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TO PARTIES OF RECORD IN RULEMAKING 20-08-020:

This is the proposed decision of Administrative Law Judge Kelly A. Hymes. Until and unless the Commission hears the item and votes to approve it, the proposed decision has no legal effect. This item may be heard, at the earliest, at the Commission's December 15, 2022 Business Meeting. To confirm when the item will be heard, please see the Business Meeting agenda, which is posted on the Commission's website 10 days before each Business Meeting.

Parties to the proceeding may file comments on the proposed decision as provided in Rule 14.3 of the Commission's Rules of Practice and Procedure (Rules).

The Commission may hold a Ratesetting Deliberative Meeting to consider this item in closed session in advance of the Business Meeting at which the item will be heard. In such event, notice of the Ratesetting Deliberative Meeting will appear in the Daily Calendar, which is posted on the Commission's website. If a Ratesetting Deliberative Meeting is scheduled, *ex parte* communications are prohibited pursuant to Rule 8.2(c)(4).

/s/ MICHELLE COOKE
Michelle Cooke
Acting Chief Administrative Law Judge

MLC:nd3
Attachment

Decision **PROPOSED DECISION OF ALJ HYMES (Mailed 11/10/22)**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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.	Rulemaking 20-08-020

DECISION REVISING NET ENERGY METERING TARIFF AND SUBTARIFFS

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DECISION REVISING NET ENERGY METERING TARIFF AND SUBTARIFFS

Summary

Pursuant to Public Utilities Code Section 2827.1, this decision adopts a successor to the net energy metering tariff that addresses the guiding principles adopted in Decision 21-02-011 as well as the requirements of the Public Utilities Code. The current net energy metering tariff and its subtariffs are revised to balance the multiple requirements of the Public Utilities Code and the needs of the electric grid, the environment, participating ratepayers, as well as all other ratepayers.

Since implementing net energy metering over 20 years ago, California has witnessed the evolution of the customer-sited rooftop solar industry, resulting in the installation of over 12 gigawatts of clean distributed energy resources. However, the needs of the electric grid in California require additional evolution of the industry. Today, California's electric grid is significantly powered by clean energy during daytime hours, but peak electricity demands in the late afternoon and continuing into the night lead to a greater reliance on greenhouse gas emitting resources. This decision revises the net energy metering tariff to improve price signals by better aligning them with the electric grid's conditions, both day and night. The updated billing structure of the tariff is designed to optimize grid use by the tariff's customers and incentivize adoption of combined solar and storage systems. These changes will help meet California's climate goals and increase reliability, while promoting affordability across all income levels.

A review of the current net energy metering tariff, referred to as NEM 2.0, found that the tariff negatively impacts non-participating ratepayers;

disproportionately harms low-income ratepayers; and is not cost-effective. This decision determines that, to address the requirements of the guiding principles and the findings related to the NEM 2.0 tariff, the successor tariff should promote equity, inclusion, electrification, and the adoption of solar paired with storage systems, and provide a glide path so that the industry can sustainably transition from the current tariff to the successor tariff and from a predominantly stand-alone solar system tariff to one that promotes the adoption of solar systems paired with storage.

In the successor tariff, the structure of the NEM 2.0 tariff is revised to be an improved version of net billing, with a retail export compensation rate aligned with the value that behind-the-meter energy generation systems provide to the grid and retail import rates that encourage electrification and adoption of solar systems paired with storage. The successor tariff applies electrification retail import rates, with high differentials between winter off-peak and summer on-peak rates, to new residential solar and storage customers instead of the time-of-use rates in the current tariff. The successor tariff also replaces retail rate compensation for exported energy with Avoided Cost Calculator values that vary according to grid needs. The high differential electrification retail import rates in combination with the variable retail export compensation rates provided by the Avoided Cost Calculator send strong price signals to customers to shift their use of energy from the grid to mid-day and export electricity during the evening hours, which promotes the installation of storage with the solar systems. These price signals also benefit customers who electrify their vehicles, home devices, and appliances. The changes will improve the reliability of electricity in California and reduce greenhouse gas emissions.

To ensure the sustainable growth of customer-sited renewable distributed generation, the successor tariff provides a glide path in the form of an adder based on the values in the Avoided Cost Calculator. The glide path allows for a transition period for the solar industry to adapt to a solar paired with storage marketplace.

This decision also adopts revisions that offer customers in low-income households more access to distributed generation systems, including solar systems paired with storage. To improve such opportunities, this decision provides a glide path with a higher adder to ensure eligible customers achieve the same nine-year payback target for stand-alone solar systems that all other residential customers receive. To ensure affordability of the successor tariff and equity among all customers, this decision directs an evaluation of these elements preceded by a three-year data collection period.

Affordability is front and center in this proceeding, given the finding that a significant and growing cost shift exists in the previous tariff and, to a lesser extent, remains in the adopted successor tariff. This cost shift is created by the ability of distributed generation customers to avoid fixed costs, including grid costs and public purpose program costs, which then become the responsibility of non-participating ratepayers, including low-income customers. The successor tariff adopted in this decision is designed to compensate customers for the value of their exports to the grid based on the Avoided Cost Calculator. This improved valuation will significantly reduce the cost shift and improve affordability for nonparticipating ratepayers, particularly low-income ratepayers. Additionally, the Commission has initiated a rulemaking (Rulemaking 22-07-005, the Rulemaking to Advance Demand Flexibility Through Electric Rates) to broadly restructure the way fixed costs are collected, moving from volumetric charges to

an income-graduated fixed charge on all residential customers. This fixed charge will further reduce cost shifts through an equitable approach to the distribution of electric costs.

Finally, eligible customers of the successor tariff will have the opportunity to take advantage of new funding for up-front incentive payments for solar paired with storage systems and stand-alone storage. This funding allows the Commission to offer a total of $900 million, with $630 million set aside for low-income customers, to reduce the cost of these systems. This funding will provide the financials means for eligible customers to access these systems while further supporting the sustainable growth of customer-sited renewable generation.

1. Legislative and Regulatory History of Net Energy Metering in California

Senate Bill (SB) 656 (Alquist, Stats. 1995, ch. 369) established net energy metering in California, an electricity tariff-based billing mechanism created to "encourage private investment in renewable energy resources, stimulate in-state economic growth, enhance the continued diversification of California's energy resource mix, and reduce utility interconnection and administrative costs." SB 656 added Section 2827 to the Public Utilities Code, which directed every electric utility in California to develop a standard contract or tariff to allow eligible customer-generators (customers who own and operate a solar electrical generating facility to offset part or all their own electrical requirements) to receive a financial credit on their electric bills for energy fed back to the utility's grid.

In the first net energy metering tariff, referred to as NEM 1.0, customer-generators received a full retail rate bill credit for power generated by

their onsite systems that was fed back into the grid when generation exceeded onsite energy demand. The credits offset a customer's monthly electricity bills and could be used on subsequent bills for up to one year.

Relatedly, the federal government enacted the Energy Policy Act of 2005, which requires a state to consider implementing net metering but does not require net metering.[1] It allows a state to decide the terms of the retail sale and billing practices applicable to retail transactions if a state chooses to implement a net metering program where generation offsets customer load.[2] It does not extend to situations where a net metering customer remains a net consumer of power during the netting period. Rather, only federal jurisdiction is triggered "when a facility operating under a state net metering program produces more power than it consumes over the relevant netting period."[3] Further, if a net sale over the netting period occurs, the Public Utility Regulatory Policies Act of 1978 (PURPA) applies, prescribing the price paid for a net sale from a state net metering program.[4] PURPA requires a utility to purchase net surplus generation

[1] Energy Policy Act of 2005, Section 1251 (16 U.S.C. § 2621(d)(11)).

[2] *See* FERC *v. Electric Power Supply Association*, 577 U.S. 260, 279-281 (2016); *S. Cal. Edison Co. v. FERC*, 604 F.3d 996, 1002 (D.C. Cir. 2010) (explaining that the federal government acting through the Federal Energy Regulatory Commission only has jurisdiction over sales at wholesale and federal law reserves regulatory authority over retail sales to the states.)

[3] *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Opinion No. 841, 162 FERC ¶ 61,127 at n.49 (2018) citing *MidAmerican Energy Co.*, 94 FERC ¶ 61,340, 62,263 (2001) ("no sale occurs when an individual homeowner or farmer (or similar entity such as a business) installs generation and accounts for its dealings with the utility through the practice of netting."). (*See also Sun Edison LLC*, 129 FERC ¶ 61,146, 61620 (2009) (explaining that a net sale only occurred where the "end-use customer participating in the net metering program produces more energy than it needs over the applicable billing period.") citing *Standardization of Generator Interconnection Agreements and Procedures*, Order No. 2003-A, 106 FERC ¶ 61,220 at 744 (2004).)

[4] *See generally* 16 U.S.C. §§ 824a-3 *et seq.* and 2601 *et seq.*

at the incremental cost of alternative energy to the utility, which, but for the purchase, the utility would generate itself or purchase from another source.[5]

In 2013, Assembly Bill (AB) 327 (Perea, Stats. 2013, ch. 611) added Section 2827.1 to the Public Utilities Code and mandated that the Commission adopt a successor to the existing net energy metering tariff with the following objectives:

(1) Ensure that the standard contract or tariff made available to eligible customer-generators ensures that customer-sited renewable distributed generation continues to grow sustainably and include specific alternatives designed for growth among residential customers in disadvantaged communities;

(2) Establish terms of service and billing rules for eligible customer-generators;

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

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

(5) Allow projects greater than one megawatt that do not have significant impact on the distribution grid to be built to the size of the onsite load if the projects with a capacity of more than one megawatt are subject to reasonable interconnection charges established pursuant to the commission's Electric Rule 21 and applicable state and federal requirements;

(6) Establish a transition period during which eligible customer-generators taking service under a net energy metering tariff or contract prior to July 1, 2017, or until the electrical corporation reaches its net energy metering program limit pursuant to subparagraph (B) of

[5] 16 U.S.C. § 824a-3(d) and 18 CFR §§ 292.101(b)(6) and 292.304.

> paragraph (4) of subdivision (c) of Section 2827, whichever is earlier, shall be eligible to continue service under the previously applicable net energy metering tariff for a length of time to be determined by the commission by March 31, 2014. Any rules adopted by the commission shall consider a reasonable expected payback period based on the year the customer initially took service under the tariff or contract authorized by Section 2827; and
>
> (7) The commission shall determine which rates and tariffs are applicable to customer generators only during a rulemaking proceeding. Any fixed charges for residential customer generators that differ from the fixed charges allowed pursuant to subdivision (f) of Section 739.9 shall be authorized only in a rulemaking proceeding involving every large electrical corporation. The commission shall ensure customer generators are provided electric service at rates that are just and reasonable.

Subsequently, the Commission approved Decision (D.) 16-01-044, which adopted a revised net energy metering tariff, now referred to as NEM 2.0. In NEM 2.0, customers continue to receive full retail rate credit for energy exported to the grid during a 12-month billing cycle, as well as compensation for net surplus energy.[6] However, NEM 2.0 customers are currently required to pay some charges that align their costs more closely with non-NEM customer costs. For example, customer-generators applying for and participating in NEM 2.0 must pay a one-time interconnection fee and monthly non-bypassable charges.[7]

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[6] Net surplus compensation payment was authorized by AB 920 (Huffman), Stats. 2009, ch. 376, and implemented by the Commission in D.11-06-016. A customer producing power in excess of their on-site load over the 12-month period is eligible for net surplus compensation under certain conditions. Net Energy Metering Aggregation (NEMA) customers do not receive full retail credits and do not receive net surplus compensation.

[7] D.16-01-044 lists the relevant non-bypassable charges as Public Purpose Program Charge; Nuclear Decommissioning Charge; Competition Transition Charge; and Department of Water

Footnote continued on next page.

Further, NEM 2.0 customers must take service under a time-of-use rate.[8] D.16-01-044 established a date of 2019 as the time for a review of NEM 2.0.[9] Additionally, the decision required Energy Division staff to continue to monitor implementation of NEM 2.0 and explore other compensation structures for customer-sited generation with a view to considering a retail export compensation rate that considers locational and time-differentiated values of customer-sited generation.[10]

2. Procedural Background

On August 27, 2020, the Commission adopted the *Order Instituting Rulemaking to Revisit Net Energy Metering Tariffs Pursuant to Decision 16-01-044, and to Address Other Issues Related to Net Metering,* with the focus of the proceeding to be the development of a successor tariff pursuant to the requirements of AB 327. The assigned Administrative Law Judge presided over a telephonic prehearing conference on November 2, 2020, to discuss the proceeding scope and schedule and other procedural matters. On November 19, 2020, the assigned Commissioner issued the *Joint Assigned Commissioner's Scoping Memo and Administrative Law Judge Ruling Directing Comments on Proposed Guiding Principles* (Scoping Memo), which established the

Resources bond charges. These charges are typically specified as non-bypassable for departing load. The decision notes that independent of the net energy metering successor tariff or any other rate schedule, the customers of community choice aggregators and direct access customers also pay the Power Charge Indifference Adjustment. D.16-01-044 at 89 and footnote 100.

[8] Benefiting tenant account customers enrolled in the Solar on Multi-Family Affordable Housing (SOMAH) program are not subject to this requirement.

[9] D.16-01-044 at 86, Conclusion of Law 25 and Ordering Paragraph 11. (*See also* Conclusion of Law 29 and Ordering Paragraph 12.)

[10] D.16-01-044 at 103.

scope of issues to be addressed in the proceeding. The final scope of issues is presented in Section 7 below.

The record of this proceeding includes the *NEM 2.0 Lookback Study* (Lookback Study) conducted by Verdant Associates (Verdant), Energy and Environmental Economics (E3), and Itron, Inc. On January 21, 2021, a ruling presented the Lookback Study to parties and instructed parties to respond to Issue 2 of the Scoping Memo, related to the study. The following parties filed comments on February 4, 2021: American Association of Retired Persons (AARP); California Solar and Storage Association (CALSSA); Ivy Energy; Natural Resources Defense Council (NRDC); Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (SCE) (collectively, Joint Utilities); Protect Our Communities Foundation (PCF); Public Advocates Office of the Public Utilities Commission (Cal Advocates); Small Business Utility Advocates (SBUA); The Utility Reform Network (TURN); and Vote Solar with the Solar Energy Industries Association (SEIA/Vote Solar). The following parties filed reply comments on February 16, 2021: CALSSA; Joint Utilities; PCF; Cal Advocates; and SBUA. A brief overview of the Lookback Study is presented in Section 4 below.

Also in the record of this proceeding is a white paper titled, *Alternative Ratemaking Mechanisms for Distributed Energy Resources in California* (White Paper), written by E3 and Verdant. On January 28, 2021, a ruling introduced the White Paper to parties, noting it would be the subject of a workshop. During the workshop, held on February 8, 2021, E3 hosted a discussion of the White Paper. As noted in the January 28, 2021 ruling and further described below in Section 5, the White Paper is meant to provide a framework for parties to develop their own proposals for a successor to the current net energy metering tariffs.

On February 11, 2021, the Commission adopted guiding principles for the development of a successor to the current net energy metering tariff, which are provided in Section 3 below. As noted in D.21-02-007, "[t]hese principles reflect the statutory requirements of Public Utilities Code Section 2827.1," which is further detailed in Section 3 below.[11] Additionally, the principles speak to specific objectives of the Commission and the California Legislature, while providing the Commission with flexibility in its determination of a successor tariff.

As directed by the Scoping Memo and further instructed in the January 28, 2021 ruling, parties filed proposals for a successor to the net energy metering tariff on March 15, 2021. The parties discussed each of the 19 filed proposals presented at the March 23-24, 2021 virtual workshop. A high-level description of each proposal is presented in Section 6 below.

Opening testimony was served on June 18, 2021, and rebuttal testimony was served on July 16, 2021. A mandatory status conference was held on July 13, 2021, to ensure all parties were able to connect to and participate in a virtual hearing through the Webex platform and a telephonic conference line. The assigned Administrative Law Judge presided over twelve days of virtual evidentiary hearings between July 26, 2021 and August 10, 2021.

The following parties filed opening briefs on August 31, 2021, addressing Issue 2 through Issue 5: Agricultural Energy Consumers Association and California Farm Bureau (Agricultural Parties); Albion Power Company (Albion); California Building Industries Association (CBIA); California Energy Storage Association (CESA); CALSSA; California Wind Energy Association (CalWEA);

[11] D.21-02-007 at 2.

Californians for Renewable Energy; [12] Coalition for Community Solar Access (CCSA); Coalition of California Utility Employees (CUE); Foundation Windpower (Foundation); GRID Alternatives with Vote Solar and Sierra Club (GRID *et al.*); Independent Energy Producers Association (IEPA); Ivy Energy; Joint Utilities; NRDC; PCF; Cal Advocates; SEIA/Vote Solar; Sierra Club; SBUA; TURN; and Walmart, Inc. (Walmart). The following parties filed reply briefs on September 14, 2021: Agricultural Parties; CBIA; California Low-Income Coalition; CALSSA; CalWEA; Clean Coalition; CCSA; CUE; Foundation; GRID *et al.*; IEPA; Ivy Energy, Joint Utilities; NRDC; PCF; Cal Advocates; SEIA/Vote Solar; Sierra Club; San Diego Community Power with San Jose Clean Energy; SBUA; TURN; and Walmart.

The Commission issued a proposed decision on December 13, 2021. Following the filing of opening and reply comments, which are in the administrative record of this proceeding, the newly assigned Commissioner requested additional time to review the proposed decision and the record.

On May 9, 2022, the Administrative Law Judge issued a ruling setting aside submission of the record to further explore three elements: (1) the glide path approach; (2) non-bypassable charges on gross consumption; and (3) community distributed energy resources. On June 10, 2022, parties filed comments responding to questions on these issues; reply comments were filed on July 1, 2022. The record was resubmitted on July 1, 2022.

[12] In this proceeding, the acronym CARE has been used to refer to two entities: the party, Californians for Renewable Energy and the program, California Alternate Rates for Energy. For clarity, this decision will refer to the party by its full name and not the acronym. References to the program in this decision will use the acronym, CARE.

On November 9, 2022, the Administrative Law Judge withdrew the December 13, 2021 proposed decision.

3. Guiding Principles

In D.21-02-007, the Commission adopted the following eight guiding principles to assist in the development and evaluation of a successor to the current net energy metering tariff:

(a) A successor to the net energy metering tariff should comply with the statutory requirements of Public Utilities Code Section 2827.1;

(b) A successor to the net energy metering tariff should ensure equity among customers;

(c) A successor to the net energy metering tariff should enhance consumer protection measures for customer-generators providing net energy metering services;

(d) A successor to the net energy metering tariff should fairly consider all technologies that meet the definition of renewable electrical generation facility in Public Utilities Code Section 2827.1;

(e) A successor to the net energy metering tariff should be coordinated with the Commission and California's energy policies, including, but not limited to, SB 100 (2018, DeLeon)[13], the Integrated Resource Planning process, Title 24 Building Energy Efficiency Standards, and California Executive Order B-55-18;

(f) A successor to the net energy metering tariff should be transparent and understandable to all customers and should be uniform, to the extent possible, across all utilities;

[13] SB 100 establishes the requirements that: (i) by 2030 at least 60 percent of California's electricity is renewable; and (ii) by 2045 all retail electricity sold in California shall be powered by renewable and zero-carbon resources.

(g) A successor to the net energy metering tariff should maximize the value of customer-sited renewable generation to all customers and to the electrical system; and

(h) A successor to the net energy metering tariff should consider competitive neutrality amongst Load Serving Entities.

4. Lookback Study[14]

The Lookback Study conducted in 2020 entails: (1) a cost-effectiveness analysis consistent with the Commission's Standard Practice Manual and D.19-05-019, *Decision Adopting Cost-Effectiveness Analysis Framework Policies for all Distributed Energy Resources*; and (2) a cost-of-service analysis that compares the cost to serve NEM 2.0 customers against their total bill payments. As noted in the study, the objectives of the Lookback Study were to examine the impacts of the NEM 2.0 tariff and compare how metrics changed in the transition from NEM 1.0 to NEM 2.0.

The cost-effectiveness analysis performed in the Lookback Study considers the cost-effectiveness of NEM 2.0 systems using the Participant Cost Test (PCT),[15] the Program Administrator Cost (PAC) test,[16] the Total Resources Cost (TRC)

[14] The Lookback Study is in the administrative record of this proceeding through the January 21, 2021 Ruling and is also in the evidentiary record of this proceeding as exhibit PCF-15. In briefs, parties cite to either the Lookback Study or PCF-15. It is the same copy and therefore has the same page numbers.

[15] The PCT is the measure of the quantifiable benefits and costs to the customer due to participation in a program. (Standard Practice Manual at 8.)

[16] The PAC test measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant. (Standard Practice Manual at 23.)

test[17] and the Ratepayer Impact Measure (RIM) test.[18] As noted in the Lookback Study, D.19-05-019 designated the TRC test as the primary cost-effectiveness test.[19] The Lookback Study also explains that because the Societal Cost Test is still in the testing phase, it was not used in this analysis.[20] Avoided costs used in the four tests are based on the 2020 Avoided Cost Calculator approved by the Commission on June 25, 2020.[21]

Table 1 presents a summary of cost-effectiveness results for each of the three investor-owned utilities.

Table 1. Lookback Study Cost-Effectiveness Results by Electric Utility[22]

Utility	Weighted Average Benefit-Cost Ratio			
	PCT	**TRC**	**RIM**	**PAC**
PG&E	1.81	0.80	0.33	41.08
SCE	1.54	0.91	0.49	10.99
SDG&E	2.03	0.84	0.31	129.58
Total	1.77	0.84	0.37	22.98
NPV[23] Total Benefits ($M)	21,329	7,960	7,576	7,576
NPV Total Costs ($M)	12,041	9,462	20,583	330

[17] The TRC measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. (Standard Practice Manual at 18.)

[18] The RIM test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by a program. The Rim test has been described as the Non-Participant Test. (Standard Practice Manual at 13.)

[19] Lookback Study at 43.

[20] Lookback Study at 44.

[21] Lookback Study at 56.

[22] Lookback Study at Table 5-1.

[23] The acronym NPV is defined as net present value.

The full cost of service analysis performed in the Lookback Study compares an estimate of the utility cost of servicing NEM 2.0 customers with the customer's utility bills.[24] The Lookback Study describes the utility cost of servicing a NEM 2.0 customer as based on the customer's use of the grid and an allocation of the fixed costs of service. For the purposes of the Lookback Study, the consultant used general rate case Phase 2 data, transmission and regulatory costs derived from utility rates, and incremental costs from utility advice letters.[25]

Table 2. Ratio of Bill Payment to Cost of Service, NEM 1.0 vs. NEM 2.0[26]

		Ratio of Bill Payment /Cost of Service					
		PG&E		**SCE**		**SDG&E**	
	Sector	**Pre-NEM**	**Post-NEM**	**Pre-NEM**	**Post-NEM**	**Pre-NEM**	**Post NEM**
NEM 1.0	Residential	171%	88%	152%	86%	101%	54%
	Nonresidential	128%	106%	110%	105%	124%	122%
	Total	146%	99%	122%	100%	119%	111%
NEM 2.0	Residential	139%	18%	91%	9%	94%	9%
	Nonresidential	189%	152%	118%	108%	178%	166%
	Total	157%	60%	99%	34%	113%	46%

The Lookback Study presented several key takeaways.

First, with respect to cost-effectiveness, the study found the benefits to NEM 2.0 participating customers in the form of bill savings and the federal investment tax credit (ITC) outweigh the costs. The Lookback Study concluded that NEM 2.0 systems are not cost-effective from the combined participant/utility perspective, which is shown by the TRC benefit-cost ratio

[24] Lookback Study at 45.

[25] Lookback Study at 45.

[26] Lookback Study at Table 1-7.

result of less than 1.0. Further, the study also found customer-sited renewables under the NEM 2.0 tariff have a RIM benefit-cost ratio less than 1.0, "indicating that the NEM 2.0 program may result in an increase in rates for ratepayers."[27]

In terms of the cost-of-service analysis, the Lookback Study indicates that, for both residential and nonresidential participating customers, average bill payments prior to installing a NEM 2.0 system are higher than the cost of service. The study found that, after installing the NEM 2.0 system, residential participating customers on average pay lower bills than the utility's cost to serve them. Finally, in the case of nonresidential customers installing NEM 2.0 systems, the study found these customers pay bills that are slightly higher than their cost of service due to demand charges and the lower ratio of system size to customer load in comparison to residential customers.[28]

5. E3 White Paper on Net Energy Metering Revisions

The Commission engaged E3 to support and facilitate the development of a successor to the net energy metering tariff. E3 developed the White Paper to provide a perspective on a framework that aligns compensation for customer-sited renewable generation with the net benefits the generation provides to the electric system and allows for sustainable growth of behind-the-meter renewable generation as required by AB 327.

According to the White Paper, the key to preserving a viable market is providing a glide path that includes a gradual retail export compensation rate reform and an external transitional support mechanism — a Market Transition Credit — that enables a reasonable payback period for new customers investing

[27] Lookback Study at 13.

[28] Lookback Study at 13.

in onsite renewable generation.[29] The White Paper recommends the Market Transition Credit be fixed over a defined payback period for each cohort of new customers (vintage), which would be based on time, number of subscribed customers or the volume of adoption. The Market Transition Credit would be gradually phased out over successive vintages as technology costs decline and/or developers adjust to rate changes, enabling customers to afford onsite renewable generation while receiving retail export compensation rates that are increasingly aligned with the underlying value of the onsite renewable generation.

The White Paper proposes that a central element of the framework would be a new successor retail export compensation rate for customers that will increase efficiency in adoption of behind-the-meter generation while producing more equitable outcomes for all ratepayers. The successor retail export compensation rate would replace retail rate-based credits for energy injections into the grid with retail export compensation rates that reflect avoided costs, and are time and seasonally differentiated.

An underlying recommendation of the White Paper is that during the transition period, customers would contribute more towards fixed costs of service than under NEM 2.0. However, the White Paper proposes that the successor import rate would not be cost-based initially to limit the size of the Market Transition Credit needed to provide a reasonable payback period.

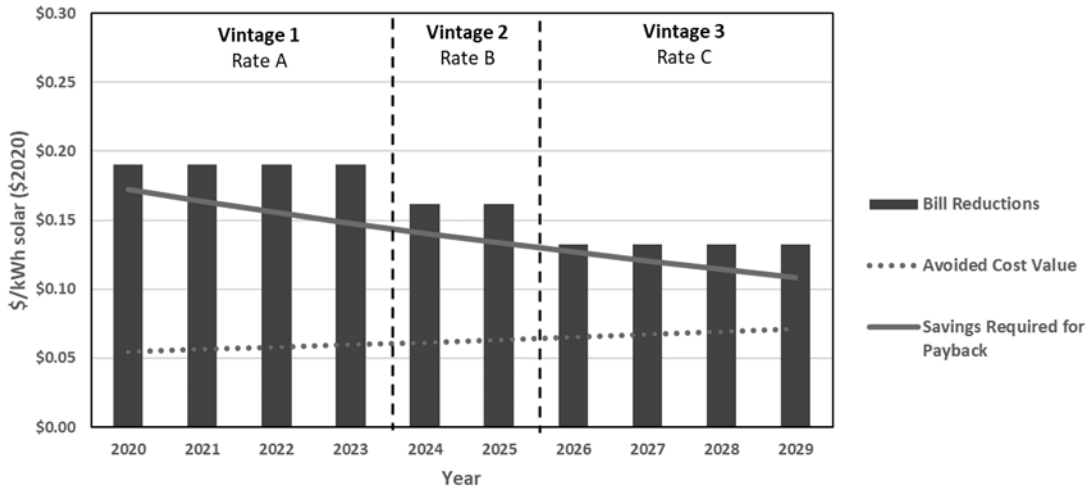
One additional element of the White Paper is time. The White Paper explains that time "can be used to guide the speed at which the transition would occur" and would allow for retail export compensation rate modification,

[29] White Paper at 3-6.

adjustments to the Market Transition Credit, and the ability to gauge impacts on bill savings and payback periods.[30]

Figure 1 and Figure 2 below illustrate how these elements would work together through time and each vintage of customers. Figure 1 presents an optimistic scenario where technology costs decline sufficiently such that a Market Transition Credit is not necessary. Figure 2 provides a more conservative scenario where technology costs remain flat. The White Paper presumes the combination of increasingly cost-reflective retail export compensation rates, and the flexibility of the Market Transition Credit, will allow for a gradual transition to a net energy metering tariff framework that more accurately reflects underlying value while supporting electrification, paired storage, and the reduction of greenhouse gas emissions.

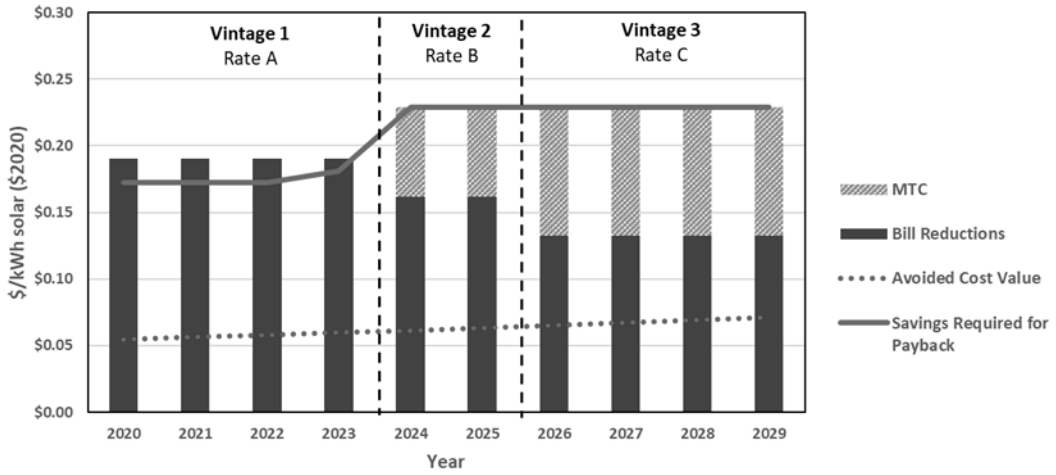
Figure 1. Bill Reductions and Market Transition Credit, Optimistic Scenario[31]



[30] White Paper at 4 and Table 1.

[31] White Paper at Figure 1.

Figure 2. Bill Reductions and Market Transition Credit, Flat Technology Cost Scenario[32]



6. Proposals for Net Energy Metering Tariff Changes

Parties individually or jointly filed proposals for a successor to the current net energy metering tariff. Below, this decision presents an overview of each response filed on March 15, 2021.[33] The overview includes a brief description of the major elements of each filed proposal. In a few instances, parties only presented narrowly defined proposals or recommendations, which are summarized. In some cases, parties later revised aspects of proposals in testimony or briefs.

6.1. AARP Recommendation

AARP did not file a proposal but recommends the Commission use the White Paper as a foundation because it is a straightforward framework that calls out the alleged cost shift and identifies a Market Transition Credit that would diminish over time as conditions change.

[32] White Paper at Figure 2.

[33] The party, Californians for Renewable Energy, filed its proposal on March 14, 2021.

6.2. CALSSA Proposal

CALSSA recommends the Commission maintain the current net energy metering tariff for nonresidential customers but revise the tariff for residential customers. CALSSA's residential proposal focuses on retail export compensation rates and includes a glide path based on deployment targets.

CALSSA proposes retail export compensation rates that would decrease over the course of five steps based on a percentage of each utility's retail rate, which CALSSA contends results in rates more reflective of avoided costs. Step five would result in a 50 percent decrease for PG&E's participating customers' rates, 75 percent for SCE customers' rates, and 45 percent for SDG&E customers' rates. CALSSA recommends the decrease in rates be less for customers installing paired storage, which would decrease in step five to 80 percent for PG&E customers, no decline for SCE customers, and 65 percent for SDG&E customers. CALSSA proposes the step-down thresholds be based on cumulative residential megawatts per utility.

Other aspects of the CALSSA proposal include a 20-year lock on the retail export compensation rate framework. Further, CALSSA proposes customers would be required to pay what they owe monthly and eliminate the annual true-up. CALSSA also proposes the Commission require utilities to create a portal to enable contractors to reasonably access customer interval data, which CALSSA contends would increase accuracy of savings estimates and reduce project development costs.

CALSSA also proposes maintaining aspects of the NEM 2.0 residential tariff specifically designed for renters and low-income households. For single-family households with income below 80 percent of Area Median Income (AMI), census tracts with income less than 100 percent of AMI, and properties

eligible for the Multi-family Affordable Solar Housing (MASH) and SOMAH programs, CALSSA proposes these customers receive net energy metering credits at full retail rates minus non-bypassable charges. For customers eligible for California Alternate Rates for Energy (CARE) and the Family Electric Rate Assistance (FERA) programs, net energy metering credits would be compensated at the same level as the non-CARE rates of their otherwise applicable rate schedule. Households living in multi-family rental properties located in census tracts with income less than 120 percent of the AMI would be eligible for virtual net energy metering (VNEM) at full retail rates, minus non-bypassable charges.

6.3. CCSA Proposal

CCSA's proposal is focused solely on community distributed energy resources and is modeled on the concept described in the White Paper. CCSA proposes that renewable energy projects up to five megawatts interconnected to the distribution system receive monetary credits that would then be applied to the utility bills of customers in the same utility service area who subscribe to the project (Subscribers or Benefiting Accounts). CCSA explains that the credits would be based on the value provided to the grid and when that value is provided. Energy would be valued based on California Independent System Operator (CAISO) Day Ahead Zonal Prices, with an applied Avoided Cost Calculator loss factor. Generation and Transmission & Distribution Capacity will have a fixed value based on the Avoided Cost Calculator values. Other value provided would include Environmental Value in the form of greenhouse gas rebalancing and a greenhouse gas adder. CCSA proposes that rates for Benefitting Accounts would be set based on the effective tariff rate at the execution of the interconnection agreement and fixed for 25 years.

Subscribers could be in any customer class and could be a bundled or unbundled customer but must be in the same utility service area as the project. Subscribers would not be required to commit to a set amount of time. The credits would be rolled over indefinitely until utilized, but if a customer leaves the utility service, credits on the account are forfeited. Exiting fees for CARE- or FERA-eligible customers and customers on other low-income programs would be prohibited. CCSA also proposes that if there is unsubscribed generation capacity, the Generator Account may bank the credits and allocate them to Benefitting Accounts within two years. Enrollment would be a capacity-based subscription and would require at least 50 percent capacity serving residential and small commercial customers.

6.4. Californians for Renewable Energy Proposal

Californians for Renewable Energy proposes the Commission compensate customer-generators by creating a small renewable qualifying facility net energy metering customer-generator tariff or power purchase agreement for facilities up to three megawatts. This proposal contends customer-generators should be compensated at a rate equal to the utility's avoided cost as defined by PURPA, which is the incremental cost to an electric utility of electric energy or capacity or both which such utility would otherwise generate itself or purchase from another source. This party did not propose a rate structure, application of secondary customer benefits, terms of service, or billing rules in its proposal filing.

6.5. CESA Proposal

CESA filed two narrow proposals focused on energy storage enhancements to be overlaid on any successor tariff.

Proposal 1 would enable virtual pairing of separate solar and offsite energy storage resources that are contractually linked to synchronize charging

and generation profiles. For net energy metering generation exported during a specific time interval, a virtually-paired storage resource would charge during that same time interval to absorb the generation and be credited at the retail export compensation rate at the time it exports. Where the investment to install solar and storage onsite is less advantageous, virtual pairing would support development of community storage to create economies of scale and enable customers to claim shares in community storage to absorb the generation and deliver it at times of greatest grid value.

Proposal 2 would remove the size limit for energy storage systems paired with net energy metering generators, by extending the three-year temporary suspension adopted in the Microgrids proceeding and extending the policy to all sizes of energy storage systems.

6.6. CalWEA Proposal

CalWEA did not file a proposal for a successor but instead recommends six policies by which the Commission should judge the successor proposals: (1) end the alleged cost shift from participating to non-participating customers; (2) reconcile potentially conflicting statutory goals and define "sustainable growth"; (3) make any remaining cost shifting transparent and routinely reviewed; (4) establish an income-based subsidy for participating customers; (5) do not equate equity with installing customer generation at low-income households; and (6) require NEM 1.0 and NEM 2.0 customers to support any subsidies.

6.7. Clean Coalition Proposal

Clean Coalition proposes the Commission adopt a Feed-in Tariff, similar to the pilot program adopted by the Los Angeles Department of Water and Power, as the successor to the current net energy metering tariff. Clean Coalition

proposes a flat rate combined with a Time of Delivery and seasonal multipliers to compensate behind-the-meter solar and energy storage on either side of the customer meter. Clean Coalition recommends an incentive to deploy storage but opposes any transmission access charges or demand charges.

6.8. Foundation Windpower Recommendations

Foundation does not provide a proposal for a successor to the current tariff but rather provides three recommendations solely for medium/large commercial, industrial, and agricultural customers. First, Foundation recommends that for this customer class (with demand greater than 500 kilowatts, with fixed and demand charges, and who install behind-the-meter wind energy facilities at 1 megawatt or greater), the Commission should provide an option to remain on the current tariff or opt-in to any new successor tariff. Second, Foundation contends the Commission should find that customers with wind energy facilities sized at 1 megawatt or greater and where net excess generation compensation does not exceed its value to the grid do not have significant impact on the distribution grid. Third, Foundation also contends that the Commission should permit currently installed wind energy generation facilities that have been de-rated from the manufacturer's original nameplate capacity down to 1.0 megawatt to operate at their intended nameplate capacity provided that doing so would cause no significant impacts on the distribution grid.

6.9. GRID Alternatives/Vote Solar/ Sierra Club Proposal

The GRID *et al*. proposal is the adoption of two policies: (1) reducing low-income energy burden by equalizing the net energy metering export value; and (2) extending the benefits of the current net energy metering tariff for 20 years for projects owned and controlled by a California cooperative

corporation or nonprofit organization. The proposal does not opine on other aspects of the successor to the net energy metering tariff.

The energy burden reduction policy would apply to customers with incomes less than or equal to 80 percent of the AMI and would be applicable on all future net energy metering tariffs, including VNEM. GRID *et al*. proposes eligible customers would remain on their retail rate for imports but would be assigned a time-varying rate for exports equal to the 2021 default residential time-of-use rate. This rate would remain in place for 20 years from interconnection and remain fixed to 2021 values, thus reducing the nonparticipant cost shift impact over time, compared to NEM 2.0. Eligible customers would be billed on a net billing basis. GRID *et al.* proposes the net costs of this policy would be assigned to all ratepayers.

The community projects policy would apply to projects owned and controlled by a California cooperative corporation or nonprofit organization, or a public entity, representing an Environmental and Social Justice (ESJ) community. The policy would not limit the geographic locations of the projects. GRID *et al.* proposes maintaining the structure of the current net energy metering tariff for 20 years from interconnection of the new projects. GRID *et al*. notes this policy is not meant to nor does it address the nonparticipant cost shift impacts. Rather, this policy is meant to increase the deployment of clean energy among middle and lower-income customers.

6.10. Ivy Energy Multifamily VNEM Proposal

Ivy Energy's proposal focuses on a VNEM subtariff for multifamily dwellings and proposes to maintain the existing VNEM subtariff structure and retail export compensation until reservation capacity reaches 10,000 megawatts, at which time the Commission would then transition VNEM to the successor

tariff. Ivy Energy proposes several changes to the current VNEM subtariff. First, Ivy Energy recommends the Commission adopt the requirement of a firm timeline of 30 days for utilities to update benefiting account lists when requested and an update to the utilities' notification process. Ivy Energy also recommends allowing CARE customers to retain their discount when a shared distributed energy resource is installed, thus allowing CARE benefits to be provided on an aggregated basis, similar to master metered arrangements. Ivy Energy also suggests the Commission could offer additional incentives to existing multifamily properties to encourage the installation of new VNEM systems.[34]

6.11. Joint Utilities Proposal

Joint Utilities propose a distributed generation successor tariff for both residential and nonresidential customers, which is focused on a net billing arrangement that sets retail export compensation rates based on avoided costs as determined in the Avoided Cost Calculator, while also recovering transmission, distribution, and public purpose costs.

Joint Utilities recommend establishing retail export compensation rates by using the 8,760 hourly avoided cost values produced by the Avoided Cost Calculator, weighting the avoided costs by metered customers' exports, and capping rates at no more than the corresponding retail commodity volumetric rate in each time period. The resulting rates would be updated annually following the adoption of the annual Avoided Cost Calculator.

Joint Utilities propose a two-part rate for imports from the grid, which would require net energy metering customers to be placed on cost-based

[34] Ivy Energy March 15, 2021 Proposal at 9.

time-of-use differentials and a monthly grid benefits charge based on installed capacity.

With respect to billing arrangements, Joint Utilities propose for each billing cycle, a customer's exported energy would be priced at the applicable retail export compensation rate explained above and depending on the time-of-use period, up to the amount that is delivered to the customer during the billing period. Any remaining exported energy would be paid at the monthly net surplus compensation rate. Joint Utilities propose a monthly true-up in which no energy credits would be banked or carried forward from prior billing cycles. Joint Utilities explain that customers would only be allowed to offset within each time-of-use period and not offset kilowatt-hours exported during low-cost hours against grid consumption during high-cost on-peak hours.

To address equity issues, Joint Utilities propose a transitional Income-Qualified Rider to be applied in conjunction with programs for which a customer might qualify, including CARE, FERA, and Medical Baseline, and would operate alongside any low-income solar incentive program. Here, Joint Utilities propose a reduced grid benefits charge of $1.50 per kilowatt[35] while retail export compensation for income-qualified customers would be the same as other net energy metering customers.

Joint Utilities also propose two virtual crediting tariffs: one for income-qualified customers and one for other customers. All exports to the grid from the generating account would be valued at the retail export compensation rates. There would be no netting of customer load using an allocation of kilowatt-hours because the energy generated by the generating facility is not

[35] This would equate to $9.00 per month for a six-kilowatt system.

consumed on site for any of the exported electricity. All interconnection and increased billing costs would be paid by the owner. There would be no true-up. Customer consumption would continue to be billed according to their current tariff based on meter data and receive a monthly credit from the generation exported from the VNEM facility.

6.12. NRDC Proposal

NRDC's proposal applies to residential customers only. NRDC proposes that solar customers be paid for the total value that their panels provide at near-term hourly avoided costs, with a lock-in period of 10 years. This export value would vary hourly, which would encourage customers to export electricity when it is most valuable to the grid and provide incentives to install battery storage. Further, NRDC proposes to add a fixed grid benefits charge to address the benefits that solar customers get from being connected to the grid. NRDC recommends basing non-bypassable charges on total (grid and estimated solar) consumption.

Other details of NRDC's proposal include an up-front cash adoption incentive, or market transition credit, to ensure a ten-year payback period. NRDC proposes the incentive could be funded from sources other than energy bills, such as through cap-and-trade revenue. NRDC suggests the incentive could be flexible, *i.e.*, higher in communities where rooftop solar is most needed.

To address equity issues, NRDC recommends the establishment of a clean energy equity fund to get clean energy benefits directly to Californians with lower incomes. Here, NRDC proposes to levy a modest charge to solar owners on existing net energy metering tariffs who have already recouped their initial investment.

6.13. PCF Recommendations

PCF puts forth five recommendations, which are not full successor tariff proposals.

Proposal A is focused on growing community storage and would require net energy metering customers to submit a fee of 20 percent of their NEM system cost when they provide their interconnection fee. PCF proposes this fee would be provided to a Community Storage Program Manager, which is the local community choice aggregator or government who owns all storage purchased. The fees would build storage no more than five miles from the census track where the net energy metering system is located, and no smaller than three megawatts in size. PCF recommends the Commission require each utility to make space for Community Storage of up to 20 megawatts at each substation within the distribution grid and substations connecting the transmission grid to the distribution grid.

Proposal B is focused on oversizing new net energy metering systems to encourage electrification. PCF recommends setting an annual generation requirement for new net energy metering systems and providing customers double the current wholesale rate compensation for exports during the first five years, afterwards the compensation would be reduced to the wholesale rate compensation received by NEM 2.0 tariff customers.

Proposal C is focused on the issue of equity. PCF proposes to extend the current NEM 2.0 structure for low-income customers and renters, until 10,000 megawatts of installed solar capacity is installed. PCF explains this should be a transitional aspect of moving from the current tariff to a successor tariff.

Proposal D is also focused on the transition between the current and successor tariffs. There are two parts to Proposal D. First, PCF recommends designing a program that works for disadvantaged communities within the successor tariff, which would provide an uncapped net energy metering participation opportunity for low-income and disadvantaged communities, as well as renters. Second, PCF proposes to create a community solar program based on the NEM 2.0 tariff structure to serve CARE and residential customers, with solar arrays owned and operated by a community choice aggregator or other program administrator, sized 50 kilowatts to five megawatts, located on rooftops and parking lots within a five-mile radius. PCF proposes utilities compensate program administrators the full time-of-use retail rate based on the current net energy metering tariff for the electricity produced by the array. The program administrator would then pay the site owner five percent, keep 10 percent for administrative purposes, and pay the remainder to the financer. Once low-income and renter's annual loads have been offset by these community solar arrays, the program administrator must use the funds to provide additional discounts to renter and low-income customer bills.

Proposal E would revise the time-of-use rates to align with energy policy and wholesale electricity prices. PCF proposes the rates align with wholesale rates for electricity unit pricing, minimize retail prices during highest renewable energy production hours, be consistent year-round, maintain a structure with three different prices for three different times of day, be consistent across all three utilities, and be mandatory for net energy metering customers.

6.14. Cal Advocates Proposal

Cal Advocates proposes compensating net energy metering participants through the use of net billing at the avoided cost for exported energy and a grid

benefits charge to ensure all participants pay their fair share for grid services. Cal Advocates propose the retail export compensation rate would vary by time-of-use period to reflect the time-varying nature of marginal costs and the avoided cost of providing or using a kilowatt of electricity. Cal Advocates also recommends the retail export compensation rate for each time-of-use period be set equal to the weighted average avoided costs.

For import rates, Cal Advocates recommends a time-of-use rate plus a grid benefits charge to recover costs to provide distribution and transmission services and ensure recovery of non-bypassable charges that produce broad societal benefits. Cal Advocates proposes the grid benefits charge be assessed on a dollar per kilowatt charge per month but CARE- and FERA-enrolled customers would be exempt from this charge. Further, Cal Advocates recommends the non-bypassable charges should be recovered on the basis of volumetric usage served by on-site generation, as statutorily required.

Cal Advocates proposes instantaneous netting with retail rates for consumption billed based on metered consumption net of on-site generation in real time. Further, Cal Advocates recommends customers not be allowed to credit net exports against net consumption occurring during a different time. However, Cal Advocates recommends the Commission allow excess bill credits to roll over until an annual true-up. The excess bill credits would then be compensated at wholesale energy market prices, which is consistent with the current net energy metering tariff.

Cal Advocates recommends incentives to encourage customers on existing net energy metering tariffs to transition to the successor tariff and to install storage. Further, Cal Advocates also proposes the Commission require existing

net energy metering customers to take service on the successor tariff after a proposed five-year period for incentives ends.

6.15. Sierra Club Proposal

Sierra Club focuses solely on the residential class of net energy metering customers in its proposal but looks at both current and future net energy metering customers. Similar to the White Paper, Sierra Club proposes to use a net billing approach in addition to a Market Transformation Credit for future net energy metering customers. Current net energy metering customers would be transitioned to existing time-of-use rates for import rates.

Instead of creating a new rate with complex features or fixed charges, Sierra Club proposes successor tariff customers subscribe to highly differentiated time-of-use rates, which would be fixed for 20 years and would not increase with retail rates. Rather, for each gigawatt of total solar deployment, compensation for each successor "tranche" of net energy metering customers would decrease by 10 percent toward avoided costs as determined by that year's Avoided Cost Calculator. Sierra Club estimates that once the three utilities reach 10 gigawatts of total rooftop solar deployment, compensation would reach the avoided cost. Sierra Club also proposes to allow systems to be sized to accommodate future installation of all-electric appliances and two electric vehicles.

Sierra Club recommends requiring existing net energy metering customers, except for low-income customers, to take service under existing time-of-use rates with a two to one differential between summer peak evening and summer weekday off-peak periods, beginning eight years from initial interconnection of the solar system.

6.16. SBUA Proposal

SBUA proposes to shift the net energy metering tariff to focus on storage and removes the restriction on grid charging of net energy metering paired storage systems, subject to size restrictions and a daily time-of-use netting period.

SBUA proposes to calculate the retail export compensation rate using the Avoided Cost Calculator, including all cost elements, to ensure exports are compensated commensurate with the time of delivery to the grid. SBUA supports the use of utility-specific marginal costs. SBUA proposes to double the potential on-to-off peak value differential during the summer and provide a much larger differential during the winter. SBUA recommends maintaining the current treatment of non-bypassable charges. However, SBUA recommends against the use of demand, grid access, or fixed charges.[36] SBUA states that a demand charge provides little or no incentive for most individual customers to take actions that reduce system costs. SBUA later changed its proposal in opening and rebuttal testimony and recommended a generation charge. SBUA also added more proposal detail in testimony including the recommendation for appropriate payback periods, emphasis on the TRC, need for incentives for continued maturation, and a second phase to determine implementation.[37]

SBUA recommends that, with a few exceptions (customers in disadvantaged communities, small businesses, and critical facilities), net energy metering customers should be switched to a monthly netting period. SBUA states that netting over a multi-hour time-of-use period would present customers

[36] SBUA Proposal, March 15, 2021 at 20.

[37] SBUA January 7, 2022 Comments at 6-8.

with reasonable pricing signals. Further, SBUA contends a very short-term netting period would encourage customers to waste effort and money on enabling technologies to smooth out inconsequential variations while daily time-of-use netting could be more compatible with management of load and storage.

With respect to net energy metering paired storage systems, SBUA proposes to allow these systems to charge from the grid without restriction using a daily time-of-use netting period limiting the benefit of time-shifting grid energy. Further, SBUA proposes that customers should be able to choose to configure and meter the net energy metering-paired storage system to ensure that compensation would only be earned by eligible renewable electric generation. SBUA offers that, alternatively, customers could choose a simpler configuration for their storage system to allow charging from either the net energy metering generator or the grid.

6.17. SEIA/Vote Solar Proposal

SEIA/Vote Solar's proposal focuses solely on the net energy metering tariff for residential customers with incomes above 80 percent of the AMI. SEIA/Vote Solar contends the Commission should not change the tariff for commercial and industrial customers.

Explaining that the goal of its proposal is to align bill savings with the benefits that the systems' exports provide, SEIA/Vote Solar recommends requiring customers of the successor tariff to take service on a time-of-use rate that promotes electrification and incentivizes the installation of storage. A five-step process, the alignment will begin in 2023 with PG&E and SDG&E customers required to use the electrification rate. SEIA/Vote Solar proposes the remaining four steps would each be triggered when specific total capacities of

residential systems are installed. SEIA/Vote Solar recommends setting the capacity trigger value equal to one year of expected residential solar or paired storage installations for each utility, based on the utility's annual average over the past five years. SEIA/Vote Solar states that its proposal would result in retail export compensation rate reductions, by the year 2027, of 50 percent for PG&E and SDG&E net energy metering successor tariff customers and 25 percent for SCE customers.

The SEIA/Vote Solar proposal maintains net billing with continued exemptions from departing load charges, standing charges and interconnection upgrade costs. SEIA/Vote Solar's proposal would continue the 20-year term of service for the tariff but allow for default monthly billing for residential and small commercial customers with an annual true-up in April for those wanting to maintain annual billing. The proposal also continues netting of imported and exported power in each metered interval and a $10 monthly minimum bill.

6.18. TURN Proposal

TURN's proposal is a net billing arrangement with retail export compensation rates based on Avoided Cost Calculator values, import rates based on time-of-use tariffs, a monthly grid charge, a market transition credit for CARE-eligible customers only, and a unique rate for customers with paired storage.

TURN recommends bill credits based on actual hourly exports by the customer's system relying on hourly values from the Avoided Cost Calculator that are modified by actual recorded CAISO market prices. The modification would replace forecasted values for energy, ancillary services, losses, and greenhouse gas cap-and-trade with actual market prices. Credit for exports would be calculated using an hourly netting approach and billed monthly.

TURN proposes that after 12 months, the balance would be adjusted based on the net surplus compensation formula.

Under TURN's proposal, net energy metering customers could choose from the complete list of available time-of-use tariffs to provide flexibility and promote uptake of options tied to identified distributed energy resources.

TURN also proposes a grid charge to recover non-bypassable, unavoidable, and shared costs associated with consumption of onsite generation. The monthly customer-specific charge would be dynamically calculated using a second meter or estimated based on customer self-consumption in each month.

The final two elements of TURN's proposal are focused on subsets of net energy metering customers. First, TURN proposes an up-front buydown incentive or Market Transition Credit for CARE-eligible customers installing a system on existing properties. The second element is a unique rate for customers with paired storage, which includes additional time-of-use rate granularity and price signals, as well as dispatch obligations to respond during emergency grid needs.

7. Issues Before the Commission

The Scoping Memo established the seven issues listed below as the scope of issues for this proceeding. D.21-02-007 addressed Issue 1. This decision will only address Issue 2 through Issue 6. A subsequent decision will address Issue 7.

1. What guiding principles (including those related to AB 327 (2013, Perea), equity, environmental goals, and social justice) should the Commission adopt to assist in the development and evaluation of a successor to the current net energy metering tariff?
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?

3. What method should the Commission use to analyze the program elements identified in Issue 4 and the resulting proposals, while ensuring the proposals comply with the guiding principles?
4. What program elements or specific features should the Commission include in a successor to the current net energy metering tariff?
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?
6. Other issues that may arise related to current net energy metering tariffs and subtariffs, which include but are not limited to the virtual net energy metering subtariff, net energy metering aggregation subtariff, the Renewable Energy Self-Generation Bill Credit Transfer program, and the net energy metering fuel cell tariff.
7. What additional or enhanced consumer protections for customers taking service under net energy metering and/or the successor to the current net energy metering tariff should be adopted by the Commission?

8. Revising the Net Energy Metering Tariff

In this proceeding, each of the first five issues in the scoping memo is a building block toward the ultimate determination of the last two scoping issues: the design of the successor and related tariffs. This proceeding previously determined the foundation for the successor and related tariffs through the adoption of a set of guiding principles, which will be referenced throughout this decision. The first building block in this decision is a review of the Lookback Study to determine the findings that should be relied upon when analyzing the tariff elements and, ultimately, the successor and related tariffs. In addition to the Lookback Study, the decision considers other methods of analysis in the selection of tariff elements and the successor tariff. With the guiding principles,

Lookback Study, and analysis methods determined, this decision then discusses the various elements that parties and the White Paper recommend for the successor tariff. After determination of the five building blocks, this decision presents a review of the elements and proposals and adopts a successor and related tariffs.

8.1. Reliance on the Lookback Study

Parties were asked to address what information from the Lookback Study the Commission should use to inform the selection of the successor net energy metering tariff and how that information should be applied. As discussed below, based on the evidence in this proceeding, this decision finds that the following Lookback Study conclusions should be considered findings of fact in this proceeding and used in the analysis of proposals and adoption of a successor to the existing net energy metering tariff:

(a) NEM 2.0 has negatively impacted non-participant ratepayers.

(b) NEM 2.0 is not cost-effective.

(c) NEM 2.0 disproportionately harms low-income customers not participating in the net energy metering tariff.

This decision discusses each of these findings in Section 8.1.2 through Section 8.1.4 below. First, however, this decision presents a general discussion of the value of the Lookback Study.

8.1.1. The Lookback Study's Analysis Is Sound

CALSSA considers the Lookback Study to have very limited value in this case because it analyzes the NEM 2.0 tariff. CALSSA and SEIA/Vote Solar note that few parties propose to keep the NEM 2.0 tariff structure for general market residential customers. CALSSA argues the Commission should give minimal weight to a "backward facing analysis" of elements and assumptions different

from those in the successor tariff proposals.[38] Similarly, SEIA/Vote Solar considers the Lookback Study not useful in determining the scope and degree of the needed changes and the speed at which changes are implemented because the study only looks at cost-effectiveness from a historical perspective (*i.e.*, backwards looking) and does not look at the "many successes of the net energy metering program."[39] For example, SEIA/Vote Solar asserts the results of the Lookback Study illustrate that adoption of solar "is often the precursor and catalyst" for adoption of other distributed energy resources.[40]

However, CUE offers that the Lookback Study "should be used to demonstrate what the new NEM should not be," and agrees with other parties that the Lookback Study "confirms that the NEM 2.0 [tariff] has severely damaged ratepayers."[41] Further, Joint Utilities state that both the Order Instituting this Rulemaking and the Scoping Memo require the Commission to consider the findings of the Lookback Study and that given past direction by the Commission, Commission staff supervision, substantial stakeholder input, and a consultant with appropriate experience and expertise, the Lookback Study should be "taken seriously and its findings given substantial weight."[42]

In a separate argument, CALSSA contends that a number of the study's assumptions are or appear flawed, and the source code necessary to investigate or replicate the study's main conclusions is not provided. PCF also contends the Lookback Study is flawed due to the use of the Avoided Cost Calculator. PCF

[38] CALSSA Opening Brief at 17.

[39] SEIA/Vote Solar Opening Brief at 8-9.

[40] SEIA/Vote Solar at 10 citing Lookback Study at 62 and Table 3-1.

[41] CUE Opening Brief at 6 citing CUE-02 at 7.

[42] Joint Utilities Opening Brief at 22.

asserts the Lookback Study underestimates the benefits of behind-the-meter generation because the calculator does not adequately quantify avoided transmission costs or the resiliency benefits of net energy metering solar, or account for the air quality and climate benefits. CALSSA further asserts the Commission did not make the Verdant analysts available for discovery or cross-examination, and re-running of its model would have been time-consuming.[43] However, Joint Utilities note that prior to issuance of the Lookback Study in the January 21, 2021 Administrative Law Judge Ruling, D.18-09-044 developed and D.19-10-040 modified the process to receive and address stakeholder input into the draft research plan for the lookback evaluation of the NEM 2.0 tariff.[44] Further, Joint Utilities underscore that the Commission published a draft of the Lookback Study on August 14, 2020, and parties were invited to comment on the draft. Joint Utilities point to a matrix in the Lookback Study, which contains a summary of comments submitted by Aurora Solar, Cal Advocates, CALSSA, Foundation Windpower, LLC, GRID Alternatives, the Joint Utilities, CalWEA, TURN, Vote Solar, and SEIA.[45] Joint Utilities state the matrix also summarizes the Lookback Study's response to the comments.[46]

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[43] CALSSA Opening Brief at 18 citing to the CALSSA Reply Comments on the NEM-2.0 Lookback Study, February 16, 2021, at 1.

[44] Joint Utilities Opening Brief at 22 at footnote 71 citing PCF-15 (the Lookback Study) at 104-140.

[45] Joint Utilities Opening Brief at 22 at footnote 71 citing PCF-15 (the Lookback Study), Appendix B at 104-140.

[46] Joint Utilities Opening Brief at 22 at footnote 71 citing PCF-15 (the Lookback Study), Appendix B at 104-140.

This decision finds the Lookback Study to be a sound analysis of the NEM 2.0 tariff and that it should be used in the development of a successor tariff. CALSSA and SEIA/Vote Solar would have the Commission dismiss the study because it is "backward looking." The evaluation of the NEM 2.0 tariff indicates whether the tariff is or is not performing as required, thus establishing a foundation for creating the successor tariff. The Commission recognizes, as SEIA/Vote Solar states, that the study does not tell the complete story. However, the Commission agrees that the Lookback Study can inform what not to do in a successor tariff. Furthermore, CALSSA's contention that the study "assumptions are or appear flawed" is not persuasive; CALSSA and all stakeholders have been given several opportunities to weigh in on both the development and drafting of the study. A disagreement on an assumption does not equate to a flaw in the assumption.

Regarding PCF's contention that the Lookback Study is flawed because it relies on the Avoided Cost Calculator, PCF's contention is incorrect. This decision finds the cost-effectiveness analyses was conducted in accordance with prior Commission decisions. As discussed in the Lookback Study, D.09-08-026 "provides guidance on the tests to be used, the costs and benefits to be included in each test, and the avoided cost inputs to be used when calculating program costs and benefits. This analysis considers the cost-effectiveness of NEM 2.0 systems using the five distinct tests."[47] The study also states that "the avoided costs used in this analysis are based on the Commission's 2020 Avoided Cost Calculator [version 1c] approved on June 25, 2020. The avoided costs were generated for all utility and climate zone combinations. The analysis includes all

[47] Lookback Study at 41-42.

components of the avoided costs included in the 2020 Avoided Cost Calculator."[48]

Accordingly, the Lookback Study should be used as a foundation to create a successor tariff that continues the elements that resulted in positive outcomes but corrects or replaces the elements that resulted in negative outcomes.

8.1.2. The Lookback Study Demonstrates NEM 2.0 Negatively Impacts Non-Participant Ratepayers

SEIA/Vote Solar state the Lookback Study illustrates the need for reform of the current net energy metering structure in the residential market and that the "reduction of the impact of solar adoption on non-participating ratepayers should be addressed through the successor tariff," and notes there is little debate on these two points.[49] Indeed, many parties agree that the Lookback Study finds the current structure of the net energy metering tariff has had a negative impact on non-participating ratepayers.

Cal Advocates asserts the study "clearly shows the NEM 1.0 and NEM 2.0 tariffs create equity concerns due to the misalignment between costs and value," which then "creates revenue under-collections that must be recovered by nonparticipating customers."[50] Cal Advocates observes that the Lookback Study shows the NEM 2.0 tariff unreasonably burdens non-participants of net energy metering.[51] Cal Advocates estimates the annual cost burden generated by the NEM 1.0 and NEM 2.0 tariffs will be approximately $3.37 billion in 2021.[52]

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[48] Lookback Study at 56.

[49] SEIA/Vote Solar Opening Brief at 8.

[50] Cal Advocates Opening Brief at 7.

[51] Cal Advocates Opening Brief at 6 citing PAO-03 at 2-32.

[52] PAO-03 at 2-17.

Joint Utilities also support this finding, asserting the Lookback Study concludes that NEM 2.0 participating customers receive "significant financial benefits" at the "expense of non-participating customers." Recognizing the Lookback Study cost shift estimate of $1 billion only looks at NEM 2.0 customers prior to 2020, Joint Utilities claim that, by looking at all customers who have adopted NEM 2.0 through 2020, NEM 2.0 installations will increase bills paid by non-participant customers by $13 billion over 20 years.[53] Supporting this disparity, IEPA points to the Lookback Study finding that residential net energy metering customers' bills are lower than the utility's cost to serve them while nonparticipant ratepayers see increased rates.[54]

TURN also agrees with the finding of the Lookback Study that there is a cost shift associated with NEM 2.0, as well as NEM 1.0. However, TURN contends the Lookback Study underestimates the cost shift because the study used 2020 Avoided Cost Calculator values.[55] TURN estimates the cost shift at $1.093 billion (in $2012) or $1,600 per NEM 1.0 customer as of 2020 and $13 billion (over 20 years) or $31,402 per NEM 2.0 customer as of 2020.[56]

In its reply brief, IEPA concludes that if the number of net energy metering tariff customers continues to grow, the pool of nonparticipants will shrink; thus,

[53] Joint Utilities Opening Brief at 23 citing PCF-15 (the Lookback Study) at Table 5-1. Utilities note the Table is in levelized values whereas in nominal dollars, the impact is likely over $20 billion. (*See also* Joint Utilities Reply Brief at 5 explaining the difference between the Lookback Study $1 billion estimate of the cost shift (Lookback Study at Table 5-10) versus the Joint Utilities $3.4 billion estimate (IOU-01 at 64:3-66:11).)

[54] IEPA Opening Brief at 3 citing PCF-15 at 1 and 13 (the Lookback Study).

[55] TURN Opening Brief at 15 citing TRN-01 at 9.

[56] TURN Opening Brief at 15 citing TRN-01 at 9 and Lookback Study at 125 and Table 5-1.

without any changes to the current tariff structure, the financial burden on the shrinking pool of nonparticipants will become unsustainable.[57]

Portraying the cost shift as insubstantial, PCF contends the Lookback Study shows that the cost shift is only $501.1 million — "far less than the $3.4 billion" estimated by various parties.[58] PCF submits the Lookback Study results show that, in 2019, nonresidential NEM 2.0 customers paid $117.5 million more than the cost to serve them while residential NEM 2.0 customers paid $618.6 million less than the cost to serve them.[59] Further, PCF argues the Lookback Study underestimates the benefits of behind-the-meter generation by relying only on the Avoided Cost Calculator, which PCF claims nullifies any existing cost shift.[60] (The Avoided Cost Calculator is discussed in Section 8.2.)

In reply briefs, Joint Utilities dispute PCF's claims of no cost shift and that the cost shift is shown solely in the bill savings from energy consumption.[61] Joint Utilities state that the cost shift from participating to non-participating customers is the result of non-participating customers overcompensating net energy metering customers for exports and non-participants paying for the infrastructure and public policy costs that net energy metering customers avoid. Joint Utilities explain that residential net energy metering customers can bypass payment of infrastructure and other costs incurred to serve them because such costs are embedded in volumetric rates and, thus, avoided by net energy

[57] IEPA Reply Brief at 4.

[58] PCF Opening Brief at 15 citing PCF 24 at 4.

[59] PCF Opening Brief at 15 citing PCF-15 at 96 (the Lookback Study).

[60] PCF Opening Brief at 16 citing PCF-15 at 56-57 (the Lookback Study).

[61] Joint Utilities Reply Brief at 4 citing PCF Opening Brief at 8.

metering customers; this results in other customers paying the difference.[62] Cal Advocates further explains that "under the volumetric rate structure and NEM 2.0 policies, average residential NEM 2.0 customers pay only 18 percent of their total annual cost of service for PG&E, 9 percent for SCE and 9 percent for SDG&E."[63] Joint Utilities acknowledge that the Lookback Study does not analyze the components of the cost shift it identifies, but note that the Commission's Affordability Report explains the cost shift is due to the bill savings exceeding the value the solar generation provides to the system.[64]

Turning first to a brief discussion of the Commission's Affordability Report, 350 Bay Area argues that the cost shift discussion in this proceeding ignores the real drivers behind high electricity rates and unequal affordability. 350 Bay Area asserts the Affordability Report states that high electricity rates are driven by transmission and distribution costs, and wildfire mitigation. This proceeding's review of the Affordability Report indicates that a growth in rate base across PG&E, SDG&E and SCE has been driven, in part, by rising transmission investments for PG&E and distribution investments for SCE and SDG&E. However, the report also states that this rise in rate base has been coupled with a growth of solar adoption that has led to residential costs being shifted from customers who have installed rooftop solar to customers who have not. The report contends the "result is that growing electric rates have been

[62] Joint Utilities Reply Brief at 5 citing IOU-01 at 66:3-6, 66:12-67:5, 66:7-11, and 67:6-68:4.

[63] Cal Advocates Opening Brief at 7, citing the Lookback Study at 12.

[64] Joint Utilities Reply Brief at 4-5, footnote 9 citing the Commission's "*Utility Costs and Affordability of the Grid of the Future: An Evaluation of Electric Costs, Rates, and Equity Issues*" (Affordability Report) at 27-28. Available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/en-banc/feb-2021-utility-costs-and-affordability-of-the-grid-of-the-future.pdf.

offset to some extent for net energy metering customers… while non-net energy metering customers have shouldered some of the cost of maintaining the grid."[65] Hence, the Affordability Report indicates high electricity rates are driven by a combination of transmission and distribution costs, wildfire mitigation, and the shifted costs from solar customers to customers without solar. The cost shift discussion in this proceeding does not ignore the other drivers of high electricity rates. This proceeding focuses on the one driver that is relevant to this proceeding, a significant cost shift from solar customers to customers without solar.

This decision finds that NEM 2.0 has negatively impacted non-participant ratepayers through this cost shift. While the precise impact depends upon the Avoided Cost Calculator version used, the Commission disagrees with PCF's method of calculating the impact and find PCF's cost shift estimate of $501 million to be incorrect. As Joint Utilities point out, the impact is caused by more than the simple bill savings from net energy metering customer energy consumption. Rather, the negative impact on non-participant ratepayers is caused by the bypassing of infrastructure and other service costs embedded in volumetric rates from each one of the net energy metering customers in NEM 1.0 and NEM 2.0 over the course of the 20-year length of the customer's tariff.

The negative impact on non-participant ratepayers is further shown in the Affordability Report. While the Commission agrees that the cost shift is not the sole cause for high electricity rates, the resulting inequity shown in both the Affordability Report and the Lookback Study should be addressed. Accordingly, the Commission should use this information to develop a successor tariff that

[65] Affordability Report at 9-10.

corrects the cost shift, to the extent possible, while balancing all eight guiding principles. As noted by IEPA, without any changes to the current tariff structure, the financial burden on the shrinking pool of nonparticipants is unsustainable and would fall disproportionately on lower-income ratepayers.

8.1.3. The Lookback Study Shows NEM 2.0 Is Not Cost-effective

The Lookback Study presents the cost-effectiveness results for NEM 2.0 for each customer segment in Table 5-3 of the study, which is provided below in Table 3.

Table 3. Lookback Study Cost-Effectiveness Results

Utility	Customer Sector	Weighted Average Benefit-Cost Ratio			
		PCT	TRC	RIM	PA
PG&E	Agriculture	1.72	1.19	0.41	590.70
	Commercial	1.79	1.12	0.37	437.07
	Industrial	1.47	1.17	0.51	6,128.90
	Residential	1.83	0.69	0.31	28.77
SCE	Agriculture	1.23	1.43	0.85	337.88
	Commercial	1.32	1.35	0.72	96.86
	Industrial	1.16	1.34	0.87	880.11
	Residential	1.62	0.80	0.43	8.20
SDG&E	Agriculture	1.51	1.25	0.53	821.47
	Commercial	1.87	1.18	0.37	1,344.24
	Industrial	1.57	1.21	0.49	16,696.43
	Residential	2.08	0.76	0.29	100.09

This discussion first focuses on the nonresidential sectors of the NEM 2.0 tariff. As previously discussed, PCF argues that because the cost-effectiveness tests used in the Lookback Study were performed using the Avoided Cost Calculator, the results underestimate many of the concrete benefits of

behind-the-meter generation, including greenhouse gas reductions, system resiliency, and reliability.[66] For the same reasons presented in Section 8.1.1 above, this decision disagrees with PCF. No other party disputes the PCT, RIM, and TRC cost-effectiveness results for the commercial, agricultural, and industrial sectors and, since this decision previously found the analysis was performed in compliance with Commission directives, it is reasonable to affirm the cost-effectiveness results for the commercial, agricultural, and industrial sectors.

Walmart asserts the Lookback Study's TRC results for the commercial, industrial, and agricultural segments of the NEM 2.0 tariff show NEM 2.0 is cost-effective for these market segments.[67] Also concurring with the results, SEIA/Vote Solar submit commercial, agricultural, and industrial sectors generally pay rates that fully cover their costs.[68] This opinion is shared by Foundation Windpower, Agricultural Energy Consumers Association, and California Farm Bureau Federation.[69] However, as discussed in Section 8.2.2 below, results of all three Standard Practice Manual tests should be considered when determining the cost-effectiveness of a resource.

While the Lookback Study found commercial, agricultural, and industrial sectors of the NEM 2.0 tariff had TRC and PCT results of 1.0 or better, the results

[66] PCF Opening Brief at 13.

[67] Walmart Opening Brief at 5 citing Lookback Study at 80-81 and Table 5-13.

[68] SEIA/Vote Solar Opening Brief at 10 citing Lookback Study at Table 5-11.

[69] *See* Foundation Windpower Opening Brief at 6 and Agricultural Energy Consumers Association and California Farm Bureau Federation Reply Brief at 4.

of the RIM test, which fared poorly, should also be considered.[70] The RIM test is useful for examining whether disproportionate impacts occur on non-participants, as part of complying with the statute's requirements to ensure benefits approximately equal costs to all customers; such an examination cannot be conducted with the TRC test. Thus, the Commission should place more weight on the results of the RIM test. Further, Joint Utilities assert that using the 2021 Avoided Cost Calculator, instead of the inaccurate 2020 Avoided Cost Calculator, would result in lower RIM results.[71] Thus, the nonresidential sectors of the NEM 2.0 tariff are not cost-effective.

With respect to the residential customer sector for NEM 2.0, Joint Utilities support the Lookback Study's finding that NEM 2.0 is not cost-effective for non-participants and "demonstrates a wealth transfer from lower-income to higher-income customers."[72] (This alleged wealth transfer is discussed in Section 8.1.4 below.) CUE highlights the low cost-effectiveness RIM and TRC test results for NEM 2.0, noting that NEM 2.0 does not come close to passing the TRC test.[73] Sierra Club also supports the cost-effectiveness findings in the Lookback Study, which show "TRC and RIM test results as under 1.0 and PCT results as above 1.5 for SCE, above 1.75 for PG&E and above 2.0 for SDG&E." Sierra Club contends the Commission should rely on these results to support

[70] The RIM results for wind resources are questionable as these results include residential and other customers who do not have demand charges in their rate structure. (*See* Foundation Windpower January 7, 2022 Comments at 3.)

[71] IOU-02 at 87.

[72] Joint Utilities Opening Brief at 23 citing PCF-15 at 4, 5, and 39.

[73] CUE Opening Brief at 7 citing the Lookback Study at 6 and 9.

transitioning retail export compensation rates from being based on retail import rates to being based on avoided cost.[74]

The cost-effectiveness analysis results of the Lookback Study for the residential segment are incorporated into this decision as findings of fact. This decision finds the analysis followed the directives of prior Commission rulings. Accordingly, the Commission should conclude that for the residential sector, NEM 2.0 is not cost-effective.

8.1.4. The Lookback Study Shows NEM 2.0 Disproportionately Harms Low-Income Ratepayers

Highlighting results from the Lookback Study, parties contend the study indicates NEM 2.0 leads to great financial disparity between upper- and lower-income brackets of customers. Parties recommend the Commission conclude that NEM 2.0 disproportionately harms low-income customers not participating in the net energy metering tariff.

TURN submits that the Lookback Study results demonstrate the existing net energy metering tariffs have disproportionately benefited non-CARE residential net energy metering customers.[75] TURN offers several examples of such results. First, in referencing the cost-effectiveness test results in the Lookback Study, TURN states "high PCT values and the low residential RIM test scores (average 0.32 for non-CARE customers) was accompanied by the finding that bill payments by residential NEM 2.0 customers, on average, covered between 9-18 [percent] of their cost of service."[76] Yet, for CARE NEM 2.0

[74] Sierra Club Opening Brief at 6 citing Lookback Study at 80-81.

[75] TURN Opening Brief at 17.

[76] TURN Opening Brief at 16 citing TRN-1 at 10 and Lookback Study at Table 5-9 and Table 5-11.

customers, TURN states the Lookback Study indicates that the "NEM 2.0 program yields lower participant cost test values and a longer payback period for CARE customers," and notes the payback period for a CARE net energy metering customer was two times that of a non-CARE net energy metering customer.[77]

Taking a different view, GRID *et al*. asserts the Lookback Study makes clear that low-income customers are not participating in net energy metering at levels equal to other residential customers. Pointing to Figure 3-6 of the Lookback Study, GRID *et al.* underscores that the three lowest income brackets had lower rates of net energy metering participation in comparison to their share of the population and the three highest income brackets had higher participation rates compared to their share of population.[78] IEPA points to the Lookback Study finding that net energy metering systems are located disproportionately in ZIP Codes with high median incomes.[79] NRDC highlights the Lookback Study finding is corroborated by a Lawrence Berkeley National Laboratory study, which indicates that only about 13 percent of net energy metering customers come from the lowest 40 percent of income, while customers in the top 20 percent of income make up 43 percent of net energy metering adopters.[80] Additionally, CUE asserts the Lookback Study indicates that both the NEM 1.0 and NEM 2.0 tariffs "disproportionately harm disadvantaged communities" in that while only a small percentage of residential net energy metering systems (11 to 12 percent)

[77] TURN Opening Brief at 16 citing TRN-1 at 10 and Lookback Study at 33.

[78] GRID *et al.* Opening Brief at 4 citing Lookback Study at 33, Figure 3-6.

[79] IEPA Opening Brief at 3 citing PCF 15 at 33 and 35 (the Lookback Study).

[80] NRD-01 at 5 citing the LBNL Solar Demographic Tool which can be found at: https://emp.lbl.gov/solar-demographics-tool (accessed by NRDC on 6/12/2021).

are installed in disadvantaged communities, these same communities are responsible for a portion of the costs of systems installed in all communities regardless of the income level.[81]

PCF disputes this concern of income inequity, stating that "parties' narrative distorts the reality of which customers bear the burdens of the purported cost shift."[82] PCF agrees that areas with higher median incomes have higher concentrations of net energy metering customers compared to lower incomes but states that "even in those higher-income areas, the overwhelming majority of households do not have [net energy metering] solar installations," approximately 93 to 97 percent.[83] PCF argues the disproportional harm does not exist, the cost shift is distributed not only among non-participants in lower-income zip codes but also among the 93 to 97 percent of customers in higher-income zip codes.[84] PCF argues that 92 percent of the cost shift is being borne by non-CARE customers.[85]

PCF's comments fail to acknowledge that lower-income customers, including those who just barely miss the eligibility criteria for CARE, are disproportionately harmed because they are burdened with the additional expense of a portion of the 82 to 91 percent of the cost of service bypassed by predominantly wealthier NEM 2.0 customers whose "bill payments by residential NEM 2.0 customers, on average, only covered between 9-18 [percent]

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[81] CUE Opening Brief at 7 citing the Lookback Study at 37.

[82] PCF Opening Brief at 45.

[83] PCF Opening Brief at 45-46 citing PCF-15 at 33 (Lookback Study).

[84] PCF Opening Brief at 46.

[85] PCF Opening Brief at 47.

of their cost of service." PCF's arguments disputing the validity of the equity concern are dismissive and glib.

The Commission agrees that the Lookback Study indicates that NEM 2.0 disproportionately harms low-income customers not participating in the net energy metering tariff. The findings in the Lookback Study show that NEM 2.0, and thus NEM 1.0, disproportionately benefited non-CARE residential net energy metering customers while all customers, including those with lower incomes, must bear the addition of the 82 to 91 percent of the cost of service bypassed by net energy metering customers. The Commission finds the Lookback Study indicates that NEM 2.0 disproportionately harms low-income customers not participating in the net energy metering tariff.

8.2. Analyzing Tariff Elements and Proposals

Parties were asked to comment on the methods the Commission should use to analyze the successor program elements and the successor tariff, to determine whether the proposals comply with the guiding principles. CALSSA states that "the legal standards for the successor tariff inform the methodologies the Commission should use to analyze parties' proposals and their resulting program elements, while ensuring the proposals comply with the guiding principles."[86] CALSSA highlights that "while parties largely agree on the types of methodologies to be utilized, parties disagree on both the correct way to execute those methodologies and the assumptions used therein."[87] In addition, parties offer differing interpretations of certain aspects of the statute and guiding principles that the tariff elements and tariff proposals are required to follow.

[86] CALSSA Opening Brief at 18.

[87] CALSSA Opening Brief at 19.

Accordingly, this decision addresses the following aspects of this scoping issue in the sections below: the definition of sustainable growth; cost-effectiveness approaches and the consideration of other benefits; the appropriate length of time for a net energy metering participant payback period (*i.e.*, cost recovery time); and a definition of "equity among all ratepayers."

8.2.1. Tariff Participation Growth Should Not Require Nonparticipant Financial Burden

All parties agree that the final successor to the current net energy metering tariff should comply with Public Utilities Code Section 2827.1(b)(1), which mandates that the Commission adopt a successor to the existing net energy metering tariff that "ensures that customer-sited renewable distributed generation continues to grow sustainably and includes specific alternatives designed for growth among residential customers in disadvantaged communities." However, parties have varying interpretations of the phrase "grow sustainably" and what that means for the successor tariff.

CALSSA asserts the plain meaning of "grow sustainably" is "continued increase of customer-sited distribution generation in the State in a manner that can continue over a period of time."[88] CALSSA maintains the phrase "grow sustainably" included in AB 327 reflects the Legislature's desire for net energy metering "to avoid the fits and starts that the previous capped program placed on the industry's growth."[89] Further, CALSSA contends this is consistent with a prior interpretation of the phrase in D.16-01-044 where the Commission stated its "responsibility under Section 2827.1 is to see to the continued growth of

[88] CALSSA Opening Brief at 7.

[89] CALSSA Opening Brief at 10.

customer-sited renewable [distributed generation]."[90] TURN, however, points out that the Commission made modifications to D.16-01-044 in response to applications for rehearing to clarify that the "sustainable growth" criteria is no more important than other provisions of the statute, stating that "the Commission was not placing a greater emphasis on achieving sustainable growth" over other statutory obligations.[91]

TURN does not attempt to define the phrase "grow sustainably" but contends that the requirement "can be satisfied if a successor tariff is found to be cost-effective for certain participants over a reasonably defined timeframe."[92] Other parties offer other definitions of the term. For example, CUE recommends the Commission adopt the United Nations' definition: "growth that is repeatable, ethical and responsible to, and for, current and future communities."[93] CUE submits this means that the growth of the net energy metering tariff "is not sustainable if it does not take into account inequities caused by the tariff, either now or in the future."[94]

SEIA/Vote Solar counsels the Commission to look to the statute itself when defining the term "continues to grow sustainably" and points out that in Donovan v. Poway Unified School District, the court stated, "[w]e must presume that the Legislature intended 'every word, phrase, and provision…in a

[90] CALSSA Opening Brief at 7, citing D.16-01-044 at 58.

[91] TURN Reply Brief at 39 citing D.16-09-036 at 13.

[92] TURN Opening Brief at 47 citing TRN-01 at 31-32.

[93] CUE Opening Brief at 11 citing CUE-02 at 13, citing from "What Does Sustainable Growth Really Mean?" Forbes, Rick Miller, August 16, 2018. (*See also* the United Nations view on sustainability at: https://sustainabledevelopment.un.org/rio20/about.)

[94] CUE Opening Brief at 11.

statute…to have meaning and to perform in a useful function.'"[95] SEIA/Vote Solar concludes that the statutory language "grow sustainably" "refers to examining any proposed change to the tariff in light of its impact on the growth of the customer-sited renewable [distributed generation] market."[96]

This decision returns to the Commission's prior statement on "grow sustainably" in which the Commission stated that it "was not placing a greater emphasis on achieving sustainable growth" over other statutory obligations.[97] There is nothing in the record of this proceeding that would lead the Commission to stray from this position. The Commission agrees with SEIA/Vote Solar that any proposed change to the tariff should consider the impact on the growth of the net energy metering market. This decision clarifies that because most customer-sited renewable distributed generation in California is from solar systems, the sustainable growth of the solar industry must also be considered to ensure the sustainable growth of customer-sited renewable distributed generation.[98]

As multiple parties have acknowledged, the net energy metering program has assisted the State in meeting its energy and climate goals. However, because the Commission is mandated to create a tariff that adheres to the entire statute — including equity concerns — the growth of the market should not come at the undue and burdensome financial expense of nonparticipant ratepayers. Allowing the net energy metering tariff to result in growing costs shifted to

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[95] SEIA/Vote Solar Opening Brief at 74 citing Donovan v. Poway *Unified School Dist.* (2008) 167 Cal. App. 4th 567, 590-591.

[96] SEIA/Vote Solar Opening Brief at 76.

[97] D.16-09-036 at 13.

[98] *See* https://www.californiadgstats.ca.gov.

nonparticipant ratepayers is not sustainable to the overall health of net energy metering.

The Commission analyzed the elements of the tariff and the proposals with the entirety of the statute in mind, as well as the other guiding principles, to develop a successor that balances the requirements of the statute and the guiding principles.

8.2.2. Cost-effectiveness Analyses Shall Be Conducted Pursuant to D.19-05-019 Using the 2022 Avoided Cost Calculator

With respect to analyzing cost-effectiveness, in D.21-02-007 of this proceeding, *Decision Adopting Guiding Principles*, the Commission stated that:

> cost-effectiveness shall be conducted in the manner directed by D.19-05-019. Relatedly, D.16-06-007 requires that cost-effectiveness evaluations for distributed energy resources shall use the most recent version of the Avoided Cost Calculator. We clarify that the most recent version of the Avoided Cost Calculator was adopted by the Commission in D.20-04-010 and Resolution E-5077. Accordingly, requests 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.[99]

As described in the most recent update of the Avoided Cost Calculator, "the Commission uses the Avoided Cost Calculator to determine the primary benefits of distributed energy resources across Commission proceedings, the primary benefits being the avoided costs related to the provision of electric and natural gas service. The Avoided Cost Calculator calculates seven types of

[99] D.21-02-007 at 12-13.

avoided costs: generation capacity, energy, transmission and distribution capacity, ancillary services, Renewables Portfolio Standard, greenhouse gas emissions, and high global warming potential gases. The outputs of the Avoided Cost Calculator feed into the cost-benefit analysis for distributed energy resources."[100] As the Commission previously directed in both D.16-06-007 and D.19-05-019, avoided costs shall be determined in the routine update of the Avoided Cost Calculator, which will then be used as inputs in the four standard practice manual tests to determine cost-effectiveness in resource specific proceedings, including this net energy metering revisit.

For further clarity, this decision notes that the avoided costs determined in the Avoided Cost Calculator are the utilities' marginal costs of providing electric service to customers. Those costs can be avoided when the demand for energy decreases because of distributed energy resources, and are, thus, the benefits of using distributed energy resources. The avoided costs determined in the Avoided Cost Calculator should not be confused with the term "avoided cost" used in federal law, where avoided cost is the cost of energy or capacity to a purchasing utility of the next increment of that wholesale energy or capacity.[101] Because this decision does not make any changes to net surplus compensation, the Commission declines to consider the creation of a new tariff or power purchase agreement for facilities up to three megawatts as recommendation by Californians for Renewable Energy.[102]

While some parties express concern about the current Avoided Cost Calculator and offer modifications to these directives (which is addressed below)

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[100] D.22-05-002 at 2-3.

[101] *See* 18 CFR § 292.101 defining "avoided cost" as used in PURPA.

[102] *See also* discussion at Section 8.3.3, Section 8.4.9, and Section 8.5.3.

only PCF argues for an alternate cost-effectiveness approach. PCF states, Public Utilities Code Section 2827.1(b) requires that the successor be "based on the costs and benefits of the renewable electrical facility" and that the "total benefits of the standard contract or tariff to all customers and the electrical system are approximately equal to the total costs."[103] PCF recommends that to ensure compliance with the statute, the Commission should rely on the Lookback Study's cost-of-service analysis to identify the actual cost to serve net energy metering customers.[104] PCF asserts the cost-of-service analysis determines the actual costs to serve net energy metering customers and relies on the actual data that is transparent.[105] PCF contends the Avoided Cost Calculator underestimates the benefits of behind-the-meter generation such as reduced transmission and distribution costs, reduced greenhouse gases, and system resiliency and reliability.[106]

PCF recognizes the prior determination that requests for changes to the Avoided Cost Calculator in this proceeding will not be considered. In lieu of requesting changes to the Avoided Cost Calculator, PCF asks the Commission to "rely on the Lookback Study's cost-of-service analysis to identify the actual cost to serve [net energy metering] customers and "not rely on the Avoided Cost Calculator as the primary indicator of the cost-effectiveness of any [net energy metering] tariff."[107] PCF's justification for this is its claim that the Avoided Cost Calculator underestimates transmission and distribution costs, reduced

[103] PCF Opening Brief at 11-12.

[104] PCF Opening Brief at 12.

[105] PCF Opening Brief at 13-14.

[106] PCF Opening Brief at 13.

[107] PCF Opening Brief at 12 and 13.

greenhouse gases, and system resiliency and reliability;[108] all of which the Commission addressed in D.20-04-010.[109] Hence, PCF is essentially asking the Commission to upend three prior decisions requiring use of the Avoided Cost Calculator as the determinant of the inputs for the standard practice manual cost-effectiveness tests and instead use the Lookback Study's cost-of-service analysis. Accordingly, the request by PCF to use the Lookback Study cost-of-service analysis in place of the Avoided Cost Calculator and the standard practice manual cost-effectiveness tests is denied.

With respect to requested modifications to the adopted approach of analyzing cost-effectiveness, parties offer two categories of modifications: (1) revisions to the tests themselves; and (2) revisions to the weight given to each of the four tests. This decision begins with the latter.

Several parties support the Commission directive requiring cost-effectiveness analyses to review the TRC, PCT, and RIM test results, but naming the TRC as the primary test by which to evaluate cost-effectiveness.[110] SBUA concurs with this approach and notes that relying primarily on the TRC test is supported by Public Utilities Code Section 2827.1, which requires the tariff to ensure that total benefits of the tariff to all customers and the electrical system are approximately equal to the total costs.[111] While agreeing the TRC test is the primary test, CALSSA underscores the principle stated in the Standard Practice

[108] PCF Opening Brief at 13.

[109] D.20-04-010 at 42-43, 50-56, 56-61, and 69-70.

[110] SBUA Opening Brief at 4 citing D.21-02-007 at Finding of Fact 4.

[111] SBUA Opening Brief at 4.

Manual that the tests "are not intended to be used individually or in isolation" but, rather, necessitate the consideration of the "tradeoffs between the tests."[112]

IEPA maintains the TRC test does not offer much insight in the costs and benefits of individual proposals for the successor tariff. IEPA submits that a resource can have a TRC test score of more than one indicating cost-effectiveness, but that score does not indicate whether the resource is a better choice than another resource with a higher score.[113] Similar to CALSSA, IEPA contends use of the TRC test along with the RIM and PCT tests will provide the Commission with useful information about different aspects of proposals.[114] Joint Utilities also support use of all three tests, indicating each has its value: the TRC test has the ability to indicate whether a demand side program is cost-effective to the grid relative to other resource options;[115] the RIM test measures what happens to rates due to changes in utility revenues and operating costs caused by the program;[116] and the PCT measures the economic viability of a distributed generation facility to the developer or customer installing the facility and can assist the Commission in determining the level of incentive needed to promote the investment.[117]

In support of the RIM test as the primary test, Cal Advocates argues that use of the RIM test will ensure the most accurate analysis since it is the only test that captures the tariff's cost burden for non-participants, thus addressing the

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[112] CALSSA Opening Brief at 43 citing *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects*, p. 6, California Public Utilities Commission (October 2001), available at: cpuc-standard-practice-manual.pdf (ca.gov) (Standard Practice Manual).

[113] IEPA Opening Brief at 7 citing D.19-05-019.

[114] IEPA Opening Brief at 7.

[115] Joint Utilities Opening Brief at 54 citing the Standard Practice Manual at 5.

[116] Joint Utilities Opening Brief at 55 citing D.19-05-019 at 9.

[117] Joint Utilities Opening Brief at 56 citing D.09-08-026 at 65 and Conclusion of Law 5.

principle of equity.[118] Cal Advocates further argues that the co-mingling of participants and nonparticipants in the TRC test (*i.e.*, general ratepayers) does not capture alterations in net energy metering tariff design nor does it address equity concerns.[119] NRDC points out the impact of distributed generation with a net energy metering tariff is two-fold in that participants are paid for electricity exports and they offset their onsite consumption with self-generation, neither of which are achieved without installing the generation system.[120] NRDC contends the RIM test evaluates the impact of both self-consumption and export.[121] SBUA opposes primary reliance on the RIM test as a measure of cost-effectiveness for all customers, as it "accounts only for certain effects on non-participants, ignoring the benefits to participants, the utility system as a whole, and the environment."[122] Further support for reliance on the RIM test comes from TURN, who argues that the Commission cannot evaluate the cost-effectiveness of different tariff options because the key elements of tariff design (incentives, retail export compensation rates, netting, grid charges, *etc.*) are not quantified in the TRC.[123] TURN contends the RIM test compares the benefits received by all customers (primarily avoided cost savings) with the incremental costs incurred to serve participating customers including utility program costs, incentives paid to participants, and decreased revenues received from participants.[124] TURN

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[118] Cal Advocates Opening Brief at 9 citing PAO-01 at 5-6.

[119] Cal Advocates Opening Brief at 9 citing PAO-01 at 5-5.

[120] NRDC Opening Brief at 21.

[121] NRDC Opening Brief at 21.

[122] SBUA Opening Brief at 6 citing SBU-01 at 13:26-27 and SBU-08 at 6:12-15.

[123] TURN Opening Brief at 19.

[124] TURN Opening Brief at 21, citing TRN-01 at 14.

concludes the RIM test is the only approach that properly accounts for the impact of the tariff design on all customers.

SEIA/Vote Solar acknowledges it advocated for the affirmation in D.21-02-007 that cost-effectiveness analysis would be performed in the manner directed in D.19-05-019 but states the 2021 Avoided Cost Calculator values complicate this support.[125] SEIA/Vote Solar concedes that, using the 2021 Avoided Cost Calculator values, solar alone does not pass the TRC test under any parties' proposal based on the cost-effectiveness analyses performed by E3.[126] Thus, SEIA/Vote Solar cautions the Commission to consider other factors when looking at the TRC test results such as the contributions distributed generation can make to the climate goals and other societal benefits.[127] With respect to looking at the RIM test in addition to the TRC test, SEIA/Vote Solar recommends the Commission take a broader view of the RIM test results and require improvement of the RIM test score over time.[128] SEIA/Vote Solar explains this will allow the Commission to ensure that impacts on net energy metering customers (*i.e.*, lower retail export compensation rates) will not impact the sustainable growth of the distributed energy resources market, as required by AB 327.[129]

The record in this proceeding leads the Commission to align the analysis here with prior guidance from the Standard Practice Manual, in that the tests

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[125] SEIA/Vote Solar Opening Brief at 11-12.

[126] SEIA/Vote Solar Opening Brief at 12, citing *Cost Effectiveness of the NEM Successor Rate Proposals Under Rulemaking 20-08-020*, Energy, Environmental Economic (May 28, 2021, updated June 15, 2021) at 5.

[127] SEIA/Vote Solar Opening Brief at 12-17.

[128] SEIA/Vote Solar at 17.

[129] SEIA/Vote Solar Opening Brief at 17-20.

should not be used individually or in isolation but, instead, allow for the consideration of the tradeoffs between the tests. While D.19-05-019 directs the use of the TRC test as the primary test, it also recognizes the importance of the PAC and RIM tests. Parties have shown in this proceeding that each test has value and together the tests tell a complete story. Hence, as directed by D.19-05-019, the Commission reviewed and considered the results of the PAC and RIM tests, in addition to the TRC test, in the final tariff determinations in this decision. Similar to the need to consider the competing requirements of the statute, consideration of all the tests allows the Commission to also consider the values of and tradeoffs between the tests. Hence, this decision does not adopt the recommendation by SEIA/Vote Solar to strive solely for a RIM test score improvement, nor does this decision strive for perfection in one test but rather a balance of the value and tradeoffs between the tests.

Relatedly, PCF recommends the Commission use the Societal Cost Test to analyze the cost-effectiveness of the successor tariff.[130] PCF asserts the Commission must consider societal benefits to ensure the costs and benefits of any net energy metering tariff are approximately equal.[131] Acknowledging the Societal Cost Test has not been approved for use in other proceedings, PCF contends the Commission cannot ignore these benefits since the Societal Cost Test offers the Commission the means to comply with the requirement to take

[130] In D.19-05-019, the Commission adopted three elements of the Societal Cost Test (societal discount rate, social cost of carbon, and air quality co-benefits) for informational purposes and to test and evaluate the details of the three elements. The test is being piloted in the Integrated Resources Planning proceeding. A final review of the three elements will be reviewed in R.14-10-003 or a successor proceeding.

[131] PCF Opening Brief at 26.

into account the total benefits of customer-sited generation.[132] The request to use the Societal Cost Test in the analysis of the successor tariff is denied. As Joint Utilities note, application of this test is premature because the evaluation to determine the final details of the test has not been completed.[133] In R.14-10-003 (Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Distributed Energy Resources) the Commission adopted D.19-05-019, which authorized Energy Division to conduct an evaluation of the Societal Cost Test. D.22-05-002 closed R.14-10-003 but stated that a successor proceeding would be initiated. Accordingly, the evaluation of the Societal Cost Test will be considered by the Commission in a successor proceeding to R.14-10-003.

PCF also recommends, in lieu of the Societal Cost Test, the Commission consider the societal benefits of resiliency[134] and avoided out-of-state methane leakage.[135] Other parties also recommend the consideration of benefits they state are not included in the Avoided Cost Calculator: (1) SEIA/Vote Solar advocates for a resiliency adder,[136] recognition of societal benefits of net energy metering systems[137] including an updated social cost of carbon metric,[138] and a reduced methane leakage multiplier;[139] and (2) CALSSA advocates for recognition of the

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[132] PCF Opening Brief at 27.

[133] Joint Utilities Opening Brief at 57. (*See also* D.19-05-019.)

[134] PCF Opening Brief at 22-23.

[135] PCF Opening Brief at 24.

[136] SEIA/Vote Solar Opening Brief at 26-28.

[137] SEIA/Vote Solar Opening Brief at 28-31.

[138] SEIA/Vote Solar Opening Brief at 30.

[139] SEIA/Vote Solar Opening Brief at 31.

land conservation benefits,[140] avoided future transmission costs,[141] and community resilience benefits.[142] CALSSA acknowledges that its recommended societal benefits are difficult to measure and recommends the Commission consider these benefits when reviewing proposals with TRC and RIM test scores well below 1.0 and find these proposals to be cost-effective.[143]

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. Hence, this decision reviews party recommendations to consider proposed additional benefits that are specific to those distributed energy resources used by net energy metering participating customers.

In D.20-04-010, the Commission considered SEIA/Vote Solar's proposals for avoided reliability and resiliency costs and found the benefits described could only be attributable to stand-alone solar and solar paired with storage. Further, D.20-04-010 found that SEIA/Vote Solar proposal "has not shown any deferred or avoided costs to utility ratepayers, but rather has shown only that ratepayers who use these technologies receive additional participant benefits."[144] In this proceeding, SEIA/Vote Solar refined its advocacy for considering the benefits of resiliency, recommending a resiliency adder of $104 per kilowatt each year for residential net energy metering and $106 per kilowatt each year for

[140] CALSSA Opening Brief at 51.

[141] CALSSA Opening Brief at 51.

[142] CALSSA Opening Brief at 52.

[143] CALSSA Opening Brief at 52.

[144] D.20-04-010 at 69-70.

nonresidential.[145] SEIA/Vote Solar contend this adder is not an avoided cost to the utility that would otherwise be included in the Avoided Cost Calculator. Rather, SEIA/Vote Solar propose the adder as a quantification of the resiliency benefits that accrue when the grid is not operating for a lengthy period (*i.e.*, dark sky events), which SEIA/Vote Solar contend results in individual customers reaching out and assisting one another, thus benefiting all ratepayers.[146]

While not proposing a particular value, PCF also supports the adoption of resiliency benefits for solar systems paired with energy storage. PCF submits paired storage offers "resiliency-related benefits that accrue to society as a whole," such as the ability to generate onsite power during a heat wave, the ability to prevent increased emergency room visits during heat waves; the ability to prevent food spoilage and waste due to loss of refrigeration; and the ability to continue educational classes during remote learning.[147]

TURN contends these benefits "are either private or highly speculative and limited to very unique circumstances."[148] TURN concludes that if the Commission finds value in these circumstances, calculations of such value should address granular specifics such as probabilities and duration of outages.[149] Joint Utilities argue that the adoption of the 2021 Avoided Cost

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[145] SEIA/Vote Solar Opening Brief at 26-27 citing SVS-03 at 18, line 2. (*See also* SVS-3 at Attachment B.) SEIA/Vote Solar proposes the value of the residential resiliency calculator to be based on the average cost of a portable inverter electric generator, plus sales tax, fuel storage costs, and the installation of a manual transfer switch to feed circuits in the home. SEIA/Vote Solar estimates this cost to be $3,605 and assumes availability of this generator for seven days of interruption in a 10-year period.

[146] SEIA/Vote Solar Opening Brief at 28.

[147] PCF Opening Brief at 22-23.

[148] TURN Reply Brief at 18.

[149] TURN Reply Brief at 18.

Calculator should account for all discernable benefits the Commission deems reasonable to incorporate into the cost-effectiveness analysis.[150] Joint Utilities contend that "no additional, unquantified benefits should be added, much less ones the Commission already has rejected."[151]

The Commission declines to adopt resiliency adders. Neither SEIA/Vote Solar nor PCF have provided convincing evidence that the examples of resiliency benefits offered are more than individual benefits. The examples given by PCF and SEIA/Vote Solar are either private benefits or highly speculative and limited to unique circumstances; none of which would lead the Commission to ascribe a resiliency adder for all net energy metering customers. While declining to quantify resiliency benefits here, the Commission recognizes that evolving analysis and changing grid conditions may result in more persuasive arguments in favor of quantifying resiliency benefits in the future, especially locational ones; the Commission may consider this issue at a future time.

This decision also declines to adopt the proposed societal benefits of an updated social cost of carbon metric, a reduced methane leakage multiplier, and avoided future transmission costs. The Commission stated in D.20-04-010, that the consideration of the benefits of grid services provided by specific distributed energy resources should be addressed in resource-specific proceedings. However, some of these benefits (methane leakage, future transmission costs, and updated social cost of carbon) can be attributable to resources other than net energy metering, thus, it is not appropriate to determine values only for net energy metering resources. Furthermore, in-state methane leakage is already

[150] Joint Utilities Reply Brief at 13.

[151] Joint Utilities Reply Brief at 13.

accounted for in the Avoided Cost Calculator. Thus, allowing for an additional value for this benefit would result in the double counting of the benefit. Relatedly, following the filing of briefs in this proceeding, the Commission adopted D.22-05-002 that updated the Avoided Cost Calculator for 2022. In that decision, the Commission declined to adopt a proposal to include out-of-state methane leakage values in the Avoided Cost Calculator.

Finally, with respect to land-use conservation, CALSSA asserts that the current cost-effectiveness tests do not consider the land conservation benefits of rooftop solar versus utility-scale solar. CALSSA contends that implementation of SB 100 requires triple the amount of utility-scale solar built annually through 2045, which would result in the need to develop one million acres of land.[152] CALSSA concludes that decreased net energy metering installations would increase this need and, therefore, asserts that increased installations would decrease the need. Similarly, SEIA/Vote Solar agree that distributed solar "has the societal (environmental) benefit of avoiding the land use impacts of utility-scale solar or wind generation."[153] Not offering a specific calculation of this benefit, CALSSA instead proposes the Commission consider these land conservation benefits when determining cost-effectiveness.[154] Neither CALSSA nor SEIA/Vote Solar offer any evidence that increased net energy metering installations will directly result in decreased utility scale projects. Further, CalWEA presents an analysis of SB 100 they contend indicates that the "need for utility-scale renewables remains virtually the same when we reduce the growth

[152] CALSSA Opening Brief at 51 citing CSA-01 at 82-84.

[153] SVS-03 at 21.

[154] SEIA/Vote Solar at 29-30.

rate of customer-side solar."[155] The Commission is not persuaded by the arguments for a land-use societal benefit.

8.2.3. The Number of Years to Payback Should Appropriately Balance Participant and Nonparticipant Needs

TURN defines the payback period as the length of time required for participating customer bill savings to recover the participating customer's investment in the net energy metering-eligible resource.[156] Similarly, Cal Advocates defines the payback period as "the time it takes for a customer to recoup the total installation costs of their system through their cumulative total annual bill savings."[157] Parties concur to differing degrees that the Commission should consider the length of time for a customer's payback period when determining the reasonableness of the successor tariff. Parties' opinions diverge on the length of time for a reasonable payback period and how to calculate that period. These divergences are discussed below.

PCF asserts the Commission should evaluate the successor tariff based on whether customers receive an attractive economic value proposition.[158] PCF explains that while some customers may adopt solar to combat climate change, most will only invest if they recover their costs.[159] Most, if not all, parties support this proposition, including SEIA/Vote Solar, who state sustainable growth requires reasonable economics for participants;[160] Environmental

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[155] CWA-01 at 8.

[156] TURN Opening Brief at 36.

[157] Transcript at 922:6-10 (August 2, 2021).

[158] PCF Opening Brief at 32.

[159] PCF Opening Brief at 32.

[160] PCF Opening Brief at 34 citing SVS-03 at 27.

Working Group, who contends sustainable growth for solar requires "a sufficiently attractive product for a large number of residents to choose to invest in it;"[161] and CALSSA, who identifies a reasonable cost recovery or payback period as the best measure of circumstances allowing consistent growth in distributed generation.[162]

Further advocating for a focus on payback periods, SEIA/Vote Solar submit that net energy metering customers consider payback periods as well as bill savings when deciding whether to invest in distributed energy resources.[163] PCF also supports the use of payback periods, asserting that a reasonable payback period remains a key determinant of whether distributed generation presents a viable economic value proposition. [164] Similarly, CALSSA states "payback is by far the most important indicator of customers' willingness to invest and, therefore, the best indicator of whether a party's proposal will ensure 'customer-sited renewable distributed generation continues to grow sustainably.'"[165]

Continuing the discussion of payback periods, solar parties have varying opinions on the length of time for the payback period. CALSSA's targeted cost recovery period is seven years and is based on the collective experience of its members.[166] SEIA/Vote Solar contends a simple payback period longer than 10

[161] PCF Opening Brief at 34-35 citing EWG-01 at 40.

[162] CALSSA Opening Brief at 19, citing CSA-01 at 60:15-61:23.

[163] SEIA/Vote Solar Opening Brief at 32.

[164] PCF Opening Brief at 40.

[165] CALSSA Opening Brief at 23.

[166] CALSSA Opening Brief at 20 citing CSA-01 at 60:15-61:23.

years is unlikely to attract significant customer interest.[167] Further, SEIA/Vote Solar opposes payback periods of more than 15 years, stating this is far longer than the average Californian stays in their home.[168] SBUA presents an analysis asserting that increasing the payback period from five to nine years reduces solar uptake by 55 percent.[169] SBUA's analysis looked at state level data from several sources, and set the payback period as the average payback reported for each state by Energy Sage and Solar Nation, the installation rate as the capacity of residential behind-the-meter solar installations from December 2020, and the potential installation rate determined by a National Renewable Energy Laboratory (NREL) analysis of rooftop photovoltaic technical potential.[170]

In further support of short payback periods, CALSSA maintains that "[c]ustomers do not invest their own capital in projects when the only expectation is to get their money back over time" and claims that seven years with a negative return is the upward bound of what should be considered acceptable for residential customers.[171] CALSSA cites the NREL dGen model, which assesses market demand for residential solar under different policy assumptions,[172] and an NREL study published in 2013 (2013 NREL Study) to argue the portion of the eligible market base willing to adopt solar drops

[167] SEIA/Vote Solar Opening Brief at 33 citing SVS-04 at 37 and SBU-01 at 24 and Figure 3.

[168] SEIA/Vote Solar Opening Brief at 34.

[169] SBU-01 at 24.

[170] SBU-01 at 24.

[171] CALSSA Opening Brief at 20 citing CSA-01 at 60:15-61:23.

[172] CALSSA Opening Brief at 21 citing CSA-01 at 61:24-62:3, which cites to the Distributed Generation Market Demand Model, NREL, https://www.nrel.gov/analysis/dgen.

precipitously as the cost recovery period moves from five to 10 years.[173] Joint Utilities argue the 2013 NREL Study does not support CALSSA's argument. Rather, Joint Utilities assert, the study indicates monthly bill savings is the most important economic factor in households' decisions whether to adopt solar.[174] (*See* Table 4 below from the 2013 NREL Study.)

Table 4. Economic Metrics Used to Evaluate Solar Investment[175]

Metric	**Buyers**	**Leasers**	**Non-Adopters**
Monthly Bill Savings	40.3%	60.5%	43.4%
Payback Time	29.5%	16.1%	41.8%
Rate of Return	17.1%	9.8%	6.3%
Net Present Value	2.2%	1.6%	3.5%
Would Not Estimate Economics	3.0%	4.6%	3.7%
Other	7.8%	7.2%	1.4%

Joint Utilities point to several statements from the study that demonstrates "lowering total electricity costs and protecting one's household from future increases in prices are now the two more important reasons."[176] Joint Utilities also reference the study's statement that "[c]oncerns over high electricity bills, in addition to concern about future rate changes is [sic] often highlighted as a motivation for adopting solar — supported by our results, particularly in

[173] CALSSA Opening Brief at 21-22 and at footnote 109 citing CSA-01 at 61:24-62:3, which cites to Ben Sigrin, National Renewable Energy Laboratory, Diffusion into new markets: Economic returns required by households to adopt rooftop photovoltaics (January 2014) https://www.researchgate.net/publication/282888559_Diffusion_into_new_markets_Economic_returns_required_by_households_to_adopt_rooftop_photovoltaics) (2013 NREL Study).

[174] Joint Utilities Reply Brief at 26, noting that the data for the 2013 NREL Study precedes AB 327 and reflects a much different market than today.

[175] Joint Utilities Reply Brief at 27 citing 2013 NREL Study at 6.

[176] Joint Utilities Reply Brief at 27 citing 2013 NREL Study at abstract.

California, which has some of the highest retail rates of the nation."[177] Further, Joint Utilities and Cal Advocates reference another NREL study from 2017, which found that 72 percent of solar adopters used monthly or annual electric bill savings as their motivating metric, while only 13.3 percent used the payback period.[178]

Joint Utilities and Cal Advocates submit that current payback periods are short. Joint Utilities assert the residential NEM 2.0 customer payback period is three to five years.[179] Referring to these payback times, Joint Utilities maintain the payback period is far less than the NEM 2.0 20-year legacy period and the estimated 35-year estimated useful life represented by a major solar manufacturer.[180] Cal Advocates states, "[i]t speaks volumes that even SEIA's expert witness testified that the current payback periods in California are too short."[181] Joint Utilities advocate that longer payback periods are reasonable. Further, Joint Utilities reference the White Paper, which shows a payback period of 4.1 years using SDG&E's rate, indicating that payback times may be far lower for more recent installations.[182]

This decision reiterates the previous statement that analysis of the successor tariff requires balancing multiple — and sometimes conflicting — legislative requirements and guiding principles, as well as balancing the needs of

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[177] Joint Utilities Reply Brief at 27 citing 2013 NREL Study at 6.

[178] Joint Utilities Reply Brief at 27 citing PAO-02 at 3-16 to 3-17.

[179] Joint Utilities Opening Brief at 3 and Reply Brief at 53.

[180] Joint Utilities Reply Brief at 25.

[181] Cal Advocates Opening Brief at 27 citing Hearing Transcript, Vol. 8 at 1282-1283, Testimony of Thomas R. Beach: "I think that all parties for this case, as far as I know, have agreed that paybacks should be longer in California, that they're too short."

[182] Joint Utilities Opening Brief at 25.

participants and nonparticipants. Hence, no single method of analysis will be the overriding determinant of a final successor tariff, including the length of time for the payback period.

With respect to the payback period, this decision agrees with most parties that the Commission should consider the length of time for a customer's payback period when determining the reasonableness of the successor tariff. However, turning to the three studies referenced by parties, the Commission is not persuaded that payback periods are the predominant factor for customers when considering solar adoption. Ultimately, this decision finds that both the 2013 and 2017 NREL studies show that consumers (especially in California where rates are amongst the highest in the nation) look at monthly bill savings when making an economic decision on adopting solar. In fact, the 2013 NREL Study states that:

> previously, the consumer behavior literature has suggested that residential customers primarily use a simple payback time to evaluate a new technology. However, with the strong growth of third-party owned systems, we expected that leasing customers are frequently being pitched PV systems based on the monthly bill savings rather than a payback time. Surprisingly, customers who bought PV systems are also increasingly using monthly bill savings.[183]

Despite this determination, it is reasonable — from a consumer protection perspective — that the successor tariff targets a nine-year simple payback for a stand-alone solar system, which is equivalent to nearly $100 in monthly bill savings. As noted by TURN, a tariff expected to produce a full discounted payback in a future year may still result in the customer realizing net savings in every year.[184] As this decision determined that monthly bill savings is a major

[183] 2013 NREL Study at 6.

[184] TURN Opening Brief at 38.

factor in customers deciding to install a solar system, this decision finds that a target of a nine-year simple payback for a stand-alone solar system — equivalent to nearly $100 in monthly bill savings — presents a balanced approach to ensuring customer-sited renewable distributed generation continues to grow sustainably.[185]

The increased number of years to payback, in addition to the other elements of the adopted successor tariff, will work towards alleviating a future cost shift, as was experienced in both NEM 1.0 and NEM 2.0. The Commission analysis in Section 8.5.5 below indicates that the solar paired with storage system, in which residential customers will experience payback periods of approximately 8.88 years and at least $136 monthly bill savings during the first year of the glide path, is closer to cost-effective as compared to stand-alone solar.[186] Furthermore, successor tariff customers with a solar system paired with storage will likely have a shorter payback period and may see greater monthly bill savings than participating customers with stand-alone solar system. This is discussed further in Section 8.5.5.

Relatedly, parties also discuss the differing analyses to determine the number of years to payback. SEIA/Vote Solar cautions the Commission to understand the different payback metrics. TURN also acknowledges that parties use different payback metrics and therefore cautions the Commission to "ensure

[185] This estimate represents an average monthly bill savings for residential non-CARE customers in PG&E and SCE service territories and all residential CARE customers. Residential non-CARE customers in SDG&E service territory are estimated to experience a much higher average savings of over $143 per month. (*See* Appendix B of this decision.)

[186] This is the estimated monthly bill savings for a residential CARE customer in SCE territory. This estimate is at the low end range of monthly bill savings for the three service territories. (*See* Appendix B of this decision for a breakdown of the payback periods and annual bill savings for non-CARE customers and customers in PG&E and SDG&E service territories.)

any reliance on payback periods uses consistent metrics and does not conflate the various approaches."[187] TURN lists the five basic payback methods as: (1) simple payback; (2) escalated simple payback; (3) simple discounted payback; (4) E3 payback; and (5) full discounted payback.[188]

SEIA/Vote Solar explains that the simple payback method (the capital cost of a system divided by the first-year bill savings) assumes the customer pays cash for the system and does not consider ongoing maintenance costs, the time value of money, or the need to earn a return on their investment.[189] TURN describes the full discounted payback as having the ability to quantify either a stream of annual lease costs, or a scenario where a participating customer purchases a resource upfront and finances the resource over time.[190] Explaining that a 10-year discounted payback can result in a simple payback of as little as five years, TURN asserts the full discounted payback metric does not reveal the extent to which a customer realizes positive cash flow (which TURN defines as annual bill savings exceeding annual expenses) in any particular year.[191]

This decision adopts a simple payback metric as the most transparent and consumer-friendly metric. The simple payback metric equals the cost of the system divided by first-year bill savings. As discussed in Section 8.5.2, this metric will be used to determine the glide path incentive amount. The number of years to payback should reflect all costs of stand-alone solar and solar paired with storage adoption. This has been taken into consideration in the

[187] TURN Opening Brief at 36.

[188] TURN Opening Brief at 36.

[189] SEIA/Vote Solar Opening Brief at 32-33.

[190] TURN Opening Brief at 37 citing TRN-01 at 76.

[191] TURN Opening Brief at 37-38.

determination of the successor tariff adopted in this decision. Modeling and analysis results are discussed in Section 8.5.5 below.

As determined above, this decision finds a nine-year simple payback for stand-alone solar to be reasonable. The Commission recognizes that the time to payback for residential stand-alone solar systems installed during the transition period will be shorter than nine years due to rate escalation. This decision clarifies that rate escalation is not a component of a simple payback metric.

8.2.4. The Adopted Cost of Solar Is $3.30 Per Watt

There is a wide range of values for the cost of solar in the record of this proceeding. At the low end of the range, Joint Utilities, and TURN submit that the NREL Annual Technology Baseline value of $2.34 per watt is a reasonable value for the Commission to adopt as the cost of solar. CALSSA contends the $2.34 per watt cost of solar is an idealized cost of residential solar that does not reflect real-world pricing and results in "overly" low estimates of cost-recovery periods, especially for small companies.[192] CALSSA asserts the NREL Annual Technology Baseline estimated cost is a bottom-up analysis rather than an analysis of actual market prices, and highlights that main panel upgrades, permitting and interconnection delays, and financing costs are not included in the NREL estimated cost.[193] CALSSA maintains there are more realistic sources for the actual cost of solar and recommends the Commission use the December 2020 edition of the Lawrence Berkeley National Laboratory's (LBNL's) *Tracking*

[192] CALSSA Opening Brief at 29.

[193] CALSSA Opening Brief at 29 citing CSA-01 at 63:7 to 67:10.

the Sun report, which estimates the average cost of solar to residential customers in California was $3.80 per watt in 2019.[194]

TURN responds to CALSSA's arguments to use the higher cost estimate from the *Tracking the Sun* report. TURN maintains that instead of relying on historical market prices, the Commission should estimate future installation costs and, thus, relying on the NREL data provides the best snapshot of future costs available in this proceeding.[195] Further, TURN disputes claims that the NREL estimate does not include costs for main electrical panel upgrades and permitting and interconnection delays. TURN contends these costs should not be included because "they are not incurred for most installations and therefore should not be assumed in base case quantifications."[196] TURN points to a CALSSA survey that found only 28 percent of new installations involve main panel upgrades.[197]

In comments to the May 2022 Ruling, NRDC recommends the Commission consider a cost per watt between Energy Sage's value of $2.85 per watt (which NRDC asserts represents the most efficient part of the market) and values presented in the *Tracking the Sun* report.[198] NRDC claims that it is important to start with a representative installation cost when designing a glide path that to provide the solar industry time to adapt to a new tariff.

This decision finds that a reasonable cost of solar is between $2.34 and $3.80 per watt. Acknowledging that most residential customers installing solar systems will require financing, especially lower-income households, the

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194 CALSSA Opening Brief at 32 citing CSA-01 at 63:7 to 67:10.

195 TURN Reply Brief at 27.

196 TURN Reply Brief at 27.

197 TURN Reply Brief at 28.

198 NRDC Opening Comments to May 9, 2022 Ruling at 9.

Commission recognizes that the low-end cost of $2.34 per watt does not include financing costs.[199] Further, the Commission also recognizes this value does not account for the fact that over one-quarter of installations require main electrical panel upgrades, and a percentage of installations may experience permitting and interconnection delays, both of which would lead to higher costs. Hence, this decision finds that the value of $2.34 per watt is low and should not be adopted.

While this decision finds the NREL cost of solar to be low, it is important to address the allegations by Joint Utilities, TURN, and NRDC that both CALSSA and SEIA/Vote Solar have previously supported the use of the NREL data during the development of the Lookback Study. As NRDC explains, SEIA and CALSSA demonstrated to the Commission that the 2018 value of $3.80 per watt from *Tracking the Sun* is too high. In its pleading, SEIA states that these "2018 costs are likely to be much higher than solar costs in 2022 or 2023."[200] SEIA further argues that using these costs for the Lookback Study results in a low TRC. CALSSA agreed that $3.80 is high.[201]

Turning to the upper end of the range, this decision finds that the value of $3.80 per watt is high for 2023 costs and should not be adopted. The record shows that the *Tracking the Sun* data from LBNL is an aggregation of historical data provided by state agencies and utilities that administer photovoltaic incentive programs, renewable energy credit systems, or interconnection

[199] CSA-01 at 34 citing Lawrence Berkeley National Laboratory's report, Residential Solar-Adopter Income and Demographic Trends: 2021 Update at 20.

[200] Comments of The Solar Energy Industries Association and Vote Solar on the Net Energy Metering 2.0 Lookback Study, February 2021 at 10.

[201] Comments of The California Solar & Storage Association on the Net Energy Metering 2.0 Lookback Study, February 2021 at 2.

processes. As shown above, all parties agree that this value is higher than solar costs in 2022 or 2023.

This decision finds a value of $3.30 per watt to be reasonable as the adopted 2023 cost of solar. Given the absence of costs for financing, panel upgrades, or installation delays in the $2.34 per watt value and the high value of $3.80, as conceded by SEIA/Vote Solar and CALSSA, the Commission considers the cost of solar to fall in between the two values. Given the pros and cons to each of the proposed data sources and because a crystal ball to determine the future cost of solar in California does not exist, the Commission finds a cost of $3.30 per watt to reasonably account for electrical panel upgrades, delays, and the current inflationary costs arising from a combination of factors in the economy. The Commission should adopt the value of $3.30 per watt as the 2023 cost of solar.

8.3. Policies for the Successor Tariff

Parties presented recommended policies for the successor tariff. Of the recommended policies, most parties agree that the successor tariff should have a glide path from the current tariff to the successor and that the successor should encourage paired storage, ensure equity, and promote electrification. Disparity of opinions occurred in the specifics of these policies. The following sections present the recommended policies, the varying opinions of the pros and cons for adoption, and the adopted policies.

8.3.1. The Successor Tariff Should Include a Glide Path

Several parties advocate for inclusion of a glide path in the successor tariff. Noting the White Paper's recommendation for a gradual pace of change, CALSSA proposes an eight-year transition to the future final tariff design, which CALSSA recognizes must include energy storage as a major part of the

customer-sited renewable distributed generation market. Underscoring multiple obstacles to reaching maturity in the paired storage market, CALSSA cautions the Commission to design a transition period that will allow the current market to remain strong until maturity in the paired storage market is attained.[202] CALSSA asserts the barriers include the still relatively high price of storage, increased demand for storage resources in light of growing electric vehicle adoption, outdated building codes and standards, and limited contractor expertise.[203] CALSSA recommends a glide path of decreasing export compensation rates in five steps, where each step reflects a percentage of a utility's retail rate. CALSSA explains that the eight-year glide path would have four transitions after the initial implementation, with each step designed to take two years.[204] SEIA/Vote Solar propose a similar rate step down glide path, which they contend is similar to a Market Transition Credit in that it gradually decreases over time, thus reducing any existing cost shift.[205] Pointing to net energy metering tariff experience in Nevada and Hawaii, SEIA/Vote Solar asserts a glide path would alleviate downturns in the solar market, along with related job losses.[206]

Sierra Club supports a glide path with step-downs as well, but different from CALSSA and SEIA/Vote Solar. Sierra Club proposes setting retail export compensation rates at the qualifying electrification retail import rate with 1 gigawatt step-downs reducing retail export compensation rates 10 percent from

[202] CALSSA Opening Brief at 109.

[203] CALSSA Opening Brief at 109-112.

[204] CALSSA Opening Brief at 87.

[205] SEIA/Vote Solar Opening Brief at 38.

[206] SEIA/Vote Solar Opening Brief at 38-39.

the 2021 rate to short-run avoided cost, where avoided cost is reached after 10 gigawatts of total deployment.[207] Maintaining that a glide path is necessary to avoid market shock and ensure customer-sited renewable generation continues to grow sustainably,[208] Sierra Club cautions that absent a glide path the Commission could experience "an immediate disruption in installations as the economics to install solar would drop, followed by an uncertain recovery dependent on future changes to the Avoided Cost Calculator."[209] Referencing the experience of other states implementing net energy metering tariff changes, Sierra Club asserts the record demonstrates that a stepdown approach allows solar installations to remain stable.[210]

Opposing the "gradualism" advocated for by CALSSA and SEIA/Vote Solar, Joint Utilities argue this is "not a plan to avoid abrupt or overnight change, but rather a request to perpetuate the inequity caused by the current net energy metering program.[211] Further, Joint Utilities contend its proposal offers a natural glide path for transition from NEM 2.0 to the successor tariff.

Cal Advocates contends the magnitude and severity of the cost shift requires the acceleration of net energy metering reform but if the Commission finds a glide path necessary, it recommends a one- to two-year interim rate whereby "the retail export compensation rate is set at a defined percentage reduction to the non-CARE 'net' electrification retail rate at the time the interim successor tariff is enacted in 2022. The 'net' electrification retail rate is the

[207] Sierra Club Opening Brief at 14-16.

[208] Sierra Club Opening Brief at 16.

[209] Sierra Club Opening Brief at 16 citing ASO-01 at 14.

[210] Sierra Club Opening Brief at 16 citing ASO-02 at 8–9.

[211] Joint Utilities Opening Brief at 3-4.

residential electrification retail rate net of the four non-bypassable charges recognized under NEM 2.0 and the Power Charge Indifference Adjustment."[212] Others supporting this interim rate as a glide path include TURN,[213] NRDC,[214] CUE,[215] CalWEA,[216] and IEPA.[217]

As explained in the White Paper, "[p]reservation of a viable market is likely to require a 'glide path' including both a gradual rate reform and an external transitional support mechanism designed specifically to enable a reasonable payback period for customers investing in onsite renewable generation."[218] Previously in this decision, the Commission stated that any proposed change to the tariff should consider the impact on the growth of the customer-sited renewable distributed generation market. Inclusion of a glide path is essential to balance the multiple requirements the tariff is required to meet. However, this decision agrees with Cal Advocates that the magnitude and severity of the cost shift, as well as the resulting affordability challenges it poses, requires immediate action by the Commission. Hence, lengthy transitions, as in the proposals by CALSSA and SEIA/Vote Solar are inadequate. Cal Advocates, TURN, NRDC, CUE, CalWEA, and IEPA support a glide path in the form of a one-to-two-year interim rate, which the Commission finds too short to ensure sustainable growth of the industry, especially the stand-alone solar industry.

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[212] Cal Advocates Opening Brief at 42 and A-11 to A-12.

[213] TURN Reply Brief at 92-93.

[214] NRDC Opening Brief at 38-41.

[215] CUE Opening Brief at 19-20.

[216] *See* Cal Advocates Opening Brief at Appendix A listing CalWEA as one of the groups supporting the recommendation for an interim rate (*i.e.*, glide path).

[217] IEPA Opening Brief at 24-25.

[218] White Paper at Executive Summary.

The Commission finds that a five-year glide path should provide a balanced approach that allows for sustainable market growth that does not occur at the undue and burdensome financial expense of nonparticipant ratepayers and, therefore, minimizes any cost shift to ensure equity among all customers, while providing time for the industry to transition from a predominantly stand-alone solar system tariff to one that promotes the adoption of solar systems paired with storage. The approach and design of the glide path are discussed in Section 8.4 and Section 8.5 below.

8.3.2. The Successor Should Promote Equity and Inclusion

AB 327 mandates the Commission to adopt a successor to the existing net energy metering tariff that includes "specific alternatives designed for growth among residential customers in disadvantaged communities." Further, in D.21-02-007, the Commission adopted guiding principles to assist in the development and evaluation of a successor, one of which requires the successor to ensure equity among customers. Hence, parties addressed the issues of equity and inclusion in testimony and briefs. The discussion included general policies and, in some cases, specific tariff elements. General policy aspects of equity are discussed here, while proposals for specific tariff elements are discussed in Section 8.4 and Section 8.6.1 below.

Many parties advocated that the successor tariff should promote equity and inclusion both with respect to the costs of net energy metering as well as direct and indirect benefits. PCF states the Commission should address equity concerns by expanding access to net energy metering to more low-income customers, renters, and multi-unit building residents.[219] While noting a tenfold

[219] PCF Opening Brief at 58.

growth in low-income solar adoption rate between 2010 and 2019,[220] CALSSA contends the successor tariff must increase adoption of solar and other distributed generation by customers in disadvantaged communities, as intended by the Legislature.[221] GRID emphasizes that the equity issue has two sides: (1) disproportionate impacts on ESJ communities from burning fossil fuels; and (2) ensuring access to electrification technologies.[222] GRID contends that any equity program should include adoption of the following policies: (1) increased net energy metering deployment in ESJ communities; (2) payback periods and bill savings for ESJ customers greater than or equal to those in NEM 2.0; (3) allowing third-party ownership; and (4) encouraging storage adoption by ESJ customers.[223]

Joint Utilities approach the equity issue differently, contending that to do the greatest good for lower-income customers, the Commission should focus "first and foremost on ending the cost shift."[224] Additionally, Joint Utilities submit their equity proposal will narrow the adoption gap; this and other equity proposals are discussed in Section 8.4 below. Similarly, CalWEA, CUE, IEPA, NRDC, Cal Advocates, and TURN recommend that a net energy metering successor tariff should help low-income customers by first reforming net energy metering retail export compensation rates to reduce the cost shift.[225] However, this group of parties also recommends the successor help low-income customers

[220] CALSSA Opening Brief at 56.

[221] CALSSA Opening Brief at 55.

[222] GRID Opening Brief at 1.

[223] GRID Opening Brief at 15-19.

[224] Joint Utilities Opening Brief at 73-74.

[225] IEPA Opening Brief at 20-21 and Cal Advocates Opening Brief at A-1.

participate in net energy metering by prioritizing incentives and reducing initial system costs.[226]

Relatedly, parties discuss eligibility requirements for low-income net energy metering opportunities. Currently, customers eligible for the CARE and FERA programs are eligible for low-income solar and storage programs that utilize the net energy metering tariff. Proposing to set the income eligibility at 80 percent of the AMI, GRID and CALSSA contend this is a well-accepted benchmark for low-income customers and it has been adopted in the Commission's ESJ Action Plan.[227] CALSSA further asserts revising the eligibility requirements for equity net energy metering programs by basing them on the AMI would further advance equity goals.[228] CALSSA explains that over two-thirds of four-person households in the top 25 percent disadvantaged communities have incomes at or below 80 percent of AMI and nearly one quarter of these households have incomes above the CARE eligibility threshold (200 percent of the federal poverty level).[229] Further, GRID notes that the 80 percent of AMI threshold is also used in the Commission's Self Generation

[226] IEPA Opening Brief at 20-21 and Cal Advocates Opening Brief at A-1.

[227] CALSSA Opening Brief at 73 and GRID Opening Brief at 14 citing the ESJ Action Plan at 10. The ESJ Action Plan, adopted by the Commission in February 2019, is available at: https://www.cpuc.ca.gov/news-and-updates/newsroom/environmental-and-social-justice-action-plan.

[228] CALSSA Opening Brief at 72.

[229] CALSSA Opening Brief at 73 citing GRD-01 at 16-17, GRD-01 at Table 3, and CSA-02 at Table 3.

Incentive Program (SGIP).[230] CALSSA asserts maintaining the CARE and FERA eligibility requirements restricts the reach of equity proposals.[231]

The guiding principles adopted in this proceeding confirmed that a successor will strive to both ensure equity among all ratepayers and expand net energy metering to disadvantaged communities. The Commission disagrees with Joint Utilities that the equity issue can be addressed solely by reducing the cost shift. Disadvantaged communities should not continue to be left behind with respect to clean energy options, including electrification and storage. The successor tariff will address the equity issue by working to ensure increased participation by disadvantaged communities. Accordingly, the successor tariff will include elements to both combat the cost shift and increase participation by households in low-income households and disadvantaged communities. The specifics are discussed in Section 8.6.1 below.

8.3.3. The Successor Should Promote Electrification

No party opposes the promotion of electrification by a successor tariff, but there is disparity regarding the approach. The Commission agrees with NRDC that the successor tariff should encourage net energy metering customers to consume electricity when carbon-free energy is abundant, and to export electricity onto the grid when carbon-intensive electricity is at the margin; both of these actions should incentivize beneficial electrification.[232] The pros and cons of the varying approaches are discussed in Section 8.4 below. In this section,

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[230] GRID Opening Brief at 14 and Tr. Vol. 12 at 2137:11-22 where Cal Advocates' Witness Buchholz agrees the 80 percent AMI definition is an eligibility requirement for the SGIP.

[231] CALSSA Opening Brief at 73.

[232] NRDC Opening Brief at 23.

general policies regarding the relationship between net energy metering and electrification are discussed.

First, this decision begins with a discussion of how the structure of the net energy metering tariff influences customer decisions on electrification. Several parties contend the current structure of the tariff and its cost shift discourage electrification. Joint Utilities assert the cost shift makes electricity more expensive for all ratepayers and makes electrification less attractive.[233] PCF disagrees that the cost shift is responsible for high electricity prices, stating that transmission and distribution charges remain by far the largest contributors to electricity prices, as well as the restructuring of residential tariffs.[234] Pointing to the transmission charges, PCF contends these charges have risen by $2.3 billion a year since 2007.[235] While supporting PCF's contentions regarding transmission charges, SEIA/Vote Solar asserts there are a number of reasons that electric rates are high. The Commission agrees that the net energy metering cost shift alone is not responsible for the entirety of high rates in California. But a cost shift exists, and continuation of the cost shift feeds into higher electricity rates, which discourage electrification. Accordingly, the successor tariff should address the cost shift not only to ensure equity but also to encourage electrification to ensure California can meet its climate and clean energy objectives.

Supporting the status quo, PCF argues that the current structure of the tariff promotes electrification goals.[236] Pointing to the results of the Lookback

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[233] Joint Utilities Opening Brief at 89 citing IOU-01 at 1:3-14, 15:32-16:3. (*See also* IEPA Opening Brief at 26 and Cal Advocates Opening Brief at 35.)

[234] PCF Opening Brief at 52 citing PCF-01 at 14 and PCF-24 at 15.

[235] PCF-24 at 15.

[236] PCF Opening Brief at 52-55.

Study, PCF asserts that net energy metering customers are more likely to adopt an electric vehicle than an individual who does not have such a system.[237] SEIA/Vote Solar supports this assertion, concluding from the Lookback Study that "a customer's investment in a solar system is often the precursor and catalyst for other types of [distributed energy resources] such as electric vehicles and electric appliances."[238]

The Commission does not necessarily disagree with either of these statements, but these statements are about net energy metering customers and not the current tariff structure. This decision finds that the Lookback Study does not show whether the current tariff structure promotes electrification goals. The objectives of the study were to "examine the impacts of NEM 2.0 and to compare how different metrics have changed following the transition from NEM 1.0 to NEM 2.0;"[239] electricity consumption patterns are not discussed in the key takeaways. Further, energy consumption patterns included in the study contain insufficient data to make the assertion that the current tariff structure promotes electrification; there was incomplete data regarding change in consumption for SCE customers.[240] Without complete data and more in-depth analysis on electricity consumption patterns, assertions regarding the promotion of electrification by NEM 2.0 can neither be made nor relied upon in this decision.

This section addresses one additional policy consideration with respect to net energy metering and electrification. First, SEIA/Vote Solar submit the

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[237] PCF Opening Brief at 54-55 citing PCF-15 at 4 and 30 (Lookback Study).

[238] SEIA/Vote Solar Reply Brief at 40 citing Lookback Study at 62. (*See also* Lookback Study at Table 3-1 indicating 30 percent increased electric usage after adding solar.)

[239] Lookback Study at 2.

[240] Lookback Study at Table 1-1.

successor tariff should advance California's electrification goals by allowing new customers to oversize their systems by 50 percent, as this would allow solar customers to grow their loads through the purchase of electric vehicles and electric appliances over time.[241] SEIA/Vote Solar propose the net surplus compensation rate be set equal to current avoided costs for distributed energy resources.[242] Contending this expands upon existing opportunities, SEIA/Vote Solar point to the SCE document: *Net Energy Metering System Residential Customer System Size Acknowledgement 30 kW or Less,* which SEIA/Vote Solar states "allows for the customer to attest to oversizing their system provided that the customers also attests that it expects to increase its usage accordingly in the next year."[243]

SEIA/Vote Solar highlight that Cal Advocates supports oversizing, with exports and annual net surplus generation compensated at avoided costs and with the requirement that, after five years, the net surplus generation compensation would decrease from avoided costs to wholesale rates to incentivize the customer toward more rapid electrification.[244] Cal Advocates explains this would address a serious flaw in SEIA/Vote Solar's proposal, in that it does not encourage consumption of the solar system generation.[245] Sierra Club supports a similar proposal, recommending systems be sized to meet a

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[241] SEIA/Vote Solar Opening Brief at 41 and 46.

[242] SVS-03 at 40.

[243] SEIA/Vote Solar Opening Brief at 47 citing https://www.sce.com/sites/default/files/inline-files/FINAL%2BNET%2BENERGY%2BMETERING%2B%28NEM%29%2BRESIDENTIAL%2BCUSTOMER%2BSYSTEM%2BSIZE%2BACKNOWLEDGEMENT%2B30%2BKW%2BOR%2BLESS.pdf.

[244] SEIA/Vote Solar Opening Brief at 46-47 citing PAO-02 at 5-16, lines 21-26.

[245] PAO-02 at 5-16 to 5-17.

household's projected load if fully electrified with two electric vehicles, and that net surplus compensation from oversized systems be collected to fund low-income programs.[246]

SEIA/Vote Solar note that in testimony, Joint Utilities "suggest that the Commission exercise 'extreme caution' when considering whether to allow the oversizing of systems by [net energy metering] customers."[247] While not specifically opposing this proposal, Joint Utilities argue that Commission policy has consistently been to require that generation systems are sized to meet but not exceed a customer's annual onsite load.[248]

While the Commission has consistently sent a message that net energy metering systems should be sized to a customer's onsite load, these messages were conveyed prior to the contemplation of the electrification policy. None of the decisions cited by Joint Utilities address the policy of electrification. SEIA/Vote Solar's proposal will further promote electrification and should be adopted with one modification; net surplus generation will be compensated at the current net surplus compensation rates, as described in Section 8.5.3 below. As Joint Utilities described, the Commission requires utilities to compensate customer qualifying facilities for net surplus generation for "random, modest, inadvertent net exports" at the Default Load Aggregation Point (DLAP) price.[249] The Commission is not revising the compensation for net surplus generation at

[246] Sierra Club Opening Brief at vi.

[247] SEIA/Vote Solar Opening Brief at 47 citing IOU-02 at 69-71.

[248] Joint Utilities Opening Brief at 10-14 citing D.06-01-024 at 15, D.06-07-028 at 2-6, D.11-06-016 at 34, and D.14-11-001 at 17.

[249] Joint Utilities Opening Brief at 17 citing D.11-06-016 at 53, 65, and Conclusion of Law 25.

this time.[250] Following the SCE current practice, customers across all three Joint Utilities' territories who oversize their systems shall attest that they expect to increase their usage accordingly in the next year. This will prevent oversizing that is not designed to meet a future increase in onsite annual load.

8.3.4. The Successor Tariff Should Transition the Solar Market to a Solar Paired with Storage Market

SEIA/Vote Solar observe party agreement that the solar industry in California must transition to paired storage.[251] PCF points out that most parties also agree that "storage resources have the ability to increase the benefits of net energy metering solar to the grid."[252] To explain this assertion, PCF submits that storage paired with renewable generation can help flatten the demand curve and reduce strain on the grid by shifting the time renewable energy is consumed to later in the day.[253] Joint Utilities agree the Commission should promote storage, stating that storage-paired solar systems can provide better alignment between grid and customer benefits.[254] However, CALSSA asserts that storage will come on the back of the solar market, contending that limited battery availability and high soft costs for storage projects remain barriers to full-scale storage deployment.[255] CALSSA cautions the Commission to allow time for the storage market to mature before relying primarily on paired storage.

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[250] This decision neither revises the net surplus generation netting period nor net surplus compensation, as further discussed in Section 8.4.9 and Section 8.5.3.

[251] SEIA/Vote Solar Opening Brief at 47.

[252] PCF Opening Brief at 57 citing IOU-01 at 103.

[253] PCF Opening Brief at 57 citing PCF-01 at 10 and 12-13.

[254] Joint Utilities Opening Brief at 59.

[255] CALSSA Opening Brief at 2-3, citing CSA-01 at 6:10.

PCF recommends the Commission encourage customers to maximize the value of their behind-the-meter systems to the grid by increasing incentives to pair solar with storage.[256] Noting the small differentials between peak- and off-peak pricing weaken the price signals to customers, PCF submits time-of-use rates should be revised to provide greater differentials between peak- and off-peak pricing.[257] PCF contends paired storage would then be encouraged to discharge batteries during peak periods.[258]

This decision agrees that the addition of storage provides greater benefits to both the customer and the grid. For example, Joint Utilities highlight that "paired storage can help manage the problems created by generation (since behind-the-meter solar cannot be curtailed), in that such excess energy can be stored… to meet load at its peak later in the day."[259] Joint Utilities contend "paired storage will reduce our dependency upon carbon emitting resources."[260] Joint Utilities also assert financial benefits to customers, maintaining that, "storage allows the customer to use energy generated by their panels during low-value midday hours later in the day when the sun is not shining and energy prices are at their highest, shortening the system payback period."[261] Some parties also note the importance of virtual power plant pilots underway that aggregate behind-the-meter storage projects to drive down peak demand when

[256] PCF Opening Brief at 55.

[257] PCF Opening Brief at 56.

[258] PCF Opening Brief at 56.

[259] Joint Utilities Opening Brief at 64-65 citing IOU-02 at 103:13 to 104:6.

[260] Joint Utilities Opening Brief at 65.

[261] Joint Utilities Opening Brief at 65.

the grid is stressed and count toward local capacity requirements, creating a potential new value stream for storage customers.[262]

While the Commission acknowledges the benefits of storage, the current cost of storage creates cost-effectiveness concerns as discussed in the Lookback Study. The Lookback Study found that the TRC test's benefit-cost ratio is consistently higher for solar PV systems when compared to paired storage systems. The study surmised that this "suggests that while energy storage systems can achieve higher avoided cost benefits, the incremental costs of energy storage are greater than the avoided cost benefits they currently provide" but "future energy storage cost reductions would tend to improve the TRC for [paired storage] systems."[263] The current cost of storage also presents a barrier to widespread adoption in the near-term, as underscored by CALSSA and PCF. PCF references an analysis performed by E3, where E3 estimated that the addition of a battery increased the length of a NEM 2.0 customer's payback period by 14 to 25 percent, depending on the utility.[264] However, this same analysis indicates a higher TRC test results for NEM 2.0 solar paired with storage and NEM 2.0 stand-alone solar. With these facts in mind, it is and will continue to be Commission policy to encourage solar systems paired with storage, while considering the costs and benefits. As discussed in Section 8.4 and Section 8.5 below, this decision adopts a successor tariff with this balance at the forefront.

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[262] CSA-01 at 88 and CLC-01 at 5.

[263] Lookback Study at 7.

[264] PCF Opening Brief at 57 citing CSA-32 at 34-35 (E3, Cost-effectiveness of net energy metering Successor Rate Proposals under Rulemaking 20-08-020, a Comparative Analysis (June 15, 2021). (*See also* CALSSA Opening Brief at 23-24 and Table 1 and Table 2.)

8.4. Elements to Include in the Successor Tariff

Parties presented recommended policies for the successor tariff. Of the recommended policies, the structure of the successor tariff should be revised to be a better version of net billing, with a retail export compensation rate better aligned with the value exported energy provides to the grid based on when the value in terms of energy is provided. Hence, retail export compensation rates should be based on avoided cost values and successor tariff customers should pay for their usage of the grid. Further, the import rate should align with the prior determination of promoting paired storage and electrification. Finally, in order to ensure that customer-sited renewable distributed generation continues to grow sustainably, a glide path in the form of an Avoided Cost Calculator Plus Adder (ACC Plus) offers a better option for balancing the needs of participants and all other ratepayers. Each of the elements are discussed separately below.

8.4.1. Retail Export Compensation Rate Structure

Net billing allows the dollar value of credits to be set at a different level than the energy's import price. With the exception of Clean Coalition and PCF, most parties support the use of net billing as the compensation structure for the successor tariff. Cal Advocates points out that net billing will disassociate export compensation from the retail rate, thus providing a more objective and transparent approach.[265] SEIA/Vote Solar explain that the use of a net billing structure is key to its proposed successor tariff.[266] Joint Utilities assert their proposal reforms the net energy metering program through adoption of a net

[265] Cal Advocates Opening Brief at 14.

[266] SEIA/Vote Solar Opening Brief at 4.

billing structure.[267] Also supporting net billing, IEPA emphasizes that net billing allows the Commission to set compensation for exports that more closely reflect the value of exports to the electrical system.[268] Likewise, NRDC highlights that there is widespread support from parties showing that the current net energy metering tariff needs to evolve to a net billing structure that compensates customers for the value they provide to the grid.[269] The compensation value is where parties' opinions diverge.

Generally, recommendations for the retail export compensation rate structure fall into two categories: (1) a retail export compensation rate based on the retail import rate (as is the structure of NEM 1.0 and NEM 2.0); and (2) a retail export compensation rate based on values from the Avoided Cost Calculator.

CUE, IEPA, Joint Utilities, NRDC, Cal Advocates, and TURN recommend energy exported to the grid be compensated at a rate based on the Avoided Cost Calculator. Each one approaches the concept differently. However, they all agree the basic concept to this approach is to align the retail export compensation rate with the value it provides to the grid based on when the value is provided.[270]

CALSSA contends the Commission's Avoided Cost Calculator undervalues exports and would result in reduced compensation and

[267] Joint Utilities Opening Brief at xii.

[268] IEPA Opening Brief at 1.

[269] NRDC Opening Brief at 26.

[270] Joint Utilities Opening Brief at 63. (*See also* NRDC Opening Brief at 27, "exports should be valued at the total hourly benefit as estimated by the Avoided Cost Calculator.")

significantly lengthier payback periods.[271] CALSSA provides analysis asserting this would result in payback periods of nine to 18 years. Noting the admittance by Joint Utilities that the Avoided Cost Calculator "was not designed to directly inform rate design," CALSSA argues this approach exceeds the tool's capabilities.[272] Agreeing the Avoided Cost Calculator has never been used to design rates, SEIA/Vote Solar also highlights the tool does not capture the total benefits referenced in Public Utilities Code Section 2827.1(b)(4).[273] Further, CALSSA alleges that the Avoided Cost Calculator is volatile and controversial, pointing to the 2021 update process, and should only be used as a guide.[274] In addition, SEIA/Vote Solar assert the retail export compensation rate should be easily understood, explaining that "a customer's willingness to invest in solar or solar [paired with] storage is ultimately tied to their ability to understand" their compensation.[275] SEIA/Vote Solar concludes use of the Avoided Cost Calculator for setting retail export compensation rates is "far from understandable," thus conflicting with rate design principles.[276] SEIA/Vote Solar disputes Joint Utilities' assertion that this approach is neither novel nor untested, maintaining that there is no evidence on whether such an approach has resulted in continued sustainable growth of the solar industry.[277]

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[271] CALSSA Opening Brief at 23 and 94.

[272] CALSSA Opening Brief at 90-91 citing IOU-01 at 125:3-4.

[273] SEIA/Vote Solar Opening Brief at 7.

[274] CALSSA Opening Brief at 91-92.

[275] SEIA/Vote Solar Opening Brief at 39.

[276] SEIA/Vote Solar Opening Brief at 40.

[277] SEIA/Vote Solar Reply Brief at 42.

Although CALSSA contends its proposal utilizes the Avoided Cost Calculator as a key component in ensuring retail export compensation rates are just and reasonable,[278] CALSSA as well as SEIA/Vote Solar and Sierra Club urge the Commission to continue basing compensation on the retail rate but with steps that would decrease compensation over time. CALSSA proposes each subsequent step would occur when cumulative installed residential capacity reached certain designated megawatt thresholds and range from an initial 20 percent decrease in the initial step to a 50 percent decrease in the final step.[279] CALSSA warns that the depth of change is based on what CALSSA believes the market can bear.[280] Similarly SEIA/Vote Solar recommend a step-down approach, which would reduce retail export compensation rates by 50 percent by the year 2030.[281] SEIA/Vote Solar explain their step-down approach, in combination with the requirement for customers to take service under current time-of-use or electrification rates, would bring bill savings for residential customers into alignment with the benefits of their renewable generation as measured by the Avoided Cost Calculator. SEIA/Vote Solar underscore their step-down approach provides a glide path, which results in a reasonable payback for customers as the market transitions.[282] Instead of creating a new rate with complex features or fixed charges, Sierra Club proposes maintaining the current structure and for each gigawatt of total solar deployment, compensation for each successor "tranche" of net energy metering customers would decrease

[278] CALSSA Opening Brief at 86.

[279] CALSSA Opening Brief at vii.

[280] CALSSA Opening Brief at vii.

[281] SEIA/Vote Solar Opening Brief at 5.

[282] SEIA/Vote Solar Opening Brief at 38.

by 10 percent toward avoided cost as determined by that year's Avoided Cost Calculator. Sierra Club estimates that once the three utilities reach 10 gigawatts of total rooftop solar deployment, compensation would reach avoided cost.

Continuing to base retail export compensation rates on retail import rates does not comply with Public Utilities Code Section 2827.1, thereby conflicting with one of the guiding principles. Retail import rates do not reflect the actual costs of the exports or the benefits the exports provide to all customers and the grid, both of which should be approximately equal pursuant to Section 2827.1. The Commission acknowledges Cal Advocates' analysis that basing retail export compensation rates on retail import rates has resulted in compensation levels 3.8 to 5.4 times higher than the benefits they provide to the electrical systems in the form of avoided costs.[283] This decision concludes that the retail export compensation rate should be based on values derived from the Avoided Cost Calculator. Using avoided cost values instead of the retail import rate brings the cost of the successor tariff for utilities closer to its value, thus complying with two other guiding principles: (1) ensuring equity among customers; and maximizing the value of the resource to all customers; and (2) to the electrical system. For these reasons, this decision also declines to adopt the SEIA/Vote Solar or CALSSA stepped-down approach that continues to base retail export compensation rates on the retail import rate. Retail export compensation rates based on the Avoided Cost Calculator sends more accurate price signals and promotes solar paired with storage, another objective of the successor tariff.

In arguing against use of the Avoided Cost Calculator, SEIA/Vote Solar asserts a lack of evidence on whether such an approach has resulted in continued

[283] Cal Advocates Opening Brief at 14 citing PAO-03 at 2-21, Table 2-3 and line 10-12.

sustainable growth of the solar industry. While the record contains only a few examples of its use, the Commission reminds SEIA/Vote Solar that ensuring the sustainable growth of customer-sited generation is not its only concern. However, using this approach to ensure the costs and benefits are approximately equal, as instructed by the Legislature, should lead to positive outcomes for customers and nonparticipating ratepayers. The Commission is not swayed by the arguments that the Avoided Cost Calculator is volatile and inconsistent. Except for the 2020 version, the Avoided Cost Calculator has consistently reflected the value of exported energy, year after year. Further, the Commission agrees that the Avoided Cost Calculator values will ensure the retail export compensation rate is based on the benefits provided to the electric grid and will, therefore, reduce the previously confirmed cost shift. While this decision recognizes the warning by CALSSA and SEIA/Vote Solar to proceed in a measured fashion, other elements and tools exist that can be used to produce such a measured approach, as this decision explains in Section 8.5 below.

Lastly, this decision acknowledges SEIA/Vote Solar's position that retail export compensation rates should be easily understood. SEIA/Vote Solar conclude that use of the Avoided Cost Calculator for setting retail export compensation rates is "far from understandable," and conflicts with rate design principles. The Commission disagrees. As noted by Cal Advocates, these claims ignore the reality that the mechanics behind any retail rate design are complex.[284] This decision agrees that customers will be able to understand that their exports

[284] Cal Advocates Opening Brief at 18.

are compensated on a per kilowatt-hour basis without having to understand the avoided cost components.[285]

However, this decision also recognizes there are multiple elements to the retail export compensation rate, which can lead to confusion for customers. The Commission should ensure customers can understand the retail export compensation rate to be able to make an informed decision on whether to purchase solar. Hence, this decision looks to simplify while balancing all other requirements and principles. This balance and the specifics of the retail export compensation rate are discussed in Section 8.5 below.

8.4.2. Nonresidential Successor Tariff

Noting the TRC and PCT scores from the Lookback Study, CALSSA, SEIA/Vote Solar, Foundation Wind, and SBUA all contend that nonresidential NEM 2.0 is cost-effective, and, therefore, the Commission should retain the same structure for the successor tariff. However, as discussed below, the Commission should look broadly at the review of the current net energy metering tariff and ensure that all retail export compensation rates are aligned with the true costs of the exports and the benefits the exports provide to customers and the grid.

Foundation Wind argues that the Lookback Study's data and analysis regarding the cost-effectiveness of medium and large commercial, industrial and agricultural customers deploying wind energy facilities must not be overlooked.[286] Foundation Wind further contends the guiding principle instructing the successor to fairly consider all technologies should allow the Commission to treat one technology differently from others, thus creating a

[285] Cal Advocates Opening Brief at 18.

[286] Foundation Windpower Opening Brief at 3.

carve-out.[287] Arguing against making any changes to the nonresidential net energy metering tariff, CALSSA contends that, as of December 2019, commercial and agricultural NEM 2.0 customers pay $117 million more per year than the cost to serve them.[288] SEIA/Vote Solar asserts that there has already been a significant drop in installations in the commercial market segment, thus decreasing retail export compensation rates could endanger its sustainability.[289]

In testimony, Joint Utilities dispute these assertions of CALSSA and SEIA/Vote Solar. Joint Utilities contend the cost-of-service analysis performed in the Lookback Study is of limited use in developing the successor tariff, as the methodology is not as vetted as the standard practice manual tests.[290] Joint Utilities also argue that looking at the results of the RIM test, nonresidential NEM 2.0 generation is only slightly less burdensome than residential NEM 2.0 generation.[291] Further, as noted in Section 8.1.3, Joint Utilities assert that the RIM scores would be lower if updated to use the 2021 Avoided Cost Calculator.

Previously, this decision found that while the TRC and PCT scores for the nonresidential sector are above 1.0, in looking at the RIM and other factors, the nonresidential sector of NEM 2.0 is not cost-effective. This decision also found that the structure of NEM 2.0 is not compliant with the guiding principles. In Section 8.4.1 above, retail rates were found to have no connection to the actual costs of the exports or the benefits the electricity exports provide to customers and the grid, both of which are needed to ensure they are approximately equal,

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[287] Foundation Windpower Opening Brief at 4.

[288] CALSSA Opening Brief at 104 citing CSA-01 at 18:7-9.

[289] SEIA/Vote Solar Opening Brief at 6.

[290] IOU-02 at 86.

[291] IOU-02 at 86-87.

pursuant to Section 2827.1. As such, it is reasonable to adopt similar retail export compensation rates for new successor tariff customers. Furthermore, requiring the same retail export compensation rate for all new successor tariff customers will maintain equal treatment between nonresidential and residential customers, thus complying with Guiding Principle (b), ensuring equity among customers.

The Lookback Study highlighted that most nonresidential NEM 2.0 customers have high fixed charges, minimum bills, and demand charges, which tend to lower the potential savings associated with investing in solar systems.[292] Hence, if the NEM 2.0 structure were to be found compliant with the guiding principles, a change in demand charges or fixed charges in another proceeding could lead to furthering a cost shift in net energy metering that could be challenging to unwind.

8.4.3. Import Rate

There is considerably more consensus amongst parties with respect to import rates. With a few exceptions, many parties agree that moving toward highly differentiated time-of-use rates will address several objectives.

PCF asserts the current time-of-use rates, for PG&E and SDG&E, do not send a strong signal to customers to divert energy usage to lower-priced hours when the solar system is producing.[293] To maximize benefits, PCF recommends revising time-of-use rates to have greater differentials between peak and off-peak pricing and be seasonally adjusted.[294] PCF contends making these revisions would also decrease the cost shift.[295] SBUA surmises that even without any other

[292] Lookback Study at 7.

[293] PCF Opening Brief at 55.

[294] PCF Opening Brief at 56.

[295] PCF Opening Brief at 56.

reform, a shift toward more fully-differentiated rates will increase bills for successor net energy metering customers.[296] Others supporting new non-tiered, highly differentiated time-of-use rates include CalWEA, CUE, IEPA, NRDC, Cal Advocates, Sierra Club, and TURN.[297] However, TURN cautions that certain customers may experience adverse bill impacts when switching from a baseline rate to a non-tiered time-of-use rate.[298]

Sierra Club states that the foundational element of the successor tariff should be requiring customers to take service on an electrification rate with a fixed charge component. Sierra Club submits that electrification rates would reduce the cost shift through more appropriate time-variant pricing and discourage energy use during peak periods when carbon intensity is the highest.[299] SEIA/Vote Solar agree that successor tariff customers should move to electrification rates, which will encourage electrification and help California reach its greenhouse gas reduction goal.[300] Contending the existence of a link between solar installation and electric vehicle purchases, SEIA/Vote Solar maintains the link would be strengthened by the requirement of an existing electrification rate.[301] Further, SEIA/Vote Solar asserts requiring electrification rates would help mitigate any cost shift between participants and non-participants.[302] However, SEIA/Vote Solar underscores that the

[296] SBUA Opening Brief at 13,

[297] Cal Advocates Opening Brief at Appendix A.

[298] TURN Opening Brief at 55.

[299] Sierra Club Opening Brief at 8.

[300] SEIA/Vote Solar Opening Brief at 41-42.

[301] SEIA/Vote Solar Opening Brief at 42 citing SVS-04 at 57.

[302] SEIA/Vote Solar Opening Brief at 43-44.

electrification rates adopted in this decision should be existing rates that are available to all customers.[303]

Joint Utilities approach the import rate reform more acutely, recommending a new set of rates for net energy metering successor tariff customers. Joint Utilities propose cost-based residential default rates for residential customers, including on-peak, off-peak, and super off-peak time-of-use rates for both summer and winter.[304] Joint Utilities assert that, in combination with fixed charges, these cost-based, non-tiered time-of-use differentials will result in ratepayer indifference and bring net energy metering into alignment with rate design principles, rectify the cost shift, provide subsidy transparency, and reflect accurate pricing.[305]

SEIA/Vote Solar oppose Joint Utilities' new rate schedules for net energy metering customers (PG&E and SDG&E rates) contending that while available to other customers, "the reality is that given its structure, with a fixed charge significantly higher than is imposed under any other currently operable PG&E tariff, it is highly unlikely that other customers will opt in to it."[306] SEIA/Vote Solar cautions that adoption of these rates could lead to segregation of customers into groups based on whether they adopt a single type of distributed energy resource. SEIA/Vote Solar submits that because the goal of the Commission is for customers to adopt multiple types of distributed energy resources in multiple combinations of technologies, having rate schedules geared toward a single distributed energy resources does not facilitate reaching this goal. Further,

[303] SEIA/Vote Solar Opening Brief at 44.

[304] Joint Utilities Opening Brief at xii.

[305] Joint Utilities Opening Brief at 62.

[306] SEIA/Vote Solar Reply Brief at 45.

SEIA/Vote Solar asserts it would be difficult for a customer to ascertain which rate schedule works best.[307]

Requiring the successor tariff customers to take service on time-of-use rates with a high off-peak/on peak price differentiation (*i.e.*, highly differentiated time-of-use rates) will meet several guiding principles in this proceeding. Most importantly, highly differentiated time-of-use rates will vastly improve the pricing signal to customers. These rates will incentivize customers to divert energy usage to lower-priced hours when their solar system is producing and/or when charging storage, rather than using this energy at expensive times when the grid's energy supply is constrained. As a result, rates are closer to the cost of service. This maximizes the value of the generation to all customers and to the electrical system and ensures equity among all customers. Adoption of these import rates will also encourage electrification and help California reach its greenhouse gas reduction goal, thus coordinating the successor tariff with the Commission's energy policies. Further, the rates should be available to all customers and should not be focused solely on net energy metering customers. SEIA/Vote Solar provided no evidence to support its claim that this could discourage the adoption of multiple distributed energy resources. Accordingly, in the successor tariff, customers shall be required to take service on the rates that are available to all customers and have high time-of-use price differential between summer weekday peak and summer weekday off-peak periods. This is discussed in more detail in Section 8.5 below.

[307] SEIA/Vote Solar Reply Brief at 45.

8.4.4. Grid Benefits Charges

Contending grid benefits charges are largely designed to recover lost utility revenues due to net energy metering customers' self-generation, PCF asserts the grid benefits charge results in the assessment of "charges to net energy metering customers for services the utility provides to non-net energy metering customers." PCF surmises these charges penalize net energy metering customers for decreasing their use of energy from the grid, comparing it to charging non-net energy metering customers for hanging clothes instead of using an electric dryer.[308]

In support of the adoption of grid benefits charges in this proceeding, Joint Utilities, NRDC, Cal Advocates, and TURN consider the grid benefits charge essential to ensuring net energy metering customers pay for the costs they impose on the system. Joint Utilities explain that when net energy metering customers avoid paying volumetric rates when self-generating, they avoid paying certain aspects of the bill for which all customers are responsible including grid services such as transmission, distribution, and the cost allocation mechanism; policy mandates such as CARE, program subsidies for energy efficiency programs, public purpose programs, the Wildfire Fund, and Nuclear Decommissioning; and the costs of utility-provided customer services. These costs (which are currently only assessed via the volumetric rate) are thus shifted to non-net energy metering customers in addition to their own costs for these items.[309] Joint Utilities further explain that behind-the-meter solar without paired storage, "does not decrease the need for the distribution or transmission

[308] PCF Opening Brief at 59.

[309] Joint Utilities Opening Brief at 70.

system and resiliency, reliability, and safety upgrades to that infrastructure."[310] Joint Utilities assert utilities through ratepayers "continue to pay generation legacy costs, as well as procure new generation to instantly meet net energy metering customer demand should their systems be, for whatever reason, unavailable to serve all or part of their load."[311]

Regarding the comparison that the grid benefits charge for net energy metering customers is like penalizing a residential customer for hanging laundry instead of using an electric dryer, NRDC counters that hanging laundry (*i.e.*, conservation) and self-consumption (*i.e.*, distribution) have different grid impacts.[312] NRDC explains that in conservation the customer permanently reduces their load, but net energy metering customers intermittently reduce their load depending upon the performance of the solar system.[313] NRDC also notes the two are different in that unplanned solar adoption can lead to increased distribution system investments, whereas conservation does not have this negative impact.[314]

Turning to legal considerations, CALSSA asserts grid benefits charges violate state and federal law in that they are not just and reasonable. CALSSA explains that the determination of just and reasonable has emphasized cost causation with the fair allocation of costs among different groups of ratepayers determined by cost-of-service studies.[315] Referencing D.15-07-001, which states

[310] Joint Utilities Opening Brief at 70.

[311] Joint Utilities Opening Brief at 71.

[312] NRD-02 at 27.

[313] NRD-02 at 27.

[314] NRD-02 at 27-28

[315] CALSSA Opening Brief at 125 citing Public Utilities Code Section 451.

that the determination of just and reasonable has emphasized cost causation,[316] CALSSA concludes that because the grid benefits charges proposed in this proceeding "are not designed to account for any incremental cost to the utility of providing service to net energy metering customers," they are not just and reasonable.[317]

Cal Advocates responds that residential rates were not designed to produce accurate compensation at full retail rates for customers installing solar systems, highlighting that the design flaw shifts costs from net energy metering to non-net energy metering customers.[318] Joint Utilities explain that the volumetric rate approach was a practical approach when one-way grid imports were the default supply option. Now, with a system of imports and exports using the grid, Joint Utilities contend the volumetric rate approach is no longer practical.[319]

The current design of the retail rates no longer provides the ability to accurately calculate all of a customer's energy and grid usage, with respect to net energy metering customers. As noted by Joint Utilities, retail rates were created before the emergence of the two-way street of imports and exports. Further, the Commission agrees that net energy metering customers cause costs even when not directly importing energy from the grid. As NRDC described, net energy metering customers intermittently reduce usage depending upon the performance of the solar system. Thus, the grid must be always prepared for the intermittent decrease and increase of usage.

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316 CALSSA Opening Brief at 125 citing D.15-07-001 at 2.

317 CALSSA Opening Brief at 125.

318 Cal Advocates Reply Brief at 21.

319 Joint Utilities Reply Brief at 37.

Subsequent to the filing of briefs in this proceeding, the Commission initiated R.22-07-005, the Rulemaking to Advance Demand Flexibility Through Electric Rates. R.22-07-005 will establish policies and modify electric rates to enhance reliability; improve bill affordability and equity; reduce curtailment of renewable energy and reduce greenhouse gas emissions; enable building and transportation electrification; reduce system costs through efficient pricing of electricity; and enable demand flexibility participation. One of the tasks the Commission will consider in the new rulemaking is the reformation of fixed charges, pursuant to AB 205. AB 205 directs the Commission to authorize a fixed charge for default residential rates no later than July 1, 2024.

Included as one of the preliminary scoping issues in R.22-07-005 is the question of how to reform fixed charges for recovery of certain authorized utility costs. The Commission considers this new rulemaking to be a more appropriate venue to consider the issue of accurately calculating a customer's energy and grid usage while ensuring that the grid is prepared for the intermittent decrease and increase of usage. The new rulemaking will have the advantage of looking at the totality of rates when reforming fixed charges for the use of the grid. Hence, this decision declines to adopt a grid benefits charge as part of the successor tariff.

8.4.5. Non-bypassable Charges

The Commission previously determined that those taking service on the NEM 2.0 tariff would be required to pay non-bypassable charges on each kilowatt hour (kWh) of electricity they consume from the grid in each metered interval.[320] D.16-01-044 determined there are four non-bypassable charges that

[320] D.16-01-044 at Conclusion of Law 113.

NEM 2.0 customers could not bypass by applying bill credits from exports to their bill: the public purpose program charge, nuclear decommissioning charge, competition transition charge, and Department of Water Resources bond charge.[321]

In this proceeding, several parties discuss non-bypassable charges within the discussion of grid benefits charges, and many recommend including these charges within a grid benefit charge. As the Commission has declined to adopt a grid benefit charge in this proceeding, the discussion in this section is focused solely on non-bypassable charges. The disagreement in this proceeding is two-fold: (1) whether the Commission should assess these charges on energy imported or a combination of energy imported from the grid and consumption behind the meter, *i.e.*, together, gross consumption; and (2) whether the list of charges that successor tariff customers may not bypass with bill credits should be expanded.

This decision begins with the question of how to assess the non-bypassable charges. In NEM 2.0, participating customers are assessed non-bypassable charges volumetrically, based on the amount of energy imported from the grid. The May 9, 2022 Ruling referenced a Sierra Club proposal, which suggested the Commission require the collection of non-bypassable charges on each successor tariff customer's gross consumption, which includes assessing the charges on both imports and consumption behind-the-meter.[322] Sierra Club proposes this could be performed by either an estimation method or the installation of a separate meter.

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[321] D.16-01-044 at Finding of Fact 42.

[322] Sierra Club Opening Comments on December 13, 2022 Proposed Decision Revising Net Energy Metering Tariff and Subtariffs (now withdrawn) at 12-13.

CALSSA and SEIA/Vote Solar oppose the assessment of non-bypassable charges on consumption behind-the-meter. CALSSA asserts such an approach exceeds Commission jurisdiction and would violate federal and state anti-discrimination law. CALSSA contends the Commission has jurisdiction over public utilities, but public utilities do not include solar energy producers as they are excluded from the definition of an electrical corporation.[323] CALSSA recognizes there are certain exceptions, *i.e.*, for rates and practices. However, CALSSA argues that because behind-the-meter activity is not drawing any energy or services from the grid, the activities are private and not subject to the Commission's jurisdiction.[324]

Joint Utilities argue that despite exempting net energy metering customers from non-bypassable charges in Public Utilities Code Section 2827, Section 2827(b)(7), established by AB 327, now requires the Commission to treat the new successor tariff customers (*i.e.*, customer-generators) as departing load. Joint Utilities assert that departing load customers must pay non-bypassable charges unless expressly exempted by statute.[325]

The Commission determines this issue is addressed by other Commission proceedings. As discussed in Section 8.4.4, the Commission recently initiated R.22-07-005, the Rulemaking to Advance Demand Flexibility Through Electric Rates, which will address the reformation of fixed charges and, specifically, how to reform fixed charges for recovery of certain authorized utility costs, including non-bypassable charges. Until such a fixed charge is determined and noticed,

[323] CALSSA Opening Comments to May 9, 2022 Ruling at 12.

[324] CALSSA Opening Comments to May 9, 2022 Ruling at 13. (*See also* SEIA/Vote Solar Opening Comments to May 9, 2022 Ruling at 14-15.)

[325] Joint Utilities Reply Comments to May 9, 2022 Ruling at 6-7

and as further explained in Section 8.5.3, the successor tariff shall continue to assess non-bypassable charges based on the energy that successor tariff customers import from the grid. This decision highlights the agreement by CALSSA that net energy metering customers should be assessed such a fixed charge, along with all residential customers. CALSSA states that utilizing a consistent methodology across all relevant customer classes and categories, *i.e.*, a fixed charge, is the correct way to approach the question of how to recover utilities' fixed costs equitably.[326]

The May 9, 2022 Ruling provided the current non-bypassable charges that all customers pay on imported energy, with corrections from the Joint Utilities.[327] These are presented in Table 5 below.

Table 5. Current Electric Program and Securitization Charges

Charge	Applicable Utility
Public Purpose Programs Charge	PG&E, SDG&E, and SCE
Wildfire Fund Non-Bypassable Charge	PG&E, SDG&E, and SCE
Competition Transition Charge	PG&E, SDG&E, and SCE
CEC Fee	PG&E, SDG&E, and SCE
Nuclear Decommissioning Charge	PG&E, SDG&E, and SCE
New System Generation Charge	PG&E and SCE
Local Generation Charge	SDG&E
Recovery Bond Charge/Recovery Bond Credit	PG&E
Reliability Services Charge	PG&E, SDG&E, and SCE
PUC Reimbursement Fee Charge	PG&E, SDG&E, and SCE
Securitized Wildfire Capital Costs/Energy Cost Recovery Account	PG&E

[326] CALSSA Opening Comments to May 9, 2022 Ruling at 2.

[327] Joint Utilities Opening Comments to May 9, 2022 Ruling at 17-19

Charge	Applicable Utility
Wildfire Hardening Charge	SCE
Power Charge Indifference Adjustment Charge	PG&E, SDG&E, and SCE

Successor tariff customers will continue to pay these charges, as applicable, on imported energy. Assessing these charges on imported energy is consistent with the manner in which all customers currently pay for these costs. The Department of Water Resources Bond Charge expired on September 30, 2020 and was replaced with the Wildfire Fund Non-Bypassable Charge.[328] Hence, successor tariff customers should continue to be assessed for this renamed charge.

Turning to the question of which non-bypassable charges successor tariff customers cannot bypass by applying bill credits from exported energy to their bills, CALSSA and SEIA/Vote Solar assert the list of non-bypassable charges should remain as in the current NEM 2.0 tariff. TURN, in addition to CalWEA, CUE, IEPA, NRDC, and Cal Advocates recommend the list of non-bypassable charges that cannot be offset on bills should be expanded to also include the Wildfire Fund Non-Bypassable Charge, Reliability Services, New System Generation Costs, Investor-Owned Utility securitization costs relating to wildfires or other undercollections, Energy Cost Recovery Account (for PG&E customers) and PUC Reimbursement Surcharge.[329]

TURN argues the Commission should expand the list of non-bypassable charges to include all current non-bypassable charges, as they have been deemed non-bypassable by statute, and were not in existence at the time that NEM 2.0

[328] D.20-09-005.

[329] TURN Opening Brief at Appendix A at 6-7.

was adopted.[330] Other than the statement that these are non-bypassable by statute, TURN offers no other justification for including the new charges. This decision maintains the four charges adopted in D.16-01-044, the public purpose program charge, nuclear decommissioning charge, competition transition charge, and the Wildfire Fund Non-Bypassable Charge, and affirms that, as was the case in D.16-01-044, these charges will continue to be non-bypassable for successor tariff customers, *i.e.*, successor tariff customers cannot offset these four charges with bill credits from exported energy.

8.4.6. Glide Path

The White Paper proposed a Market Transition Credit to provide a glide path for the successor tariff, creating both a gradual retail export compensation rate reform and an external transitional support mechanism designed specifically to enable a reasonable payback period for customers investing in onsite renewable generation. Explaining the credit would be flexible, the White Paper suggests the credit would also be sensitive to cost declines.[331] The White Paper proposes the credit would be fixed over a defined payback period for each net energy metering customer vintage and could be based on time, number of subscribed customers, or the volume of net energy metering generator adoption.[332]

Only NRDC and TURN recommend a Market Transition Credit as part of their tariff proposals.[333] TURN proposes structuring the credit as a one-time

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[330] TURN Opening Brief at 110.

[331] White Paper at 3.

[332] White Paper at 3.

[333] CCSA and GRID/Vote Solar/Sierra Club recommend a Market Transition Credit as part of their proposals that are focused on income-challenged customers. These proposals and the recommended elements are discussed in Section 8.6 below.

upfront rebate to reduce the costs of the new investment and eliminate the subsidy from retail rates.[334] TURN contends its proposal presents a transparent upfront subsidy that could be used to target adoptions and eliminate cost shifts.[335] TURN further proposes the Market Transition Credit be administered by either the Commission or a third-party entity. TURN's and NRDC's proposals for the credit are identical except that in TURN's proposal only low-income customers would qualify for the credit, while NRDC recommends the credit be available to all customers to ensure the market continues to grow sustainably.[336]

CALSSA and SEIA/Vote Solar oppose the TURN and NRDC proposals for the Market Transition Credit. Turning first to NRDC's proposal, both CALSSA and SEIA/Vote Solar consider NRDC's proposal to be incomplete because NRDC does not provide the value of the credit but rather describes the credit as the amount necessary for a customer to achieve a 10-year payback period.[337] With respect to TURN's proposal, CALSSA contends the TURN proposal for the credit would result in a substantial credit for customers, up to $2,331 per kilowatt in SDG&E's territory.[338] CALSSA blames the high incentive on the high solar fee and low retail export compensation rate contained in TURN's proposal.[339] CALSSA also contends that the modeling TURN provided to calculate the credit is a black box. While the Commission has not adopted the TURN model, this

[334] TURN Opening Brief at 85.

[335] TURN Opening Brief at 84-85.

[336] NRDC Opening Brief at 34.

[337] CALSSA Opening Brief at 119 and SEIA/Vote Solar at 68.

[338] CALSSA Opening Brief at 117 citing SVS-04 at 49.

[339] CALSSA Opening Brief at 117 citing SVS-04 at 50:8-11.

decision does not consider it a black box, as TURN provided it to all parties and, as they stated, the model is fully transparent, runs on Microsoft Excel, and has no confidential material.[340] SEIA/Vote Solar assert the TURN proposal is unclear on what is being offered and that several key elements are "left up for grabs in the implementation phase."[341]

Ultimately, CALSSA opposes any use of a Market Transition Credit, contending such credits are difficult to administer and providing the examples of the Solar on Multifamily Affordable Housing (SOMAH) program and SGIP.[342] With respect to administration of the SOMAH program, CALSSA bases its opposition on a delay (15 months) for the Commission to issue a decision on the SOMAH incentive levels. The lengthy amount of time to determine incentives does not justify CALSSA's claim of administrative difficulties. CALSSA also contends program performance has been disappointing due to incentive levels being misaligned with program economics but provides no evidence that this is due to administrative difficulty. CALSSA contends the commercial storage budget in SGIP lingered for years with minimal activity before finally gaining momentum but again provides no evidence this is due to administrative difficulty. Finally, CALSSA concludes that the Commission is not positioned to understand market pricing or the level of granularity necessary to create and accurate, current, and evolving credit amount on day one.

As previously discussed, the Commission set aside submission of the record to seek further comment on the approaches to the glide path. The May 9, 2022 Ruling proposed a different approach to the glide path, referred to

[340] TURN Reply Brief at 29.

[341] SEIA/Vote Solar Opening Brief at 66-67.

[342] CALSSA Opening Brief at 116 citing to CSA-01 at 46:17 to 47:19.

as the ACC Plus. The ACC Plus would provide either a multiplier or a fixed cents per kilowatt-hour (c/kWh) export adder on top of the Avoided Cost Calculator-based hourly export credits. As that ruling explained, a customer enrolled in the successor tariff in Year 1 of the glide path would be compensated for any energy exported to the grid based on the corresponding hourly Avoided Cost Calculator value plus the adder. The May 9, 2022 Ruling explains that the ACC Plus would decrease over time for prospective customers, resulting in a glide path that ends at the Avoided Cost Calculator values.

Parties were asked to comment on this alternative approach to the glide path and compare it to the proposed Market Transition Credit and the retail rate step-down approach proposed by CALSSA and SEIA/Vote Solar. Generally, parties were divided on which glide path approach the Commission should adopt. 350 Bay Area, Albion Power, Aurora Solar, CALSSA, the County of Los Angeles, GRID with Sierra Club[343] and Vote Solar, Joint CCAs, PosiGen, SBUA, Sierra Club (individually), and SEIA support the ACC Plus approach as preferable to the Market Transition Credit, stating it would be best for supporting solar-only installations during the transition to solar paired with storage as the preferred system. However, Aurora, CALSSA, Enphase, and GRID with Sierra Club and Vote Solar, Joint CCAs, and SEIA continue to advocate for the retail rate step-down approach. CESA, CUE, IEPA, Joint Utilities, NRDC, Cal Advocates, and TURN contend the Market Transition Credit is simpler and less volatile than the ACC Plus and immediately encourages the adoption of solar paired with storage systems. A majority of this

[343] For the opening comments on the May 9, 2022 Ruling, Sierra Club filed with GRID on subjects related to low-income households and individually with regard to issues not related to low-income households.

group expresses support for the use of the ACC Plus over the retail rate step-down approach. Representing the extreme opposite positions on this issue, Joint Utilities continue to contend that a glide path or transition credit is unnecessary for successor tariff customers and PCF continues to oppose any approach except for that based on retail rate decreases.

This decision previously determined that the inclusion of a glide path is essential to balance the multiple tariff requirements but that a lengthy glide path is inadequate. The adopted glide path should: (1) ensure equity among all customers, encourage sustainable market growth during the transition from a predominantly stand-alone solar system program to one that encourages the adoption of solar paired with storage systems; (2) minimize cost shifts to ensure growth is sustainable and, therefore, not occur at the undue and burdensome financial expense of nonparticipant ratepayers; and (3) provide transparency to successor tariff customers.

Parties in support of the proposed Market Transition Credit maintain it is easier to understand than the ACC Plus approach, is more transparent and predictable, and encourages the adoption of solar systems paired with storage.[344] Parties opposing the Market Transition Credit assert the approach is untested, complex, and completely divorced from the customer's exports to the grid.[345]

Regarding the objective to encourage the adoption of solar systems paired with storage, parties were asked whether the ACC Plus would impact the

[344] CUE Opening Comments to May 9, 2022 Ruling at 2-3; IEPA Opening Comments to May 9, 2022 Ruling at 2; NRDC Opening Comments to May 9, 2022 Ruling at 5: Cal Advocates Opening Comments to May 9, 2022 Ruling at 3-4; and TURN Opening Comments to May 9, 2022 Ruling at 1-3.

[345] Sierra Club Opening Comments to May 9, 2022 Ruling at 2-3; 350 Bay Area Opening Comments to May 9, 2022 Ruling at 2-4; and SEIA/Vote Solar Opening Comments to May 9, 2022 Ruling at 4.

dispatch of a battery. Parties contend batteries would typically only discharge if needed to serve onsite load and avoid paying retail rates for imports. NRDC asserts that high differentiated rates that encourage grid-friendly dispatch will lead to batteries continuing to export based on those rates.[346] SEIA/Vote Solar submit that, only in September, retail export compensation rates may be high enough to encourage exports during the peak.[347] SEIA/Vote Solar recommends averaging the Avoided Cost Calculator values across the same time-of-use periods to present a stronger signal to export during the peak. The Commission anticipates minimal negative impacts on the grid with the ACC Plus approach compared to a Market Transition Credit approach because total retail export compensation rates, including the ACC Plus, are typically lower than the retail rate for imports.

SEIA/Vote Solar argue that the glide path should be based either on the current retail export compensation rate structure (*i.e.*, retail import rates) or the final structure (*i.e.*, Avoided Cost Calculator values).[348] SEIA/Vote Solar assert that because the ACC Plus approach is based on customers' exports, it will provide benefit in the near-term to customers with stand-alone solar systems. SEIA/Vote Solar contend this transition tool will allow time for the industry to sustainably grow during the successor tariff's evolution to a tariff that favors solar paired with storage systems.[349] SEIA/Vote Solar state this transition

[346] NRDC Reply Comments to May 9, 2022 Ruling at 7-8. (*See also* Ivy Energy Opening Comments to May 9, 2022 Ruling at 3 and 4; Cal Advocates Opening Comments to May 9, 2022 Ruling at 8; and CESA Opening Comments to May 9, 2022 Ruling at 6.)

[347] SEIA/Vote Solar Opening Comments to May 9, 2022 Ruling at 9-10.

[348] SEIA/Vote Solar Opening Comments to May 9, 2022 Ruling at 4.

[349] SEIA/Vote Solar Opening Comments to May 9, 2022 Ruling at 3-5.

should allow time for storage costs to continue to decline.[350] In support of the retail rate step-down approach, SEIA/Vote Solar assert that a retail export compensation rate linked to the retail rate is superior to the ACC Plus because retaining a link between the retail import rate and the retail export compensation rate will enhance customer understanding. In opposition to the retail rate step-down approach, both Joint Utilities and the County of Los Angeles point to the focus on the Avoided Cost Calculator values as better reflecting grid conditions and actual market data.[351]

This decision finds the ACC Plus to be superior to either the Market Transition Credit or the retail rate step-down approaches because of its direct linkage to the adopted retail export compensation value. The Market Transition Credit has no direct linkage to either the current retail export compensation rate structure of NEM 2.0 or the future structure of Avoided Cost Calculator-based values. While the retail rate step-down approach is linked to the current compensation structure, the glide path will be provided to successor tariff customers who have never received compensation based on the retail rate for their exported energy. Further, basing the glide path on the Avoided Cost Calculator values ensures that values are current, as these values are updated every two years, whereas changes to retail rates and time-of-use periods can be slow, as stated by Joint Utilities.[352] Hence, the Commission considers the ACC Plus approach to enable successor tariff customers to become familiar with the Avoided Cost Calculator values immediately compared to the retail rate

[350] SEIA/Vote Solar Opening Comments to May 9, 2022 Ruling at 3-5.

[351] Joint Utilities Opening Comments to May 9, 2022 Ruling at 8-9 and County of Los Angeles Opening Comments to May 9, 2022 Ruling at 6.

[352] Joint Utilities Opening Comments to May 9, 2022 Ruling at 8-9.

step-down approach. It is important for successor customers to understand and be educated on the Avoided Cost Calculator-based values.

Parties both in support of and opposed to the ACC Plus concede that the ACC Plus would most likely result in customers providing higher value to the grid by providing better price signals than with a glide path based on retail rates.[353] The Commission recognizes that while the ACC Plus sends the right price signals to support the grid, stand-alone solar systems would benefit more from the ACC Plus approach than solar paired with storage systems during the transition period. This decision finds this reasonable as it will allow the industry to grow sustainably during the transition to a market that predominantly sells and leases solar paired with storage systems. This decision underscores that by adopting this glide path approach, it is the Commission's intention to strongly encourage the solar industry to leverage the overall declining cost of storage and evolve to an industry that is focused on the installation of solar paired with storage systems.

Again, a glide path is essential to balance the multiple requirements the tariff is required to meet. By adopting the ACC Plus with specific design elements, as discussed in Section 8.5.2 below, the Commission creates a glide path that is more easily understood by customers, will send accurate price signals to support grid needs, will communicate the true value of exports, and will allow the customer-sited renewable generation industry to adapt and grow sustainably.

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[353] CESA Opening Comments to May 9, 2022 Ruling at 5; Grid Alternatives *et al*. Opening Comments to May 9, 2022 Ruling at 6-7; IEP Opening Comments to May 9, 2022 Ruling at 2-3; Joint Utilities Opening Comments to May 9, 2022 Ruling at 8-9; NRDC Opening Comments to May 9, 2022 Ruling at 6; Cal Advocates Opening Comments to May 9, 2022 Ruling at 6-7; and SEIA/Vote Solar Reply Comments to May 9, 2022 Ruling at 3-4.

8.4.7. Minimum Bill

Parties did not indicate whether a minimum bill should be one of the elements of the successor tariff. NRDC and Cal Advocates contend the grid benefits charge is preferable over the minimum bill, calling the minimum bill regressive.[354]

In D.15-07-001, the Commission adopted a minimum bill standard for residential customers on the non-generation portion of their monthly electric bill, which included a minimum bill rate of $5 for CARE customers and $10 for non-CARE customers.

As discussed in Section 8.4.4 above, the Commission initiated R.22-07-005 to establish policies and modify electric rates to enhance reliability; improve bill affordability and equity; reduce curtailment of renewable energy and greenhouse gas emissions; enable building and transportation electrification; reduce system costs through efficient pricing of electricity; and enable demand flexibility participation. The Commission will consider the reformation of fixed charges, which could include the continuance or elimination of a minimum bill requirement. The Commission considers this new rulemaking to be a more appropriate venue to consider this issue. The new rulemaking will have the advantage of looking at the totality of rates when considering fixed charges or a minimum bill requirement. This decision declines to establish a minimum bill requirement as part of the successor tariff. This decision clarifies that certain rate schedules for which successor tariff customers are eligible may require a minimum bill. As is the current practice in NEM 2.0, Net Billing tariff customers

[354] Cal Advocates Opening Brief at 22. (*See also* CUE Opening Brief at 17 citing Transcript pp. 1864:10-1865:11 (Chhabra) and Transcript p. 1663:8-21 (Chait).)

will be subject to any minimum bill or fixed charge that is contained in a customer's applicable rate.

8.4.8. Netting Intervals for the Successor Tariff

Currently, NEM 2.0 nonresidential customers have a 15-minute netting interval and residential customers have a one-hour netting interval. Joint Utilities explain that the current netting policy — to net imports and exports within each metered interval — is a billing construct to measure the kilowatt-hour consumption to which non-bypassable charges should be applied.[355] Joint Utilities contend this does not have to continue. Joint Utilities recommend implementation of no netting (also referred to less correctly as instantaneous netting) where all recorded imports on the first meter channel are charged the import retail rate, and all recorded exports on the second meter channel are credited the retail export compensation rate. Joint Utilities contend this is a very easy process.[356] CalWEA, CUE, IEPA, NRDC, Cal Advocates and TURN concur, making the same recommendation.[357]

In support of hourly billing intervals, SEIA/Vote Solar argues the instantaneous netting approach creates significant consumer protection concerns, stating the customer does not have access to instantaneous metered data.[358] Agreeing with this concern, CALSSA notes that contractors also do not have access to this data and SBUA asserts that instantaneous netting creates unreasonable challenges for solar installers and customers in terms of accessing

[355] Joint Utilities Reply Brief at 31.

[356] Joint Utilities Reply Brief at 32.

[357] Cal Advocates Opening Brief at i.

[358] SEIA/Vote Solar Opening Brief at 71.

and analyzing data to forecast project economics.[359] SEIA/Vote Solar contends if billing were calculated with instantaneous netting and data is only available on an interval basis, developers could not provide prospective customers with solar savings estimates, as required by the Commission. SEIA/Vote Solar references testimony from Aurora Solar, which claims that modeling bill savings under instantaneous netting would require both high-frequency production estimates and high-frequency consumption readings. Aurora Solar asserts that weather data used for production estimates is almost always offered in 15-, 30-, or 60-minute intervals, and that the utilities could not provide high frequency consumption data.[360] With respect to this issue, Joint Utilities contend "all three utilities either already or will soon have the capability for solar customers to see and share both channels of data.[361] However, this data does not address the need for high-frequency production estimates raised by the solar parties, as prospective solar customers only see one channel of import data.[362] Also, CALSSA notes that "[e]ven if the data were made available, it would not align with the PV Watts solar generation projection that D.20-08-001 also requires contractors to use."[363] Solar savings estimates, which are imprecise by nature, could theoretically be created to reflect no netting by comparing 15-minute production estimates to 15-minute consumption data from the first meter channel. Accordingly, this decision adopts a process for establishing an

[359] CSA-01 at 117:3 and SBUA Opening Brief at 14.

[360] SEIA/Vote Solar Opening Brief at 72 citing AOS-02 at 16.

[361] Joint Utilities Reply Brief at 31 citing IOU-02 at 55:3-9.

[362] Joint Utilities Reply Brief at 31.

[363] CSA-01 at 117:3 and CALSSA Opening Brief at 174.

adjustment factor, as discussed below, that can be used with hourly production estimates and consumption data.

Cal Advocates asserts that continuing to employ hourly netting neglects the "actual relationship of customers' usage and exports with the system." Cal Advocates explain that generation is variable and consumption changes frequently within the hour, "so even during times of high PV generation, customers are importing and exporting power from the utility at sub-hourly intervals.[364] Cal Advocates contends that hourly netting allows customers "to increase their consumption in the last 15 minutes of an hour and use excess generation at the beginning of the hour (when PV production is higher) to "offset" their end-of-hour consumption."[365] Cal Advocates highlights that the California Solar Initiative Final Impact Evaluation found that customers participating in NEM 1.0 and NEM 2.0 increase their consumption during the hours of 3:00 p.m. to 6:00 p.m after installing solar. That study concluded this increase "is potentially reducing the grid benefits of [photovoltaics] and contributing to the later afternoon net load ramp."[366] Cal Advocates explains that the steep afternoon net load ramps — referred to as the "neck of the duck curve" — impose operational difficulties on the system and require adequate supply to meet this demand, often in the form of gas-fired generation.[367]

The Commission finds that hourly netting could lead to additional strain on the grid, which does not meet the requirements of the statute. Eliminating the

[364] PAO-02 at 5-45.

[365] PAO-02 at 5-46.

[366] PAO-02 at 5-47 to 5-48 citing the evaluation: Itron and Verdant, LLC, *California Solar Initiative Final Impact Evaluation*, January 28, 2021, at 161.

[367] PAO-02 at 5-45 to 5-46.

netting interval exposes more of the customers' imports and exports to net billing, which this decision has found is more aligned with system costs. Customer imports include the non-bypassable charges, which will be collected on each kilowatt-hour of electricity imported from the grid. As one of the guiding principles is to adopt a tariff that maximizes the value of customer-sited renewable generation to all customers and to the grid, this decision finds no netting is more consistent with cost-based compensation and should be adopted as part of the successor tariff. This modifies the practice adopted in D.16-01-044 and clarified in D.19-04-019, wherein non-bypassable charges were assessed on the kilowatt-hours consumed in each metered interval net of exports under the net energy metering successor tariff.[368] Because the Commission adopts a no netting approach, the metered interval approach is no longer relevant.

This decision addresses two distinct concerns with the no netting approach. First, the Commission should ensure that a successor tariff customer's bill is transparent. Second, the Commission should require that prospective customers receive accurate estimates of bill savings.

With respect to the former concern, this decision directs the utilities to include both channels of data in 15-minute intervals in their customer-authorized energy usage data portals. Utilities testified they have this ability. Requiring this data will provide transparency to customers and will allow customers with distributed generation to have the most accurate data possible.

Regarding the latter concern, the Commission recognizes the importance of providing accurate bill savings estimates to prospective customers. Cal Advocates provides a comparison of the annual difference in residential

[368] D.19-04-019 at Ordering Paragraph 1.

customer's net exports under no netting versus 15-minute interval netting. In that comparison, Cal Advocates offers an adjustment to convert total annual exports from hourly to no netting.[369] The Commission finds an adjustment factor to be useful as a proxy for no netting. Joint Utilities are directed to propose adjustment factors through a Tier 3 advice letter to be submitted no later than 90 days from the adoption of this decision and to update those adjustment factors in a Tier 1 advice letter annually thereafter. Following a Commission resolution on this Tier 3 advice letter, the adopted adjustment factor can be incorporated into the bill savings inputs and assumption requirements for developers.

8.4.9. True-Up Period

Currently, net energy metering customers receive a monthly bill and, if the customer generates more bill credits than they use during that month, they can carry forward the excess credits to the following months, within a 12-month period. This is considered the annual true-up. If the net energy metering customer incurs a bill greater than their minimum bill, they can carry forward the amount due to the next month, within a 12-month period. This is referred to as annual billing and is the relevant netting period for determining whether a customer has triggered federal jurisdiction under a state net energy metering program by producing more power than the customer consumes over the billing period.[370] On an annual basis, based on the customer's interconnection date, each net energy metering customer's bill is trued-up and the customer either

[369] PAO-02 at Table 5-15.

[370] *See, e.g., Sun Edison LLC*, 129 FERC ¶ 61,146, 61620 (2009) (under federal law a net sale occurs where a net energy metering customer produces more energy than the customer needs "over the applicable billing period.").

pays the amount owed or receives compensation for any credits at the Net Surplus Compensation rate.[371]

Joint Utilities propose that the annual true-up be converted to a monthly true-up. Joint Utilities contend the current annual true-up undermines greenhouse gas goals because it does not incentivize customers to shift load out of the on-peak period and it results in non-participating customers paying more for energy exports than they are worth.[372] Further, Joint Utilities assert requiring monthly true-ups is consistent with federal law.[373]

SEIA/Vote Solar and CALSSA oppose requiring a monthly true-up. CALSSA disputes Joint Utilities claim that non-participating customers are paying more for energy exports than they are worth if credits are generated at one time to offset consumption at a different time. CALSSA argues that the generation is credited for exactly what it is valued based upon the rate at that hour.[374] CALSSA explains that net energy metering credits are not a one-for-one exchange in kilowatt hours and provides the following example: monthly net generation during mid-day hours in the spring are valued at winter off-peak rates and export credits during off-peak hours are lower value than the rates for on-peak energy consumed from the grid.[375]

Further, CALSSA contends that annual true-ups allow for the natural cycle of solar conditions, with systems producing two or three times more electricity in

[371] PAO-01 at 3-7.

[372] Joint Utilities Opening Brief at 67-68.

[373] Joint Utilities Opening Brief at 67.

[374] CALSSA Opening Brief at 179.

[375] CALSSA Opening Brief at 179.

the summer than in the winter.[376] CALSSA notes that, with monthly true-ups, if more generation than consumption occurs during a month, the customer is reimbursed at the net surplus compensation rate rather than carrying forward credits to the following month.[377] CALSSA underscores this would hurt agricultural customers and schools most because their load is seasonal.[378]

This decision declines to revise the true-up period and retains, unchanged, the terms of the NEM 2.0 tariff, which established the annual true-up one year from interconnection as the retail netting period. Annual true-ups are maintained for both residential and nonresidential customers of the successor tariff, meaning bill credits can be carried forward to future months within a 12-month billing period. Customers may make a one-time request that their true-up date be changed going forward in order to use any generation credits accrued in the summer, which will alleviate winter bills.

However, this decision requires residential customers and nonresidential customers to pay their bills monthly, meaning customers must pay all incurred charges every month. The Commission agrees with CALSSA that an annual true-up allows generation to be credited for exactly what it is valued based upon the rate at that hour. Further, the Commission disagrees with Joint Utilities that annual true-ups undermine California's greenhouse gas emissions goals. Joint Utilities argue that currently a net energy metering customer can carry over credits during less costly months to more costly months.[379] However, as noted

[376] CALSSA Opening Brief at 175.

[377] CALSSA Opening Brief at 176. (*See also* SEIA/Vote Solar Opening Brief at 69-71.)

[378] CALSSA Opening Brief at 176.

[379] IOU-01 at 132.

by CALSSA, those earned credits are valued at the appropriate prices.[380] The purpose in maintaining annual true-up periods is to create a successor tariff that balances the various requirements of the statute.

8.5. The Successor Tariff

In the review of the proposals filed in this proceeding, this decision finds that no one proposal meets all the requirements of a successor tariff. Many proposals focused solely on meeting the cost-effectiveness thresholds and eliminating the cost shift without any true deference to attempting to ensure customer-sited renewable generation continues to grow sustainably. Other proposals make a less valiant effort at addressing the cost shift and focus primarily on maintaining the status quo. However, as previously determined in this decision, many elements recommended by the proposals are appropriate for a successor tariff and selecting these elements at an appropriate size or amount can help achieve a successful successor tariff. Accordingly, this decision does not adopt any single proposed tariff but, rather, the Commission has developed a successor net billing tariff that balances the multiple guiding principles adopted in D.21-02-007.

To distinguish this tariff from the two prior net energy metering tariffs, this decision breaks from the previous nomenclature and does not refer to this tariff as NEM 3.0 but rather refers to it as the Net Billing tariff. This decision clarifies that all references to net energy metering requirements established in other decisions will continue to apply to the Net Billing tariff unless explicitly altered by this decision. The Commission reiterates here that all consumer

[380] CALSSA Opening Brief at 179.

protection efforts initiated for prior net energy metering customers will continue for future customers taking service under the Net Billing tariff.

In the successor tariff, the adopted elements are rationalized and balanced to meet the needs of the grid, participating customers, and all other customers, as well as the environment. Each of the elements of the new tariff is discussed below and described in terms of how it meets the multiple requirements of the guiding principles. To illustrate an example of how to ensure customer understanding of the successor tariff, a description of the Net Billing tariff developed for customers is provided in Appendix A. Such a description can be used in customer education materials such as the California Solar Consumer Protection Guide, which will also apply to the Net Billing tariff.

8.5.1. Retail Export Compensation Rates Based on Avoided Cost Calculator Values

In Section 8.4.1, this decision determined that retail export compensation rates should be based on values derived from the Avoided Cost Calculator. While several parties (Joint Utilities, NRDC, Cal Advocates, and TURN) advocate for use of the Avoided Cost Calculator, there are differences in the specifics of the proposals. The pros and cons for these differences and the adopted retail export compensation rate structure are discussed below.

The Joint Utilities proposal aggregates the 8,760 hourly avoided cost values produced by the Avoided Cost Calculator into retail export compensation rates, weights the one-year levelized avoided costs by metered customers' exports, using time-of-export periods that match the time-of-use periods of the underlying tariff, and caps rates at no more than the corresponding retail rate in each time period. The resulting rates would be updated following the adoption of the Avoided Cost Calculator, which is currently conducted on a biannual basis

as directed in D.22-05-002. CALSSA surmises this approach would require customers and developers to predict the values for thirteen separate rates (six retail export compensation rates, six retail import rates and the net surplus compensation rate) in order to predict the benefits of installing solar.[381] CALSSA also contends capping the retail export compensation rate at the retail import rate creates a double standard in that Joint Utilities only rely on the Avoided Cost Calculator to a point.[382] Further, CALSSA underscores this approach provides no glide path for the industry and declares these aspects of the proposal will leave customers with excessive uncertainty about their investments. Asserting these aspects of the proposal will result in a retail export compensation rate decline of 64 to 84 percent, CALSSA contends this is in opposition to the requirement for sustainable growth.[383]

With respect to the correct levelization period, CALSSA and SEIA/Vote Solar support a period of 25 years since systems are a 25-year resource.[384] Joint Utilities contend one-year forward time-differentiated avoided costs, updated annually, more closely align with the value of exports to the system over the course of a day and a season as well as the character of system benefits as they evolve annually.[385] Joint Utilities highlight that several parties agree forecasts are not an exact science and are more accurate the closer they are to the present.[386] However, NRDC and Cal Advocates takes a different approach,

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[381] CALSSA Opening Brief at 101.

[382] CALSSA Opening Brief at 101.

[383] CALSSA Opening Brief at 187.

[384] Joint Utilities Reply Brief at 29 citing CALSSA Opening Brief at 93 and SEIA/Vote Solar Brief at 20.

[385] Joint Utilities Opening Brief at 29.

[386] *See* CUE-01 at 14, TRN-01 at 9, PAO-01 at 3-17 to 4-7 and NRD-01 at 15:10 to 16:12.

looking at three and four years of avoided costs to "maintain current information but provide customers with more certainty on net energy metering earnings."[387]

Very similar to Joint Utilities' proposal, Cal Advocates proposes the retail export compensation rate would be based on avoided costs and vary by time-of-use period to reflect the time-varying nature of marginal costs, which Cal Advocates contends will improve rate stability and minimize confusion.[388] However, Cal Advocates also recommends the avoided costs be weighted by solar production for each period during non-evening time-of-use periods so that exports are properly compensated for the value they provide.[389] Cal Advocates further recommends compensation for any time-of-use period, that begins at 4 p.m. or later and ends at midnight or earlier, be based on a simple average of avoided costs to encourage adoption of battery storage.[390] Further, like Joint Utilities, Cal Advocates propose to cap retail export compensation rates at less than the time-of-use retail import rate to avoid reducing the generator's value to the system and other customers.[391] To provide stability to customers, Cal Advocates propose avoided cost values be averaged based on a going forward four-year average of the two-most recent approved Avoided Cost Calculators.[392]

NRDC's retail export compensation rate proposal would require customers be paid for the total value that their panels provide at near-term

[387] NRD-01 at 15-16.

[388] Cal Advocates Opening Brief at 15.

[389] Cal Advocates Opening Brief at 16.

[390] Cal Advocates Opening Brief at 16.

[391] PAO-01 at 3-21.

[392] Cal Advocates Opening Brief at 16.

hourly avoided costs. NRDC proposes this export value would vary hourly, which would encourage customers to export electricity when it is most valuable to the grid and provide incentives to install battery storage.

Lastly, TURN proposes setting retail export compensation rates based on actual hourly exports by the customer's system and relying on hourly values from the Avoided Cost Calculator that are modified by actual recorded CAISO market prices. CCSA also supports using CAISO market or day ahead prices. The modification would replace forecasted values for energy, ancillary services, losses, and greenhouse gas cap-and-trade with actual market prices. TURN proposes that after 12 months, the balance would be adjusted based on the net surplus compensation formula.

As previously stated, this decision must balance all requirements and principles. Accordingly, the retail export compensation rate is set at averaged monthly values for each hour, differentiated between weekday and weekend/holiday. For example, the hour of 3:00 p.m. to 4:00 p.m. on weekdays in July 2023 will have the same retail export compensation rate. While the Commission agrees with Joint Utilities that hourly values complicate the bill structure, this decision finds that averaging the values across days in a month acknowledges the general trends in differences between hours and months and results in accurate values. The Commission agrees with CALSSA that setting export values at an hourly interval instead of a time-of-use interval results in one set of export values across all rates, which is more transparent for developers and customers. This approach also yields more accurate signals for customer generators to reduce imports from the grid and for battery storage to dispatch during the hours that are most valuable to the grid.

Further, this approach does not add the false precision of potentially inaccurate forecasts of a specific hour's weather and other conditions, as recommended by NRDC and TURN. This decision previously found that basing retail export compensation rates on Avoided Cost Calculator values brings the cost of the successor tariff closer to its value. Hence, using averaged monthly values for retail export compensation rates also ensures the tariff is based on the generator's true costs and benefits to the grid, thus leading to equity among all ratepayers while maximizing the value of the generation to all customers and to the grid.

As the successor tariff is available to both bundled and unbundled customers, Joint Utilities recommend that for unbundled customers where the export credit is divided between the customer's load serving entity and distribution utility, the load serving entity should be responsible for energy, cap and trade, and generation capacity while the distribution utility should be responsible for transmission, distribution, greenhouse gas adder, and methane leakage.[393] As this approach is consistent with current tariff approaches and considers competitive neutrality amongst load serving entities, the Commission finds this division of credit to be reasonable for adoption.

For any residential PG&E, SDG&E, or SCE customer that enrolls in the successor tariff during the first five years of the tariff (*i.e.*, the transition time), the values for the first nine years following a customer's interconnection date will be based on a nine-year schedule of values for each hour from the Avoided Cost Calculator. This nine-year period is referred to as the lock-in period. This timing aligns with the customer payback period and will assist in ensuring sustainable

[393] IOU-01 at 12.

growth of the industry during the transition time and enabling solar providers to predict customer savings leading to increased financial certainty for the customers as well as the industry. The Avoided Cost Calculator used will be the most recent calculator, adopted as of January 1 of the calendar year of the customer's interconnection date. Parties recommend options for locking in the values: one year (Joint Utilities), 10 years (NRDC) and 20 years (SEIA/Vote Solar). A shorter time-period for locking in the values is preferable because, like all forecasts, the Avoided Cost Calculator forecast values get increasingly uncertain as time moves away from the present. This could result in export values being misaligned with grid needs in the future.

Because the Commission's analysis of the successor tariff indicates a shorter payback period for small commercial customers, this decision limits the lock-in period to five years for nonresidential customers to provide some degree of certainty while ensuring these customers transition in a timely fashion to the most current version of the Avoided Cost Calculator. This will enable commercial customers to receive the most accurate and current price signals to support the grid at the time it is most needed. However, the certainty of the adopted lock-in period helps to ensure that customer-sited renewable distributed generation continues to grow sustainably.

The Commission finds that lock-in periods will not be necessary after the transition time, considering the historical trends of increasing rates, decreasing costs of solar, consistency of the Avoided Cost Calculator (as discussed below), and increasing storage attachment rates. Accordingly, customers may choose to exit their lock-in periods early but may not reenter them after exiting. Customers who exit their lock-in period early will subsequently receive retail export

compensation rates calculated using the most recently adopted Avoided Cost Calculator.

Following the locked-in period, retail export compensation rates will be based on averaged monthly avoided cost values, as previously described, but calculated by the version of the Avoided Cost Calculator adopted as of January 1 of that year. Parties recommend averaging multiple years of the Avoided Cost Calculator to avoid rate shock from changes in the Avoided Cost Calculator.[394] However, this decision has already determined that, except for the 2020 values, Avoided Cost Calculator values have consistently reflected the value of exported energy year after year. Accordingly, this decision adopts use of the most recently adopted Avoided Cost Calculator after the lock-in period ends for each customer on the tariff. Using single years' avoided cost values, instead of averaged costs, brings the cost of the tariff closer to its value, which aligns with the requirements of Public Utilities Code Section 2827.1(b)(3), ensuring the tariff is based on the costs and benefits of the generator, and Section 2827.1(b)(4), ensuring the benefits are approximately equal to the total costs. A customer that enrolls in the Net Billing tariff after the five-year glide path and transition period ends will not be eligible to lock-in Avoided Cost Calculator forecast values; their exports will be valued at the most recently adopted Avoided Cost Calculator values.

The Avoided Cost Calculator provides avoided cost values for each climate zone. Several parties contend that there is minimal difference in the

[394] Cal Advocates recommends using four years from the last two Avoided Cost Calculators (Cal Advocates Reply Brief at 50). NRDC recommends adopted fixed 2021 avoided cost and to use three years of the Avoided Cost Calculator (NRD-01 at 15-16). CalWEA suggests basing retail export compensation rates on the last two Avoided Cost Calculators (CalWEA Opening Brief at 11).

Avoided Cost Calculator between climate zones.[395] Moreover, Aurora Solar, CALSSA, and Sierra Club assert that using retail export compensation rates set by climate zone would be complex for solar providers and customers.[396]

The Commission finds that retail export compensation rates specific to climate zones do not significantly reflect Avoided Cost Calculator values more accurately. Therefore, the Commission directs Joint Utilities to calculate average export compensation retail rates across the climate zones within each utility service territory. Joint Utilities shall coordinate to standardize the method of deriving retail export compensation rates based on the Avoided Cost Calculator values in accordance with the findings of this decision. The Commission clarifies that in the case of negative hourly values, Joint Utilities shall present these values as $0. Further, Joint Utilities shall coordinate to provide uniform machine-readable spreadsheets containing the export values for each vintage of Avoided Cost Calculator updates. The spreadsheets shall include separate columns for delivery-related and energy-related portions of the retail export compensation rate to accommodate unbundled customers. In Section 8.7, this decision directs Joint Utilities to submit advice letters implementing the successor tariff; Joint Utilities shall: (1) describe the standardized method and provide the retail export compensation rates in the required advice letter; and (2) articulate which components of the Avoided Cost Calculator are under the jurisdiction of the utilities in the case of unbundled customers. Joint Utilities

[395] Aurora Solar January 7, 2022 Opening Comments at 5, Joint Utilities January 7, 2022 Opening Comments at 14, CALSSA January 14, 2022 Reply Comments at 7, and IEPA January 14, 2022 Reply Comments at 4.

[396] Aurora Solar January 7, 2022 Comments at 5, CALSSA January 7, 2022 Comments at 13-14, and Sierra Club January 7, 2022 Comments at 15.

shall also include an example of the spreadsheet as an attachment to the required advice letter.

8.5.2. ACC Plus Glide Path as a Transition to Solar Paired with Storage

Adoption of the revised retail export compensation rates will lead to less compensation for successor tariff customers as compared to NEM 1.0 and NEM 2.0 customers. This will enable the Commission to meet the requirement that the tariff is based on the costs and benefits of the generators. However, the Commission recognizes the need and requirement that customer-sited renewable distributed generation continues to grow sustainably. To attain this sustainable growth, the market must transition to one focused on solar paired with storage. Hence, as previously determined, this decision finds inclusion of a glide path is essential, and the ACC Plus is the best and most transparent approach. The details of the adopted ACC Plus are described below. This glide path will be available to eligible successor tariff customers for the first five years of the successor tariff and will ensure a reasonable level of monthly bills savings.

As described in the May 9, 2022 Ruling, the proposed ACC Plus would provide a fixed cents per kilowatt-hour (c/kWh) export adder on top of the Avoided Cost Calculator-based hourly export credits. For example, a residential customer who enrolls in the successor tariff in Year 1 of the glide path would be compensated for any energy exported to the grid based on the corresponding hourly Avoided Cost Calculator value + X c/kWh (adder). The ACC Plus would step-down over time for prospective customers, providing a glide path that ends at Avoided Cost Calculator values. The May 9, 2022 Ruling provided an example of this calculation where a customer who enrolls in the successor tariff in Year 2 of the glide path would be compensated based on the corresponding

hourly Avoided Cost Calculator value + X * 0.75 c/kWh for their lock-in period (this step-down amount was provided in the May 9, 2022 Ruling for illustrative purposes only).

Parties were asked to comment on details of the ACC Plus, including who should receive the glide path, whether the Commission should consider a multiplier instead of a fixed adder value, and whether the ACC Plus should result in a certain payback period or a certain level of bill savings. Parties were also asked to recommend the length of the glide path, which this decision determined, as discussed in Section 8.5.1 above, should be five years, and the rate of step-down so that the glide path ends at Avoided Cost Calculator-based values.

This discussion begins with the issue of the basis for determining the ACC Plus adder amount. With one exception, parties agree that the Commission should calculate the adder amount based on a specific payback period. Only Joint Utilities oppose the focus on the payback period, stating that there is no need for a glidepath to satisfy the requirements of AB 327.[397] Recommendations for the payback period range from seven (SBUA) to 15 years (TURN) with some parties recommending this should be based on a successor tariff customer with solar paired with storage, while others contend it should be based on a customer with stand-alone solar.

One of the objectives of the glide path is to provide a transition from the current NEM 2.0 tariff to the successor tariff and ensure the transition allows for sustainable growth of customer-site renewable generation as the industry moves from a tariff dominated by stand-alone solar to a tariff focused on the growth of

[397] Joint Utilities Opening Comments to May 9, 2022 Ruling at 11-12.

solar paired with storage. In Section 8.2.3, this decision found that a nine-year simple payback period for stand-alone solar systems is reasonable and falls within the range of recommendations from parties with respect to the glide path.

This discussion turns to the matter of eligibility requirements for the glide path. TURN and CUE recommend limiting the glide path to low-income customers to minimize further cost shifts.[398] An objective of the glide path, as described in the White Paper, is to ensure reasonable payback times for customers, especially low-income customers. However, providing a glide path to a small subset of customers would not ensure that distributed generation continues to grow sustainably. While the tariff described in Section 8.6.1 below is intended to increase participation by CARE- and FERA-enrolled customers, this does not mean the Commission should solely focus on low-income customers to sustainably grow the market. Therefore, the intention of the glide path should be to ensure successor tariff customers, including CARE- and FERA-enrolled customers, have a nine-year simple payback period for stand-alone solar. Accordingly, the glide path will be available to all residential customers who enroll in the successor tariff over the course of the first five years of the successor tariff, starting with the initial implementation, and that have more than a nine-year payback period without the ACC Plus. Because the Commission's objective is to achieve a simple payback period targeted at nine years, commercial customers will not receive the ACC Plus because of shorter payback periods without the ACC Plus. Further, this decision clarifies that the ACC Plus is not applicable to new construction as new construction is already

[398] TURN Opening Brief at 88-91 and CUE Opening Comments to May 9, 2022 Ruling at 7.

required to install solar systems. The ACC Plus should not fund required solar systems.

This decision does not restrict eligibility requirements for the glide path by technology type. The ACC Plus glide path is designed to provide the nine-year payback based on adoption of a stand-alone solar system. The Commission acknowledges that continuing to encourage the adoption of stand-alone solar systems conflicts with the objective of encouraging the adoption of solar paired with storage systems. Again, ensuring a nine-year payback, based on the adoption of a stand-alone solar system, allows customer-sited renewable generation to grow sustainably during the transition to a tariff that is focused on solar paired with storage.

The design of the ACC Plus will provide a transparent incentive to successor tariff customers. As proposed in the May 9, 2022 Ruling, this approach could provide either a fixed c/kWh adder value or a multiplier defined as a fixed percent that would increase the retail export compensation rate in all hours by the same percentage (*i.e.*, hourly Avoided Cost Calculator value multiplied by (1 + the adder)). Either calculation is user-friendly. For customer transparency, the monthly credit could be a discrete line item on the customer bill and be credited against all charges, including non-bypassable charges. The May 9, 2022 Ruling proposed that if the value of the ACC Plus is greater than a customer's charges in a certain month, the value could be applied to future bills until the credit zeroed out. This would prevent the unnecessary usage of energy by customers if, instead, the Commission imposed a deadline by which to use the credit.

Turning to the specifics of the ACC Plus, parties were asked whether the Commission should design the ACC Plus with an adder value or a multiplier.

Aurora favors a single fixed adder value applied across all customer classes, contending it may be easier to implement and more predictable for customers.[399] Others supporting a fixed adder over the multiplier include CALSSA, who agrees that the multiplier would be difficult to predict given the range of Avoided Cost Calculator values;[400] Joint Utilities, who caution that a multiplier could lead to perverse outcomes;[401] and SEIA/Vote Solar, who assert the fixed adder will provide additional support to customers with stand-alone solar systems.[402]

Preferring the multiplier, Cal Advocates contends using a multiplier may provide more value to customers with solar paired with storage systems if they choose to export energy. Cal Advocates maintains that "[a]pplying a fixed percentage would simply result in solar customers receiving higher compensation at the beginning and end of their production windows (assuming avoided costs are higher during those times) which introduces unnecessary complication for these customers. By contrast, the percentage-based approach may provide benefit to some solar paired with storage customers if they select to export a portion of their production during peak hours when hourly [Avoided Cost Calculator values] are higher, and therefore receive higher export compensation."[403] In opposition to the multiplier, Joint Utilities caution that its use could lead to perverse outcomes for battery discharge. Joint Utilities explain that "using a multiplier would create inappropriately high subsidy adders in

[399] Aurora Opening Comments to May 9, 2022 Ruling at 9.

[400] CALSSA Opening Comments to May 9, 2022 Ruling at 4.

[401] Joint Utilities Opening Comments to May 9, 2022 Ruling at 9.

[402] SEIA/Vote Solar Opening Comments to May 9, 2022 Ruling at 9.

[403] Cal Advocates Opening Comments to May 9, 2022 Ruling at 7.

high value periods, resulting in export credits that can be higher than the retail on peak rate" and leading to "a battery discharging then recharging from the grid during the peak period."[404]

The Commission finds that a fixed adder meets many objectives as compared to the multiplier and agrees with the Joint Utilities that a multiplier might have perverse outcomes on battery discharge behavior and compensation. A fixed adder will ensure sustainable growth of the renewable distributed generation industry while it transitions to an industry predominantly focused on solar paired with storage, which will then provide more value to the grid. Finally, the fixed adder will provide more certainty to the customer by providing a predictable value.

The ACC Plus is designed to target a nine-year simple payback period for all residential successor tariff customers. The ACC Plus will be available to eligible residential customers who enroll in the successor tariff over a five-year period. Residential customers who enroll in the Net Billing tariff during the transition period will lock-in their ACC Plus fixed amount for nine years. The first-year glide path adder amount will be available to residential customers that submit interconnection applications the day after the NEM 2.0 sunset period ends. The ACC Plus is allowed to offset non-bypassable charges and any fixed charges associated with the import rate, as it is an incentive designed to achieve a target payback period.

As seen in Table 6, residential SDG&E successor tariff customers have simple paybacks that range from 4.70 years to 8.43 years absent the ACC Plus due to higher rates in SDG&E's territory that result in relatively short paybacks.

[404] Joint Utilities Opening Comments to May 9, 2022 Ruling at 8-9.

Since SDG&E residential customers already have a simple payback period of less than nine years without the ACC Plus, SDG&E residential customers who interconnect during the five-year glide path and transition period will not receive an adder.

Table 6. Simple Payback Periods for SDG&E Net Billing Customers

SDG&E Customer Segment	Payback Period (years)
Residential Non-CARE	4.70
Residential CARE	6.98
Commercial (not eligible)	5.82

The ACC Plus will be a stepped-down approach, as recommended by SEIA/Vote Solar, CALSSA, and Sierra Club.[405] At the end of each calendar year (*e.g.*, December 31, 2023), the adder will decrease by 20 percent a year for eligible residential customers who have yet to enroll in the net billing tariff, as measured from the first-year adder until the adder reaches zero by the end of year five. Customers who take service on the successor tariff after the NEM 2.0 tariff sunset date, but who are temporarily billed on the NEM 2.0 tariff, will not receive the ACC Plus until the successor tariff is operationalized. These customers will receive the ACC Plus for nine years minus the amount of time they were billed on the NEM 2.0 tariff. This timing ensures a payback period of approximately nine years for each of these customers.

[405] Sierra Club Opening Brief at 5. While CALSSA and SEIA/Vote Solar do not support the Market Transition Credit, they do support providing a stepped-down glide path. (*See* CALSSA Opening Brief at 109 describing its gradual step down in retail export compensation rates and SEIA/Vote Solar Opening Brief at 5 describing the goal of its retail export compensation rate stepdown is to align bill savings with generator benefits, as measured by the Avoided Cost Calculator.)

Aligning the timing of the step-downs with calendar years will assist with customer understanding. Again, each customer who is eligible will receive the adder for a period of nine years from their interconnection date, the same amount of time as their payback period. The ACC Plus glide path for (residential non-CARE participant customers of) each of the Joint Utilities is illustrated in Figure 3 through Figure 5 below. These figures provide an idea of the approximate adder that could be expected each year per kilowatt of solar installed for a residential, non-CARE participant customer with a stand-alone solar system sized to cover 100 percent of the customer's annual load. (The number of kilowatt-hours exported per kilowatt installed will vary according to each system configuration, customer behavior, and other factors.) Because SDG&E Net Billing tariff customers will have payback periods of less than nine years, the graph does not indicate a glide path.

Figure 3. ACC Plus Glide Path for New PG&E Net Billing Customers

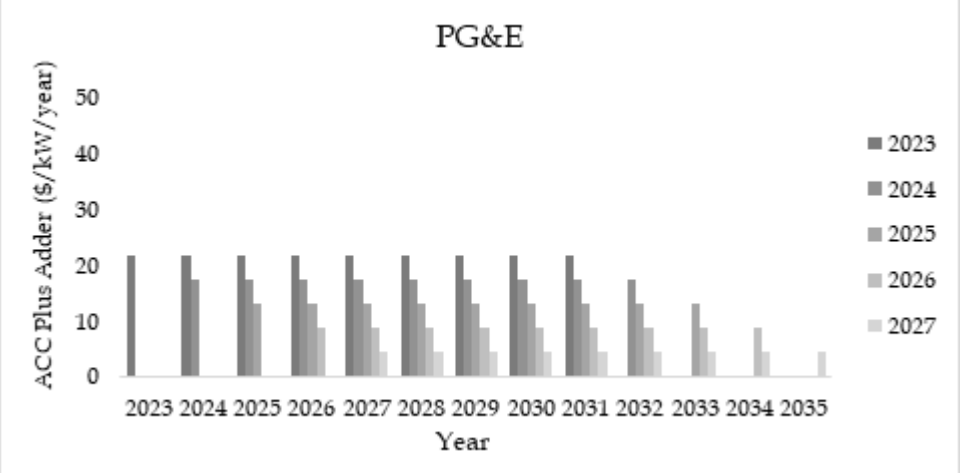
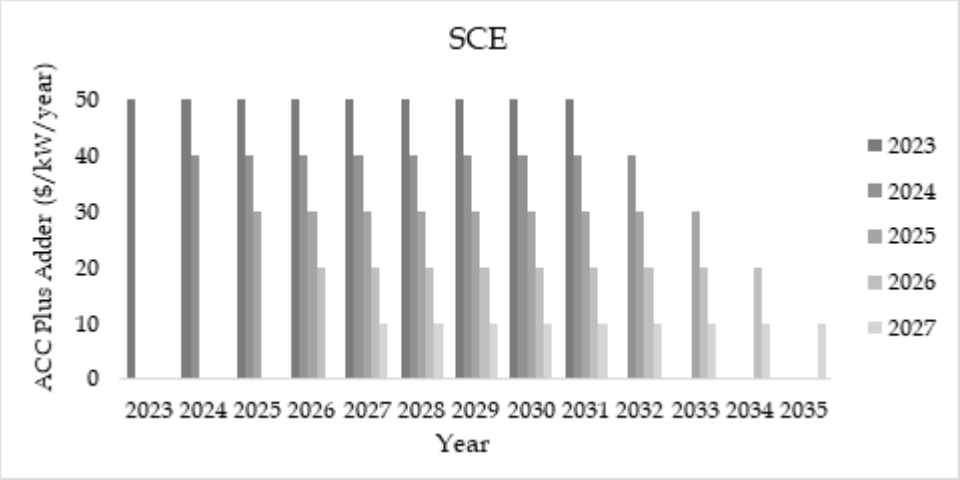


Figure 4. ACC Plus Glide Path for New SDG&E Net Billing Customers

Figure 5. ACC Plus Glide Path for New SCE Net Billing Customers



Lastly, the ACC Plus will be funded by all ratepayers. Parties have varying proposals on who should fund the glide path. TURN recommends applying a surcharge to existing non-CARE NEM 1.0 and NEM 2.0 residential customers to fund half of the costs of the glide path with the remaining costs recovered in rates through the Public Purpose Programs charge.[406] TURN submits this is justified because of the enormous financial benefits legacy net

[406] TURN Opening Brief at 91-93.

energy metering customers continue to realize under the existing tariffs.[407] Joint Utilities recommend the glide path should be funded through means other than rates.[408] Both SEIA/Vote Solar and Sierra Club oppose the recovery of the glide path from a particular subset of ratepayers.

There are many competing requirements of the successor tariff. Specifically, the Commission must ensure that customer-sited renewable distributed generation continues to grow sustainably while simultaneously ensuring that benefits to all customers and the electrical system are approximately equal to the total costs. This decision previously stated that tariff participation growth should not require nonparticipant financial burden. However, this decision also stated that the net energy metering cost shift alone is not responsible for the entirety of high rates in California. Further, the tariff should also ensure California can meet its climate and clean energy objectives. In combination with the other elements of the successor tariff, overall ratepayer funding of the stepped-down ACC Plus approach appropriately balances tariff requirements.

The adopted ACC Plus adders are provided in Table 7 below. The adders are designed to achieve a nine-year simple payback period (as defined in the Commission modeling) for a stand-alone solar system adopter who does not receive an SGIP incentive, has a system sized to 100 percent of load on an annual basis, and takes service on one of the eligible import rates discussed in the next section.[409]

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[407] TURN Opening Brief at 92.

[408] IOU-01 at 61.

[409] *See* Appendix B for modeling results.

Table 7. Adopted Initial ACC Plus Adders by Utility ($/kWh)

Customer Segment	PG&E	SDG&E	SCE
Residential Non-CARE	$0.018	$0.000	$0.040
Residential CARE	$0.087	$0.000	$0.093
Commercial (not eligible)	$0.000	$0.000	$0.000

TURN and NRDC recommend a periodic review of the glide path to reflect the latest solar costs and avoided costs.[410] Given that the glide path is only available for five years, this decision declines to perform a periodic review. However, the Commission finds it reasonable to collect data to monitor the affordability of the successor tariff and continued equity among customers. Hence, Energy Division is authorized to collect data on the ACC Plus approach, as well as other affordability and equity elements that will inform an evaluation as discussed in Section 8.6 below.

8.5.3. Rate Structure

The rate structure of the successor tariff will include two elements that this decision determined, in Section 8.4 above, to be reasonable: a highly differentiated time-of-use rate and non-bypassable charges. Other related rate elements include the interconnection fees, net surplus compensation, and the true-up period.

First, this decision describes the adopted residential time-of-use rate. As previously determined, requiring highly differentiated time-of-use rates will vastly improve the pricing signal to successor tariff customers, encourage electrification, and maximize the value of generation, which meets several guiding principles in this proceeding. Table 8 below provides the existing

[410] TURN Opening Brief at 87-88.

electrification rates that are initially eligible for successor tariff residential customers.

Table 8. Residential Customers' Eligible Time-of-Use Rates by Utility

Utility	**PG&E**	**SDG&E**	**SCE**
Eligible Rate	E-ELEC	EV-TOU-5	TOU-D-PRIME

Joint Utilities propose new non-tiered rates that would be available to all residential customers, including successor tariff customers, that features a customer charge based on fully scaled customer costs and cost-based time-of-use differentials.[411] PG&E also proposes that E-ELEC, which was recently approved as part of PG&E's 2020 general rate case Phase 2, should be eligible for the successor tariff.[412] This decision finds that the rates provided in Table 8 meet the objectives discussed in Section 8.4.3 in that they will improve the pricing signal to successor tariff customers, increase the value of the generation to all customers and the electrical grid, and encourage electrification. The Commission should adopt the rates in Table 8 as the eligible import rates for the successor tariff.

Cal Advocates assert there is a cost shift risk caused by customers on SDG&E's EV-TOU-5 rate because the super off-peak rates included in the EV-TOU-5 rate are below marginal costs.[413] The Commission acknowledges Cal Advocates' concern and authorizes Energy Division to review this concern in the evaluation of the successor tariff, which is described in Section 8.8 below. Alternatively, Energy Division is authorized to review this issue through any modification of the eligible import rates, as described in this section.

[411] IOU-01 at 106 and 107-125.

[412] IOU-01 at 112.

[413] Cal Advocates January 7, 2022 Opening Comments at 9.

New rates may be considered for future eligibility in the successor tariff, either in addition to each utility's successor tariff eligible rate or to replace the rate. A utility may seek approval through submittal of a Tier 2 advice letter or through its general rate case Phase 2 or rate design window.[414] Additionally, Energy Division may propose such changes through a self-directed resolution. All four options reasonably allow for stakeholder opportunity to comment. Successor tariff customers will pay any fixed charge components of an eligible import rate, similar to a nonparticipating customer who takes service on the same rate. Any fixed charge contained in eligible retail import rates are considered non-bypassable through the use of export compensation and shall be treated as such.

Customers should also be provided the opportunity to elect critical peak pricing or peak day pricing rates on any rate option they select. SEIA/Vote Solar correctly state that the transition to the successor tariff will require customers to make substantial investments in storage, as well as solar, with longer payback periods.[415] SEIA/Vote Solar request the Commission enhance the value customers receive from solar and paired storage installations by requiring all three utilities to allow customers to participate in critical peak pricing; currently only SCE permits this.[416] Noting the high level of engagement of net energy metering customers, SEIA/Vote Solar underscore that these customers are more likely than other customers to choose critical peak pricing rates, which will help the grid during critical peak days.[417] The Commission agrees that the availability

[414] Joint Utilities Opening Comments to Proposed Decision, January 7, 2022 at 18.

[415] SEIA/Vote Solar Opening Brief at 126-127.

[416] SEIA/Vote Solar Opening Brief at 127 citing SVS-03 at 74.

[417] SEIA/Vote Solar Opening Brief at 127 citing SVS-03 at 74.

of critical peak pricing and peak day pricing will enhance the value of stand-alone solar systems and solar paired with storage systems. Accordingly, critical peak pricing and peak day pricing should be considered as eligible rates for customers enrolled in the successor tariff.

This decision has already determined in Section 8.4.9 that it is reasonable to maintain an annual true-up and require monthly billing. Other elements of the rate structure remain the same as in the NEM 2.0 tariff. Interconnection fees remain unchanged from D.16-01-044.

This decision makes no changes to the calculation of Net Surplus Compensation established by D.11-06-016. Therefore, Net Surplus Compensation will accrue at the current rate, calculated at the average DLAP prices between 7:00 a.m. to 5:00 p.m. over the past 12 months. Utilities are directed to be consistent with respect to the calculation method of Net Surplus Compensation.

While the calculation of the Net Surplus Compensation rate remains the same, this decision addresses one concern with respect to Net Surplus Compensation. Joint Utilities contend that under the current NEM 2.0 tariff, it is possible for customers to receive double payment for the same exports — one payment at the NEM 2.0 retail export compensation rate and another at the Net Surplus compensation rate.[418] Joint Utilities recommend the Commission adopt one of the following proposals: (1) eliminate the Net Surplus Compensation rate; (2) adopt the Joint Utilities monthly true-up methodology; or (3) clarify that, regardless of whether the Net Surplus Compensation rate is monthly or annual, Joint Utilities are authorized to pay the Net Surplus Compensation rate only

[418] Joint Utilities January 7, 2022 Opening Comments at 15.

when it will not produce a double payment. The Commission acknowledges the potential for a double payment and adopts a variation of the Joint Utilities' third proposed solution. Accordingly, in the successor tariff, Joint Utilities are directed to discontinue the NEM 2.0 practice of double compensation. During a customer's 12-month annual true-up in the successor tariff, the utility shall determine if the customer's net exports are positive, *i.e.*, the customer exported more electricity than they imported over the past 12-month period. If the net exports are positive, that quantity of kilowatt hours will be debited from the customer's account at a rate equal to the utility's average real-world retail export compensation rates for all Net Billing tariff customers in their service territory over the past 12 months. The customer will then be credited at the Net Surplus Compensation rate for the same number of kilowatt hours. Joint Utilities are directed to be consistent with respect to the calculation method of the average real-world retail export compensation rates for all Net Billing tariff customers in their service territory. This will eliminate double compensation of exports using a simplistic approach.

8.5.4. Terms of Service and Billing Rules

With the exception of the import rate itself, the adopted successor tariff elements (Section 8.4 and Section 8.5) will be available to an enrolled customer for a period of nine years from the interconnection date (*i.e.*, the legacy period) to allow for sufficient time for the customer to pay for their investment while protecting other ratepayers from undue financial burden. The nine-year legacy period is meant to provide the enrolled customer with certainty about the terms of their investment. This decision clarifies that the legacy period is linked to the customer who originally causes the system to be installed, not to the system itself. If the original customer moves away within nine years from the system's

interconnection date and another utility customer takes control of (*e.g.*, buys, leases, or pays a power purchase agreement for) the system, the subsequent utility customer does not have a legacy period. The exception is when the subsequent customer is or was the legal partner (*e.g.*, spouse or domestic partner) of the original customer. For this latter group, the legacy period does not restart when the subsequent customer takes control of the system. Rather, the legacy period maintains its original interconnection date and length of nine years. Joint Utilities are directed to create a uniform attestation for legal partners to use to take advantage of this exception.

As noted in Section 8.2.3, a tariff expected to produce a fully discounted payback in a future year may still result in the customer realizing net savings in every year. This decision highlights that bill savings will continue to occur throughout the life of the installed system beyond the legacy period.

As determined in Section 8.4.8 above, imports and exports will be calculated based on no netting of consumption and production whereby all recorded net imports on the first meter channel are charged the retail rate and all recorded net exports on the second meter channel are compensated at the retail export compensation rate. Bill credits will be applicable toward import charges from any time in that billing period. Joint Utilities recommend that bill credits only apply to charges in the time-of-use period as they were generated, arguing that applying credits to other time-of-use time-periods would result in inappropriate customer benefits during times the grid does not benefit.[419] This requirement is overly prescriptive and, therefore, denied.

[419] IOU-02 at 55-56.

D.16-01-044 directed the utilities "to require that the applicant for [NEM 2.0] interconnection provide verification, as part of any interconnection request, that all major solar system components are on the verified equipment list maintained by the [California Energy Commission (CEC)]."[420] The CEC's verified equipment list was required by SB 1 (Murray, 2006) "to establish conditions for ratepayer funded incentives that are applicable to the California Solar Initiative."[421] This direction in D.16-01-044 was duplicative as similar criteria are listed in Sections L.2-L.4 and Section L.7 of Electric Rule No. 21 (Rule 21). While it was sensible in 2016 to leverage California Solar Initiative activities, NEM 2.0 and the Net Billing tariff adopted here are not part of that initiative. This decision amends this direction in D.16-01-044 and clarifies that the utilities shall use the aforementioned sections of Rule 21 to establish the certified and non-certified connection criteria for the Net Billing tariff eligibility in place of the CEC's verified equipment list.

This decision also clarifies that a customer currently taking service under NEM 2.0 may add battery storage to their existing distributed generation system without altering their NEM 2.0 status.

Lastly, the Commission recognizes that equipment failures or other issues may cause a customer's solar system to go offline without the customer's knowledge. This may cause unanticipated increases to the customer's electric bill. Non-operating solar systems would also result in underutilization of California's installed renewable energy resources, impacting the State's ability to meet its environmental and climate goals. To avoid these negative impacts on

[420] D.16-01-044 at 101.

[421] SB 1 (2006, Murray) added Public Resources Code Chapter 8.8 'California Solar Initiative', Section 25782(a)-(d).

consumers and resource availability, this decision finds that customers should be informed when their solar systems are not functioning. Accordingly, Joint Utilities are directed to propose a process to notify customers when their solar systems interconnected under the net energy metering or Net Billing tariffs appear to be offline for a period of seven days or more. These notices must be sent within seven days of the completion of the seven-day non-operating period. Within 90 days of the adoption of this decision, Joint Utilities shall submit a Tier 2 advice letter requesting approval of this process.

8.5.5. Analysis Results of the Successor Tariff

The Commission is statutorily mandated to adopt a successor tariff that meets the requirements of Public Utilities Code Section 2827.1. As part of the analysis of the successor tariff discussed above in Sections 8.5.1 through Section 8.5.4, the Commission must ensure that the costs are approximately equal to the benefits. Previously, this decision determined that the cost-effectiveness analysis would be conducted as directed by the Commission in D.19-05-019 and the results of the TRC test, as well as the RIM and PCT tests, would be reviewed. Below, this decision describes the approach and the resulting outputs used to analyze the cost effectiveness of the elements adopted above, as part of the successor tariff.

The Commission used an Excel-based spreadsheet to analyze the elements contained in the successor tariff. This same approach was used previously in this proceeding to analyze the proposals discussed in Section 6 of this decision. This approach used five standardized output metrics and calculated annual customer bills for representative customers assuming stand-alone solar and solar paired with storage systems. Additionally, bill savings were calculated relative to a counterfactual customer with no solar or battery system. This decision clarifies

that while the Lookback Study used the 2020 version of the Avoided Cost Calculator, the most recent version at the time of publication, more recent analysis uses the current (2022) version of the Avoided Cost Calculator.

The analysis has several dimensions including (1) three different utilities: PG&E, SDG&E, and SCE; (2) three customer categories: non-CARE residential, CARE residential, and small commercial; and (3) two system types: stand-alone solar and solar paired with two-hour storage. For each of these dimensions, seven metrics were evaluated: simple payback period (in years), time to payback (in years) first-year bill savings (in dollars), first-year cost shift (in dollars), PCT benefit-cost ratio, RIM benefit-cost ratio, and TRC benefit-cost ratio. Each of these metrics are discussed individually. Full results from the analysis and descriptions of the inputs and assumptions used are in Appendix B.

This decision begins with a discussion of the payback period. For residential customers with stand-alone solar systems, the simple payback period ranges between a low of 5.95 years for an SDG&E non-CARE customer to a high of nine years for CARE and non-CARE customers in SCE and PG&E territories after application of the ACC Plus. The results indicate the tariff generally provides a better economic investment for residential customers with solar paired with storage, where the payback period ranges between 4.7 and 8.88 years. Certainly, these results comport with the prior determination that the tariff should encourage paired storage. They also align with the determination that the payback period should balance the needs of participants and nonparticipants, but that a nine-year payback period is reasonable. For nonresidential customers, the simple payback period is also short, with a range between 5.82 years for an SDG&E customer with solar paired with storage to

9.38 years for an SCE customer with stand-alone solar. Again, these results align with the finding that aiming for a nine-year payback period is reasonable.

Turning to the results regarding the first-year cost shift, the cost shift per residential customer ranges from a low of $607 for a CARE customer in SCE territory with solar paired with storage to a high of $1,794 for a non-CARE customer in SDG&E service territory with solar paired with storage. While the tariff does not eliminate the cost shift from residential customers, it compares favorably with a majority of proposals in this proceeding, as shown in the E3 results.[422] The first-year cost shift for nonresidential customers ranges from $1,563 for SCE stand-alone solar customers to $2,561 for SDG&E customers with solar paired with storage.[423]

This decision turns to the cost-effectiveness analysis of the successor tariff, beginning with the results of the TRC test for both residential and nonresidential, as shown in Table 9 below.

Table 9. TRC Test Results

Customer Type	CARE Status	System Type	PG&E	SCE	SDG&E
Residential	Non-CARE	Solar Only	0.62	0.60	0.57
		Solar+Storage	0.86	0.86	1.03
Residential	CARE	Solar Only	0.62	0.60	0.57
		Solar+Storage	0.86	0.86	1.03
Nonresidential	Non-CARE	Solar Only	0.65	0.64	0.61
		Solar+Storage	0.86	0.78	1.03

With respect to customers with solar paired with storage, the results of the TRC test indicate ratios over 1.0 for all SDG&E customers and 0.86 for residential

[422] CSA-32 at 34-35, 38-39, 53-54, and 57-58.

[423] Commercial customers' cost shifts are larger due to having larger solar systems.

and small commercial PG&E and SCE customers, while stand-alone solar systems scored lower for customers across all three utilities.

The cost-effectiveness tests results are not compliant with the statute, in that the costs are not approximately equal to the benefits in the case of all customer segments. This is especially true with the results of the RIM, shown in Table 10 below. However, as stated throughout this decision, the Commission is faced with the challenging task of balancing multiple competing requirements for the successor tariff. The successor tariff makes great strides in tackling the cost shift, thus addressing one element of the equity issue. As further discussed in Section 8.6.1, the successor expands access to low-income households and disadvantaged communities through additional external funding. Furthermore, the ACC Plus provides a glide path to assist the Commission in addressing the equity issue while also addressing the statute's requirements that the tariff ensures that customer-sited renewable distributed generation continues to grow sustainably.

Table 10. RIM Test Results

Customer Type	CARE Status	System Type	PG&E	SCE	SDG&E
Residential	Non-CARE	Solar Only	0.37	0.38	0.23
		Solar+Storage	0.43	0.42	0.35
Residential	CARE	Solar Only	0.44	0.44	0.33
		Solar+Storage	0.59	0.58	0.50
Nonresidential	Non-CARE	Solar Only	0.34	0.39	0.31
		Solar+Storage	0.44	0.42	0.44

The successor tariff balances the multiple statutory requirements as well as the guiding principles.

Appendix B contains the complete set of inputs and outputs from the Commission's analysis of the successor tariff.

8.6. Related Subtariffs

Parties offered recommendations for subtariffs of the current net energy metering tariff including a tariff for low- and medium-income customers; a community net energy metering tariff; virtual net energy metering; and aggregated net energy metering. The issue of whether and how to revise the current NEM 1.0 and NEM 2.0 tariffs is also addressed. This decision discusses party proposals and the Commission's determinations in the subsections below.

8.6.1. Low- Income Customers

In Section 8.3.2. above, this decision determined that the successor tariff will address the equity issue by working to ensure increased participation by low-income and disadvantaged communities. As discussed in Section 8.8 below, the Commission will conduct an evaluation of the successor tariff, which will include an evaluation of the equity elements adopted in this decision. With this as the base policy, multiple proposals to increase participation by low-income and disadvantaged communities are reviewed and considered below.

This decision begins with the energy burden reduction policy from GRID *et al*. where eligible customers would remain on their retail rate for imports but be assigned a time-varying rate for exports equal to the 2021 default resident time-of-use rate that would remain in place for 20 years, fixed to 2021 values. GRID *et al.* contend the aim of this policy is to correct the "value impact" in NEM 2.0, where these customers receive lower solar bill savings compared to wealthier customers due to their discounted rates.[424] GRID *et al.* explains that,

[424] GRID *et al.* Opening Brief at 20 citing GRD-01 at 8.

because these customers' exports are netted against their consumption, they functionally receive a discounted value for the energy that they provide to the grid. GRID *et al*. asserts adoption of their proposal would ensure this group of customers would receive a fair return on exported energy.[425] This proposal is supported by SEIA/Vote Solar, who did not address low-income customers in their proposal.[426]

CALSSA proposes a suite of proposals for low- and moderate-income customers. As this decision has already defined income eligibility, this section will only address those proposals that will meet these criteria. CALSSA asserts that the Commission should address equity and access by encouraging solar adoption among low-income customers and addressing obstacles that have hindered solar growth for renters.[427] CALSSA proposes that all income qualified customers living in single-family homes be eligible for the NEM 2.0 tariff minus any non-bypassable charges and credit exports from those customers at the undiscounted applicable retail rate minus non-bypassable charges.[428] CALSSA also proposes the Commission extend NEM 2.0 eligibility for virtual net energy metering to those apartment buildings eligible for Multifamily Affordable Solar Housing (MASH) and SOMAH programs.

This decision has already rejected the Joint Utilities statement that ending the cost shift does "the greatest good for lower-income customers." However, Joint Utilities also offer a transitional tariff discount for CARE- and FERA-eligible customers, which provides a discount on the proposed grid benefits charge and

[425] GRID *et al*. Opening Brief at 21.

[426] SEIA/Vote Solar Opening Brief at 4, footnote 7 citing GRD-01.

[427] CALSSA Opening Brief at 58 citing CSA-01 at 22:13 to 23:3.

[428] CALSSA Opening Brief at 58.

guarantees these customers will pay only a nominal amount toward the costs underlying this charge.[429] This charge, which Joint Utilities contend would reduce the grid benefits charge to $1.50 per kilowatt hour Alternating Current, would only be available for the first three years of the successor tariff, with potential extensions depending upon Commission action.[430] Joint Utilities propose all ratepayers would fund this benefit. Additionally, Joint Utilities propose a behind-the-meter storage incentive for CARE and FERA customers, where these customers would receive a free battery, which Joint Utilities estimate would allow these customers to experience a payback period of seven to eight years for their solar system.[431] Joint Utilities propose that this incentive program, called STORE, would be funded with cost shift savings realized by its proposed reform of NEM 2.0.[432]

NRDC and Cal Advocates propose an equity fund or equity fee to help bring clean energy benefits to low-income customers and disadvantaged communities.[433] NRDC explains that the fund is intended to be a feature of any successor tariff.[434] In addition to exempting all CARE and FERA customers from the grid benefits charge, Cal Advocates submits its proposed equity charge has two components: (1) a per month fee of $0.26-$0.66/kW on non-CARE/FERA NEM 1.0 and NEM 2.0 customers to cover the cost of the exemption of the grid benefits charge; and (2) an additional monthly fee of $3.15/kW on

[429] Joint Utilities Opening Brief at 75.

[430] Joint Utilities Opening Brief at 75-76.

[431] Joint Utilities Opening Brief at 77 citing IOU-01 at 172.

[432] Joint Utilities Opening Brief at 78 citing IOU-01 at 178.

[433] NRDC Opening Brief at 32.

[434] NRDC Opening Brief at 32.

non-CARE/FERA NEM 1.0 and NEM 2.0 customers to provide an upfront subsidy to CARE/FERA customers.[435] Cal Advocates proposes that once these funds begin to be collected, the Commission should establish an inclusive process with disadvantaged communities, environmental justice groups, and consumer advocates to determine how the funds should be spent to address barriers to adoption in these communities.[436] Cal Advocates explains that the proposed equity fund could be applied to existing programs such as SOMAH, which may increase the adoption of distributed renewables in disadvantaged communities.[437]

PCF proposes a carve-out for low-income customers to retain access to the NEM 2.0 tariff until low-income customers reach 10,000 megawatts of installed behind-the-meter capacity.[438] PCF contends this would contribute to ensuring the customer-sited distributed generation continues to grow sustainably and advance equity between customer classes.[439]

First, this decision declines any proposal to maintain the status quo, *i.e.*, NEM 2.0. While the Commission recognizes the barriers to adoption of behind-the-meter resources by low-income households as well as the financial challenges for low-income customers, other objectives for this tariff must be met, including ensuring the tariff is based on the costs and benefits. This decision found that NEM 2.0 does not meet this standard.

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[435] Cal Advocates Opening Brief at 30 citing PAO-01 at 3-56 and footnote 330.

[436] Cal Advocates Opening Brief at 30 citing PAO-01 at 3-55 to 3-56 and footnote 330.

[437] PAO-01 at 3-59.

[438] PCF Opening Brief at 61.

[439] PCF Opening Brief at 61.

With respect to the successor tariff structure, this decision approves the same structure adopted above for low-income customers, including the same retail export compensation rates as other customers. For the purposes of the successor tariff, low-income customers are defined as residential customers enrolled in CARE or FERA. The Lookback Study showed that low-income non-participating ratepayers are most impacted by the cost shift that exists in the net energy metering tariff. The record of this proceeding does not measure the impact that would occur if the Commission were to expand the definition of low-income beyond CARE- and FERA-enrolled customers. Hence, the Commission declines to broaden the definition of low-income with respect to the successor tariff.

For this group of successor tariff customers, the CARE and FERA discount will not be applied to the retail export compensation rate, as is currently done in NEM 2.0. The Lookback Study explains that low-income customers who participate in NEM 2.0 receive lower bill savings benefits and experience longer payback periods.[440] As a result, installation of distributed generation is less frequent in low-income and disadvantaged communities.[441] While this is primarily due to the cost of systems, the Commission considers the inability to: (1) achieve higher bill savings; and (2) receive payback in a reasonable number of years have been and continue to be barriers to increased participation by low-income customers. Providing the same tariff structure, with the exceptions described below, will meet the equity requirement in Guiding Principle (b).

[440] Lookback Study at 94.

[441] Lookback Study at 94.

Joint Utilities and CALSSA recommend providing discounts on certain elements of the tariff structure for eligible households. This will assist in meeting the objectives of improved equity and increasing participation. Accordingly, eligible customers will receive a greater adder for the ACC Plus to ensure modeled simple payback periods of no greater than nine years. This decision recognizes the challenges of these customers with respect to time-of-use rates and the additional financial burden of electrification. As GRID *et al*. pointed out, low-income customers have difficulty shifting load and cannot easily afford smart appliances to help them in this endeavor.[442] However, analysis of the successor tariff indicates greater bill savings with adoption of the electrification rates shown in Table 7 above, and any future rate that may become eligible for customers enrolled in the successor tariff. As shown in Table 11 below, with these increased ACC Plus adders, CARE- and FERA-enrolled customers can expect to achieve payback periods ranging from 6.98 years for SDG&E customers installing solar paired with storage systems to nine years for PG&E and SCE customers installing stand-alone solar systems.

Table 11. ACC Plus Adders and Payback Periods for CARE- and FERA-Enrolled Customers

	PG&E	**SCE**	**SDG&E**
ACC Plus Adder ($/kWh)	0.087	0.093	-
Simple Payback Period (years)			
Stand-alone Solar Systems	9.00	9.00	8.43
Solar Paired with Storage Systems	8.69	8.88	6.98

These elements of the successor tariff will be available to qualified customers for nine years from the date of interconnection. As discussed in

[442] GRID *et al*. Opening Brief at 17.

Section 8.8 below, the Commission will conduct an evaluation of the successor tariff, including certain elements adopted here. Hence, these elements are only guaranteed to prospective tariff customers until Commission action on the evaluation. Following the evaluation, the elements could remain the same, be expanded, or be reduced. To document any cross-program enrollment impacts between the CARE and FERA programs and enrollment on the Net Billing tariff, Joint Utilities must report on the number of new CARE- and FERA-associated Net Billing tariff enrollments and the tenancy of those interconnected customers in the CARE and FERA programs. This documentation shall occur in the Joint Utilities' annual interconnection cost advice letters, which are currently filed in accordance with the directions in D.14-05-033 and Resolution E-4610. This advice letter will now be known as the "Net Energy Metering and Net Billing Tariff Annual Reporting Advice Letter."

Several parties recommend the creation of low-income or equity funding mechanisms. Joint Utilities recommend a fund solely focused on providing battery storage to CARE and FERA customers. NRDC and Cal Advocates recommend the creation of a two-part equity fund, as described above. In addition to the ACC Plus, an equity fund focused on promoting storage for low-income customers could assist the Commission in meeting the requirement of Public Utilities Code Section 2827.1(b)(1) to ensure the tariff includes specific alternatives designed for growth among residential customers in disadvantaged communities.

Parties offer multiple options on collecting for the equity fund. Cal Advocates recommends a charge of approximately $3.81/kilowatt-hour per

month to NEM 1.0 and NEM 2.0 non-CARE customers.[443] For customers interconnecting on the successor tariff, this charge would be assessed beginning 10 years from the date of interconnection.[444] Cal Advocates asserts this would help ensure equity in payback periods between CARE and non-CARE customers. Joint Utilities contend that there will be a cost shift savings with adoption of its full proposal, such that for the first three years after implementation, the Commission should allocate 10 percent of the savings to its low-income battery proposal.[445]

Subsequent to the filing of briefs, on September 6, 2022 California Governor Gavin Newsom signed AB 209, which, among other statutory modifications and additions, amended the Self-Generation Incentive Program (SGIP) governing statute to authorize incentives, subject to a future legislative appropriation, for residential customers who install new behind-the-meter solar paired with storage or new storage systems. Of the funding appropriated by the Legislature for this purpose, 70 percent would be dedicated to low-income customers and 30 percent would be dedicated to non-low-income customers.[446] AB 209 added Section 379.10 to the Public Utilities Code, which provides:

> (a) In administering the self-generation incentive program pursuant to Section 379.6, the commission shall use funds appropriated by the Legislature for the purpose of providing incentives to eligible residential customers, including those receiving service from a local publicly owned electric utility, as defined pursuant to Section 224.3, who install behind-the-meter energy storage

[443] Cal Advocates Opening Brief at 30-31 citing PAO-01 at footnote 30.

[444] Cal Advocates Opening Brief at 30-31 citing PAO-01 at footnote 30.

[445] Joint Utilities Opening Brief at 78 citing IOU-01 at 173.

[446] https://ebudget.ca.gov/2022-BudgetAddendum.pdf at 5-6.

systems or solar photovoltaic systems paired with energy storage systems, as an integrated approach to increase individual customer resiliency, to reduce the electrical grid's net peak demand, to reduce electric ratepayer costs, and to reduce emissions of greenhouse gases and localized air pollution. The commission shall allocate funding pursuant to this section as follows:

(1) Seventy percent for incentives to eligible low-income residential customers who install either new behind-the-meter solar photovoltaic systems paired with energy storage systems or new energy storage systems.

(2) Thirty percent for incentives to residential customers who install new behind-the-meter energy storage systems.

(b) The commission shall consider requiring customers installing solar photovoltaic systems paired with energy storage systems or new energy storage systems under this section and served on a standard contract or tariff pursuant Section 2827.1 to participate in a demand response or peak load reduction program offered through the customer's load-serving entity, including market-integrated supply-side demand response programs, to reduce net peak demand.

Shortly after AB 209 was signed, the California Department of Finance released an Addendum to the 2022-23 California State Budget outlining multi-year funding set-asides and future appropriations, including $900 million for SGIP for the purposes specified in Public Utilities Code Section 379.10.[447] This funding will be available starting July 1, 2023.

Hence, an equity fund has been created by the legislature which includes the objective of improving access to distributed energy resource technology for

[447] California Department of Finance 2022-23 California State Budget Addendum.

low-income customers and disadvantaged communities. These funds will be administered through the SGIP proceeding (R.20-05-012). An October 26, 2022 Ruling in that proceeding describes these funds as follows:

> Specific to the $900 million, AB 209 states that 70 [percent] ($630 million) of the funding must be directed towards funding incentives for eligible low-income residential customers who install either new [behind-the-meter] solar photovoltaic systems paired with energy storage systems or new energy storage systems. This funding will be referred to as AB 209 Low-Income Incentives throughout this document. Statutory modifications made by AB 209 further specifies that 30 [percent] ($270 million) of the funding must be directed towards incentives for residential customers who install new behind-the-meter energy storage systems. These general market storage projects are not income restricted. This funding will be referred to as AB 209 General Market Incentives.

The October 26, 2022 Ruling directs parties to respond to questions focused on implementing the funds and understanding obstacles to low-income household participation as well as potential programmatic changes with the objective of improved project completion for SGIP low-income customers. Hence, this decision will make no determinations on eligibility or other implementation details.

8.6.2. Virtual Net Energy Metering and Net Energy Metering Aggregation

As further described below, to achieve the multiple and competing objectives of this proceeding, this decision adopts the same structure as discussed in Section 8.5 above for VNEM and NEMA. At this time, however, the current tariff (*i.e.*, NEM 2.0) for the low-income subtariffs of VNEM for MASH and SOMAH is maintained, which is explained below. Thus, only changes to the

general VNEM subtariff proposals are addressed in this decision, as well as NEMA.

This decision first provides a brief explanation of the decision to maintain the current subtariff for VNEM MASH and SOMAH, at this time. A guiding principle in this proceeding is to ensure equity in the tariff. Further, in the Order Instituting Rulemaking the Commission stated it would coordinate with other relevant proceedings.[448] R.18-07-006 considered the affordability of utility services; information gathered in the affordability proceeding and not in the record of this proceeding could be helpful in providing a more complete record with respect to the low-income VNEM subtariff. Further, there are ongoing triennial evaluations of the SOMAH program being conducted, pursuant to D.17-12-022.[449] The first report has been made public and information from that evaluation could be useful in determining future changes to the subtariff.[450] However, at this time the report is not in the record of this proceeding. It is prudent to delay any changes to these programs until review in this proceeding of findings from the affordability proceeding and the SOMAH evaluation. Accordingly, the current structure of the low-income VNEM subtariff is maintained until such review is conducted.

With respect to the general VNEM subtariff, parties offer multiple proposals. CALSSA recommends maintaining the same overall structure but suggests improvements for the Commission to adopt. First, CALSSA proposes

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[448] Order Instituting Rulemaking 20-08-020 at 7-8 stating the proceeding would coordinate with several other proceedings, listing those proceedings, but noting the coordination is not limited to those proceedings.

[449] D.17-12-022 at Ordering Paragraph 13 requiring measurement and evaluation of SOMAH.

[450] The October 13, 2021 report can be found at: somah_phaseii_report_20211013_final.pdf (ca.gov).

the Commission allow new tenants to automatically receive the same benefit as the previous tenant in the same unit.[451] CALSSA explains the current process is that, after a current tenant leaves, the account shifts to a backup account, which provides benefits to the property owner, and updating the account requires waiting or paying a fee to update immediately. Second, CALSSA requests the Commission allow multiple arrays on one property to be treated as one generator. CALSSA explains it is inefficient to treat each array separately when many apartment complexes require use of separate roof surfaces and points of interconnection.[452]

Like CALSSA, Ivy Energy proposes, among its recommendations, a carve-out for net energy metering to continue the NEM 2.0 structure for VNEM until 10,000 megawatts of capacity has been reached by multifamily buildings, at which time VNEM should transition to the successor tariff.[453] Ivy Energy also supports ensuring that customers in a multifamily building, who are eligible for CARE or FERA, are able to retain that discount when the building installs a shared distributed energy resources asset.[454]

Joint Utilities recommend that VNEM and NEMA be aligned with the successor tariff, such that exports are compensated at avoided costs, and to allocate the revenues from exported energy to benefiting accounts as a dollar credit.[455] Joint Utilities explain that because a customer is allocated a dollar

[451] CALSSA Opening Brief at 214-215 citing CSA-01 at 27.

[452] CALSSA Opening Brief at 215 citing CSA-01 at 27.

[453] Ivy Energy Opening Brief at 3.

[454] Ivy Energy Opening Brief at 3.

[455] Joint Utilities Opening Brief at 117.

credit for exports, there is no need for grid benefits or usage charges. Joint Utilities also recommend combining VNEM and NEMA into one subtariff.

The Commission declines to maintain the current structure of the general VNEM and NEMA subtariffs. One of the objectives in this proceeding is to ensure the tariff successor aligns with the costs and benefits of customer-sited renewable distributed generation. This decision has already determined that basing the retail export compensation rate on retail import rates does not meet that objective. Accordingly, the VNEM and NEMA subtariffs will be revised to mirror the successor tariff adopted in Section 8.5 above. This structure appropriately balances the multiple and competing objectives in this proceeding. However, this decision makes two changes from the structure of the successor tariff.

First, this decision does not require VNEM customers to enroll in the highly differentiated electrification time-of-use rates adopted above in Section 8.5.3. Tenants lack the ability to install storage and lack access to a shared system's net generating output account information. As with other tenant-owner split incentive issues, tenants do not design, own, or manage the on-site generation system. Further, tenants often have less ability and fewer options than property owners to install load-shifting "smart" devices and appliances. However, general VNEM customers will be required to take service on time-of-use rates. For Net Billing VNEM customers on rates that have a baseline credit, the monthly baseline credit should be calculated using the customer's monthly imports, instead of using their monthly net consumption, which is the current practice under NEM 2.0. This change should only be made for Net Billing customers.

Second, this decision maintains the netting intervals for each of the two subtariffs as they currently exist. The Commission recognizes that VNEM generation meters measuring output are separate from individual tenant or common area meters measuring customer usage, making it impossible to allow for no netting under a net billing construct. Similarly, no netting is impossible for NEMA subtariff customers under a net billing construct, in that no onsite generation is used to prevent imports by powering the benefiting accounts. Additionally, because analysis (as described in Appendix B) shows that VNEM subtariff customers will have simple payback periods ranging between 4.04 and 7.20 years, which falls below the nine-year simple payback target, the ACC Plus is not necessary. As NEMA was omitted from this analysis, the applicability of the ACC Plus to NEMA customers will depend on their residential status, as it does for other successor tariff customers. Lock-in periods will align with whether a customer is a residential customer, with a nine-year lock-in period, or a commercial customer, with a five-year lock-in period. All accounts in a NEMA arrangement must be residential for a customer to be counted as residential in this context.

There are three other policy considerations that have been considered. First, Ivy Energy contends that the Joint Utilities' claim that "virtual NEM systems do not displace onsite load, and therefore does not provide the same distribution benefits as standard NEM" is false.[456] Noting that most VNEM generation is used onsite instead of being exported and 94 percent of VNEM systems are located on the same feeder,[457] Ivy contends it has demonstratively

[456] Ivy Energy Opening Brief at 5 citing IOU-01 at 156.

[457] Ivy Energy Opening Brief at 6 citing IOU-02 at 110.

proven there can be onsite consumption of energy that is generated at multifamily buildings interconnected under VNEM.[458] Joint Utilities did not dispute this claim in reply briefs. Hence, this decision affirms that VNEM provides benefits to the grid similar to that of NEM. However, this does not lead the Commission to make any changes to the virtual nature of the VNEM subtariff nor does this affect the overall decision to adopt revisions to the VNEM subtariff to align with the adopted successor tariff.

Secondly, Ivy Energy and Agricultural Parties disagree with the Joint Utilities proposal to combine the VNEM and NEMA subtariffs, contending that VNEM and NEMA subtariffs serve different purposes and should remain separate. Ivy Energy states that VNEM is for multifamily buildings and is designed to facilitate virtual metering billing arrangements. In comparison, NEMA — Ivy contends — is available to a single customer who has generating facilities on adjacent or continuous properties and allows for aggregation as if on one site.[459] The Commission agrees with Ivy Energy that the two subtariffs serve separate purposes and, generally, have separate customer bases: VNEM primarily for multi-tenant properties and NEMA primarily for agricultural customers.[460] Accordingly, this decision maintains separate subtariffs for the two.

Third, CALSSA proposes the Commission allow multiple solar arrays on one property to be treated as one generator for billing purposes in the VNEM subtariff, with credits allocated across the property. CALSSA notes that the current subtariff allows multiple arrays but requires each array to serve a subset

[458] Ivy Energy Opening Brief at 5-6 citing IVY-02 at 2-4.

[459] Ivy Energy Opening Brief at 7.

[460] Ivy Energy Opening Brief at 7 citing Transcript Vol. 5 at 803-804.

of customers on the property.[461] Joint Utilities point to no engineering or policy reason to deny this change. This recommendation is reasonable and efficient; as CALSSA points out many apartment complexes contain more than one building and often require the use of separate roof surfaces and points of interconnection.[462] Furthermore, adoption of this proposal brings the general VNEM subtariff into alignment with existing MASH and SOMAH VNEM subtariffs.

8.6.3. Community Project Tariffs

As previously described in Section 6 above, CCSA, CESA, and PCF put forward proposals for community distributed energy resources. CCSA proposes that renewable energy projects up to five megawatts interconnected to the distribution system receive monetary credits that are then applied to the utility bills of customers in the same utility service area who subscribe to the project. CESA recommends virtual pairing of separate solar and offsite energy storage resources. PCF proposes growing community storage through a net energy metering customer fee.

The Commission declines to adopt a successor tariff specifically for community distributed energy resources in this decision, as the Commission deems it premature. As stated in the Scoping Memo, this proceeding will coordinate with other related proceedings. There are currently aspects of community solar that are being discussed or considered in other proceedings. For example, in May 2022, PG&E, SDG&E, and SCE each filed applications for their Green Tariff Shared Renewables program, Disadvantaged Communities

[461] CSA-01 at 8.

[462] CALSSA Opening Brief at 215 citing CSA-01 at 27.

Green Tariff program, and Community Solar Green Tariff program, resulting in the opening of the consolidated proceeding, Application (A.) 22-05-022, A.22-05-023, and A.22-05-024. Additionally, AB 2316 requires the Commission to evaluate customer renewable energy programs to determine whether they achieve specified goals, including whether the program efficiently serves distinct groups; minimizes duplicative offerings; and promotes robust participation by low-income customers. AB 2316 further requires the Commission to provide a report to the Legislature by March 31, 2024 that justifies any actions taken as a result of the evaluation of each program and explain whether it would be beneficial to ratepayers to establish a new community renewable energy program. As such, a recent ruling in A.22-05-022 *et al*. directed parties to consider matters such as AB 2316 when determining the schedule for the proceeding.

The Commission recognizes that a community renewable energy program tariff has the potential to benefit the grid and ratepayers. Hence, a full examination in a narrower context is warranted through A.22-05-022 *et al.*, which allows the Commission to compare the costs and benefits of proposals for new community renewable energy programs directly with existing community solar programs.

8.6.4. Revisions to NEM 1.0 and NEM 2.0 Tariffs

In D.16-01-044, determinations regarding NEM 2.0 were made at a transitional moment without the advantage of a "quantitively informed basis."[463] Over six years later, the Commission has the data needed to make an informed decision. As indicated previously, the Lookback Study found that NEM 2.0 is

[463] D.16-01-044 at 85-86.

not cost-effective; has negatively impacted non-participant ratepayers; and has disproportionately harmed low-income customers; certain parties contend the cost shift ranges between $1 and $3.4 billion a year. The changes made thus far in this decision do nothing to tackle this existing cost shift. The changes only attempt to prevent or at least limit additional cost shift from new customers in the successor tariff. Below, this decision discusses whether the Commission can and should make revisions to the NEM 1.0 and NEM 2.0 tariffs.

Several parties argue the Commission cannot and should not make any revisions to NEM 1.0 and NEM 2.0 based on legal and fairness contentions. This decision begins with CALSSA's claim of a due process violation. CALSSA argues that changes to NEM 1.0 and NEM 2.0 are not in the scope of this proceeding and that making changes to these tariffs would be a violation of customers' due process rights. CALSSA correctly notes that Issue 2, Issue 4, and Issue 5 speak solely to the matter of the successor tariff. Turning to Issue 6, CALSSA underscores the phrase, "other issues that may arise." Explaining that the scoping memo is issued following the review of the comments to the Order Instituting Rulemaking, replies to the comments, and discussion at the prehearing conferencing, CALSSA argues that the matter of changes to NEM 1.0 and NEM 2.0 was raised in those pleadings and therefore cannot be considered as "issues that may arise." CALSSA asserts that, with respect to Issue 6, a reasonable affected customer would interpret the phrase "other issues that may arise" as not including NEM 1.0 and NEM 2.0 tariffs.

TURN considers this to be a "tortured" reading of Issue 6, especially given that at no time did CALSSA file a motion to strike any proposals with respect to revisions to NEM 1.0 and NEM 2.0 tariffs. TURN highlights that CALSSA chose to conduct discovery on the proposals at issue and briefed the merits of the

proposals.[464] TURN asserts that Issue 6 clearly identifies the potential change to any existing net energy metering tariff as within scope of this proceeding, thus providing CALSSA with adequate notice that these issues would be considered.[465] TURN contends failure to submit a motion to strike earlier in the proceeding is fatal to CALSSA's "last minute claims."[466]

The wording of Issue 6 may be imprecise; however, CALSSA's contention that it does not include NEM 1.0 and NEM 2.0 tariffs is disingenuous and not supported by the record of this proceeding. CALSSA argues it interprets Issue 6 to exclude NEM 1.0 and NEM 2.0 tariffs because, despite being discussed in comments prior to the scoping memo, the tariffs were not explicitly listed in the scope. However, as discussed by TURN, CALSSA's testimony, discovery, and hearing cross-examination all included discussion of NEM 1.0 and NEM 2.0. CALSSA never argued a due process violation until briefs. NEM 1.0 and NEM 2.0 tariffs are within the scope of Issue 6.

Turning to arguments regarding the legality of revising the legacy tariffs, this decision addresses contentions from SEIA/Vote Solar. SEIA/Vote Solar argue that, because of the adoption of the legacy period, the Commission cannot make any changes to the NEM 1.0 and NEM 2.0 tariffs for current customers. In D.16-01-044, the Commission established a legacy period of 20 years from the customer's interconnection as a reasonable period over which the customer should be eligible to continue taking service under the NEM 2.0 tariff. D.16-01-044 states this would "allow customers to have a uniform and reliable

[464] TURN Reply Brief at 89.

[465] TURN Reply Brief at 89-90.

[466] TURN Reply Brief at 90.

expectation of stability of the net energy metering structure under which they decided to invest."[467]

Sierra Club proposes the Commission transition existing net energy metering tariff customers to electrification rates at five years from interconnection and provide a storage rebate to NEM 2.0 customers in exchange for switching to the successor tariff.[468] CUE, IEPA, NRDC, Cal Advocates, and TURN support the transitioning of existing non-CARE NEM 1.0 and NEM 2.0 tariff customers to the successor tariff. These parties propose the Commission provide storage rebates to NEM 2.0 customers in exchange for voluntarily switching to the successor tariff, but then require NEM 2.0 and NEM 1.0 customers to transition to the successor tariff at eight years from the customer's interconnection date.[469] These parties assert the revised timeline would still "allow these customers to realize full paybacks before transitioning to the end-state tariff and receive ongoing bill saving and investment returns for the remainder of their system life."[470] Contending the Commission has the authority to revise its prior determinations, Cal Advocates argues that allowing current NEM 1.0 and NEM 2.0 customers to remain on the tariffs through the legacy period will result in continued cost burden, as shown in the Lookback Study, and continue increases in average electric rates for all ratepayers and discourage electrification.[471] Further, Cal Advocates contends continuation of this cost shift may necessitate discounts to electric vehicle rates, creating an additional cost

[467] D.16-01-044 at 100.

[468] Sierra Club Opening Brief at 40.

[469] Cal Advocates Opening Brief at Appendix A.

[470] TURN Opening Brief at 69.

[471] Cal Advocates Opening Brief at 35 and footnote 151 citing PAO-02 at 5-31.

burden.[472] In support of the accelerated timeline for transitioning NEM 1.0 and NEM 2.0 customers, TURN maintains it "is justified by the need to balance the interests of participants and non-participants."[473]

Recognizing the Commission has the authority to modify prior decisions, SEIA/Vote Solar caution that transitioning NEM 1.0 and NEM 2.0 tariff customers would have significant consumer protection and market impacts.[474] Underscoring that over one million utility customers have invested tens of billions of dollars in distributed solar under these tariffs, SEIA/Vote Solar assert that "undermining the economic underpinnings of those investments… would be profoundly destabilizing and would impact adversely the market" for solar and other distributed energy resources.[475] SEIA/Vote Solar further warn that revising these tariffs undermines the project economics and efforts to ensure that consumers have the information necessary to make an informed decision and could lead to consumer backlash.[476] Pointing to the state of Nevada, SEIA/Vote Solar underscores that similar changes were adopted but ultimately reversed.[477]

While this decision concludes the Commission has the authority to revise the legacy NEM 1.0 and NEM 2.0 tariffs, the outcome could result in an inequity to one of two groups: nonparticipant ratepayers or NEM 1.0 and NEM 2.0 participant ratepayers. Public Utilities Code Section 2827.1 and the guiding principles do not rank the requirements, defining whose needs should come first:

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[472] Cal Advocates Opening Brief at 40.

[473] TURN Opening Brief at 68.

[474] SEIA/Vote Solar Opening Brief at 122.

[475] SEIA/Vote Solar Opening Brief at 122.

[476] SEIA/Vote Solar Opening Brief at 123.

[477] SEIA/Vote Solar Opening Brief at 123-124.

the needs of a particular group of people, the environment, or the grid. Hence, the Commission is left with a policy decision of what requirements and needs should be prioritized. This decision has noted that the adopted successor tariff is a balance of various and competing requirements, impacting participants and nonparticipants, the grid, and the environment. This is equally true of the determination for the NEM 1.0 and NEM 2.0 customers and customers who take service under NEM 2.0 after the adoption of this decision.

The Commission finds that the NEM 1.0 and NEM 2.0 tariff should remain intact. As discussed above, in the Rulemaking to Advance Demand Flexibility Through Electric Rates (R.22-07-005), the Commission will consider the question of how to reform fixed charges for recovery of certain authorized utility costs. The Commission considers this new rulemaking to be a more appropriate venue to consider the issue of accurately calculating a customer's energy and grid usage while ensuring that the grid is prepared for the intermittent decrease and increase of usage.

8.7. Implementation of the Successor Tariffs

This decision has affirmed that NEM 2.0 creates a cost shift between participating customers and nonparticipant ratepayers. Hence, there is a sense of urgency to transition to the successor tariff. However, the record of this proceeding indicates changes to each utility's billing systems and supporting platforms to bill customers on the successor tariff will take 12 to 24 months following the effective date of a final decision, *i.e.*, the date the Commission votes on the decision.[478] With these implementation challenges in mind, this decision adopts the implementation schedule below.

[478] Joint Utilities Opening Brief at 101 citing IOU-01 at 181.

Step 0: Adoption of this decision and the beginning of the NEM 2.0 Sunset Period. Customers submitting a completed interconnection application prior to the end of the Sunset Period will be considered applicable for the NEM 2.0 tariff.

Step 1: Within 30 days of the adoption of this decision, Joint Utilities shall each submit an information-only Tier 1 advice letter to provide the details of the successor tariff and all subtariffs, as adopted in this decision. Joint Utilities shall coordinate before submitting the advice letters to ensure language uniformity to the extent possible. The individual advice letters shall summarize Joint Utilities' interpretation of how the successor tariff will be structured and include indicative levels of price components. Separately, Joint Utilities shall jointly file a Tier 1 advice letter within 30 days of the adoption of this decision requesting to establish a memorandum account to record costs for implementation of and marketing, education, and outreach for the successor tariff. The memorandum account should record utility costs for marketing, education, and outreach efforts and for the data collection, administrative support, and execution of the third-party evaluation outlined in Section 8.8. A reasonableness review of the costs shall be conducted in a subsequent general rate case.

Step 2: Within 60 days of the adoption of this decision, Joint Utilities shall each submit a supplemental advice letter containing rate factors based on the applicable revenue requirements and associated tariff sheets. These supplemental advice letters provide the industry with the details necessary to inform customers about the successor tariff, including consumer protection elements such as updated or new disclosure documents. Joint Utilities shall ensure the tariff language is standardized across all three utilities.

Joint Utilities recommend short timelines for these first two steps.[479] Cal Advocates recommend a 90-day turnaround.[480] Any unnecessary delay in providing this information to the behind-the-meter industry could lead to potential harm to the industry's ability to grow sustainably.

Step 3: Energy Division is authorized to dispose of the advice letters from Step 1 and Step 2.

Step 4: No later than 120 days after the adoption of this decision, the Commission will implement the NEM 2.0 tariff sunset marking the end of the Sunset Period, at which time no additional customers will be permitted to take service under the NEM 2.0 tariff. Joint Utilities recommend establishing the eligibility for inclusion in the Sunset Period based on the interconnection application date.[481] The Commission adopts this policy. CALSSA recommends defining "interconnection application date" as an application that is free of deficiencies but may not yet have the post-inspection notification from the local building department.[482] SEIA/Vote Solar agree with CALSSA's recommendation because "system completion can be delayed for a host of reasons not in the customer's control."[483] These assertions are reasonable. Accordingly, the interconnection application date is defined as the submission date of an application that is free of major deficiencies and includes a complete application, a signed contract, a single-line diagram, a complete California Contractors License Board Solar Energy System Disclosure Document, a signed

[479] IOU-02 at 99.

[480] PAO-01 at 6-1.

[481] IOU-02 at 100.

[482] CALSSA January 7, 2022 Comments at 20.

[483] SEIA January 14, 2022 Reply Comments at 8.

California Solar Consumer Protection Guide, and an oversizing attestation (if applicable).

The Sunset Period will protect customers who are in the process of contracting for NEM 2.0 tariff service. As previously stated, customers submitting completed applications prior to or on this date will be considered NEM 2.0 customers. Customers submitting complete applications after this sunset date will be billed on the NEM 2.0 tariff and then be transitioned to the successor tariff once it is operationalized. Additionally, the first step of the successor tariff glide path goes into effect at this time as well. Any delay in Step 3, the processing of the advice letters in Step 1 and Step 2, will result in an equal, day-for-day, extension of time in Step 4.

Joint Utilities propose that customers taking interim service on the NEM 2.0 tariff have a reduction of these benefits during the interim period.[484] This would add an unnecessary layer of complexity. Instead, customers taking NEM 2.0 service on an interim basis will receive the full benefits of NEM 2.0 until the transition to the successor tariff, with one exception: these customers shall take service on the appropriate time-of-use rates adopted in this decision. The Commission agrees with the Joint Utilities that this will allow successor tariff customers to become accustomed to the new rate prior to changing to net billing.[485] Once transitioned to the Net Billing tariff, these customers' retail export compensation rates will be based on the locked-in schedule of Avoided Cost Calculator values described above, commencing with a customers' respective date of system interconnection. The Avoided Cost Calculator version

[484] IOU-02 at 185.

[485] Joint Utilities January 7, 2022 Comments at 18.

used will be the adopted calculator, as of January 1 of the calendar year of the successor tariff customer's interconnection date. Customers will retain this retail export compensation rate schedule for the lock-in period, other than customers who choose to exit their lock-in periods early.

Between the NEM 2.0 tariff sunset date and Step 5, Joint Utilities shall pause transitions that would normally occur of NEM 1.0 tariff customers to the NEM 2.0 tariff. This will eliminate the need for customers to understand a tariff on which they would only take service for a short period of time.

Step 5: Within 12 months following adoption of this decision, Joint Utilities will complete alignment of related necessary billing systems and transition to full implementation of the successor tariff. Joint Utilities state that billing system upgrades for each of the utilities are currently in progress and contend this will result in delays to implementation. However, these delays are unreasonable and, thus, this decision requires full implementation of the successor tariff no later than one year from adoption of this decision.

Cal Advocates recommends enrollment of customers on the successor tariff by early 2023,[486] which would not allow behind-the-meter industry providers to sufficiently train their sales force and customer service representatives, and revise marketing material and contracts. The overall transition from NEM 2.0 to the successor tariff is as expeditious as reasonably possible to prevent additional contribution to the cost shift, ensure the compensation for these services is cost-effective, and initiate the storage and electrification benefits of the successor tariff.

[486] PAO-01 at 6-1.

Lastly, many parties expressed concern regarding the impact of the successor tariff on the California Energy Commission's Title 24 regulation. The Commission intends to collaborate with the California Energy Commission on the Title 24 regulation and its interactions with the successor tariff.

8.8. Evaluation of the Successor Tariff

Previously, this decision stated that the successor tariff will be evaluated, with an emphasis on evaluating equity, affordability, and grid benefits. Below, this decision describes the intentions of the evaluation.

The evaluation will collect three years of data after full implementation of the successor tariff and will follow a similar process as conducted in the Lookback Study, reviewing the entire successor tariff but with a focus on affordability, equity, and grid benefits. Given the Commission's desire to promote solar paired with storage, this decision adds to the evaluation an analysis of battery dispatch trends.

To be clear, it is the intention of the Commission to collect data from the successor tariff for three years and then analyze the data and provide a draft evaluation within five years of implementation of the successor tariff. Following the issuance of the draft evaluation, parties will have an opportunity to provide comment prior to the issuance of a final evaluation. The Commission will consider the contents of the evaluation and associated party comments in a future proceeding to determine whether changes to the successor tariff or any of its elements are necessary.

The record of this decision does not contain the specifics of the evaluation. As such, a ruling will be issued following the adoption of this decision to assist the Commission in better defining the parameters, determining the amount of

funding, authorizing funding, and creating an implementation plan for the evaluation. A future decision in this proceeding will consider these details.

9. Comments on Proposed Decision

The proposed decision of Administrative Law Judge Kelly A. Hymes in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on _____, and reply comments were filed on _____ by _____.

10. Assignment of Proceeding

Alice Reynolds is the assigned Commissioner and Kelly A. Hymes is the assigned Administrative Law Judge in this proceeding.

Findings of Fact

1. The evaluation of NEM 2.0 tells the Commission whether the tariff is or is not performing as required.
2. The evaluation of NEM 2.0 establishes a foundation for creating a successor tariff.
3. The Lookback Study does not tell a complete story but informs the Commission on how the successor tariff should be revised.
4. The NEM 2.0 tariff negatively impacts non-participant ratepayers.
5. The NEM 2.0 tariff is not cost-effective for the commercial, industrial, and agricultural customer segments.
6. The NEM 2.0 tariff is not cost-effective for the residential customer segment.
7. The NEM 2.0 tariff disproportionately harms low-income customers.
8. A disagreement on an assumption in the Lookback Study does not equate to a flaw in that assumption.

9. The cost-effectiveness analysis in the Lookback Study was conducted in accordance with prior Commission decisions.

10. The Lookback Study is a sound analysis of the NEM 2.0 tariff.

11. The Affordability Report indicates high electricity rates are driven by a combination of transmission and distribution costs, wildfire mitigation, and the shifted costs from solar customers to customers without solar.

12. The cost shift discussion in this proceeding does not ignore the other drivers of high electricity rates but, rather, focuses on the one driver that is relevant to this proceeding: the significant cost shift from solar customers to customers without solar.

13. NEM 2.0 tariff customers bypass infrastructure and other service costs embedded in volumetric rates by decreasing grid imports.

14. The bypassed infrastructure and other service costs embedded in volumetric rates by NEM 2.0 participants over the course of the 20-year legacy period are shifted to non-participant ratepayers.

15. The Lookback Study indicates NEM 2.0 negatively impacts non-participant ratepayers.

16. The precise financial impact of NEM 2.0 on nonparticipant ratepayers depends on the Avoided Cost Calculator values used.

17. PCF's analysis and estimate of the financial impact of NEM 2.0 are incorrect.

18. The financial impact of NEM 2.0 is caused by more than the simple bill savings from net energy metering customer energy consumption.

19. Without changes to the current tariff structure, the financial burden on the shrinking pool of nonparticipants is unsustainable and would fall disproportionately on lower-income customers.

20. The Lookback Study finds that the commercial, industrial, and agricultural customer segments of the NEM 2.0 tariff generally pass the TRC test and pay rates that fully cover their costs of services.

21. No party other than PCF disputes the cost-effectiveness results of the commercial, industrial, and agricultural segments of the NEM 2.0 tariff.

22. The Lookback Study followed the directives of prior Commission decisions regarding the methods for cost-effectiveness analysis.

23. While the Lookback Study found commercial, agricultural, and industrial sectors of the NEM 2.0 tariff had TRC test and PCT results of 1.0 or better, the results of the RIM test showed a benefit-cost ratio of less than 1.0.

24. The Lookback Study indicates the nonresidential sectors of the NEM 2.0 tariff are not cost-effective.

25. The Lookback Study finds the NEM 2.0 tariff is not cost-effective for the residential customer segment.

26. Lower-income customers are burdened with the additional expense of a portion of the 82 to 91 percent of the cost of service bypassed by NEM 2.0 residential customers whose bill payments only cover nine to 18 percent of their cost of service.

27. The Lookback Study indicates that the NEM 2.0 tariff disproportionately harms low-income customers not participating in the tariff.

28. The Lookback Study indicates that the NEM 2.0 tariff disproportionately benefits non-CARE residential NEM 2.0 tariff customers while all other customers, including those with lower incomes, bear the addition of 82 to 91 percent of the cost of service bypassed by these tariff customers.

29. Parties have varying interpretations of the phrase "grow sustainably" and what that means for the successor tariff.

30. In D.16-09-036, the Commission stated it was not placing a greater emphasis on achieving sustainable growth over other statutory obligations, and nothing in the record of this proceeding leads the Commission to stray from this position.

31. Any proposed change to the net energy metering tariff should consider the impact on the growth of the net energy metering market and, therefore, the solar industry.

32. Allowing the net energy metering tariff to result in growing costs shifted to non-participants is not sustainable to the overall health of net energy metering.

33. The net energy metering tariff has and should continue to assist California in meeting its energy and climate goals.

34. The Commission considered and adopted estimates of transmission and distribution costs, greenhouse gas reductions, and system resiliency and reliability in D.20-04-010.

35. The Standard Practice Manual states that the cost-effectiveness tests should not be used individually, but instead consider the tradeoffs between the tests.

36. D.19-05-019 directs the use of the TRC and recognizes the importance of the PAC and RIM tests.

37. Each cost-effectiveness test has value and together the tests tell a complete story.

38. Consideration of all the cost-effectiveness tests allows the Commission to consider the values of and tradeoffs between the tests.

39. Application of the Societal Cost Test is premature because the evaluation to determine the final details of the test has not been completed.

40. D.20-04-010 concluded that consideration of the benefits of grid services provided by specific distributed energy resources should be addressed in resource-specific proceedings.

41. D.20-04-010 considered SEIA/Vote Solar's proposals for avoided reliability and resiliency costs and found the benefits described could only be attributable to stand-alone solar and solar paired with storage.

42. D.20-04-010 found the SEIA/Vote Solar proposal for avoided reliability and resiliency costs did not show any deferred or avoided costs to utility ratepayers but indicated ratepayers using these technologies receive additional participant benefits.

43. Neither SEIA/Vote Solar nor PCF provide convincing evidence that the examples of resiliency benefits offered are more than individual benefits.

44. Examples given by SEIA/Vote Solar and PCF are either private or highly speculative and limited to unique circumstances.

45. The proposed societal benefits of an updated social cost of carbon metric, a reduced methane leakage multiplier, and future transmission costs are not solely applicable to net energy metering.

46. In-state methane leakage is accounted for in the Avoided Cost Calculator.

47. Allowing for an additional value for societal benefits associated with in-state methane leakage would result in the double counting of this benefit.

48. In D.22-05-002, the Commission declined to adopt a proposal to include out-of-state methane leakage values in the Avoided Cost Calculator.

49. Neither CALSSA nor SEIA/Vote Solar offer any evidence that increased net energy metering installations will directly result in decreased utility-scale projects.

50. Parties agree to differing degrees that the Commission should consider the length of time for a customer's payback period when determining the reasonableness of the successor tariff.

51. Analysis of the successor tariff requires balancing multiple legislative requirements and guiding principles, and the needs of participants and nonparticipants.

52. Payback periods are not the predominant factor for customers when considering solar adoption.

53. The 2013 and 2017 NREL studies show that consumers look at monthly bill savings when making an economic decision on adopting solar.

54. It is reasonable to consider the length of time for a customer's payback period when determining the reasonableness of the successor tariff.

55. A simple payback metric is the most transparent and consumer-friendly metric to determine the number of years to payback.

56. A target of a nine-year simple payback period for a stand-alone solar system presents a balanced approach to promoting the adoption of solar systems paired with storage.

57. The increased number of years to payback will alleviate cost shift in the successor tariff.

58. The number of years to payback should reflect all costs of stand-alone solar and solar paired with storage adoption.

59. The $2.34 per watt value for the cost of solar does not include costs for financing, electrical panel upgrades, or installation delays.

60. SEIA/Vote Solar and CALSSA concede that $3.80 per watt is high for the cost of solar.

61. The value of $3.30 per watt for the cost of solar reasonably accounts for electrical panel upgrades, delays, and the current inflationary costs.

62. The White Paper proposed that preservation of a viable market is likely to require a glide path including both a gradual rate reform and an external transitional support mechanism designed specifically to enable a reasonable payback period for customers investing in onsite generation.

63. Inclusion of a glide path is essential to balance the multiple requirements the tariff should meet.

64. The magnitude and severity of the NEM 2.0 cost shift requires immediate action by the Commission.

65. The glide paths proposed by CALSSA and SEIA/Vote Solar are inadequate, with respect to the length of time involved, for addressing the magnitude and severity of the cost shift.

66. A five-year glide path provides a balanced approach that allows for sustainable market growth that does not occur at the undue and burdensome financial expense of nonparticipant ratepayers.

67. A five-year glide path minimizes any cost shift to ensure equity among all customers and allow the industry to transition to one that promotes the adoption of solar systems paired with storage.

68. The equity issue in this proceeding cannot be addressed solely by reducing the cost shift.

69. State policy requires that disadvantaged communities not continue to be left behind with respect to clean energy options, including electrification and storage.

70. Continuation of the existing cost shift feeds into higher electricity rates, which discourages the adoption of electrification measures.

71. The objectives of the Lookback Study were to examine the impacts of the NEM 2.0 tariffs and to compare how different metrics have changed following the transition from the NEM 1.0 tariff to the NEM 2.0 tariff.

72. Electricity consumption patterns are not discussed in the key takeaways of the Lookback Study.

73. Energy consumption patterns included in the Lookback Study contain insufficient data to make the assertion that the current structure of net energy metering promotes electrification.

74. The Lookback Study contains incomplete data regarding change in energy consumption for SCE's customers.

75. Without complete data and more in-depth analysis on electricity consumption patterns, assertions regarding the promotion of electrification cannot be made or relied upon in this decision.

76. The Lookback Study does not indicate that the current structure of net energy metering promotes electrification goals.

77. The Commission has consistently conveyed the message that net energy metering systems should be sized to a customer's onsite load.

78. Policy messages regarding sizing net energy metering systems to load were conveyed prior to the contemplation of the electrification policy.

79. D.06-01-024, D.06-07-028, D.11-06-016 and D.14-11-001 do not address the policy of electrification.

80. SEIA/Vote Solar's proposal to allow customers to oversize their systems by 50 percent, with the modification to compensate the net surplus generation at the current net surplus compensation rate, will promote electrification.

81. The Commission is not revising the net surplus compensation rate currently set at the Default Load Aggregation Point price.

82. The addition of storage provides greater benefits to both the customer and the grid as compared to the benefits of a stand-alone solar system.

83. The Lookback Study found that the TRC benefit-cost ratio is consistently higher for solar photovoltaic systems when compared to solar paired with storage systems.

84. The current cost of storage not only creates cost-effectiveness concerns, but also presents a barrier to widespread adoption.

85. It is the policy of the Commission to encourage paired storage with the benefits and costs in mind.

86. Continuing to base retail export compensation rates on retail import rates conflicts with the guiding principles.

87. Retail rates do not reflect the actual costs of the exports or the benefits the exports provide to all customers and the electrical system.

88. The Commission needs to know export actual costs and benefits in order to ensure they are approximately equal pursuant to Section 2827.1.

89. Basing retail export compensation rates on retail import rates has resulted in compensation levels 3.8 to 5.4 times higher than the benefits they provide to the electrical systems in the form of avoided costs.

90. Using avoided cost values instead of the retail rate brings the cost of the successor tariff closer to its value, which will ensure equity among customers and maximize the value of the resource to all customers and to the electrical system.

91. Basing retail export compensation rates on Avoided Cost Calculator values sends more accurate price signals and promotes paired storage.

92. Ensuring the growth of customer-sited renewable generation is not the Commission's only concern.

93. Using the Avoided Cost Calculator approach will ensure the costs and benefits are approximately equal, as instructed by the Legislature.

94. Using the Avoided Cost Calculator approach leads to positive outcomes for customers and nonparticipating ratepayers.

95. With the exception of the 2020 version of the Avoided Cost Calculator, the calculator has consistently reflected the value of exported energy from year to year.

96. Using Avoided Cost Calculator values to set retail export compensation rates will ensure the retail export compensation rate is based on the benefits provided to the electric grid and will reduce the cost shift.

97. The Commission can use other elements and tools besides the stepped-down retail rate to transition to the successor tariff in a measured fashion.

98. There are multiple elements to the retail export compensation rate, which can lead to confusion for customers.

99. Requiring the same retail export compensation rate for all successor tariff customers will maintain equal treatment between nonresidential and residential customers, ensuring equity among customers.

100. Adopting similar retail export compensation rates for new nonresidential successor tariff customers is reasonable.

101. The Lookback Study highlighted that most nonresidential NEM 2.0 customers have high fixed charges, minimum bills, and demand charges, which tend to lower the potential savings with solar systems.

102. If the Commission were to find the NEM 2.0 structure compliant with guiding principles for the nonresidential customer sector, a change in demand

charges or high fixed charges in another proceeding could lead to furthering the cost shift in net energy metering that could be challenging to unwind.

103. Requiring successor tariff customers to take service on retail import rates with high differentials between winter off-peak and summer on-peak rates will improve the price signal to these customers.

104. Requiring successor tariff customers to take service on highly differentiated time-of-use rates will incentivize customers to divert energy usage to lower-priced hours when the solar system is producing energy or to deploy storage.

105. Highly differentiated time-of-use rates are closer to the energy prices required to run the grid.

106. Requiring successor tariff customers to take service on highly differentiated time-of-use rates maximizes the value of the generation to all customers and to the electrical system and ensures equity among all customers.

107. Highly differentiated time-of-use rates encourage electrification and help California reach its greenhouse gas emissions reduction goals.

108. Requiring successor tariff customers to take service on highly differentiated time-of-use rates will meet several guiding principles in this proceeding.

109. No evidence has been provided indicating that creating a highly differentiated time-of-use rate that is specific to net energy metering customers could discourage the adoption of multiple distributed energy resources.

110. The current design of retail rates no longer provides the ability to accurately calculate a customer's energy and grid usage, with respect to net energy metering customers.

111. Net energy metering customers intermittently reduce usage depending upon the performance of the solar system.

112. The grid must always be prepared for the intermittent decrease and increase of a customer's usage.

113. Net energy metering customers cause costs even when not directly importing energy from the grid.

114. Retail rates were created before the emergence of the two-way street of imports and exports.

115. The Commission initiated Rulemaking 22-07-005 to establish policies and modify electric rates to, among other objectives, enhance reliability and improve affordability and equity of bills.

116. In R.22-07-005, the Commission will consider the reformation of fixed charges.

117. R.22-07-005 is the appropriate regulatory venue to consider the issue of accurately calculating a customer's energy and grid usage and ensuring the grid is prepared for intermittent decrease and increase of usage.

118. D.16-01-044 determined there are four non-bypassable charges that NEM 2.0 customers could not bypass by applying bill credits from exports; these charges are the public purpose program charge, nuclear decommissioning charge, competition transition charge, and the Wildfire Fund Non-Bypassable Charge.

119. Parties provided no evidence regarding why the list of non-bypassable charges adopted in D.16-01-044 should be expanded.

120. The ACC Plus is directly linked to the adopted retail export compensation value.

121. The Market Transition Credit has no direct linkage to either the current export compensation structure of NEM 2.0 or the future structure of Avoided Cost Calculator-based values.

122. While the retail rate step-down approach is linked to the current compensation structure, the adopted glide path will be provided to successor tariff customers who have never received retail export compensation rates based on the retail import rate.

123. Basing the glide path on the Avoided Cost Calculator values ensures that values are current, as these values are updated every two years and changes to retail rates and time-of-use periods can be slow.

124. The ACC Plus approach enables successor tariff customers to become familiar with the Avoided Cost Calculator values immediately compared to the retail rate step-down approach.

125. The ACC Plus approach sends the right price signals to support the grid.

126. It is reasonable during the transition period that stand-alone solar systems benefit more from the ACC Plus approach than solar paired with storage systems during the transition period.

127. The ACC Plus approach will allow the industry to grow sustainably during the transition to a market that predominantly sells and leases solar paired with storage systems.

128. In D.15-07-001, the Commission adopted a minimum bill standard for residential customers on the non-generation portion of their monthly electric bill.

129. In D.15-07-001, the Commission established a minimum bill of $5 for CARE customers and $10 for non-CARE customers.

130. R.22-07-005 will consider the reformation of fixed charges, which could include the continuance or elimination of a minimum bill requirement.

131. Hourly netting in the successor tariff could lead to additional strain on the grid.

132. Eliminating the netting interval exposes more of the customers' imports and exports to net billing.

133. No netting is more consistent with cost-based compensation and will maximize the value of customer-sited renewable generation to all customers and to the electrical system.

134. An adjustment factor is useful as a proxy for no netting in developing estimates of monthly bill savings for prospective solar customers.

135. Annual true-up periods allow generation to be credited for exactly what it is valued based upon the retail export compensation rate that hour.

136. Annual true-up periods do not undermine greenhouse gas emissions objectives.

137. Using hourly Avoided Cost Calculator values for retail export compensation rates complicates the bill structure.

138. Averaging the Avoided Cost Calculator values across days in a month acknowledges the general trends in differences between hours and months and results in accurate values.

139. Averaging the Avoided Cost Calculator values yields more accurate signals for customer generators to reduce imports from the grid and for battery storage to dispatch during hours most valuable to the grid.

140. Averaging the Avoided Cost Calculator values across days in a month does not add the false precision of potentially inaccurate forecasts of a specific hour's weather and other conditions.

141. Using averaged monthly Avoided Cost Calculator values for retail export compensation rates ensures the tariff is based on the generator's true costs and

benefits to the grid and leads to equity among all ratepayers while maximizing the value of the generation to all ratepayers and to the electrical system.

142. Dividing the export credit between the customer's load serving entity and distribution utility (where the load serving entity is responsible for energy, cap and trade, and generation capacity while the distribution utility is responsible for transmission, distribution, greenhouse gas adder, and methane leakage) is consistent with current tariff approaches and considers competitive neutrality amongst load serving entities.

143. Like all forecasts, the Avoided Cost Calculator forecast values are increasingly uncertain further away from the present.

144. Basing the Avoided Cost Calculator values on a schedule of values will enable solar providers to predict customer savings.

145. The certainty of a locked-in rate schedule helps to ensure that customer-sited renewable distributed generation continues to grow sustainably during the transition period.

146. Using a single year of Avoided Cost Calculator values, instead of values averaged across several years of the Avoided Cost Calculator, brings the cost of the tariff closer to its value.

147. Using a single year of Avoided Cost Calculator values aligns with requirements to ensure the tariff is based on the costs and benefits of the customer generator and ensures the benefits are approximately equal to the total costs.

148. Using retail export compensation rates specific to climate zones does not result in significantly more accurate Avoided Cost Calculator values.

149. An objective of the glide path is to ensure reasonable payback periods for customers, especially low-income customers.

150. Limiting the glide path to a small subset of customers would not ensure customer-sited renewable distribution generation continues to grow sustainably.

151. The Commission does not intend the sustainable growth of the market to be focused solely on low-income customers.

152. The glide path is meant to ensure successor tariff customers, including CARE- and FERA-enrolled customers, have a nine-year simple payback period for stand-alone solar systems.

153. A fixed ACC Plus adder meets many objectives of this proceeding as compared to the multiplier.

154. A multiplier ACC Plus adder might have perverse outcomes on battery discharge behavior and compensation.

155. A fixed adder in the ACC Plus will provide more certainty to a customer by providing a predictable value.

156. In combination with other elements of the successor tariff, ratepayer funding of the stepped-down ACC Plus approach appropriately balances tariff requirements.

157. The proposed import retail rates will improve the pricing signal to successor tariff customers, increase the value of the generation to all customers and the electrical system, and encourage electrification.

158. The transition to the successor tariff will require customers to make substantial investments in storage, as well as solar, with longer payback periods in comparison with the NEM 2.0 tariff.

159. Net energy metering customers are more likely than other customers to choose critical peak pricing rates, which will help the grid during critical peak days.

160. The availability of critical peak pricing and peak day pricing rates will enhance the value of stand-alone solar and solar paired with storage systems.

161. The Joint Utilities' proposal to require bill credits be applied to charges in the same time-of-use period is overly prescriptive.

162. D.16-01-044 required verification that solar system components are on the verified equipment list maintained by the CEC, which was required by the California Solar Initiative, and was duplicative of interconnection rules.

163. The Net Billing tariff adopted here is not part of the California Solar Initiative.

164. Equipment failures or other issues may cause a customer's solar system to go offline without the customer's knowledge, which may cause unanticipated increases to the customer's electric bill.

165. Non-operating solar systems may result in underutilization of California's installed renewable energy resources and impact the State's ability to meet its environmental and climate goals.

166. The successor tariff makes great strides in tackling the cost shift, thus addressing one element of the equity issue.

167. The ACC Plus glide path assists the Commission in addressing the equity issues while also addressing the statutory requirement that customer-sited renewable distributed generation continues to grow sustainably.

168. The successor tariff balances the requirements of the statute and the guiding principles previously adopted in this proceeding.

169. Low-income households have financial challenges and barriers to adoption of behind-the-meter resources.

170. The successor tariff is required to meet many objectives in addition to expanding access to low-income households.

171. The Lookback Study found that low-income non-participating customers are most impacted by the cost shift that exists in the current net energy metering tariff.

172. The record does not measure the impact that would occur if the Commission were to expand the definition of low-income beyond CARE- and FERA-enrolled customers.

173. Installation of distributed generation is less frequent in low-income households and disadvantaged communities.

174. The inability to achieve higher bill savings and reasonable payback periods are barriers to increased participation by low-income customers.

175. Adopting the same net billing tariff structure regardless of household incomes meets the equity requirement in Guiding Principle (b).

176. Providing discounts on certain elements of the tariff structure for eligible households (*i.e.,* a higher ACC Plus adder) will assist the Commission in meeting the objectives of improved equity and increased participation in low-income households and disadvantaged communities.

177. Low-income households have challenges with certain time-of-use rates and electrification costs due to the difficulty with load-shifting and affordability of smart appliances.

178. Analysis of the successor tariff indicates greater bill savings with adoption of electrification rates by customers with solar systems paired with storage.

179. The combination of the ACC Plus and an equity fund could assist the Commission in meeting the requirement to ensure specific alternatives designed for growth among residential customers in disadvantaged communities.

180. An equity fund has been created by the legislature with the objective of improving access to distributed energy resources technology for low-income households and disadvantaged communities.

181. A ruling has been issued in R.20-05-012 asking for comment on implementation of funds pursuant to AB 205, as well as eligibility and deployment requirements.

182. A guiding principle in this proceeding is to ensure equity in the successor tariff.

183. The Order Instituting Rulemaking for this proceeding stated that this proceeding would coordinate with other relevant proceedings.

184. Information gathered in the affordability proceeding (R.18-07-006) and not in the record of this proceeding could be helpful in providing a more complete record with respect to the low-income VNEM subtariff.

185. Ongoing triennial evaluations of the SOMAH program are being conducted, pursuant to D.17-12-022.

186. A report of the SOMAH evaluation has been made public and the information in the evaluation could be useful in determining future changes to the tariff.

187. The SOMAH evaluation is not in the record of this proceeding.

188. It is prudent to delay any changes to low-income subtariffs of VNEM until review in this proceeding of findings from the affordability proceeding and the SOMAH evaluation.

189. An objective in this proceeding is to ensure the successor tariff aligns with the costs and benefits of customer generation.

190. Basing retail export compensation rates on retail import rates does not meet the objective of aligning costs and benefits of customer generation.

191. Aligning the VNEM subtariff with the successor tariff balances the multiple and competing objectives in this proceeding.

192. Tenants lack the ability to install storage and lack access to the net generation system.

193. Tenants do not design, own, or manage the on-site generation system.

194. Tenants have less ability and fewer options than property owners to install load-shifting smart devices and appliances.

195. VNEM generation meters measuring output are separate from individual tenant or common-area meters measuring customer usage, which makes it impossible to require no netting under a net billing tariff.

196. No netting is impossible for NEMA subtariff customers under a net billing tariff because no onsite generation is used to prevent imports by powering the benefiting accounts.

197. Analysis shows that VNEM subtariff customers will have simple payback periods ranging between 4.03 and 7.20 years.

198. Ivy Energy demonstrated there is onsite consumption of energy that is generated at multifamily buildings interconnected under VNEM; Joint Utilities do not dispute this claim in briefs.

199. It is reasonable to affirm that VNEM provides benefits to the grid similar to that of the NEM 2.0 tariff.

200. VNEM is for multi-tenant buildings and is designed to facilitate a virtual metering billing arrangement.

201. NEMA is available to a single customer that has a generating facility or facilities on adjacent or contiguous properties and allows for aggregation as if on one site.

202. VNEM and NEMA serve separate purposes and generally have separate customer bases: VNEM for multi-tenant customers and NEMA for agricultural customers.

203. The current VNEM subtariff allows multiple arrays but requires each array to serve a subset of customers on the property.

204. Joint Utilities point to no engineering or policy reason why multiple solar arrays on one property should not be treated as one generator on the VNEM subtariff, with credits allocated across the property.

205. Many apartment complexes contain more than one building and often require the use of separate roof surfaces and points of interconnection for VNEM.

206. Treating multiple solar arrays on one property as one generator is reasonable, efficient, and aligns with existing MASH and SOMAH VNEM subtariffs.

207. There are aspects of community solar that are being discussed or considered in other proceedings.

208. In consolidated Applications A.22-05-022, A.22-05-023, and A.22-05-024 the Commission is reviewing utility applications for the Green Tariff Shared Renewables program, Disadvantaged Communities Green Tariff program, and Community Solar Green Tariff program.

209. It is premature to adopt a Community Solar tariff or subtariff in this decision.

210. In D.16-01-044, determinations regarding the NEM 2.0 tariff were made at a transitional moment without the advantage of a quantitively informed basis.

211. The Commission now has the data to make an informed decision on a successor tariff.

212. The Lookback Study found that NEM 2.0 is not cost-effective, has negatively impacted non-participant ratepayers, and has disproportionately harmed low-income customers.

213. The estimated cost shift from the NEM 2.0 tariff ranges between $1 billion and $3.4 billion annually.

214. The changes made to the net energy metering tariff in Section 8.5 above do nothing to tackle the cost shift created by NEM 1.0 and NEM 2.0 customers; the changes only attempt to prevent or limit additional cost shift from new customers enrolling in the successor tariff.

215. NEM 1.0 and NEM 2.0 are within the scope of Issue 6.

216. In D.16-01-044, the Commission established a legacy period of 20 years from a customers' interconnection date as a reasonable period over which the customer should be eligible to continue taking service under the NEM 2.0 tariff.

217. The choice regarding changes to NEM 1.0 and NEM 2.0 result in an inequity to one of two groups: nonparticipant ratepayers or legacy customer ratepayers.

218. Public Utilities Code Section 2827.1 and the guiding principles do not rank the requirements for the successor tariff or tell the Commission whose needs should come first: the needs of a particular group of customers, the environment, or the grid.

219. Determining whether to revise the NEM 1.0 and NEM 2.0 tariffs requires balancing various and competing requirements, and impacts participants, nonparticipants, the grid, and the environment.

220. In R.22-07-005, the Commission will consider the establishment of a fixed charge for all residential customers who use the grid.

221. The fixed charge proposed in R.22-07-005 is intended to recover certain authorized utility costs that are currently collected through volumetric components of electricity bills.

222. The record of this proceeding indicates that changes to each utility's billing systems and supporting platforms to bill customers on the successor tariff will take 12 to 24 months to upgrade following the adoption of a final decision.

223. System completion following an interconnection application can be delayed for a host of reasons not in the customer's control.

224. It is reasonable to define the interconnection application date as the submission date of an application that is free of major deficiencies and includes a complete application, a signed contract, a single-line diagram, a complete CSLB Solar Energy System Disclosure Document, a signed California Solar Consumer Protection Guide, and an oversizing attestation (if applicable).

225. A Sunset Period will protect customers who are in the process of contracting for NEM 2.0 tariff service when this decision is adopted.

226. Reducing benefits to customers taking interim service on the NEM 2.0 tariff following the Sunset Period would add an unnecessary layer of complexity.

227. Billing system upgrades for each of the utilities are currently in progress.

228. The utilities' request for additional time to implement their billing system upgrades is unreasonable.

229. Between the NEM 2.0 tariff sunset date and Step 5, pausing any transitions of NEM 1.0 tariff customers to the NEM 2.0 tariff that would normally occur will eliminates the need for customers to understand a tariff on which they would only take service for a short period of time.

230. A one-year implementation period for the successor tariff will allow behind-the-meter industry providers to sufficiently train their sales force and

customer service representatives, and revise marketing material and contracts; and prevent additional contribution to the cost shift, ensure the compensation for these services is cost-effective, and initiate the storage and electrification benefits of the successor tariff.

231. The Commission intends to collect data from the successor tariff for three years, and then analyze the data and provide a draft evaluation within five years of implementation of the successor tariff.

Conclusions of Law

1. The Commission should use the Lookback Study as a foundation to create a successor tariff that continues the elements that resulted in positive outcomes but corrects or replaces elements that resulted in negative outcomes.

2. The Commission should ensure the growth of the net energy metering market does not come at the undue and burdensome financial expense of nonparticipant ratepayers.

3. The Commission should not grant the request to replace the Avoided Cost Calculator with the Lookback Study cost of service analysis.

4. The Commission should align its analysis in this proceeding with prior guidance from the Standard Practice Manual and consider the value of the TRC, PCT, and RIM cost-effectiveness tests, as well as the tradeoffs between the tests.

5. The Commission should not use the Societal Cost Test in its analysis of the successor tariff.

6. The Commission should not ascribe a resiliency adder for net energy metering customers.

7. The Commission should not adopt proposed societal benefits of an updated social cost of carbon metric, land conservation, a reduced methane leakage multiplier, or avoided transmission costs.

8. The Commission should not rely on one single method of analysis to be the determinant of the final successor tariff.

9. The Commission should consider monthly bill savings and a simple payback period target of nine years for a stand-alone solar system as part of the successor tariff.

10. The Commission should adopt the value of $3.30 per watt as the cost of solar.

11. The Commission should adopt a five-year glide path as part of the successor tariff to minimize the cost shift, to ensure equity among all customers, and also to encourage the sustainable growth of the market, but not at the undue and burdensome financial expense of nonparticipant ratepayers.

12. The Commission should address equity in the successor tariff through increased participation in low-income households and disadvantaged communities and combatting the cost shift.

13. The Commission should adopt a successor tariff that addresses the cost shift to ensure equity but also to encourage adoption of electrification measures.

14. The Commission should adopt SEIA/Vote Solar's proposal to allow customers to oversize their systems by 50 percent, while maintaining the current net surplus generation compensation rate, to promote electrification.

15. The Commission should continue to encourage solar paired with storage in the successor tariff with both the benefits and costs in mind.

16. Continuing to base retail export compensation rates on retail import rates does not comply with Public Utilities Code Section 2827.1.

17. The Commission should base retail export compensation rates on values derived from the Avoided Cost Calculator.

18. The Commission should not adopt the stepped-down retail rate glide path approach as it continues to use retail export compensation rates based on the retail import rate.

19. The Commission should ensure customers can understand the retail export compensation rate structure to be able to make an informed decision on whether to purchase a solar system.

20. The Commission should adopt the same retail export compensation rate structure for residential and nonresidential customer sectors.

21. The Commission should adopt a successor tariff that requires residential customers to take service on an existing highly differentiated time-of-use rate available to all customers.

22. AB 205 directs the Commission to authorize an income-graduated fixed charge for default residential customers by July 1, 2024.

23. The Commission should not adopt a grid benefits charge as part of the successor tariff.

24. The Commission should maintain the four charges adopted in D.16-01-044 as non-bypassable: public purpose program charge, nuclear decommissioning charge, the competition transition charge, and the Wildfire Fund Non-Bypassable Charge.

25. The Commission should adopt a successor tariff that includes the ACC Plus as a glide path.

26. The Commission should adopt no netting in the successor tariff.

27. The Commission should maintain monthly billing and annual true-up periods for customers in the successor tariff.

28. The Commission should set retail export compensation rates at monthly values for each hour, differentiated between weekday and weekend/holiday.

29. The Commission should adopt Avoided Cost Calculator values based on a five-year schedule of values for each hour from the most recent Avoided Cost Calculator, adopted as of January 1 of the calendar year of the new successor tariff customer's interconnection date.

30. The Commission should require the utilities to average Avoided Cost Calculator values across climate zones within each of the utilities' service territory.

31. The Commission should adopt a ratepayer-funded, stepped-down ACC Plus glide path that is available to all successor tariff customers who enroll in the tariff over the next five years.

32. The Commission should permit customers to adopt critical peak pricing or peak day pricing as part of their highly differentiated time-of-use rates.

33. The Commission should not adopt a requirement to apply credits only to charges during the same time-of-use period.

34. The Commission should adopt the Net Billing tariff.

35. The Commission should not maintain the NEM 2.0 tariff for low-income households.

36. The Commission should adopt the same base successor tariff for all income levels.

37. The Commission should not broaden the definition of low-income beyond CARE- and FERA-enrolled customers.

38. The Commission should not decrease retail export compensation rate credits by applying the CARE and FERA discounts received by low-income households.

39. The Commission should maintain the current structure of the low-income VNEM subtariffs until review of findings from the affordability proceeding and the SOMAH evaluation is conducted in this proceeding.

40. The Commission should not require VNEM customers to enroll in highly differentiated time-of-use rates, but rather require these customers to take service on the time-of-use rates of their choice.

41. The Commission should adopt the same net billing structure for the general VNEM and NEMA subtariffs, at this time.

42. The Commission should maintain the netting intervals for general VNEM and NEMA subtariffs as they currently exist.

43. The Commission should not provide an ACC Plus adder to VNEM subtariff customers.

44. The Commission should affirm that VNEM provides benefits to the grid similar to that of NEM 2.0.

45. The Commission should maintain separate VNEM and NEMA subtariffs.

46. The Commission should allow multiple solar arrays on one property to be treated as one generator in the general VNEM subtariff.

47. AB 2316 requires the Commission to evaluate community renewable energy programs.

48. The Commission should not adopt a community solar tariff or subtariff in this decision.

49. The Commission has the authority to amend previous decisions pursuant to Public Utilities Code Section 1708.

50. The Commission has the authority to revise NEM 1.0 and NEM 2.0 tariffs.

51. The Commission should not revise the NEM 1.0 or NEM 2.0 tariffs.

52. The Commission should define the interconnection application date as the submission date of an application that is free of major deficiencies and includes a complete application, a signed contract, a single-line diagram, a complete CSLB Solar Energy System Disclosure Document, a signed California Solar Consumer Protection Guide, and an oversizing attestation (if applicable).

53. The Commission should adopt a sunset date as 120 days from the adoption date of this decision.

54. The Commission should adopt the implementation of the successor tariff as described in Section 8.7 of this decision.

55. The Commission should conduct an evaluation of the successor tariff.

O R D E R

IT IS ORDERED that:

1. For the purposes of this decision, a low-income household is defined as residential customers enrolled in California Alternate Rates for Energy and the Family Electric Rates Assistance programs.

2. A net billing tariff is adopted. Imports and exports will be calculated based on no netting of consumption and production and will be trued-up on an annual basis. Bill credits will be applicable toward import charges from any time of use time period. Net billing tariff customers shall comply with Electric Rule No. 21 Sections L.2-L.4 and Section L.7. for interconnecting to the electrical grid. Interconnection fees apply and remain as identified in Electric Rule 21. The net billing tariff shall contain the following adopted elements:

   (a) Retail Export Compensation Rates based on hourly Avoided Cost Calculator values averaged across days in a month, differentiated by weekdays and weekends/holidays. For the first five years of the successor tariff, *i.e.*, the glide path transition time, retail export compensation rates for residential net billing tariff

customers will be based on a nine-year schedule of values for each hour from the most recent Avoided Cost Calculator, adopted as of January 1 of the calendar year of the customer's interconnection date. For commercial customers, the Avoided Cost Calculator values will be locked-in for five years. Following the locked in period, retail export compensation rates will be based on averaged hourly avoided cost values from the most recent Avoided Cost Calculator, adopted as of January 1. Tariff customers enrolling after the five-year glide path will not receive a lock-in period for Avoided Cost Calculator values.

(b) An Avoided Cost Calculator Plus (ACC Plus) adder, based on a cents per kilowatt-hour exported. The ACC Plus will be available to net billing tariff customers during the first five years of the successor tariff, as a glide path. The adopted ACC Plus adders, as indicated in the table below, will remain constant for a customer for nine years from the customer's interconnection date.

Adopted Avoided Cost Calculator Plus Adder			
Customer Segment	**PG&E**	**SDG&E**	**SCE**
Residential	$0.018/kWh	$0/kWh	$0.040/kWh
Low-Income	$0.087/kWh	$0/kWh	$0.093/kWh
Nonresidential	$0/kWh	$0/kWh	$0/kWh

The adder will decrease by 20 percent annually, as measured by the first-year adder rate until the adder reaches zero. The adder will be a discrete line on the customer's utility bill, will apply to all charges, and will apply to future bills until the credit is used. Funding for the adder will be provided by all ratepayers through the Public Purpose Program charge.

(c) Highly differentiated time-of-use rates as provided in the following table. Additional eligible rates may be added by utility request through submittal of a Tier 3 advice letter or through its general rate case Phase 2 or rate

design window. Net billing tariff customers may choose to enroll in critical peak pricing or peak day pricing rates.

Eligible Time Of Use Rates by Utility			
	PG&E	**SDG&E**	**SCE**
Eligible Rate	E-ELEC	EV-TOU-5	TOU-D-PRIME

(d) Low-income customers (as defined in this decision) may also participate in the net billing tariff. For such participants, the California Alternate Rates for Energy and Family Electric Rates Assistance discount will not be applied to the retail export compensation rate.

(e) Customer sizing attestation requirements. Customers of Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company who oversize their systems shall attest that they expect to increase their usage accordingly in the next year.

(f) Four non-bypassable charges. The four charges are the public purpose program charge, nuclear decommissioning charge, competition transition charge, and the Wildfire Fund Non-Bypassable Charge.

(g) Minimum bill or fixed charges. Net Billing tariff customers are subject to any minimum bill or fixed charge that is contained in a customer's applicable rate.

(h) True-up Dates. Customers taking service under the net billing tariff may make a one-time request that their annual true-up date be changed going forward.

3. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall notify net billing tariff customers within 24 hours of when their solar systems appear to be offline for a period of seven days or more.

4. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company (Joint Utilities) shall work together to

develop a standard oversizing attestation form for net billing tariff customers planning to oversize their systems for net billing. Joint Utilities shall make this available to net billing customers no later than 120 days from the adoption of this decision.

5. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company (Joint Utilities) shall work together to develop a standard process by which net billing tariff customers may request that their true-up date be changed. Joint Utilities shall make this available to net billing customers no later than 120 days from the adoption of this decision.

6. Within 90 days of the adoption of this decision, Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company (Joint Utilities) shall submit a Tier 3 advice letter that proposes adjustment factors calculated using the difference in each utility's residential stand-alone solar customers' net exports under no netting versus interval netting in the last year. Joint Utilities shall update adjustment factors in a Tier 1 advice letter due annually thereafter.

7. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall report on the number of new net billing tariff enrollments by customers enrolled in California Alternate Rates for Energy (CARE) and the Family Electric Rates Assistance (FERA) and the tenancy of those interconnected customers in the CARE and FERA programs. This documentation shall occur in the Joint Utilities' annual interconnection cost advice letters, which are currently filed in accordance with the directions in Decision 14-05-033 and Resolution E-4610. This advice letter shall now be known as the "Net Energy Metering and Net Billing Tariff Annual Reporting Advice Letter."

8. Energy Division is authorized to conduct an evaluation of the net billing tariff adopted in Ordering Paragraph 3 above.

9. The Virtual Net Energy Metering subtariff for low-income eligible households shall remain unchanged until review in this proceeding of additional findings from Rulemaking 18-07-006 and the evaluation of the Solar on Multifamily Affordable Housing program.

10. The Virtual Net Energy Metering (VNEM) general subtariff shall adhere to the same changes as the successor net energy metering tariff adopted in Ordering Paragraph 2 above, with two distinctions: VNEM subtariff customers shall take service on the time-of-use rates of their choice and netting intervals shall remain unchanged from the current net energy metering tariff. Further, the VNEM subtariff is revised to allow multiple solar arrays on one property to be treated as one generator, with credits allocated across the property.

11. Within 90 days from the adoption of this decision, Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall each submit a Tier 2 advice letter that updates each of their general market Virtual Net Metering tariffs to allow multiple solar arrays on one property to be treated as one generator for billing purposes, with credits allocated across the property.

12. The Net Energy Metering Aggregation subtariff shall adhere to the same changes as the successor net energy metering tariff adopted in Ordering Paragraph 2 above with two distinctions: NEMA subtariff customers shall take service on the time-of-use rates of their choice and netting intervals shall remain unchanged from the current net energy metering tariff.

13. Implementation of the changes adopted in the previous ordering paragraphs of this decision shall occur in the following steps:

(a) Step 0: NEM 2.0 Sunset Period begins with adoption of this decision. Customers submitting a completed interconnection application prior to the end of the Sunset Period will be considered applicable for the current NEM 2.0 tariff.

(b) Step 1: Within 30 days of the adoption of this decision Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company (Joint Utilities) shall each submit an information-only Tier 1 advice letter to provide the details of the net billing tariff, conforming to the elements adopted in Ordering Paragraph 3. Joint Utilities shall coordinate before submitting the advice letters to ensure language uniformity to the extent possible.

Separately, Joint Utilities shall jointly file a Tier 1 advice letter within 30 days of the adoption of this decision requesting to establish a memorandum account to record costs for implementation of and marketing, education, and outreach for the successor tariff. The memorandum account should record utility costs for marketing, education, and outreach efforts described in Section 8.6.4 and for the data collection, administrative support, and execution of the third-party evaluation outlined in Section 8.8.

(c) Step 2: Within 60 days of the effective date of this decision, Joint Utilities shall each submit a supplemental advice letter containing rate factors based on the applicable revenue and associated tariff sheets. Joint Utilities shall ensure language uniformity.

(d) Step 3: Commission's Energy Division disposes of the advice letters from Step 1 and Step 2.

(e) Step 4. No later than 120 days after the effective date of this decision, Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company will implement a tariff sunset on the prior net energy metering tariff, known as NEM 2.0, after which time, no additional customers will

be permitted to take service under the NEM 2.0 tariff. Any delay in Step 3 resulting in the disposition of a utility advice letter approved after 100 days from the effective date of this decision, will result in an equal, day-for-day, extension of time in the tariff sunset date. Customers with an interconnection application date after this sunset date will take service and be billed on the NEM 2.0 tariff and transitioned to the net billing tariff, once it is operationalized. The interconnection application date is defined as the submission date of an application that is free of major deficiencies and includes a complete application, a signed contract, a single-line diagram, a complete California Contractors State License Board Solar Energy System Disclosure Document, a signed California Solar Consumer Protection Guide, and an oversizing attestation (if applicable).

Joint Utilities are directed to pause transition of NEM 1.0 customers to NEM 2.0 until the commencement of Step 5.

(f) Step 5: No later than 12 months following adoption of this decision, Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall complete alignment of related necessary billing systems and transition to full implementation of the net billing tariff.

14. Rulemaking 20-08-020 remains open to address issue seven in the Scoping Memo and continuing matters related to this decision.

This order is effective today.

Dated _____, at San Francisco, California.

Appendix A

Customer Explanation of Net Billing Tariff

How Electricity Bill Savings Work

If you install solar at your home, the majority of your electric bill savings will come from reducing the amount of electricity that you buy, or import, from your electricity provider. A minor additional amount of bill savings will come from your provider's Net Billing program. Net Billing provides financial credits on your bill when your solar system sends, or exports, excess electricity to the electric grid after first meeting the electricity needs in your home. If you are the original PG&E, SCE, or SDG&E customer who installed solar on your roof, you will have Net Billing for at least 9 years from the time your solar system starts operating.

Net Billing and Your Electricity Bill

Importing and Exporting Electricity

Since the sun isn't always shining, most solar customers also rely on electricity from the electric grid. Pairing a battery with your solar system allows you to store your excess solar energy from sunlit hours and then use the stored energy at home, instead of importing electricity from the electric grid, during part of the evening. Your monthly electric bill will summarize how much electricity your home imported from and exported to the electric grid, and the resulting overall charge or credit due to your account.

Bill Charges

PG&E, SCE, and SDG&E solar customers are required to go on an electrification time-of-use (TOU) rate plan. On a TOU rate plan, you will pay different prices for electricity at different times of the day (also called "TOU periods"). Prices for the energy you import from the electric grid are highest during the "peak" period between 4 p.m. and 9 p.m. The electricity rates in each plan, and which plans are allowed for use with Net Billing, are subject to change; go to cpuc.ca.gov/electricrates for details.

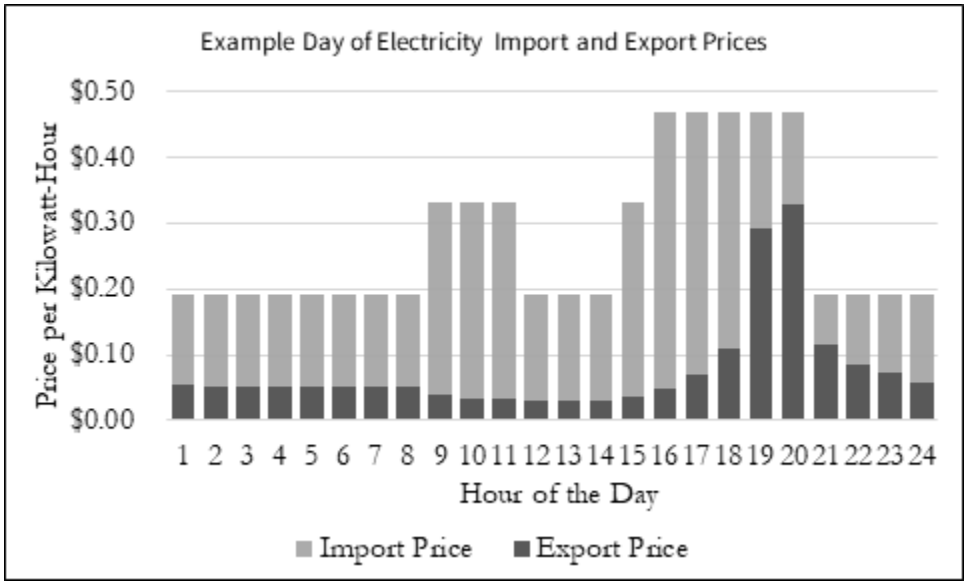
In addition to charges for energy you import, you may see non-bypassable charges and a fixed charge listed on your electric bill.

- All customers pay small charges to help maintain the electric grid and help low-income and disadvantaged Californians afford energy and access clean energy programs. These are called non-bypassable charges since you cannot bypass them using solar bill credits. However, if you receive the ACC Plus adder described below, you may apply it to non-bypassable charges.
- Each TOU rate plan eligible for use with the Net Billing program includes a monthly charge of around $15, sometimes called a fixed, basic, or service charge or fee.

Bill Credits

Bill Credits for Exports

You will receive bill credits at a set price per unit (kilowatt-hour) of electricity exported, based on the electricity's value to the electric grid in each hour of the day. The price will usually be lower than what you pay for a kilowatt-hour of electricity. The value generally follows TOU periods, meaning you will receive low prices for energy exported during the less expensive TOU periods, and so on. If you want to maximize your bill credits, you can pay closer attention and use less energy (in order to export more) during the specific hours in your "peak" TOU period when prices are highest. If you have a battery, you may be able to program it to automatically store up energy produced by your solar panels during sunny hours, and then export energy during the most lucrative evening hours.



If you apply to connect your solar system to the electric grid before the end of 2027, then for the first nine years after your solar system is interconnected to the electric grid, these prices will be based on what was predicted before you installed solar, to provide a measure of certainty for the purpose of predicting bill savings. However, you may opt out of this arrangement if you wish. After nine years, or if you either opt out or apply to connect your system after 2027, the prices you receive will be set every two years. They can rise or fall but are not expected to change drastically each year.

ACC Plus

California has an ACC Plus adder to help residential PG&E and SCE customers access solar energy. (SDG&E customers are excluded because their solar systems generate more bill savings due to SDG&E's higher electric rates.) If you apply to connect your system to the PG&E or SCE electric grid before the end of 2027, you will receive the adder in the form of slightly higher-than-normal bill credits for your energy exports for nine years. After that, you will receive bill credits based on your exports' value to the electric grid, as described above. If you have a low bill in a given month and part of the

adder is left over after reducing your bill to the minimum amount, that part of the adder will roll over to future months as needed and will not expire.

Customers who are required to add solar (e.g., by California's building code) do not receive the adder.

Monthly Payments and Net Surplus Compensation

Even though installing solar can reduce your electricity costs, most Net Billing customers will still pay electric bills in most months of the year. In months when there are excess solar bill credits, the credits will roll over to following months, until they are used up or it is time for your annual "true-up." Though it's rare, if you export more electricity than you import in a 12-month period, you will be paid "net surplus compensation" of a few cents per excess kilowatt-hour. Because this rate is so low, it is generally not in your financial interest to install a solar system that produces much more energy than you use.

(END OF APPENDIX A)

Appendix B

Modeling Inputs and Results

Modeling Assumptions

The Net Billing Tariff was modeled using the following assumptions.

Customers

1. Illustrative single-family residential inland customers with 7,500 kWh/year electric usage were modeled for Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E) and Southern California Edison Company (SCE).

2. Illustrative small commercial inland customers with 17,000 kilowatt-hours (kWh)/year electric usage were modeled for PG&E, SCE, and SDG&E.

Rates

3. The following electric retail rates as of July 1, 2022 were used in the modeling:

Customer	PG&E	SCE	SDG&E
Residential pre-solar	E-TOU-C	TOU-D	TOU-DR1
Residential post-solar	E-ELEC	TOU-D PRIME	EV-TOU-5
Commercial (pre- and post-solar)	B-1	TOU-GS-1 E	TOU-A

4. California Alternative Rates for Energy (CARE) discounts were applied as follows:

Bill Component	PG&E	SCE	SDG&E
Volumetric Charges	35%	32.5%	35%
Fixed Charges	35%	32.5%	50%

5. Export rates were based on the 2022 Avoided Cost Calculator (ACC) and reflect single-year ACC values averaged over all climate zones for each utility. Each year's hourly values were averaged over the attributes of month, hour of day, and weekday/weekend, with holidays classified as weekends.

6. To account for no netting given the use of hourly solar and load profiles, hourly exports were increased by 6.6 percent and imports were increased by the same amount of kWh in each hour.

7. Electric rates were escalated at 4 percent per year (nominal), reflecting the Commission's August 2020 Decision 20-08-001, "Decision Adopting Standardized Inputs and Assumptions for Calculation Estimated Electric Utility Bill Savings from Residential Photovoltaic Solar Energy Systems."

8. ACC Plus adders were calculated for solar-only customers of each utility to achieve a 9-year simple payback period. Separate ACC Plus adders were modeled for CARE and Non-CARE customers. These ACC Plus adders were applied to both solar-only and solar+storage customers for each utility. The ACC Plus adders were applied for nine years.

9. ACC Plus adders were modeled as a credit that can offset any charges on the bill including energy charges, fixed charges, and/or non-bypassable charges.

Solar and Battery Systems

10. The purchase of a solar or solar-plus-storage system was assumed to occur in 2023.

11. Solar systems were sized to generate energy corresponding to 100 percent of annual customer load.

12. Battery Alternating Current (AC) power capacity was sized to match solar AC capacity. Batteries were modeled to have two hours of discharge duration.

13. The cost of residential solar in 2023 was determined as described in Section 8.2.4. Small commercial solar costs were calculated by taking the cost ratio between ≤10 kW-Direct Current (DC) non-residential systems and 4-5 kW-DC residential systems reported in "Lawrence Berkeley National Lab: Tracking the Sun – Distributed Solar 2020 Data Update" and applying this ratio to the cost of residential solar systems. 2020 battery storage costs were based on costs of residential battery energy capacity and power capacity from "Lazard Levelized cost of Storage 6.0." Solar and battery cost declines over time were forecast using "NREL 2020 ATB."

14. 2023 solar and battery storage system costs, before tax credits, were modeled as follows:

System	Units	Residential	Small Commercial
Solar	$/kW-DC	$3300	$3138
2-hour Battery Storage	$/kW-AC	$1764	$1764

15. 30 percent federal Investment Tax Credit (ITC) was modeled for all systems based on the Inflation Reduction Act.

16. Customer battery systems were modeled to have 85% round-trip efficiency.

17. Battery dispatch was modeled using an Excel-based algorithm that approximates optimal customer bill savings for 2023:

    a. The battery is assumed to perform a full charge/discharge cycle every day, given adequate solar generation.

    b. The battery is charged using customer solar generation and at times that benefit the customer the most. The algorithm favors charging when solar energy would have otherwise been exported, though it may also charge from solar generation that could have been used on site if necessary to fully charge the battery. The highest benefits are achieved when charging during off-peak hours, though the battery is also charged during mid-peak and on-peak hours if necessary to fully charge the battery.

    c. For battery discharging, the battery is similarly discharged to benefit the customer the most. The algorithm favors discharging the battery to reduce customer imports from the grid, though it may also discharge the battery to export if necessary to fully discharge the battery. The highest benefits are achieved when discharging during peak hours, though the battery is also discharged during mid-peak and off-peak hours if necessary to fully discharge the battery.

    d. On days when the maximum hourly export rate is greater than the peak period import rate, the battery is instead discharged exclusively based on hourly export rates, without consideration for reducing customer imports.

Standard Practice Manual Cost Tests

18. A 20-year system lifetime was assumed.

19. A discount rate of 7.52 percent (nominal) was used, reflecting the average WACC (weighted average cost of capital) across utilities based on authorized rates of return, as reflected in the 2022 ACC.

Virtual Net Energy Metering (VNEM) Customers

VNEM customers were modeled using the same assumptions as regular Net Billing tariff customers as described above with the following exceptions:

20. Netting of imports and exports is assumed to occur hourly; therefore, a "no netting" adjustment was not applied.

21. Solar system costs were assumed to be lower due to larger system sizes. Solar costs were reduced by 29% from $3.30/W-DC to $2.33/W-DC based on the cost difference between 4-5 kW-DC systems and 20-50 kW-DC systems reported in "Lawrence Berkeley National Lab: Tracking the Sun — Distributed Solar 2020 Data Update."

Other Changes from 12/23/21 Public Model

22. The Grid Participation Charge was removed.
23. The Market Transition Credit was removed.
24. For PG&E rates, October is identified as a "summer" month. Previously it was erroneously identified as "winter."
25. The storage dispatch algorithm has been updated, as described above.

NBT - Solar

All metrics reflect the ACC Plus adder

ACC Plus Adder ($/kWh)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.018	0.040	-
Residential	CARE	0.087	0.093	-
Small Commerci	N/A	-	-	-

Simple Payback Period (years)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	9.00	9.00	5.95
Residential	CARE	9.00	9.00	8.43
Small Commerci	N/A	8.11	9.38	7.50

First-Year Bill Savings ($)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	1,230	1,133	1,724
Residential	CARE	1,230	1,133	1,217
Small Commerci	N/A	2,919	2,335	2,928

First-Year Cost Shift ($)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	851	792	1,298
Residential	CARE	851	792	791
Small Commerci	N/A	2,060	1,563	1,962

Participant Cost Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	1.66	1.57	2.49
Residential	CARE	1.42	1.37	1.75
Small Commerci	N/A	1.91	1.64	1.97

Ratepayer Impact Measure Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.37	0.38	0.23
Residential	CARE	0.44	0.44	0.33
Small Commerci	N/A	0.34	0.39	0.31

Total Resource Cost Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.62	0.60	0.57
Residential	CARE	0.62	0.60	0.57
Small Commerci	N/A	0.65	0.64	0.61

Modeled Solar System Size (kW-AC)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	3.78	3.51	3.51
Residential	CARE	3.78	3.51	3.51
Small Commerci	N/A	8.57	7.95	7.95

NBT - Solar+Storage

All metrics reflect the ACC Plus adder

ACC Plus Adder ($/kWh)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.018	0.040	-
Residential	CARE	0.087	0.093	-
Small Commerci	N/A	-	-	-

Simple Payback Period (years)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	6.68	6.58	4.70
Residential	CARE	8.69	8.88	6.98
Small Commerci	N/A	6.92	7.49	5.82

First-Year Bill Savings ($)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	2,357	2,208	3,106
Residential	CARE	1,810	1,636	2,090
Small Commerci	N/A	4,952	4,231	5,458

First-Year Cost Shift ($)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	1,241	1,179	1,795
Residential	CARE	695	607	779
Small Commerci	N/A	2,499	2,017	2,561

Participant Cost Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	1.99	2.03	2.97
Residential	CARE	1.46	1.49	2.04
Small Commerci	N/A	1.95	1.83	2.36

Ratepayer Impact Measure Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.43	0.42	0.35
Residential	CARE	0.59	0.58	0.50
Small Commerci	N/A	0.44	0.42	0.44

Total Resource Cost Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.86	0.86	1.03
Residential	CARE	0.86	0.86	1.03
Small Commerci	N/A	0.86	0.78	1.03

Modeled Solar System Size (kW-AC)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	3.78	3.51	3.51
Residential	CARE	3.78	3.51	3.51
Small Commerci	N/A	8.57	7.95	7.95

VNEM on NBT - Solar

All metrics reflect the ACC Plus adder

ACC Plus Adder ($/kWh)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	-	-	-
Small Commerci	N/A	-	-	-

Simple Payback Period (years)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	6.44	7.20	4.03
Small Commerci	N/A	5.72	6.72	5.30

First-Year Bill Savings ($)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	1,221	1,003	1,805
Small Commerci	N/A	3,080	2,423	3,082

First-Year Cost Shift ($)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	842	662	1,379
Small Commerci	N/A	2,222	1,650	2,116

Participant Cost Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	2.40	2.15	3.67
Small Commerci	N/A	2.69	2.28	2.79

Ratepayer Impact Measure Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.36	0.40	0.22
Small Commerci	N/A	0.33	0.37	0.29

Total Resource Cost Test (benefit-cost ratio)

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	0.87	0.85	0.80
Small Commerci	N/A	0.88	0.86	0.81

Modeled Solar System Size (kW-AC) - Tenant Allocation

Customer	CARE Status	PG&E	SCE	SDG&E
Residential	Non-CARE	3.78	3.51	3.51
Small Commerci	N/A	8.57	7.95	7.95

(END OF APPENDIX B)