transcript Vol. 9, 1617:8-12 (Testimony of TURN witness M. Chait) ("Q: [] Do you believe that the cost of service analysis indicates whether a cost shift is occurring? A: I think that it is one metric that can be used to quantify a cost shift.").

²⁸ PCF-15 at p. 96 [Lookback Study].

²⁹ *Id.* at p. 97.

³⁰ PCF-24 at p. 4 [Rebuttal Testimony of B. Powers].

The Energy Institute at Haas’ report, “Designing Electricity Rates for an Equitable Energy Transition” (“Haas paper”) also supports the Lookback Study’s cost-of-service assessment.³¹ Protect Our Communities witness Bill Powers accepted for the sake of argument the Haas paper’s assessment that the cost-recovery gap attributable to NEM customers is reflected by the fixed charge components of residential rates. Mr. Powers then conservatively calculated the size of that cost-recovery gap by multiplying the total number of NEM customers by the average electricity usage and the fixed charge component of the utilities’ respective residential rates, and then subtracting the fixed charges paid by current NEM customers. The result is a gap similar in magnitude to the cost shift suggested by the cost-of-service analysis in the NEM 2.0 Lookback Study.³²

B. The Lookback Study underestimates the benefits of BTM generation.

When assessing the benefits of BTM generation, the Lookback Study relies only on the Avoided Cost Calculator.³³ However, the Avoided Cost Calculator fails to provide a full account of customer-sited renewable generation’s benefits, including its full transmission and distribution benefits, avoided GHG emissions, and resiliency and reliability. To comply with its statutory mandate, the Commission should ensure that any successor tariff properly accounts for the full benefits of customer-sited renewable generation.³⁴

1. The Avoided Cost Calculator does not adequately quantify avoided transmission costs.

³¹ *Id.* at pp. 6-7.

³² *Ibid.*

³³ PCF-15 at p. 56-57 [Lookback Study].

³⁴ *See* D.21-02-007, Guiding Principles Decision at p. 13.

In the recent past, distributed generation has actually avoided transmission expenses in California.³⁵ The Avoided Cost Calculator, however, does not fully account for these avoided costs because it does not capture the value of specific projects that have been cancelled as no longer needed due to NEM solar.³⁶ Instead of crediting these actual cancelled transmission costs, the Avoided Cost Calculator presumes proposed transmission projects will be built and only attributes a modest hypothetical value to distributed generation for deferring the transmission construction start date into the future.³⁷ In so doing, it significantly understates the value of NEM solar.

The testimony of Tyson Siegele and the rebuttal testimony of Bill Powers on behalf of the Protect Our Communities Foundation discussed the SDG&E Sunrise Powerlink project to provide an illustrative calculation of the value of distributed generation in deferring specific transmission projects. While SDG&E's Sunrise Powerlink project was an outlier at the time in terms of its cost,³⁸ the example remains illustrative of current conditions because of the

³⁵ Reporter's Transcript Vol. 5, 890:10-21 (Testimony of Cal Advocates Witness K. Rounds) (“[Q:] Do you agree that distributed generation has, in the last five years, avoided transmission and distribution costs? A: Through projects specifically that are valid for those specified values, yes, I do think they have been instrumental in that regard. . . . They represent [a] benefit to all customers of distributed generation.”).

³⁶ PAO-01, p. 3-10 [R.20-08-020, Public Advocates Office of the California Public Utilities Commission, Prepared Testimony for a Successor Tariff to the Current Net Energy Metering Tariffs (June 18, 2021) (“Cal Advocates Opening Testimony”)].

³⁷ See Reporter's Transcript Vol. 5, 889:19-890:9 (Testimony of Cal Advocates witness K. Rounds) (testifying that the Avoided Cost Calculator “captures unspecified transmission avoided costs; which means that it’s trying to capture the value that DERs would bring to the transmission system in the hypothetical” and that it does not capture specific projects).

³⁸ PCF-24 at p. 35 [Rebuttal Testimony of B. Powers].

significant overall increase in costs from 2012 to the present.³⁹ The rebuttal testimony of Mr. Powers estimates that, if SDG&E's Sunrise Powerlink project had been replaced by distributed generation, each distributed 6 kW NEM system would have avoided over \$1,000 per year in transmission costs.⁴⁰ This avoided cost is significantly higher than the avoided transmission value of less than \$87 per year per 6kW NEM system included in the Avoided Cost Calculator.⁴¹ Additionally, when compared to the estimated net annual cost-of-service cost shift of \$580-\$780 per NEM system from the Haas Report,⁴² the value derived from the actual cost of Sunrise Powerlink demonstrates that NEM systems' benefits in avoiding costs related to specific transmission projects are enough to eliminate the claimed cost shift.

CAISO has also recently identified unanticipated growth in NEM solar as a contributing reason for the cancellation of \$2.6 billion in proposed transmission projects in PG&E service territory.⁴³ Mr. Powers calculated that these cancelled projects translated to annual transmission savings of over \$600 per year per each distributed generation system in PG&E's service territory.⁴⁴ CAISO may have been able to identify additional transmission projects in SDG&E and SCE's service territories that also would have been cancelled due to the growth of

³⁹ Reporter's Transcript Vol. 6, 982:2-25 (Testimony of Protect Our Communities Foundation witness T. Siegele).

⁴⁰ PCF-24 at p. 37 [Rebuttal Testimony of B. Powers].

⁴¹ PCF-76 at p. 53, Table 20 [2021 Distributed Energy Resources ACC Documentation, V. 1b, (June 22, 2021)] (SDG&E Marginal Transmission Capacity Cost = \$14.44/kW-yr). Therefore, avoided transmission capacity value of 6 kW NEM system in SDG&E territory = 6 kW x \$14.44/kW-yr = \$86.64/yr.

⁴² PCF-24 at p. 40, Table 8 [Rebuttal Testimony of B. Powers].

⁴³ *Id.* at p. 18 (citing CAISO, 2017-2018 ISO Transmission Plan (Mar. 22, 2018) at pp. 2-3 [PCF-04]).

⁴⁴ *Id.* at pp. 21-22.

distributed generation if CAISO had had additional visibility into those utilities' sub-transmission projects.⁴⁵ Although CAISO later qualified its comments, it did not deny that distributed generation has contributed to eliminating the need for the projects.⁴⁶ In fact, CAISO's remarks reconfirmed that DERs can and do eliminate transmission costs.⁴⁷ CAISO simply argues that rather than attributing the cost reductions to all DERs it would prefer the avoided costs be more granularly attributed to specific projects—a laborious and time consuming process.

Moreover, as CAISO acknowledged,⁴⁸ distributed generation decreases gross peak load and shifts daily peak loads later in the day. By decreasing peak loads, NEM solar also contributes to eliminating the need for transmission upgrades to serve higher peaks. For example, the Agricultural Energy Consumers and the California Farm Bureau Federation's witness concluded that NEM capacity has deferred 6,500 MW of capacity additions from 2006 to the present. He noted that there was a close correlation between the growth of NEM and the decrease in load

⁴⁵ CAISO, 2017-2018 Transmission Plan (Mar. 22, 2018) at p. 17, fn. 11 (“Because most of PG&E’s low voltage sub-transmission facilities are under ISO operational control, there are a relatively large number of previously approved small and substantially unrelated projects in the PG&E area that were predominantly load-growth driven. This enabled the ISO to conduct a more programmatic approach in reviewing those projects . . . in this planning cycle. In contrast, the ISO has focused on a more case-by-case basis on a smaller number of larger and more heavily inter-related projects in the SDG&E and SCE service areas mitigating the loss of the San Onofre Nuclear Generating Station and once-through-cooling thermal generation retirements.”).

⁴⁶ IOU-07 at pp. 3-5 [R.14-08-013, Reply Comments of the California Independent System Operator Corporation (Aug. 23, 2019)].

⁴⁷ *Id.* at pp. 4-5 (“By meeting specific reliability or economic needs, a tailored portfolio of DERs can provide value in eliminating the need for specific transmission projects on a case-by-case basis” and “...avoided transmission costs from DERs are inherently project, location, and need specific.”)

⁴⁸ *Id.* at pp. 3-4.

over that period.⁴⁹ Protect Our Communities Foundation witness Tyson Siegele also described how NEM solar has reduced peak load and decreased the need for additional transmission infrastructure, in part by moving the time of peak load later in the day.⁵⁰

The 2021 Distributed Energy Resources Avoided Cost Calculator Documentation (“Documentation”) also shows that the Avoided Cost Calculator’s input value for transmission vastly understates transmission costs. The Documentation shows that the Avoided Cost Calculator used a PG&E forecast of \$229.8M in capacity-related transmission projects for the five years from 2020 through 2025 to derive its marginal transmission capacity cost.⁵¹ The

⁴⁹ AEC-01 at p. 9 [R.20-08-020, Testimony of Richard McCann, Ph.D., on behalf of the Agricultural Energy Consumers Association and the California Farm Bureau Federation (June 18, 2021)] (“Prior to 2006, the CAISO peak was growing at annual rate of 0.97%; after 2006, peak loads have declined at a 0.28% trend. Over the same period, solar NEM capacity grew by over 9,200 megawatts. The correlation factor or “R-squared” between the decline in peak load after 2006 and the incremental NEM additions is 0.93, with 1.0 being perfect correlation. Based on these calculations, NEM capacity has deferred 6,500 megawatts of capacity additions over this period, saving all ratepayers both reliability and energy costs while delivering zero-carbon energy.”).

⁵⁰ PCF-01 at pp. 6-8 [R.20-08-020, Prepared Testimony of Tyson Siegele on behalf of the Protect Our Communities Foundation (June 18, 2021) (“Testimony of T. Siegele”)]; *see also* Reporter’s Transcript Vol. 6, 989:1-990:7 (Testimony of Protect Our Communities Foundation witness Tyson Siegele) (“[W]hen I say ‘Moving the peak to later in the day,’ what I’m referring to is reducing the peak load earlier in the day such that the peak load in future years continues to move further and further into the afternoon and evening hours. And so by reducing the peak load and in turn moving it later in the day, that does decrease the amount of infrastructure that would be needed to serve customers. Q: Why would moving the peak later in the day reduce the amount of infrastructure needed to serve customers? You still have to meet the peak, don’t you? A: Correct. . . . [T]ransmission and distribution infrastructure is designed and built . . . to accommodate the peak. If the peak is the same or decreasing, then that means that approximately the same amount of infrastructure that currently exists should be able to serve a lower peak in the future. . . . When I’m referring to the peak being later in the day, . . . if you take a look at demand curves, what you see is later in the day you have lower peak demand. And so by pushing the peak to later in the day, what you also see is []generally a lower peak demand.”).

⁵¹ PCF-76 at p. 45 [CPUC, 2021 Distributed Energy Resources Avoided Cost Calculator Documentation (June 22, 2021)].

forecasted amounts for SCE and SDG&E were \$230 million and \$21.85 million, respectively.⁵² Thus, the Avoided Cost Calculator input a total of \$481,650,000 in capacity-related transmission projects for all three utilities for 2020-2025.⁵³ In contrast, the transmission-related revenue requirements for the three utilities in 2021 was more than \$4 billion dollars.⁵⁴ There is a gross mismatch between the transmission costs input by the Avoided Cost Calculator—i.e., almost \$500 million over *five* years—and the utilities’ actual transmission spending—over \$4 billion in one year alone. This mismatch between inputs into the Avoided Cost Calculator and actual costs further suggests that the Avoided Cost Calculator does not adequately account for NEM solar’s transmission-related benefits.

2. The Avoided Cost Calculator does not quantify resiliency benefits of NEM solar.

The Avoided Cost Calculator does not include a value for the resiliency benefits of customer-sited renewable generation paired with storage.⁵⁵ Instead, the Avoided Cost

⁵² *Id.* at pp. 47, 52.

⁵³ Reporter’s Transcript Vol. 12 2155:6-17 (Testimony of Cal Advocates Witnesses A. Buccholz and K. Rounds) (“Q: . . . So for all three utilities between 2021 and 2025, the Avoided Cost Calculator projects a total expenditure [on capacity-related transmission projects] of \$481,650,000; correct? . . . A: I don’t remember the figures to do the mental math, but I will take at face value that that is the total. Q: And that’s to supply a total of 2,360 megawatts of projected load growth? . . . Witness Rounds: Sure.”).

⁵⁴ PCF-35 at pg. 38, Table 6 [CPUC, 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 (Feb. 2021)].

⁵⁵ Reporter’s Transcript Vol. 3, 408:24-409:9 (Testimony of Joint Utilities witness S. Wray) (“Q: And has [the] value of resiliency been addressed in any other proceedings that you’re aware of? A: Yes. It was addressed in the IDER proceeding on the Avoided Cost Calculator and [it] was determined that it should not be included in the avoided costs, and that it’s a participant benefit, and, therefore, not to be included in the [ACC].”)

Calculator—and various other parties to this proceeding—considers resiliency to be a solely private benefit that accrues to the owner of the BTM system, rather than to society as a whole.⁵⁶

However, the evidence in this proceeding demonstrates that BTM systems with solar and paired storage generate resiliency-related benefits that accrue to society as a whole, and not just to individual participants. For example, resiliency includes the ability to generate onsite power during a heat wave.⁵⁷ When customers lose power during a heat wave, they may no longer have the ability to cool their homes.⁵⁸ This loss of cooling could lead to adverse health consequences, such as increased emergency room visits and other adverse societal impacts,⁵⁹ including, in some circumstances, deaths.⁶⁰ A solar system paired with storage allows a customer to continue to meet electric power demand despite grid disruptions and avoid these costs.⁶¹ Further, the resiliency-related benefits of customer-sited generation paired with storage go beyond avoiding adverse health consequences. Benefits of resilience also include avoiding food spoilage and

⁵⁶ *Ibid.*; see also Reporter’s Transcript Vol. 5, 891:10-19 (Testimony of Cal Advocates witness K. Rounds) (asserting that resiliency benefits accrue only to individuals who own BTM solar systems paired with storage).

⁵⁷ Reporter’s Transcript Vol. 5, 892:6-9 (Testimony of Cal Advocates witness K. Rounds).

⁵⁸ Reporter’s Transcript Vol. 3, 403:16-22 (Testimony of Joint Utilities witness S. Wray) (“If the customer is part of the power disruption and they don’t have power, then it would be difficult to cool their home.”); Reporter’s Transcript Vol. 5, 894:5-9 (Testimony of Cal Advocates witness K. Rounds); Reporter’s Transcript Vol. 9, 1628:3-7 (Testimony of TURN witness M. Chait).

⁵⁹ Reporter’s Transcript Vol. 5, 894:10-895:5 (Testimony of Cal Advocates witness K. Rounds); Reporter’s Transcript Vol. 9, 1628:8-12 (Testimony of TURN witness M. Chait).

⁶⁰ Reporter’s Transcript Vol. 3, 405:15-24 (Testimony of Joint Utilities witness S. Wray).

⁶¹ TRN-01 at pp. 56-57 [R.20-08-020, Direct Testimony of Michele Chait on Net Energy Metering Reform Proposals, Submitted on behalf of The Utility Reform Network (July 30, 2021) (“M. Chait Testimony”)].

waste due to loss of refrigeration, as well as continuity of education during times of remote schooling or otherwise.⁶²

Even though organizations like TURN may not have “quantified . . . or thought about” how to quantify societal benefits related to resilience,⁶³ and despite the Avoided Cost Calculator’s omission of a value for resiliency-related benefits of customer-sited generation, these benefits exist. Because society as a whole benefits from decreased emergency room visits, deaths, food waste, and educational disruptions, these benefits should be weighed in the evaluation of customer-sited generation’s costs and benefits.

3. The Avoided Cost Calculator does not adequately account for the full air quality and climate benefits of NEM solar.

Although the Avoided Cost Calculator includes values for avoided costs related to greenhouse gas emissions and in-state methane leakage, these values are incomplete and do not account for other significant benefits of NEM solar. For example, the Avoided Cost Calculator’s GHG adder is intended to capture the avoided costs to the electric system of replacing distributed generation with utility-scale renewable generation.⁶⁴ This value, however, fails to account for the

⁶²See Reporter’s Transcript Vol. 9, 1628:23-1629:14 (Testimony of TURN witness M. Chait) (“Q: And do you agree that the loss of power during a multiday utility shutoff can result in food spoilage? A: Yes. Q: Or that it could prevent children from logging into school or completing homework? A: I think that that’s possible. Q: Do you agree that there’s a societal value to avoiding emergency room visits or premature deaths? A: I think that there’s a personal value to that and there’s probably a societal value to it also. I haven’t quantified that or thought about it. Q: Okay. And do you agree that there’s a societal value to ensuring children can attend schools consistently, [and] do their homework? A: Absolutely.”); see also Reporter’s Transcript Vol. 3 406:19-23, 407:5-16 (Testimony of Joint Utilities witness S. Wray).

⁶³ Reporter’s Transcript Vol. 9, 1629:3-9 (Testimony of TURN witness M. Chait).

⁶⁴ SVS-03 at pp. 20-21 [R.20-08-020, Prepared Direct Testimony of R. Thomas Beach on behalf of the Solar Energy Industries Association and Vote Solar (July 22, 2021) (“Testimony of R.T. Beach”)].

additional climate-related benefits of distributed—*or* utility-scale—renewable generation compared to fossil-fuel generation.⁶⁵ In another example, the avoided costs related to in-state methane leakage credited by the Avoided Cost Calculator are artificially limited. California procures approximately 90% of its natural gas from out-of-state,⁶⁶ but the Avoided Cost Calculator does not capture the benefits related to avoided out-of-state methane leakage.⁶⁷ Finally, renewable generation that replaces fossil-fuel generation avoids the emissions of air pollutants that are damaging to health. The Avoided Cost Calculator does not include any means of calculating avoided health costs related to customer-sited renewable generation.⁶⁸

4. The 2021 Avoided Cost Calculator is the subject of a pending application for rehearing.

Finally, Resolution E-5150, the resolution adopting the 2021 Avoided Cost Calculator, remains the subject of a pending application for rehearing. The application for rehearing asserts, among other things, that the process that led to the adoption of Resolution E-5150 was procedurally defective, the process denied the due process rights of the parties, and “the Resolution is grounded in several factual errors which undermine its legitimacy.”⁶⁹ Thus, the 2021 Avoided Cost Calculator may be modified as a result of the application for rehearing. Even if it is not, if the Avoided Cost Calculator begins to determine export compensation rates for

⁶⁵ *Ibid.*

⁶⁶ *Ibid.*

⁶⁷ *Ibid.*

⁶⁸ *Ibid.*

⁶⁹ A.21-07-___, Application of the California Solar & Storage Association, the Solar Energy Industries Association, and Vote Solar for Rehearing of Resolution E-5150 (July 28, 2021) at p. 1.

customer-sited generation, future updates will likely become the subject of protracted disputes as parties contest the extent to which it properly accounts for the benefits of BTM generation.⁷⁰

C. When the costs and benefits of NEM solar are properly calculated, any alleged cost shift is eliminated.

The cost-of-service analysis in the NEM 2.0 Lookback Study demonstrates that the total costs shifted from NEM participants to non-participants is in the order of \$500 million. A full accounting of the benefits of BTM solar generation in terms of avoided transmission costs alone would eliminate this gap in the cost of service. The value of NEM in avoiding transmission costs justified as needed for reliability or greenhouse gas reduction is likely in the order of \$1,400 to \$1,700 per 6 kW system per year.⁷¹ Multiplied by the number of NEM systems in operation, this alone is more than sufficient to eliminate the \$500 million cost shift indicated by the cost-of-service analysis.

Because the benefits of NEM, properly credited, reduce or eliminate any cost shift, the Commission should refrain from making drastic reforms to the current NEM tariffs and should instead focus on more targeted refinements. The failure to account for these benefits would be

⁷⁰ SVS-04 at p. ii [R.20-08-020, Prepared Rebuttal Testimony of R. Thomas Beach on behalf of the Solar Energy Industries Association and Vote Solar (July 22, 2021)] (“Complicating the picture is the evident volatility in the Avoided Cost Calculator (ACC) tool that the Commission uses to evaluate the benefits of all DERs. Under the 2021 ACC avoided costs recently adopted by the Commission in Resolution E-5150, the value of energy efficiency and distributed solar drops by 50% and over 60%, respectively, compared to the 2020 ACC which the Commission adopted a year earlier. . . . This volatility in the ACC may continue, as there are significant major issues to be litigated for the 2022 ACC.”).

⁷¹ PCF-24 at p. 40, Table 8 [Rebuttal Testimony of B. Powers] (detailing combined avoided costs for projects relied on for RPS transmission and reliability).

inconsistent with the Public Utilities Code and the Guiding Principles Decision and would result in an abuse of discretion.⁷²

III. Issue 3: What method should the Commission use to analyze the program elements identified in Issue 4 and the resulting proposals, while ensuring that the proposals comply with the guiding principles?

A. The Commission should use the Societal Cost Test variation of the Total Resource Cost test to analyze the cost-effectiveness of the successor tariffs.

The Guiding Principles Decision directs parties to use the Total Resource Cost test as the primary test for evaluating the cost-effectiveness of distributed energy resources.⁷³ However, to comply with its statutory obligation to ensure that the costs and benefits of any NEM tariff are approximately equal, the Commission must consider the societal benefits of distributed energy resources. As Cal Advocates conceded, these societal benefits “have a quantitative value greater than zero.”⁷⁴ TURN’s witness also agreed that the Commission should not ignore societal benefits.⁷⁵ Instead, she noted that the Standard Practice Manual’s societal test would be “appropriate to quantify societal benefits that would not be calculated in the [Total Resource Cost test].”⁷⁶ The societal test constitutes a variation of the Total Resource Cost test that captures

⁷² See, e.g., *Center for Biological Diversity*, 538 F.3d at 1198; *National Association of Home Builders*, 682 F.3d at 1040.

⁷³ D.21-02-007, Guiding Principles Decision at pp. 6-7 (citing D.19-05-019).

⁷⁴ Reporter’s Transcript Vol. 5, 875:17-23 (Testimony of Cal Advocates Witness K. Rounds) (“[Q:] In your opinion, do distributed energy resources provide any societal benefits? A: Yes. Q: Do you believe such benefits have a quantitative value greater than zero? A: Yes.”)

⁷⁵ Reporter’s Transcript Vol. 9, 1630:17-21 (Testimony of TURN witness M. Chait) (Q: “[I]f the Avoided Cost Calculator does not quantify a benefit of NEM solar, is it TURN’s position that that benefit should be excluded from consideration in this proceeding? A: No.”).

⁷⁶ Reporter’s Transcript Vol. 9, 1630:22-1631:2 (Testimony of TURN witness M. Chait) (“The Standard Practice Manual has a test called the Societal Test. And it’s similar to the Total Resource Cost test that we are required to use in this proceeding. So my belief is that that test would be appropriate to quantify societal benefits that would not be calculated in the TRC.”).

a broader range of benefits.⁷⁷ Notably, the Standard Practice Manual states that the societal test variation of the Total Resource Cost test is capable of “capturing *total benefits* (avoided supply costs plus, in the case of the societal test variation, externalities)” of a program.⁷⁸

Although the Commission has not yet approved all elements of the Societal Cost Test for use in other proceedings,⁷⁹ this delay does not mean that societal benefits do not exist. Nor does it mean that the Commission may ignore those benefits. The Legislature has required the Commission to take into account the “total” benefits of customer-sited generation:⁸⁰ the Societal Cost Test offers the Commission the means to comply with this requirement.

B. The RIM test should not serve as the metric for determining the cost effectiveness of BTM generation.

1. Reliance on the RIM test is not consistent with the Guiding Principles Decision.

Under the Guiding Principles decision, the Commission should not rely on the RIM test to determine the cost effectiveness of any NEM tariff.⁸¹ The Standard Practice Manual also warns that the “[r]esults of the RIM test are probably less certain than those of other tests because the test is sensitive to the differences between long-term projections of marginal costs and long-term projections of rates, two cost streams that are difficult to quantify with certainty.”⁸² Because

⁷⁷ See CPUC, California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects (October 2001) at p. 19.

⁷⁸ See *id.* at p. 21.

⁷⁹ See D.19-05-019, Decision Adopting Cost-Effectiveness Analysis Framework Policies for All Distributed Energy Resources (May 16, 2019) at pp. 66-67, Ordering Paragraphs 4 through 7 (authorizing testing and evaluation of a Societal Cost Test and describing its components).

⁸⁰ See Pub. Util. Code § 2827.1(b)(4).

⁸¹ D.21-02-007, Guiding Principles Decision at p. 7.

⁸² CPUC, California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects (October 2001) at p. 15.

the RIM test should not serve as the lens through which to evaluate a successor NEM tariff, the cost shift predicted by that test also should not form the basis upon which either NEM 2.0 or a NEM successor tariff is predicated.

The anti-NEM parties nonetheless all rely on a variation of the RIM test⁸³ to argue that BTM generation results in substantial bill savings for NEM customers that unfairly burden other customers.⁸⁴ These parties also design their successor tariffs around eliminating hypothetical bill savings projected by the RIM test. For example, TURN substantially reduces any bill savings for NEM customers by crediting all generation only at avoided costs modified by the CAISO day ahead market for energy generation.⁸⁵ The Joint Utilities would similarly compensate NEM customer exports at avoided costs.⁸⁶ Cal Advocates would only allow crediting for energy consumed and generated simultaneously. Exports to the grid would be credited at a four year average of the avoided cost calculator.⁸⁷ On top of this attempt to eliminate any bill savings on the part of NEM customers, the Joint Utilities, TURN, and Cal Advocates would add on

⁸³ The anti-NEM parties calculate the cost shift as TOTAL NEM CUSTOMER BILL SAVINGS – AVOIDED COSTS. *See, e.g.*, IOU-01 at p. 75 [Joint Utilities’ Opening Testimony]; PAO-01 at p. 2-20 [Cal Advocates Opening Testimony]. This is an arithmetic version of the RIM test, which shows Bill Savings divided by Avoided Costs. *See* TRN-01 at p. 14:8-13 [M. Chait Testimony]; Reporter’s Transcript Vol. 12, 2058:7-14 (Testimony of Cal Advocates Witness N. Chau).

⁸⁴ TRN-01 at p. 9:15-24 [M. Chait Testimony]; Reporter’s Transcript Vol. 9, 1610:9-11 (Testimony of TURN witness M. Chait).

⁸⁵ TRN-01 at p. 45 [M. Chait Testimony].

⁸⁶ *See* IOU-01 at p. 18 [Joint Utilities’ Opening Testimony] (stating that the Joint Utilities’ successor tariff will include an export compensation rate “set at the avoided cost”).

⁸⁷ PAO-01 at pp. 3-16 to 3-23 [Cal Advocates Opening Testimony].

substantial fixed costs that effectively make their NEM successor tariffs uneconomical without direct financial incentives to the customer installing a BTM system.⁸⁸

These parties' heavy reliance on the RIM test's cost shift as the driver of their successor reform tariffs conflicts with the direction of the Guiding Principles Decision. Rather, as described in the previous section, any attempt to identify a "cost shift" should focus on the actual cost of serving NEM customers and the full range of benefits BTM generation provides.

2. The bill savings metric penalizes energy conservation efforts.

Reliance on the RIM test also undervalues the benefits of reducing energy usage from the grid. As TURN and Cal Advocates note, the RIM test reflects the cost to the utility of providing a certain amount of electricity and the lost revenue that results when customers no longer take power from the utility.⁸⁹ Focusing on bill savings by NEM customers leads to absurd results that discourage energy efficiency and conservation. TURN's witness acknowledged that energy efficiency programs cause a cost shift because they result in a reduction in energy use, and therefore, utility revenue:

Q: . . . is it your view that when bill savings increase, if everything else is held equal, the cost shift increases?

A. For energy efficiency, yes, because your throughput is declining, and that is one of the reasons why California's retail rates are relatively high compared to other states because we have many decades of energy efficiency.⁹⁰

⁸⁸ See, e.g., TRN-01 at p. 63:15-16 [M. Chait Testimony] ("For non-CARE customers, the PCT is less than 1.0, indicating that without an incentive participation is not expected to be economic.").

⁸⁹ TRN-01 at p. 14:8-15 [M. Chait Testimony]; Reporter's Transcript Vol. 12, 2071:6-8 (Cal Advocates witness Gutierrez: "The revenue under-collection is essentially equivalent to the customers' total bill savings.").

⁹⁰ Reporter's Transcript Vol. 9, 1614:19-27 (Testimony of TURN witness M. Chait).

In fact, under the RIM test, any program or activity that reduces electricity use from a utility results in a cost shift unless the avoided costs of that program as calculated by the Avoided Cost Calculator exceed the bill savings achieved by the program.⁹¹ Similar anomalous results would occur if someone elects to use a gas powered appliance instead of an electric one. Under a bill savings metric, every time someone uses their gas stove—instead of an electric tea kettle—to heat a pot of water, they are reducing the use of electricity and increasing the cost burden on other users of the electric system.

3. Any consideration of bill savings under the RIM test must properly address simultaneous generation and consumption.

The Guiding Principles Decision indicates that the Commission may consider the RIM test when assessing the cost effectiveness of the NEM tariff.⁹² If the Commission relies on the RIM test at all, it should remove from the “costs” side of the ledger purported customer “bill savings” related to self-generation that is simultaneously consumed on-site.⁹³ As Cal Advocates’ witness confirmed, energy produced and consumed simultaneously on site does not come from the utility.⁹⁴ In fact, the customer’s meter readings do not even reflect this energy consumption

⁹¹ As noted in section II.B, the Avoided Cost Calculator does not adequately account for the benefits of BTM energy generation.

⁹² D.21-02-007, Guiding Principles Decision at pp. 36-37.

⁹³ See CSA-01 at p. 79 [R.20-08-020, Prepared Direct Testimony of Brad Heavner and Joshua Plaisted on behalf of the California Solar and Storage Association (Aug. 2, 2021) (“Testimony of B. Heavner & J. Plaisted”)] (calculating RIM using exports only and excluding self-generation; and explaining: “Calculating RIM to include self-generation also captures generation to supply new load. If a customer purchases an electric vehicle and installs solar and storage to fuel the vehicle, it is not replacing utility sales that previously occurred. This makes the all-generation approach to RIM inaccurate even if the objective is to count utility lost revenue as a cost to non-participating customers.”).

⁹⁴ Reporter’s Transcript Vol. 12, 2060:11-16 (Testimony of Cal Advocates witnesses B. Gutierrez and N. Chau).

or use.⁹⁵ By allowing for retail rate credits for energy simultaneously produced and used on site,⁹⁶ Cal Advocates implicitly recognizes that this usage does not require any power from the utility. The bill savings that occur are the same as when someone avoids the use of energy, and they are effectively credited with the retail rate that energy would have otherwise cost had they used power from the utility.

Bill savings that NEM customers enjoy for power that is generated and used on-site simultaneously are no different than bill savings from any energy conservation effort that does not rely on electric power from the grid, such as hanging laundry to dry or using a gas dryer instead of using an electric dryer.⁹⁷ Cal Advocates claims that energy conservation efforts should be treated different from self-consuming BTM-solar generation because utility forecasts account for energy conservation when making procurement decisions.⁹⁸ The same Cal Advocates witness, however, later admitted that the utilities include BTM solar growth when they project future load.⁹⁹ In both cases, utilities are able to adjust their procurement and to account for energy conservation and BTM growth. As a result, that generation and consumption is not increasing the costs borne by other customers, and it should not be included as a “cost” in the RIM test.

⁹⁵ *Id.* at 2059:8-16, 2059:23-28.

⁹⁶ *See* PAO-01 at p. 3-6, lines 2-3 [Cal Advocates Opening Testimony].

⁹⁷ Of course, a customer hanging their clothes or using a BTM solar system to power a dryer creates far more benefit to public health and climate than a gas dryer and any tariff should account for those benefits.

⁹⁸ Reporter’s Transcript Vol. 12, 2071:17-22 (Testimony of Cal Advocates witness B. Gutierrez).

⁹⁹ *Id.* at 2088:6-12 (“Q: So when utilities project . . . future load, do they take into account projected . . . behind-the-meter solar system[s]? . . . [A (Mr. Gutierrez):] Yes, typically, they do include . . . BTM PV growth in their sales forecast.”).

C. The Commission should evaluate successor tariffs based on whether customers would receive an attractive economic value proposition.

1. The successor tariff must maintain approximate current rates of adoption of customer-sited renewable generation.

Under Public Utilities Code section 2827.1(b)(1) and the first guiding principle in this proceeding, the Commission must adopt a successor tariff that ensures that customer-sited renewable generation “continues to grow sustainably.” The plain language of sub-section 2827.1(b)(1) suggests that the successor tariff must allow for adoption of customer-sited renewable generation at similar rates to those under the current tariffs.¹⁰⁰ The language emphasizes the need for continued expansion of customer-sited generation: the provision calls for sustainable *growth*—not sustainable stasis. Further, the provision emphasizes continuity in rates of adoption of customer-sited generation. Its requirement that distributed generation “continue[] to grow sustainably” implies, first, that distributed generation is *currently* growing at sustainable rates—otherwise, there would be no sustainable growth to “continue.” Second, the inclusion of “continues” implies that rates of adoption under the new successor tariff should be similar to existing rates.¹⁰¹

¹⁰⁰ See *Stephens v. County of Tulare* (2006) 38 Cal.4th 793, 801-02 (“When interpreting statutes, ‘we follow the Legislature’s intent, as exhibited by the plain meaning of the actual words of the law.’ . . . ‘Because the statutory language is generally the most reliable indicator of that intent, we look first at the words themselves, giving them their usual and ordinary meaning and construing them in context.’”) (quoting, respectively, *Equilon Enterprises v. Consumer Cause, Inc.* (2002) 29 Cal.4th 53, 59; *People v. Johnson* (2002) 28 Cal.4th 240, 244); *Southern California Edison Co. v. Public Utilities Commission* (2000) 85 Cal.App.4th 1086, 1103 (“In determining the meaning of a statute, ‘we look first to the words of the statute, giving the language its usual ordinary meaning. If there is no ambiguity in the language, we presume the Legislature meant what it said, and the plain meaning of the statute governs.’”) (quoting *Hunt v. Superior Court* (1999) 21 Cal.4th 984, 1000).

¹⁰¹ See “Continue,” Merriam-Webster.com Dictionary, Merriam-Webster, <https://www.merriam-webster.com/dictionary/continue> (accessed Aug. 26, 2021) (defining “continue” as “to maintain (footnote continued on next page)

The Legislature drafted a requirement that emphasizes both growth and continuity of renewable customer-sited generation. If the Legislature had wanted to draft a provision requiring the Commission to adopt a successor tariff that would limit or halt the expansion of customer-sited renewable generation, it could have done so. It did not.

Moreover, the Legislature’s directive to ensure that distributed solar “continues to grow sustainably” encompasses the growth of the distributed solar industry. While some parties have taken the contrary view,¹⁰² the legislative history and the larger statutory scheme containing section 2827.1 show that the Legislature intended to ensure the continued growth of the industry. For example, the Assembly Committee on Utilities and Commerce’s analysis of AB 327 emphasized the successor tariff’s relationship to solar companies. It stated that, in evaluating successor tariffs, the Commission will need to “assess whether [] changes to NEM will impact *the sustained growth of the industry.*”¹⁰³

Sustainable growth should also be understood in the context of the legislative findings in section 2827(a). There, the legislature found and declared that the NEM program will “encourage substantial private investment in renewable energy resources” and “stimulate in-state economic growth.” Both of these factors—and the fact that, as a practical matter, distributed

without interruption a condition, course, or action; “keep up, maintain”); *see also Stephens*, 38 Cal.4th at 802 (citing to Webster’s dictionary to discern the plain meaning of a word).

¹⁰² *See* Reporter’s Transcript Vol. 2, 208:11-17 (Testimony of Joint Utilities Witness Dr. S. Tierney) (“Q: When you think about what it means to ensure that customer-sited renewable distributed generation continues to grow sustainably, do you take into account . . . the successor tariff’s impact on the solar industry’s ability to grow?” A: Not directly.”).

¹⁰³ Assembly Committee on Utilities and Commerce (Steven Bradford, Chair), Bill Analysis: AB 327 (Perea) (Date of Hearing: Sept. 11, 2012), at p. 6, available at https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201320140AB327# (emphasis added).

generation cannot continue to grow without a robust supporting industry—show that “growth” concerns not only the growth of distributed renewable generation, but also of the industries providing those resources.

2. Sustainable growth requires a continued economic value proposition for prospective customers.

The continued growth of distributed renewable generation requires an economic value proposition for prospective customers. While some customers may adopt an expensive solar system regardless of its economics¹⁰⁴—e.g., because it represents an opportunity personally to combat climate change—most customers will only invest if they will recover their costs. Thus, CALSSA identified a reasonable cost-recovery period, or payback period, as “[t]he best measure of whether growth in distributed generation can be steady.”¹⁰⁵ CALSSA further noted that a “focus on customer economics” is “the key to ensuring continued customer interest in solar.”¹⁰⁶ SEIA/Vote Solar likewise stated that sustainable growth “requires reasonable economics for participants.”¹⁰⁷

Support for this proposition comes not only from the solar industry parties. For example, the Environmental Working Group (“EWG”) states that, for solar to “grow sustainably,” there must be a “sufficiently economically attractive product for a large number of residents to choose

¹⁰⁴ See, e.g., Reporter’s Transcript Vol. 2, 201:11-12 (Testimony of Joint Utilities witness Dr. S. Tierney) (noting that customers “may have been seeking other values besides just bill[] savings.”).

¹⁰⁵ CSA-01 at p. 60 [Testimony of B. Heavner & J. Plaisted].

¹⁰⁶ *Id.* at p. 61.

¹⁰⁷ SVS-03 at p. 27 [Testimony of R.T. Beach].

to invest in it.”¹⁰⁸ The Joint Utilities witness also admitted that more attractive economic returns for customers would generally increase solar adoption rates, and, conversely, less attractive economic returns could decrease adoption rates.¹⁰⁹ Even NRDC premised its proposal on the fact that an economic value proposition for prospective customers is critical to ensuring continued growth of renewable distributed generation.¹¹⁰

3. Data from other states’ reform tariffs demonstrate that proposals that do not present a viable economic value proposition for prospective customers would not encourage sustainable growth.

Although the Joint Utilities attempt to create the impression that California is out of step with NEM reform efforts by other states, not all states have elected to dismantle their NEM programs. In South Carolina, for example, the Public Service Commission recently approved a NEM tariff for Dominion Energy with more modest changes than those that anti-NEM parties have proposed for California’s successor tariff.¹¹¹ The Dominion tariff includes (1) time-of-use rates, (2) a minimum bill of approximately \$13.50, and (3) annual netting, crediting excess on-

¹⁰⁸ EWG-01 at p. 40 [R.20-08-020, Prepared Direct Testimony of Ken Cook on behalf of the Environmental Working Group (June 18, 2021)].

¹⁰⁹ Reporter’s Transcript Vol. 2, 193:1-8 (Testimony of Joint Utilities witness Dr. S. Tierney).

¹¹⁰ NRD-01 at pp. 19, 24-27 [R.20-08-020, Opening Testimony of Mohit Chhabra Sponsored by the Natural Resources Defense Council (NRDC) on the Net Energy Metering Successor Tariff Proposal (June 30, 2021)]. However, as noted by EWG, a ten year payback period does not represent a sufficient economic benefit/incentive, particularly for lower- and middle-income customers. EWG-01 at p. 41 [R.20-08-020, Prepared Direct Testimony of Ken Cook on behalf of the Environmental Working Group (June 18, 2021)] (concluding that, because of its “minimal bill savings and additional fixed charges” that will make NEM solar unattractive to middle-income customers, “[W]e can confidently expect that if NRDC’s proposal is adopted we would see the market [for distributed solar] collapse at its center, . . . stopping the progress we need on clean energy to meet the state’s climate goals.”).

¹¹¹ See PCF-72 at p. 1 [Public Service Commission of South Carolina, Docket No. 2020-229-E: Dominion Energy South Carolina, Incorporated’s Establishment of a Solar Choice Metering Tariff Pursuant to S.C. Code Ann. Section 58-40-20 (Apr. 28, 2021)].

peak generation against on-peak consumption (and the same for off-peak generation and consumption), with only those excess exports remaining after netting credited at avoided costs.¹¹² Although the Dominion Energy NEM tariff provides an example of reasonable NEM modification, other reform efforts that presented customers with unattractive economic value propositions have “decimated” the market for rooftop solar in other states.¹¹³ As SEIA/Vote Solar witness Tom Beach ominously concludes, “States that have tried a significant drop in compensation for solar customers all at once have not had positive experiences.”¹¹⁴

For example, Nevada adopted a 2015 reform tariff with reduced export compensation and increased fixed charges that made distributed solar uneconomic for new customers.¹¹⁵ New installations decreased from a peak of 35 MW in the third quarter of 2015 to approximately 1 or 2 MW in the third and fourth quarters of 2016.¹¹⁶ Thus, Nevada’s changed NEM tariff resulted in a 94% decrease in the pace of installations.¹¹⁷ In another example, after Hawaii adopted a NEM tariff similar to those proposed by the anti-NEM parties, solar adoptions dramatically decreased. In the three years following the adoption of the reform tariff in Hawaii, the number of permits

¹¹² *Ibid.*; see also Reporter’s Transcript Vol. 12, 2188:6-2189:6 (Testimony of Cal Advocates witness S. Babka).

¹¹³ SVS-01 at pp. 10-11, 13 [Testimony of S. Gallagher].

¹¹⁴ SVS-03 at p. 49 [Testimony of R.T. Beach].

¹¹⁵ SVS-01 at pp. 11, 13 [Testimony of S. Gallagher].

¹¹⁶ *Id.* at p. 13, Figure 1 (“Quarterly Nevada Residential Solar PV Deployment”).

¹¹⁷ $1 - (2 \text{ MW} / 35 \text{ MW}) = 0.9428$, or 94.28%.

issued for rooftop solar dropped by over 60%.¹¹⁸ Installations of new rooftop solar systems dropped as much as 80% compared to their peak a few years earlier.¹¹⁹

Although the Joint Utilities' testimony about other states' experiences appears intended to assure the Commission that presenting customers with less attractive value propositions will not spell disaster for the continued growth of rooftop solar in California,¹²⁰ the data does not support that conclusion. For example, data from Hawaii and Nevada corroborate the grim picture painted above concerning solar adoption rates in those states. For the twelve months prior to the October 2015 NEM reform in Hawaii, average monthly capacity additions were over 4 MW/month. For the twelve months after Hawaii's second NEM reform in February 2018, average monthly capacity additions dropped to 0.43 MW/month, approximately one-tenth of their pre-reform rate.¹²¹ Similarly, in Nevada, capacity rates decreased from 6.33 MW/month for the 12 months prior to NEM reform to 3.37 MW/month in the twelve months after, a drop of almost one-half.¹²²

The latter statistic, however, significantly understates the damage wrought by Nevada's NEM reform tariff. A Joint Utilities witness testified that there was a "fly-up" of capacity additions before Nevada's commission adopted its reform tariff in January 2016.¹²³ But the data

¹¹⁸ SVS-02 at pp. 8-9 [R.20-08-020, Prepared Direct Testimony of Will Giese on behalf of the Solar Energy Industries Association and Vote Solar (July 22, 2021)].

¹¹⁹ *Ibid.*

¹²⁰ *See* IOU-01 at p. 35 [Joint Utilities' Opening Testimony].

¹²¹ *Id.* at p. B-6 (Table 3 of Appendix B: North Carolina Clean Energy Technology Center at North Carolina State University, A Review of Net Metering Reforms Across Select U.S. Jurisdictions (Feb. 2021)).

¹²² *Ibid.*

¹²³ Reporter's Transcript Vol. 2, 195:16-19 (Testimony of Joint Utilities witness Dr. S. Tierney).

presented in Appendix B of the Joint Utilities’ Opening Testimony indicates that the “fly-up” continued for the first few months after January 2016.¹²⁴ Indeed, after the dust from this “fly-up” settled, growth rates plummeted: the average capacity additions for the twelve month period starting in September 2016 were only 0.96 MW/month, less than *one-sixth* of the rate before NEM reform.¹²⁵ The Joint Utilities’ data also provides strong evidence that the reform tariff provisions—and not other market conditions—were behind this precipitous decline. After Nevada restored its NEM tariff, average monthly capacity additions more than tripled.¹²⁶

The data presented by Joint Utilities witness Dr. Tierney continues the Utilities’ selective and misleading narrative about other states’ experiences. Dr. Tierney’s testimony presents Figure II-10, which she asserts shows that “PV capacity has continued to increase in the states with reformed NEM tariffs.”¹²⁷ Figure II-10, in addition to showing the states discussed above in which solar capacity growth rates in fact plummeted after NEM reforms were adopted, also presents data from jurisdictions with NEM reform tariffs that are not comparable to the anti-NEM parties’ proposed successor tariffs. The reform noted for the Sacramento Municipal Utility District, for example, did not involve either new fixed charges or a change to export compensation at retail rates.¹²⁸ The two reforms shown for National Grid New York did not

¹²⁴ IOU-01 at p. B-6, Figure 1 [Joint Utilities’ Opening Testimony] (showing, for NV Energy, a short period of continued rapid growth in capacity after January 2016, followed by a longer period with negligible growth).

¹²⁵ *Id.* at p. B-6, Table 3; *see also* Reporter’s Transcript Vol. 2, 196:15-18 (Testimony of Joint Utilities Witness Dr. S. Tierney).

¹²⁶ IOU-01 at p. B-6, Table 3 [Joint Utilities’ Opening Testimony].

¹²⁷ *Id.*, at p. 35.

¹²⁸ Reporter’s Transcript Vol. 2, 198:15-199:12 (Testimony of Joint Utilities Witness Dr. S. Tierney).

require customers to switch to a new tariff,¹²⁹ and did not yet go into effect, respectively.¹³⁰

Figure II-10 even includes data from a utility (Duke Energy) for which NEM reforms will not go into effect until January 2022—more than a year after the end date of the data presented in the figure.¹³¹

Thus, of the six jurisdictions Dr. Tierney selected purporting to show that solar markets have thrived despite NEM reform tariffs like the Joint Utilities’ proposed successor, *five* show no such thing. Only in Arizona did growth continue at a reasonably sustained rate after a reform tariff; but Arizona’s tariff did not include the same elements as those proposed in the Joint Utilities’ successor tariff proposal.¹³² Specifically, Arizona’s tariff was designed gradually to phase export compensation to avoided costs,¹³³ rather than to make that change immediately. Thus, adverse effects on Arizona NEM customers’ economics were not as severe or immediate as they would be under the Joint Utilities’ proposal. Further, costs for solar are lower in Arizona than in California, which improved customers’ economics.¹³⁴

¹²⁹ Reporter’s Transcript Vol. 1, 132:9-23 (Testimony of Joint Utilities Witness Dr. S. Tierney).

¹³⁰ *Id.* at 132:24-133:11.

¹³¹ *Id.* at 130:14-131:25; *see also* IOU-01 at p. 35 [Joint Utilities’ Opening Testimony].

¹³² Reporter’s Transcript Vol. 1, 129:28-130:7 (Testimony of Joint Utilities Witness Dr. S. Tierney) (“Q: . . . So keeping all those [elements] of the IOUs’ proposal in mind, can you tell me which of the states you previously referenced, Hawaii, Nevada, Arizona, New York, or South Carolina, have all those elements in its successor tariffs? A: None of them have all of those elements, and none of them have the situation facing California right now.”).

¹³³ IOU-01 at p. B-4 [Joint Utilities’ Opening Testimony]; *see also* SVS-01 at p. 20 [Testimony of S. Gallagher] (“Arizona has taken a gradual approach to give the market sufficient time to adapt to the change in compensation. Although Arizona moved to value exports based on RCP, it has also limited reductions in the export rate to no more than 10% annually.”).

¹³⁴ SVS-01 at p. 20 [Testimony of S. Gallagher] (“[I]n installed residential and commercial solar PV system prices . . . in Arizona as of the end of 2020 are 18% (\$0.58/watt) and 28% (\$0.61/watt) lower, respectively, than prices in California.”).

4. Reform tariff proposals that would result in lengthy payback periods would not allow NEM solar to grow sustainably.

Data regarding payback periods further demonstrate that reform tariff proposals that would make NEM solar prohibitively expensive would not allow distributed generation to “continue[] to grow sustainably.” A reasonable payback period remains a key determinant of whether distributed generation presents a viable economic value proposition and will continue to grow.¹³⁵ The payback periods calculated for the proposed reform tariffs from the anti-NEM parties indicate that those proposals would not present customers with a reasonable economic value proposition.

The Joint Utilities’ own calculations show that stand-alone solar participants enrolled under the Joint Utilities’ proposed tariffs would not recover their initial investments for as many as 19 years.¹³⁶ This payback period—which does not take into account interest payments—is considerably longer than the payback periods of almost all of the other utilities described in Dr. Tierney’s testimony.¹³⁷ Significantly, 19 years is more than twice as long as one estimate of the payback period in Arizona, the only jurisdiction mentioned by Dr. Tierney for which growth rates continued at a reasonable pace after the adoption of a NEM reform tariff.¹³⁸ Although the data presented by the Joint Utilities show several other utilities with payback periods approaching 19 years, the reform tariffs for those utilities either (1) caused disastrous declines in rooftop solar installations (e.g., NV Energy), or (2) have not yet taken effect (e.g., National Grid

¹³⁵ CSA-01 at pp. 60-61 [Testimony of B. Heavner & J. Plaisted]; SVS-03 at p. 27 [Testimony of R.T. Beach].

¹³⁶ IOU-01 at p. 105, Table IV-14 [Joint Utilities’ Opening Testimony].

¹³⁷ *Id.* at p. 36, Table II-4.

¹³⁸ *Ibid.*

NY, SMUD, Duke SC).¹³⁹ It remains to be seen whether those jurisdictions will experience precipitous declines in rooftop solar installations similar to that seen in Nevada.

Moreover, the Joint Utilities' calculation underestimates the payback period. The comparative analysis of the parties' proposals performed by E3 determined that customers enrolled in the Joint Utilities' proposed successor tariff would face payback periods of up to 21 years, two years longer than the Joint Utilities' calculations.¹⁴⁰ E3 calculated payback periods as long as 21.2 years for TURN's proposal and 16.5 years for Cal Advocates' proposal.¹⁴¹ Payback periods of 21 years or longer make the Joint Utilities and TURN proposed successor tariffs the *least* economically attractive NEM tariffs in the nation.¹⁴²

In short, the successor tariffs proposed by the Joint Utilities, TURN, and Cal Advocates would not present customers with an attractive economic value proposition. Instead, they would result in the longest payback periods in the country. Overnight, rooftop solar would go from an attractive investment to an unattractive economic burden. As the results from other states have shown, such abrupt disruptions have not allowed for continued sustainable growth in rooftop solar installations: instead, they have badly damaged the markets in those states. For the Commission to meet the Legislature's mandate of ensuring that customer-sited distributed generation continues to grow sustainably, the successor tariff must yield an economically attractive value proposition.

¹³⁹ See *ibid.*; see also Section III.C.3, *supra*.

¹⁴⁰ CSA-32 at p. 34, Table 4 [E3, Cost-effectiveness of NEM Successor Rate Proposals under Rulemaking 20-08-020: A Comparative Analysis (June 15, 2021)].

¹⁴¹ *Ibid.*

¹⁴² See IOU-01 at pp. 35, B-5 [Joint Utilities' Opening Testimony].

D. Making NEM solar prohibitively expensive conflicts with the Commission’s goal of increasing equity.

The second guiding principle in this proceeding calls for a successor tariff that “should ensure equity among customers.”¹⁴³ The anti-NEM parties have advanced a narrative that, under NEM 1.0 and 2.0, wealthy, white homeowners are shifting considerable costs to lower-income customers who are disproportionately renters and people of color.¹⁴⁴ Assuming, for the sake of argument, that NEM participants are shifting costs to non-participants, the anti-NEM parties’ narratives about the equitable implications of that shift lack critical context. All ratemaking involves some level of cost shifting, particularly to further important policy goals (as NEM does). And any claimed cost shift is balanced across customers of various income levels. Finally, the successor tariffs proposed by the anti-NEM parties present customers with unattractive economic value propositions and thus fail to expand access to NEM solar in disadvantaged communities and to advance or ensure equity between customers.

1. Shifting costs to further explicit state policy goals is an inherent and accepted part of all ratemaking.

While the anti-NEM parties make much of the “cost shift” they claim is occurring as a result of NEM 1.0 and 2.0, shifting costs has always existed as an inherent and accepted part of ratemaking. All ratemaking involves cost shifting. As a Joint Utilities witness and former Commissioner of the California Public Utilities Commission acknowledged, transfers of wealth from one customer class to another—i.e., cost shifts—are common in ratemaking:

Q: Would you [agree] that ratemaking generally involves transfers of wealth from one customer class to another?

¹⁴³ D.21-02-007, Guiding Principles Decision at p. 45 (Guiding Principle (b): “A successor to the net energy metering tariff should ensure equity among customers.”).

¹⁴⁴ See, e.g., IOU-01 at pp. 2-3, 15, 49 [Joint Utilities’ Opening Testimony].

A: Yes. I would agree that it often does.

Q: And, generally speaking, would you support transfers of wealth among groups of residential customers if it advanced important state policy interests?

A: I would. We are proposing some transfer of wealth as it relates to increasing the amount of adoption of solar low-income customers. That is a part of the Joint IOU proposal.

Q: . . . [D]uring your time as a commissioner, did you ever vote to approve rates that would shift payments . . . from the less wealthy to wealthier customers . . . ?

A: I'm sure that was a result of some of the things I voted for.

Q: And as a commission on the PUC, did you ever vote to approve rates that would shift costs from commercial customers through residential customers?

A: I imagine that happened sometimes as well.¹⁴⁵

To provide only one example of rates creating a cost-shift, SDG&E charges customers different rates for transmission depending on their customer class.¹⁴⁶ Thus, while the CAISO's 2021 combined transmission cost in SDG&E service territory is \$38.074/MWh,¹⁴⁷ commercial and industrial customers pay less than that amount—\$33.76/MWh¹⁴⁸—and residential customers pay more—\$64.44/MWh.¹⁴⁹ As a result of this cost differential, SDG&E effectively shifts transmission costs from commercial and industrial customers to residential customers.¹⁵⁰

¹⁴⁵ Reporter's Transcript Vol. 1, 85:11-86:11 (Testimony of Joint Utilities witness Dr. C. Peterman).

¹⁴⁶ PCF-01 at p. 13 [Testimony of T. Siegele].

¹⁴⁷ *Ibid.* (citing CAISO January 01, 2021 TAC Rates (January 13, 2021), available at: http://www.caiso.com/Documents/HighVoltageAccessChargeRatesEffectiveJan01_2021.pdf).

¹⁴⁸ *Ibid.* (citing SDG&E, Schedule TOU-A, Effective March 1, 2021 (Submitted Feb. 26, 2021), p. 2).

¹⁴⁹ *Ibid.* (citing SDG&E, Schedule TOU_DR1, residential time of use effective June 1, 2021 (Submitted May 13, 2021), p. 3).

¹⁵⁰ *Id.* at pp. 13-14.

As Dr. Peterman acknowledged,¹⁵¹ rates often shift costs from one class of customers to another to advance societal goals. Such shifts are baked into the fundamental structure of tiered rates, which shift costs to customers who consume greater amounts of electricity.¹⁵² The Commission deployed the tiered rate structure—with its inherent cost shifts—explicitly to encourage conservation and efficiency.¹⁵³ Indeed, the Commission’s own adopted rate design principles acknowledge that cross-subsidies that support explicit state policy goals are permissible.¹⁵⁴

The NEM program furthers such explicit state policy goals. Specifically, the Legislature found that the NEM program would “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 resources mix, reduce interconnection and administrative costs for electricity suppliers, and encourage conservation and efficiency.”¹⁵⁵ As described in section II.B.3, above, NEM solar also brings substantial greenhouse gas reduction-related benefits.

¹⁵¹ Reporter’s Transcript Vol. 1, 85:11-86:11 (Testimony of Joint Utilities witness Dr. C. Peterman).

¹⁵² Reporter’s Transcript Vol. 4, 581:8-12 (Testimony of Joint Utilities Witness G. Morien) (“The tiered rate structure is a policy instrument. It provides lower-usage customers with a lower volumetric rate that is subsidized by higher-usage customers. . . . It is not a cost-based rate structure.”).

¹⁵³ *See id.* at 581:17-19 (“Q: Do tiered rates incentivize customers to use less electricity? A: They are designed to.”).

¹⁵⁴ IOU-01 at pp. 106-07, Table IV-15 [Joint Utilities’ Opening Testimony] (“CPUC Rate Design Principles”) (citing R.12-06-013 at pp. 27-28).

¹⁵⁵ Pub. Util. Code § 2827(a).

2. The anti-NEM parties exaggerate the equitable implications of the claimed cost shift.

The Commission has determined that the successor tariff should ensure equity among customer classes.¹⁵⁶ “Equity” among customer classes is compatible with some level of cost shift, provided that the costs shifted are supporting societal benefits that serve the interests of all customers, including those bearing the shifted costs. As described in sections II.B and III.B, above, various parties are significantly overstating the scale of the costs shifted by the current NEM tariffs. When the full societal benefits of NEM are taken into account, including avoided transmission costs, those benefits balance or eliminate the purported cost shift.

But even if a cost shift from NEM participants to non-NEM participants was found to occur after appropriately accounting for all the benefits of NEM, the narratives promoted by the anti-NEM parties exaggerate its equitable implications. While higher-income individuals have been more likely than lower-income individuals to adopt NEM,¹⁵⁷ the anti-NEM parties’ narrative distorts the reality of which customers bear the burdens of the purported cost shift.

Contrary to the narrative that costs are shifted from higher-income to lower-income customers, any purported cost shift distributes costs across customers of various income levels. For example, while areas with higher median incomes have higher concentrations of NEM participants than those with lower median incomes,¹⁵⁸ even in those higher-income areas, the overwhelming majority of households do not have NEM solar installations. Specifically, in zip codes with median incomes over \$200,000, 93% of customers do not have NEM solar

¹⁵⁶ D.21-02-007, Guiding Principles Decision at p. 45 (Guiding Principle (b)).

¹⁵⁷ PCF-15 at p. 32 [Lookback Study] (“[A]reas with higher incomes show higher percentages of NEM installations relative to California’s population.”).

¹⁵⁸ *Ibid.*

installed.¹⁵⁹ And in zip codes with median incomes between \$100,000 and \$199,000, 97% of customers do not have NEM solar.¹⁶⁰ Because these customers are non-participants, they, too, bear the burden of any cost shift.¹⁶¹ Thus, the cost shift claimed by the anti-NEM parties is distributed not only among non-participants in lower-income zip codes, but also among 93% to 97% of customers in higher-income zip codes, as well.¹⁶²

In fact, lower-income customers are bearing a relatively small percentage of the costs that the anti-NEM parties claim are being shifted. To take one of the three utilities as an example, PG&E serves approximately 1.3 million CARE customers.¹⁶³ PG&E claims that each of these customers' bills will increase by \$95/year as a result of the current NEM tariffs.¹⁶⁴ Multiplying the number of CARE customers in PG&E's territory by the claimed annual bill increase yields the amount of the alleged cost shift that would be borne by CARE customers in PG&E's service territory,¹⁶⁵ or \$123.5 million. Performing this same calculation for SCE and SDG&E, one gets

¹⁵⁹ Reporter's Transcript Vol. 2, 307:15-308:1 (Testimony of Joint Utilities witnesses A. Pierce, R. Thomas, and C. Kerrigan); *see also* PCF-15 at p. 33, Figure 3-7 [Lookback Study].

¹⁶⁰ Reporter's Transcript Vol. 2, 308:5-10 (Testimony of Joint Utilities witnesses A. Pierce, R. Thomas, and C. Kerrigan); *see also* PCF-15 at p. 33, Figure 3-7 [Lookback Study].

¹⁶¹ Reporter's Transcript Vol. 2, 308:24-309:4 (Testimony of Joint Utilities witnesses A. Pierce, R. Thomas, and C. Kerrigan).

¹⁶² *Id.* at 309:5-27.

¹⁶³ Reporter's Transcript Vol. 2, 319:25-320:9 (Testimony of Joint Utilities witnesses A. Pierce, C. Kerrigan, R. Thomas).

¹⁶⁴ IOU-01 at p. 73, Table III-9 [Joint Utilities' Opening Testimony].

¹⁶⁵ *See* Reporter's Transcript Vol. 2, 316:19-317:2 ("Q: So if you were to multiply the bill increases for each service territory . . . –actually, Mr. Pierce, . . . let's take SDG&E, for example. So if you were to multiply [the annual bill increase for SDG&E CARE customers] times the number of CARE customers in SDG&E's service territory, would you get the total amount of the cost shift that the IOUs assert is occurring that is borne by CARE customers within SDG&E's service territory? A: Yes, that's correct.").

\$97.5 million and \$49.5 million,¹⁶⁶ respectively, or a total for all three utilities of \$270.5 million. This total amount—the total amount of the claimed cost shift that would be borne by CARE customers—is approximately 8% of \$3.4 billion, the total amount of costs that the Joint Utilities’ claim is being shifted.¹⁶⁷ Thus, approximately 92% of the cost shift that the Joint Utilities claim is occurring is being borne by non-CARE customers.

Thus, any costs shifted by NEM do not constitute a uniquely inequitable anomaly that disproportionately burdens lower-income customers. Instead, as a Joint Utilities witness stated, the “portion of the cost shift [that] would be borne by CARE customers” is “in line with . . . the overall portion of bills paid by CARE customers relative to the [] total IO[U] revenue requirement.”¹⁶⁸ In other words, any cost shift is distributed across customer classes in a similar fashion to overall costs.

3. Proposals with lengthy payback periods will not expand access to NEM solar in disadvantaged communities or increase equity among customer classes.

To achieve equity among customer classes, the Commission should ensure that more customers across all income levels have a meaningful opportunity to adopt customer-sited distributed generation. A successor tariff that significantly increases the payback period for NEM solar is less likely to expand such opportunity to middle- and lower-income individuals.

¹⁶⁶ *Id.* at 319:18-320:1 (estimating that there are approximately 330,000 CARE customers in SDG&E’s territory and 1.3 million in SCE’s territory); IOU-01 at p. 73, Table III-9 [Joint Utilities’ Opening Testimony] (showing the Joint Utilities’ calculated annual bill increases of \$150/year for SDG&E CARE customers and \$75/year for SCE CARE customers). $330,000 \times \$150 = \$49,500,000$; $1,300,000 \times \$75 = \$97,500,000$.

¹⁶⁷ IOU-01 at p. 1 [Joint Utilities’ Opening Testimony] (“[T]oday the cost shift exceeds \$3.4 billion annually.”).

¹⁶⁸ Reporter’s Transcript Vol. 2, 314:6-28 (Testimony of Joint Utilities witnesses A. Pierce, R. Thomas, and C. Kerrigan).

The high cost of installing a NEM solar system is a common adoption barrier facing lower-income customers.¹⁶⁹ Indeed, as the costs of NEM installations (and the length of the payback period) have decreased, the share of NEM installations in lower-income areas has increased.¹⁷⁰ In general, more attractive economic returns increase solar adoption rates, and less attractive economic returns decrease adoption rates.¹⁷¹

Because of the relationship between economic returns and rates of adoption, successor tariff proposals that substantially increase the payback period for a new solar installation are not likely to attract new lower- and middle-income individuals or to expand access to customer-sited renewable distributed generation to those populations. Instead, they are more likely to place such resources farther out of reach by presenting these customers with less attractive economic value propositions.¹⁷² Even if the proposals include income-qualified programs to address otherwise unattractive or impossible economics, scant, if any, evidence exists in the record that these

¹⁶⁹ NRD-01 at p. 10 [R.20-08-020, Opening Testimony of Mohit Chhabra Sponsored by the Natural Resources Defense Council (NRDC) on the Net Energy Metering Successor Tariff Proposal (June 30, 2021)].

¹⁷⁰ IOU-01 at p. 36 [Joint Utilities' Opening Testimony] (“In the 25 years since California adopted its NEM program, the installed costs of new solar PV systems have declined substantially.”); *see also* PCF-15 at p. 34 [Lookback Study] (“ZIP codes with lower median incomes have seen an increase in the proportion of solar PV installations in somewhat recent years[.]”).

¹⁷¹ Reporter's Transcript Vol. 2, 193:1-8 (Testimony of Joint Utilities' witness Dr. S. Tierney) (“[Q: W]ould you agree that in general more attractive economic returns would increase solar adoption rates? A: Yes. Q: And would you agree that less attractive economic returns could decrease solar adoption rates? A: Yes, they could.”).

¹⁷² *See* SVS-03 at p. 51 [Testimony of R.T. Beach] (“[L]ow- and moderate-income customers . . . will be more likely to consider the impact of the solar investment on their monthly energy cost and . . . want the comfort that their monthly bill savings will cover the payment on the solar system.”).

programs will be effective.¹⁷³ Further, such proposals are likely to leave behind significant portions of the population—particularly middle-income individuals—who may not qualify but are still faced with both high upfront installation costs and significantly less attractive investments.¹⁷⁴

Moreover, the successor tariff proposals that increase the payback period are less attractive to lower- and middle-income customers than they appear. Lower-income customers are more likely than higher-income customers to require loans or other forms of financing to install new BTM systems.¹⁷⁵ Thus, to gauge what lower- and middle-income customers would face in installing new solar systems, payback period calculations must take into account interest and other payments.

¹⁷³ See, e.g., Reporter’s Transcript Vol. 9, 1554:10-16 (Testimony of TURN witness M. Chait) (“[Q:] [H]as TURN done any market analysis or any sort of . . . customer outreach on whether your proposed market transition credit will actually result in CARE customers investing in behind-the-meter solar? A: Not that I’m aware of.”); see also, e.g., Reporter’s Transcript Vol. 10, 1859:17-27 (Testimony of NRDC witness M. Chhabra) (acknowledging that NRDC’s selected target payback period “wasn’t data[-]base[d]. It was more—I don’t have a specific source of data. That’s with my estimate.”).

¹⁷⁴ TRN-01 at p. 63:15-16 [M. Chait Testimony] (“For non-CARE customers, the PCT is less than 1.0, indicating that without an incentive participation is not expected to be economic.”); Reporter’s Transcript Vol. 9, 1557:6-13 (Testimony of TURN witness M. Chait) (“Q: So the Commission, if it were to approve of TURN’s proposal, it would then have to seek funding from the legislature or elsewhere to provide market transition credits to non-CARE customers who install standalone . . . solar, correct? A: Correct. Yes.”); Reporter’s Transcript Vol. 9, 1561:14-1563:2 (Testimony of TURN witness M. Chait) (acknowledging that, without a market transition credit funded by the legislature or other modifications to TURN’s proposal, a standalone solar system installed on new homes pursuant to Title 24 “would not be economic.”).

¹⁷⁵ SVS-03 at p. 28 [Testimony of R.T. Beach] (stating that a cash purchase “is an option available mostly to wealthier customers who can afford the initial cash outlay.”); see also Reporter’s Transcript Vol. 10, 1857:8-16 (Testimony of NRDC witness M. Chhabra) (“[Q:] In your opinion, is a lower-income customer more likely than a higher-income customer [to] require loans or other forms of financing in order to install a NEM system? A: Because of the first cost barrier among other things. Q: . . . [I]s that a yes? A: Yes. Because dot, dot, dot, yes.”).

The payback period calculations presented by E3, however, involve only “simple,” and thus inadequate and unrepresentative, payback calculations.¹⁷⁶ These calculations assume an upfront cash payment and do not take into account interest or other financing payments.¹⁷⁷ Adding in these interest payments increases the length of the payback period.¹⁷⁸ As a result, the simple payback periods calculated by E3 are too short compared to what lower- or middle-income customers would face.¹⁷⁹

Adjusting payback periods to account for interest payments shows why the successor tariff proposals with longer payback periods will fail to attract lower- and middle-income customers. According to SEIA/Vote Solar witness Tom Beach, payback calculations that include interest payments could result in payback periods that are 60% longer than the “simple” payback periods.¹⁸⁰ Applying this adjustment to E3’s calculated simple payback periods, a middle-income, non-CARE standalone solar customer in PG&E’s service territory in 2023 could be

¹⁷⁶ E3, Cost-Effectiveness of NEM Successor Rate Proposals Under Rulemaking 20-08-020: A Comparative Analysis (May 28, 2021) at p. 2, fn. 2 (“In this model, an upfront purchase was assumed to facilitate calculation of the Simple Payback Period metric.”).

¹⁷⁷ *Ibid.*

¹⁷⁸ Reporter’s Transcript Vol. 2, 202:20-25 (Testimony of Joint Utilities witness Dr. S. Tierney) (“Q: Do you agree that if a customer was also paying interest or financing charges on a loan to fund a purchase [of a solar installation] that would extend the payback period? A: Under that hypothetical, I—presumably so.”); *see also* Reporter’s Transcript Vol. 10, 1857:25-1858:7 (Testimony of NRDC witness Mohit Chhabra) (“Q: Would a customer who is paying interest on loans to finance a NEM system have a longer or shorter payback period compared to a customer who purchased a system in cash, holding all else equal. A: . . . [E]verything else equal, if someone pays cash, that means they aren’t paying interest, and so—so yeah, they’ll have a lower payback period.”).

¹⁷⁹ SVS-03 at p. 51 [Testimony of R.T. Beach] (“The simple payback understates the actual economic payback, because it ignores costs for financing and O&M, and does not consider the time value of money.”).

¹⁸⁰ *Ibid.*

facing payback periods ranging from 20 years under Cal Advocates’ proposal to over 30 years under TURN’s and the Joint Utilities’ proposals.¹⁸¹ The latter two proposals would result in paybacks longer than the likely life of a solar system—i.e., customers would likely *never* recoup their initial investments.

4. The Commission should adopt focused policies to expand access to NEM to lower- and middle-income customers.

Rather than make NEM unattractive economically to all customers, the Commission should expand access to NEM to lower- and middle-income customers by addressing the specific inequitable Commission policies and practices that have created barriers to adoption. For example, CARE customers participating in NEM receive proportionally less compensation for the same exports compared to non-CARE participants.¹⁸² The Commission should improve CARE customer economics—and reduce a NEM adoption barrier—by compensating CARE customers at the same rates received by others.

Further, because NEM costs are allocated to CARE customers “in line with . . . the overall portion of bills paid by CARE customers,”¹⁸³ many of the inequities stemming from these costs are systemic, rather than specific to NEM. To increase equity, the Commission should adopt solutions—like the community solar, community storage, tariffed on-bill financing, and NEM 2.0 carve-out proposals described in section V.A, below—that would expand access to

¹⁸¹ See CSA-32, at p. 34 [Pages from Updated Cost-Effectiveness of NEM Successor Rate Proposals (June 15, 2021)]. Cal Advocates result of 12.5 years increased by 60% = 20 years; TURN result of 18.9 years increased by 60% = 30.24 years; Joint Utilities result of 21 years increased by 60% = 33.6 years.

¹⁸² IOU-01 at p. 19 [Joint Utilities’ Opening Testimony].

¹⁸³ Reporter’s Transcript Vol. 2, 314:25-27 (Testimony of Joint Utilities witnesses A. Pierce, R. Thomas, and C. Kerrigan).

NEM benefits to historically underrepresented populations without destroying NEM's economic value proposition for middle-income customers.

E. Maintaining the current NEM tariffs would promote California's and the Commission's electrification goals.

The anti-NEM parties claim that the current NEM tariff undermines California's ability to meet its electrification goals by increasing electricity prices. This claim is not supported by any evidence specifically linking NEM tariffs to decreased electrification and is undermined by the positive relationship between NEM solar adoption and electrification adoption.

The current NEM rate structure has not caused California's high electricity prices. Transmission and distribution charges remain by far the largest contributors to electricity prices.¹⁸⁴ These charges have increased significantly since 2007.¹⁸⁵ The restructuring of residential tariffs has also increased prices.¹⁸⁶ Even parties that claim that NEM contributes to price increases agree that there are other factors increasing electricity prices.¹⁸⁷

While the anti-NEM parties assert that the current NEM tariffs discourage electrification adoption, the evidence in this proceeding does not establish a specific link between NEM and

¹⁸⁴ PCF-01 at p. 14 [Testimony of T. Siegele].

¹⁸⁵ PCF-24 at p. 15 [Rebuttal Testimony of B. Powers] ("The increase in IOU transmission asset value from 2007, the year after the highest recorded peak year of 2006, to 2020 is \$22.1 billion. The annualized transmission cost factor for PG&E is 0.1046. Using the PG&E annualized cost factor as representative, the annualized IOU transmission charges to ratepayers have risen by approximately \$2.3 billion per year since 2007. This is over four times higher than the \$500 million per year NEM solar cost of service cost shift identified by E3 and Verdant in the Lookback Study.").

¹⁸⁶ *Id.* at pp. 8-9 ("A December 2017 [Cal Advocates] analysis of SDG&E rates determined that the summertime residential baseline rate for the non-CARE customers increased 55 [percent] and for CARE customers 48 percent in less than three years, from January 2015 to November 2017, after implementation of rate-flattening combined with rate increases.").

¹⁸⁷ Reporter's Transcript Vol. 5, 866:12-18 (Testimony of Cal Advocates witness A. Ward).

electrification adoption rates. For example, the Joint Utilities’ opening testimony asserts that NEM will undermine building and vehicle electrification at least six times; five of those assertions are not supported by any citations to evidence or authority.¹⁸⁸ The Joint Utilities’ rebuttal testimony includes an entire section titled “The Cost Shift Drives Up Electricity Prices, Harming the State’s Climate Goals that Depend Upon Electrification of Vehicles and Buildings” that does not cite to a single source to support its claims.¹⁸⁹

Cal Advocates’ assertions about NEM’s relationship to electrification also lack support. For example, Cal Advocates states that the claimed NEM cost shift “will exacerbate electric service equity and affordability issues to the point where continued incentives for adoption of vehicle and building electrification will be impossible without creating additional cost burdens on lower income customers.”¹⁹⁰ But the source cited for this assertion is Public Utilities Code section 2827.1(b)(1).¹⁹¹ That provision provides that the successor tariff must ensure that

¹⁸⁸ IOU-01 at pp. 1:12-14, 15:32-16:3, 56:10-13, 60:7-13 and fn. 104, 74:6-7, 209:6-8 [Joint Utilities Opening Testimony]. The only authority cited to support the proposition that NEM will undermine building and vehicle electrification is the CPUC staff white paper, “Utility Costs and Affordability of the Grid of the Future.” That paper, however, confirms that transmission and distribution investments, and not the NEM tariffs, are responsible for higher electricity prices: “The growth in rates [since 2013] can be largely attributed to increases in capital additions driven by rising investments in transmission by PG&E and distribution by SCE and SDG&E.” See PCF-35 at pp. 7 [CPUC, 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 (Feb. 2021)].

¹⁸⁹ IOU-02 at p. 19 [R.20-08-020, Corrected Joint IOU Rebuttal Testimony of Southern California Edison Company (U 338-E), Pacific Gas and Electric Company (U 39-E) and San Diego Gas & Electric Company (U 902-E) on Issues 2-6 of Joint Assigned Commissioner’s Scoping Memo and Administrative Law Judge Ruling Directing Comments on Proposed Guiding Principles (July 16, 2021)].

¹⁹⁰ PAO-01, at p. 2-16:11-14 [Cal Advocates Opening Testimony].

¹⁹¹ *Ibid.*, fn. 57.

customer-sited renewable generation continues to grow sustainably; it does not say anything about a relationship between NEM and electrification adoption rates. Cal Advocates also asserts that lower electric prices promote electrification adoption but does not cite any authority establishing a specific link between NEM solar and electrification.¹⁹² Indeed, because evidence in this proceeding supports a strong relationship between NEM growth and decreased costs,¹⁹³ Cal Advocates' testimony actually suggests that NEM will increase electrification.

Finally, the claims that NEM will undermine California's electrification goals neglect the relationship between NEM adoption and adoption of electrification. A Cal Advocates witness agreed that, according to "social preference theory and economics," an individual with a BTM solar system is more likely to adopt an electric vehicle than an individual who does not have such a system.¹⁹⁴ The Lookback Study supports this proposition: NEM customers significantly increased their consumption after installing BTM systems,¹⁹⁵ suggesting that they adopted electric appliances or vehicles. As the Study stated, "Customers often install solar PV while at the same time investing in an electric appliance, an electric vehicle, or making an expansion to

¹⁹² *Id.* at pp. 5-16 to 5-17 (citing a paper from the Energy Institute at Haas for the proposition that lower electric rates and higher natural gas prices increased electrification adoption); Reporter's Transcript Vol. 5 895:23-27 (Testimony of Cal Advocates witness K. Rounds) (clarifying that a UC Davis study cited for the proposition that higher electricity prices result in decreased EV use "did not evaluate the impact of NEM systems on electrical vehicle adoption"); Reporter's Transcript Vol. 5, 868:7-13 (Testimony of Cal Advocates witness A. Ward) (admits that section of report concerns effect of higher prices on electrification, and "[n]ot specifically about the effect of NEM on building electrification").

¹⁹³ PCF-01 at p. 2 [Testimony of T. Siegele].

¹⁹⁴ Reporter's Transcript Vol. 5, 895:28-896:7 (Testimony of Cal Advocates witness K. Rounds).

¹⁹⁵ PCF-15 at pp. 4, 30 (Table 1-1 and Table 3-1, respectively) [Lookback Study].

the home.”¹⁹⁶ Thus, by discouraging NEM solar adoption by making NEM less economical for customers, the anti-NEM parties’ proposals themselves would undermine electrification goals.

IV. Issue 4: What program elements or specific features should the Commission include in a successor to the current net energy metering tariff?

A. The Commission should retain the current NEM tariff with modifications to incent storage and more equitable access.

As discussed above, the current NEM tariffs are not causing many of the problems raised by the anti-NEM parties. As a result, the successor tariff should largely maintain the features of the current NEM tariffs. The Commission should add refinements to address targeted issues, including sending better price signals to encourage customers to maximize the value of their BTM systems to the grid, increasing incentives to pair solar with storage, and expanding access to NEM to more middle- and lower-income individuals and non-homeowners.

1. The Commission should adopt modified time-of-use rates to increase incentives for customers to maximize the benefits of their solar and storage systems to the grid.

One simple way to modify the current NEM tariff to maximize the benefits of solar and storage is to modify time-of-use rates to send better price signals to customers. The current time-of-use rates, at least for PG&E and SDG&E, do not send a strong signal to customers to shift consumption to lower-priced hours (i.e., generally daylight hours when solar is producing), because the differences between on- and off-peak prices are relatively small.¹⁹⁷ Further, while the time-of-use rates are designed to incentivize solar + storage customers to charge batteries

¹⁹⁶ *Id.* at p. 62.

¹⁹⁷ Reporter’s Transcript Vol. 9, 1575:24-28 (Testimony of TURN witness M. Chait) (agreeing that “the residential default TOU rates for PG&E and SDG&E have relatively small differences between the on and off-peak rates.”).

during daylight hours when solar is generating, and to discharge during peak hours,¹⁹⁸ the small differentials between peak and off-peak pricing weaken this signal.

The time-of-use rates applicable to NEM customers should be revised to include greater differentials between peak and off-peak pricing. Specifically, rates should be lower during periods when solar is generating and higher during times of peak demand in which solar is no longer generating. To that end, the pricing periods could also be seasonally adjusted to account for differences in solar production profiles at different times of the year. Simply applying these adjustments to time-of-use rates would send a stronger signal to both standalone solar and solar + storage customers to maximize the benefits of their activities to the grid. Standalone solar customers would have a greater incentive to shift their consumption to daylight hours. Solar + storage customers would have a greater incentive to discharge their batteries during peak periods. Both of these behaviors would help to flatten the demand curve and decrease peak demand on the grid, creating benefits for all customers.

Modifying time of use rates in this fashion would also decrease the cost shift that the anti-NEM parties claim is occurring. Under the bill savings and avoided cost-based methodologies used by these parties to calculate the cost shift, decreased bill savings by NEM participants decrease the cost shift.¹⁹⁹ By decreasing time-of-use rates while solar was producing, or by increasing prices after solar had stopped generating, NEM standalone-solar customer bill savings

¹⁹⁸ Reporter's Transcript Vol. 4, 576:3-11, 16-19 (Testimony of Joint Utilities witness G. Morien) (agreeing that time of use rates are "designed to incentivize shifting out of the peak period").

¹⁹⁹ Reporter's Transcript Vol. 2, 328:27-329:6 (Testimony of Joint Utilities' Witnesses A. Pierce, R. Thomas, and C. Kerrigan).

would decrease.²⁰⁰ Thus, increasing the price differentials between peak and off-peak periods would result in a decrease in the claimed cost shift.²⁰¹

2. The Commission should promote adoption of and expand access to storage.

As broadly acknowledged by the parties to this proceeding, storage resources have the ability to increase the benefits of NEM solar to the grid.²⁰² Specifically, storage paired with renewable generation can help flatten the demand curve and reduce strain on the grid by shifting the time that renewable energy is consumed to later in the day.²⁰³ The costs of purchasing a battery storage asset, however, are still significant, especially for lower- and middle-income individuals.²⁰⁴ E3, for example, estimated that the addition of a battery increased the length of a NEM 2.0 customer's payback period by 14 to 25%, depending on the utility.²⁰⁵

To increase the deployment of storage and expand access to its benefits to more customers, the Commission should adopt a program that allows for investments in community

²⁰⁰ *Id.* at 330:24-332:22.

²⁰¹ Reporter's Transcript Vol. 9, 1576:12-20 (Testimony of TURN witness M. Chait) (Q: "If . . . customers of the successor tariff were required to be on a rate which had on- and off-peak differences that were closer to marginal costs, would that help to mitigate any cost shift that may exist between participants and non-participants? A: Yes. I think that it could, all else equal.").

²⁰² *See, e.g.*, IOU-01 at p. 103 [Joint Utilities' Opening Testimony] (recognizing "the 'win-win' impact of pairing storage systems with distributed solar" for participants and the grid).

²⁰³ *See* PCF-01 at pp. 10, 12-13 [Testimony of T. Siegele].

²⁰⁴ *Id.* at pp. 11-12 (discussing a battery shortage that "allows the limited battery supply to be sold to consumers at far above production costs.").

²⁰⁵ CSA-32 at pp. 34-35 [E3, Cost-effectiveness of NEM Successor Rate Proposals under Rulemaking 20-08-020: A Comparative Analysis (June 15, 2021)]. The percentages were derived by comparing NEM 2.0 payback periods for storage + solar customers in Table 5 to those of standalone solar customers in Table 4.

storage. Additional details of such a program are presented in section V.A.1, below, discussing the Protect Our Communities Foundation's Proposal PCF-A.

3. The Commission should address equity concerns by expanding access to the benefits of NEM 2.0.

As discussed in section III.D.3, above, proposed successor tariffs that do not present customers with an economic value proposition will not present lower- and middle-income individuals with sufficient reason to adopt NEM solar and will thus fail to advance equity. Because the current NEM tariffs present customers with a reasonable economic value proposition and are cost-effective for the grid as a whole, the Commission should advance equity by expanding access to NEM to more lower-income customers. The Protect Our Communities Foundation's proposals PCF-C, discussed in section V.A.2, below, and its proposal for tariffed on-bill financing, discussed in section V.A.4, below, describe specific programs for accomplishing this goal. The Commission may also advance equity by expanding access to the successor tariff to renters and multi-unit building residents through a community solar program. Such a program is presented in section V.A.3, below, discussing the Protect Our Communities Foundation's proposal PCF-D.

B. The Commission should not adopt a regressive and unfair Grid Benefits or Grid Access Charge.

Various parties' proposed successor tariffs include some version of a Grid Benefits Charge (or other similarly named feature) that would impose a fixed charge on NEM customers. These Grid Benefits Charges are largely designed to recover lost utility revenues resulting from

NEM customers' consumption of their own generation.²⁰⁶ Essentially, the Grid Benefits Charges would assess charges to NEM customers for services the utility provides to *non*-NEM customers.

Grid Benefits Charges would penalize NEM customers for decreasing their use of energy from the grid. They are based on a faulty premise—i.e., that NEM customers are shifting costs when they consume their own generation.²⁰⁷ In fact, NEM customers are no more shifting costs by reducing their energy usage from the grid than an individual is shifting costs by hanging clothes to dry rather than using an electric drier, or using a gas-fired stove to heat a pot of water rather than an electric kettle. In each instance, the customer is forgoing the use of electricity from the grid,²⁰⁸ and the utility is not collecting revenue as a result of the customers' choices. But the Grid Benefits Charge would effectively penalize the NEM customer, treating them differently from the others, even though the NEM customer has already paid to install a renewable energy system that supplies clean power.

Grid Benefits Charges are also regressive. Because these fixed charges would be the same for each customer (with a similarly-sized system), they would take a larger share of household income or total expenditures from lower-income customers than from higher-income customers.²⁰⁹ They would also, in general, tend to make BTM systems less economically attractive by increasing the costs facing NEM customers. As discussed in section III.D.3, above,

²⁰⁶ See IOU-01 at p. 102 [Joint Utilities' Opening Brief] (“The grid benefits charge will be designed to recover costs that are shifted due to solar customers' onsite consumption”).

²⁰⁷ *Id.* at pp. 102-03.

²⁰⁸ Reporter's Transcript Vol. 12, 2060:11-16 (Testimony of Cal Advocates witnesses B. Gutierrez and N. Chau) (confirming that when energy produced on site by a solar installation is simultaneously consumed onsite, the NEM customer does not use power from the grid).

²⁰⁹ PCF-24 at p. 42 [Rebuttal Testimony of B. Powers].

measures that make NEM solar less economically attractive to lower- and middle-income customers are not likely to advance equity between customer classes.

V. Issue 5: Which of the analyzed proposals should the Commission adopt as a successor to the current net energy metering tariff and why? What should the timeline be for implementation? How would the recommended proposal meet the guiding principles?

A. The Commission should adopt the proposals submitted by the Protect Our Communities Foundation.

1. The Commission should adopt Proposal PCF-A: NEM 3.0 Community Storage.

The Protect Our Communities Foundation’s Proposal PCF-A: NEM 3.0 Community Storage describes a requirement for each owner of a new BTM system to pay a modest fee that would be used to purchase community storage. The fee, to be assessed by the solar installer and paid to the utility as part of the interconnection cost, would be approximately 20% of the total BTM system cost, and would go into a Community Storage fund. The local Community Choice Aggregator (“CCA”) would serve as the program manager of the Community Storage fund and would own all storage assets purchased by the fund. Storage assets would be 3 MWh or larger, and would be located on the local distribution grid no more than five miles from the census tract where the contributing NEM system is located.

The Community Storage system would increase benefits to all customers and the electric system as a whole. Specifically, it would harness clean, renewable energy generated during daylight hours and allow it to be discharged during the evening hours, thereby flattening the demand curve and mitigating the need for emissions-producing, gas-fired generation in the evening and overnight hours. Storage assets installed under this program could also be

dispatchable and optimized to maximize the benefits of clean energy.²¹⁰ Community Storage would also increase equity by distributing the benefits of storage to entire communities. Finally, promoting storage is consistent with California's energy policies, including Senate Bill 100.²¹¹

2. The Commission should adopt Proposal PCF-C: NEM 2.0 Carve-Out for Low-Income Customers and Renters

If the Commission adopts a successor tariff that presents customers with a less attractive economic value proposition than the current tariff, it should also adopt a carve-out from the successor tariff for low-income customers and renters. The Protect Our Communities Foundation's proposal PCF-C describes such a carve-out that would allow low-income customers to retain access to the NEM 2.0 tariff until those customers reach 10,000 MW of installed BTM capacity.

A NEM 2.0 carve-out for lower-income customers would contribute to ensuring that customer-sited distributed generation continues to grow sustainably. As described in section III.D.3, above, an attractive economic value proposition is needed to ensure that lower-income customers have a compelling reason to adopt BTM solar. Further, the carve-out would advance equity between customer classes by allowing lower-income customers, who have historically adopted BTM solar at lower rates, an expanded opportunity to access the benefits that higher-income customers have enjoyed. Finally, because increased proliferation of renewable BTM generation brings benefits that outweigh its costs, the NEM 2.0 carve-out would comply with the requirements of Public Utilities Code section 2827.1(b)(3) and (4).

²¹⁰ See TRN-01 at pp. 56-57 [M. Chait Testimony] (explaining that storage operated to support grid needs and increase greenhouse gas reductions and with the capability to be dispatched would increase benefits to the grid and all customers).

²¹¹ See 2018 Cal. Legis. Serv. Ch. 312 (S.B. 100).

3. The Commission should adopt Proposal PCF-D: NEM 2.0 Community Solar, an Equitable Transition

To date, NEM has primarily benefitted building owners.²¹² The Protect Our Communities Foundation's proposal PCF-D, NEM 2.0 Community Solar, an Equitable Transition, is designed to streamline access to NEM for low-income customers and renters. Under PCF's Community Solar proposal, the Commission would extend the NEM 2.0 tariff to community solar arrays as if those arrays were producing electricity behind the meter at participants' dwellings. Participation would be limited to those groups with historically low participation in NEM, specifically, CARE customers and residents of multi-unit buildings. The community solar arrays would be sized between 50 kW and 5 MW in capacity, and would be owned and operated by the local CCA. Each community solar array constructed would be assigned to CARE customers and multi-unit building residents in a particular census tract until fully subscribed within those tracts.

Initially, the program administrator would allocate the proceeds received for the array's generation to the site owner (5%), to administrative costs (10%), and to paying off any loans required to finance the project. Once the loans had been repaid, the remaining proceeds would be applied to provide discounts on participating CARE customer and renters' bills and to fund additional community-based infrastructure, including community storage projects and community electric vehicle chargers. Additional details regarding program administration are described in the Protect Our Communities Foundation's proposal in this proceeding.²¹³

²¹² R.20-08-020, The Protect Our Communities Foundation Net Energy Metering 3.0 Tariff Proposals A-E (Mar. 15, 2021), at p. 21.

²¹³ *Id.* at pp. 24-27.

Like the NEM 2.0 carve-out for lower-income customers, the Community Solar program would contribute to the growth of customer-sited distributed generation. And it would advance equity by expanding access to NEM solar to lower-income customers, renters, and other residents of multi-unit buildings. The Community Solar program would accomplish this without requiring those customers and individuals to pay significant upfront costs to install systems, which has proved to be a barrier to accessing NEM solar in the past.

4. The Commission should adopt a tariffed on-bill financing program tied to the meter to expand equitable access to NEM.

Equity can be fully achieved under the existing NEM 2.0 tariff by mandating that the utilities offer a tariffed on-bill financing (“OBF”) program tied to the customer meter to assure that renters and lower income customers have equal access to solar and battery storage.²¹⁴ This type of financing is already offered in California. BayREN is administering a OBF “tied to the meter” financing program for water efficiency measures in the Bay Area.²¹⁵ OBF tied to the meter financing is also available to Hawaii IOU residential customers.²¹⁶ “Tied to the meter” means the *meter* is billed, not the customer behind the meter. NRDC’s witness acknowledged that on-bill financing should be considered as a mechanism to finance BTM generation.²¹⁷

The answer to NEM equity is employing the appropriate financing mechanism, not making NEM solar less financially viable for IOU customers. Therefore, the Commission should mandate that any modifications to the current NEM 2.0 tariff include measures such as tariffed

²¹⁴ PCF-24 at p. 44 [Rebuttal Testimony of B. Powers].

²¹⁵ PCF-66 at pp. 34-46 [R.20-08-022, Clean Energy Finance Workshop - Day 2, January 28, 2021].

²¹⁶ *Id.* at pp. 52-58.

²¹⁷ Reporter’s Transcript, Vol. 10, 1863:25 (Testimony of NRDC witness Mohit Chhabra) (“Should it be considered? Sure.”).

on-bill financing that will make customer-sited, renewable generation more accessible to low and moderate income customers.

B. If the Commission does not adopt the proposals of the Protect Our Communities Foundation, it should instead adopt CALSSA’s proposal.

Although the Protect Our Communities Foundation believes the Commission should make only targeted and minor refinements to the current NEM tariffs, if the Commission is not inclined to do so, or to adopt the PCF proposals described above, the Commission should instead adopt CALSSA’s proposal.

While CALSSA’s proposal would reduce the export compensation rate to the point that NEM customers would no longer be fairly compensated for the benefits they provide to the electric system, the proposal has several salutary features. First, CALSSA’s proposal would step-down export compensation gradually, with each step occurring when cumulative installed residential capacity reached certain designated MW thresholds.²¹⁸ Because the step-down would occur at a measured pace, it would allow the Commission to make adjustments if CALSSA’s proposed tariff were to cause the rate of BTM-solar installations to slow down (i.e., if the successor tariff were to fail to comply with the statutory directive to ensure that customer-sited generation “continues to grow sustainably.”). This gradual change—unlike the precipitous shifts in compensation proposed by the anti-NEM parties—would also likely prevent irreparable damage to the solar industry. Second, CALSSA’s proposed tariff includes reforms to increase the feasibility of Virtual Net Energy Metering (VNEM).²¹⁹ VNEM would encourage growth among renters and residents of multi-unit buildings, who have been historically under-

²¹⁸ CSA-01 at pp. 6-7 [Testimony of B. Heavner & J. Plaisted].

²¹⁹ *Id.* at p. 8.

represented and under-served by the current NEM tariffs. Third, the CALSSA tariff would maintain the current NEM tariffs for commercial customers.²²⁰ While commercial customers currently pay more than their cost of service,²²¹ suggesting that they should receive more benefits from a successor NEM tariff, CALSSA's proposal to maintain the current tariff for these customers at least does not reduce benefits for commercial customers, as other parties' proposals would do.

VI. Conclusion

A cost-effectiveness analysis of the current tariffs that appropriately values the full scope of benefits and rejects an overstated view of costs shows that the Commission need only make minor modifications to the current tariffs to comply with Public Utilities Code section 2827.1. For this reason, and for the reasons explained above, the Protect Our Communities Foundation requests that the Commission adopt a successor tariff that retains the core features of the current NEM tariffs and makes targeted refinements to advance equity and enhance the deployment and benefits of NEM resources.

²²⁰ *Id.* at p. 9.

²²¹ PCF-15 at p. 96 [Lookback Study].

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Respectfully submitted,

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