



FILED

03/15/21
04:59 PM

**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 R.20-08-020

**NATURAL RESOURCES DEFENSE COUNCIL PROPOSAL FOR THE SUCCESSOR
NET ENERGY METERING TARIFF**

March 15, 2021

Mohit Chhabra
Julia de Lamare
Natural Resources Defense Council
111 Sutter St., 21st Floor
San Francisco, CA 94104
(415) 875-6100
mchhabra@nrdc.org
jdelamare@nrdc.org

Table of Contents

I.	Introduction	1
II.	Summary	2
A.	Proposal Overview	2
B.	Statutory Criteria	5
C.	NRDC’s Proposal Compared to The CPUC White Paper.....	5
D.	Description of any important statutory, policy, or practical issues that remain open in the proposal.....	6
III.	Tariff Components and Rationale	6
A.	Overarching Rationale: Why NEM Needs to Evolve.....	6
B.	NEM 3.0 Tariff Should be a Net Billing, not Net Metering, Tariff	7
C.	Export Compensation at Near-Term Hourly Avoided Costs	8
D.	Market Transition Credit Paid as An Upfront Incentive	11
E.	Appropriately Differentiated Time of Use (TOU) Electric Consumption Rates	13
F.	Grid Benefit Charge That Scales with Distributed Generation Capacity.....	14
G.	Non-Bypassable Charges Based on Estimated Total Consumption.....	15
H.	Equity in Clean Energy Fund	15
I.	Transition period for NEM 1.0 and 2.0 Customers.....	17
J.	NRDC Supports Applying TURN’s NEM 3.0 Tool to Evaluate Party Proposals	17
IV.	Compliance with NEM Successor Tariff Principles Adopted in D.21-02-007	17
A.	Principle (a) – A successor to the net energy metering tariff should comply with the statutory requirements of Public Utilities Code Section 2827.1	17
B.	Principle (b) – A successor to the net energy metering tariff should ensure equity among customers	18
C.	Principle (c) – A successor to the net energy metering tariff should enhance consumer protection measures for customer-generators providing net energy metering services .	18
D.	Principle (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	18
E.	Principles (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, Senate Bill 100 (2018, DeLeon), the Integrated Resource Planning process, Title 24 Building Energy Efficiency Standards, and California Executive Order B-55-18	18
F.	Principle (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.....	19
G.	Principle (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	19
H.	Principle (h) – A successor to the net energy metering tariff should consider competitive neutrality amongst Load Serving Entities	20
V.	Plans and timelines	20
VI.	Response to Questions Included in the CPUC White Paper	20
VII.	Appendices	21
VIII.	Conclusion	21

**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

**NATURAL RESOURCES DEFENSE COUNCIL PROPOSAL FOR THE SUCCESSOR
NET ENERGY METERING TARIFF**

I. Introduction

Pursuant to Administrative Law Judge E-mail Ruling Providing Instructions for Successor Proposals (Ruling), issued on January 28, 2021, the Natural Resources Defense Council (NRDC) respectfully submits this proposal. NRDC is a non-profit membership organization with more than 95,000 California members who have an interest in receiving affordable energy services while reducing the environmental impact of California’s energy consumption and fighting climate change. Mohit Chhabra (mchhabra@nrdc.org) will present this proposal at the CPUC workshop on March 23rd and 24th.

NRDC has been a leader in supporting clean energy in California for decades and has supported renewables and solar power through our advocacy at the California Public Utilities Commission (CPUC) to set clean energy and carbon reduction targets,¹ at the legislature,² and the at the California Energy Commission (CEC) to set building codes that mandate rooftop solar.³

Net energy metering (NEM) is an easy to understand incentive that has done wonders for rooftop solar in California (and beyond). When it was implemented in the 1990s, there was hardly any local solar generation in California. Today, there are approximately 1.2 million rooftop solar installations that amount to 9 gigawatts (GW)⁴ of clean energy capacity--about 11 percent of California’s total electricity production capacity ([80 GW](#)). California’ success in bringing solar

¹ <https://www.nrdc.org/experts/mohit-chhabra/cpuc-should-adopt-ambitious-2030-carbon-emissions-target>

² <https://www.nrdc.org/experts/peter-miller/california-legislature-passes-bill-setting-target-50-percent-renewables-2030>

³ <https://www.nrdc.org/experts/pierre-delforge/ca-2020-building-code-draft-zero-net-electricity-new-homes>

⁴ <https://www.californiadgstats.ca.gov/>

and other renewables online also has made wholesale electricity cheaper; midday prices in the spring and fall are [half of what they were](#) in 2012. Along with producing clean electricity and making the electric system stronger, rooftop solar makes clean energy tangible, creates local clean energy jobs, and serves as a reminder of the need to transition to clean energy and fight climate change.

However, the current state of the electric grid – which has record penetration of solar – California electric rates structure, and steadily rising electric rates add up to a unique and situation: California’s NEM policy needs to evolve to better contribute to California’s economywide decarbonization and equity goals. NRDC has developed a proposal that evolves NEM to reduce pressure on electric rates, deliver clean energy benefits to low income Californians, and ensures the sustainable growth of distributed generation, including rooftop solar, in California. NRDC looks forward to working with the CPUC and this proceeding’s stakeholders to develop creative solutions to this complex issue.

II. Summary

A. Proposal Overview

NRDC is proposing a three-part solution:

- Reform the NEM tariff to fairly compensate solar customers for the benefits from exported energy without unduly raising rates;
- Implement an up-front adoption incentive, or market transition credit, to allow customers to make back their distributed generation investment within ten years. Thus, ensuring rooftop solar continues to grow sustainably; and
- Develop a clean energy equity fund to provide clean energy benefits directly to Californians with lower incomes.

Under NRDC’s proposal, solar customers will be paid for the total value that their panels provide at near-term hourly avoided costs. As the CPUC is aware, these avoided costs include benefits of avoided electricity generation and purchase, avoided capacity build, transmission & distribution benefits, and a GHG adder which accounts for our climate goals and additional policy benefits of distributed energy resources. This export value would vary hourly; the value will be lower in the middle of the day when clean energy is cheap and abundant, and the export value would be higher after sundown when the grid most needs cheap and clean electricity. This would

provide solar customers with incentives to install battery storage. New York and Minnesota have already adopted similar approaches to credit rooftop solar. NRDC's proposal couples this export payment with a fixed charge – a grid benefit charge – that addresses the benefits that solar customers' get from being connected to the grid: affordable and reliable electricity.

Layered on to this is an upfront cash incentive to install rooftop solar. It will ensure that new rooftop solar customers can make back their investment within ten years. Rooftop solar systems last for at least 25 to 30 years, so customers could make money while furthering Californians' clean energy goals and protecting the environment. An upfront incentive plus the fact that California's building codes require solar panels on new homes will help rooftop solar steadily grow for the foreseeable future.

The incentive should change to reflect any decreasing cost of solar panels and installation. It could be funded from sources other than energy bills, such as through cap and trade revenue. It could be higher in communities where rooftop solar is most needed.

Finally, NRDC's proposal includes an equity fund to provide clean electricity benefits – rooftop solar, energy efficiency, electrification – directly to low-income Californians. This fund would be developed by levying a modest charge to rooftop solar owners on existing NEM rates who have already recouped their initial investment and stand to make a substantial return on it. This charge and the above mentioned grid benefit charge can also be implemented in the form of a minimum bill that applies to all residential customers but would in effect only be triggered for NEM customers.

This fund would yield approximately \$130 million annually to reinvest in communities that haven't yet reaped enough benefits from the clean energy transition. NRDC recommends the CPUC convene a process that includes environmental justice advocates and community groups to figure out how to spend the fund in way that most benefits vulnerable Californians and supports clean energy.

NRDC's proposal only applies to residential customers. NRDC does not propose any changes to NEM rules for non-residential customers at this point.

Table 1 Overview of NRDC's Successor Tariff Proposal

Tariff Component	Details
Net Billing	NRDC proposes moving from net metering to net billing. The net bill is the sum of fixed charges, TOU consumption charges, non-bypassable charges, less export credit. See Section III.B.
Export Compensation at Near-Term Hourly Avoided Costs	Set export compensation at average of three future years' avoided costs. Update these export credits every two years. Customers get locked into whatever vintage of export credit is current for a period of ten years. See Section III.C.
Market Transition Credit as Upfront Incentive	A one-time incentive for adoption that ensures a ten year payback. See Section III.D.
Electric Consumption Rates	TOU consumption charges with appropriately high differential. Section III.E.
Grid Benefit Charge	To fairly recoup costs of service for NEM customers. Section III.F.
Non-Bypassable Charges	Non-bypassable charges based on estimated consumption. Section III.G.
Clean Energy in Equity Fund	NRDC's proposal to guarantee clean energy benefits to lower income Californians. Section See Section III.H.
NEM 1.0 and 2.0 transition	NRDC supports continued discussion of the transition period. NRDC also supports the Public Advocates' Proposal to encourage voluntary transition with storage incentives. See Section III.I.

B. Statutory Criteria

NRDC’s proposal complies with Public Utilities Code (PUC) 2827.1(b) as illustrated in Table 2.

Table 2 NRDC Successor NEM Tariff Complies with Statutory Criteria

Section 2827.1(b) of the Public Utilities Code: [...] The commission may revise the standard contract or tariff as appropriate to achieve the objectives of this section. In developing the standard contract or tariff, the commission shall do all of the following:	
Statutory Criteria	NRDC’s proposal
2827.1(b)(1): Sustainable growth	NRDC’s proposal guarantees a ten-year payback through a market transition credit. See Section III.D. for details.
2827.1(b)(2): Terms of service and billing rules	NRDC does not propose any changes to terms of service. Details of NRDC net billing proposal are provided in Section III.
2827.1(b)(3): Costs and benefits of the renewable electrical generation facility.	NRDC proposes a tariff whereby the benefits of distributed generation are equal to the costs incurred separately by all customers, NEM customers, and non-NEM customers.
2827.1(b)(4): Total benefits to all customers and the electrical system are approximately equal to the total costs	NRDC proposes a separate market transition credit that layers on this balanced tariff to comply with PUC 2827.1(b)(1).
2827.1(b)(6): Transition period	NRDC does not propose material changes to this section.

C. NRDC’s Proposal Compared to The CPUC Whitepaper

NRDC’s proposal is very aligned with the options presented in the white paper. NRDC’s proposal contains minor differences in how we suggest the Whitepaper’s findings apply. The similarities and differences can be summarized as follows:

- NRDC proposes compensating distributed generation at hourly avoided costs similar to the Whitepaper. NRDC proposes that these be based on near-term avoided costs and NRDC has specific recommendations on how this compensation should be implemented to

provide certainty to the industry and to customers.

- NRDC proposes an upfront incentive which is the same as a market transition credit as called in the Whitepaper. This ensures reasonable payback period for potential adopters of distributed generation. NRDC specifies that this be implemented in the form of an upfront incentive.
- NRDC proposes the creation of a clean energy and equity fund as described in Section III.H. This fund would provide clean energy benefits – like rooftop solar panels or electrification – at no cost to low income Californians.

D. Description of any important statutory, policy, or practical issues that remain open in the proposal

The main practical issues that remain open in the proposal are:

- NRDC is open to discussing the transition period for NEM 1.0 and NEM 2.0 customers.
- NRDC does not specify what the value of a demand-related charge – or grid benefit charge – should be or how it should be levied. NRDC proposes principles through which it can be applied.
- NRDC is open to suggestions on how the market transition credit – that will be used to provide up-front incentives will be collected.
- NRDC provides reasons why the CPUC should develop an equity in clean energy fund and describes one way that fund could be created. NRDC is open to other ways of developing that fund and implementing. It's most important to NRDC that these benefits be delivered to low income customers.

III. Tariff Components and Rationale

A. Overarching Rationale: Why NEM Needs to Evolve

California's net energy metering policy has been incredibly effective at growing the rooftop solar market and plays an important role in helping the state achieve its clean energy goals. Currently, there is more than 9 GW of distributed solar in California's Investor Owned Utilities' (IOUs) service territory. However, the time is here for NEM to evolve.

NEM needs to evolve for two main reasons. First, the benefits and costs of current NEM aren't being realized equitably by all customers. Second, NEM needs to be better aligned with

California’s broader economy-wide decarbonization goals. California, with the expert guidance of the CPUC, must achieve its climate goals in a timely manner while keeping clean energy affordable and accessible for all Californians. Without affordable clean electricity, the benefits of electrification can’t be realized. The CPUC’s own research has shown that electric rates are already making electrification a tougher proposition than it should be.⁵

In addition, the record of this proceeding confirms that NEM needs to evolve so that all Californians have access to affordable and equal clean energy benefits. To summarize, the NEM 2.0 Lookback Study found that the NEM 2.0 program currently fails multiple California Standard Practice Manual (SPM) cost-effectiveness tests. Most importantly, the Lookback Study found that the NEM program isn’t fulfilling its statutory mandate to ensure that benefits from NEM are equal to or greater than the costs borne by all ratepayers. The CPUC NEM Successor Tariff Whitepaper confirmed these findings.⁶ The California Public Advocates Offices Successor Tariff proposal summarizes the need for NEM’s evolution and the state of the current NEM program in detail.

The challenge that the Commission and stakeholders face is clear: evolve NEM to minimize its rate impact and keep the growth of distributed generation sustainable in accordance with AB 237. NRDC’s tariff proposal accomplishes this while meeting all necessary statutory requirements.

B. NEM 3.0 Tariff Should be a Net Billing, not Net Metering, Tariff

The successor tariff should be structured as a net billing tariff with appropriate and separate values for compensation for electricity exported to the grid, and separate charges for electric consumption, fixed grid benefit charges that help recoup full costs to serve the customers, and non-bypassable charges. The customer monthly bill would equal the sum of the monthly charge for each tariff component less the compensation the customer gets for exporting electricity to the grid. Each component of the tariff, and the rationale for doing so, are explained in detail in the following sub-sections of this proposal.

⁵ CPUC, *Utility Costs and Affordability of the Grid of the Future*, at 14 and 15.

⁶ “The recent Net-Energy Metering 2.0 Lookback Study completed by Verdant Associates, with input from E3 and Itron, found that the compensation given to participating NEM customers for load reductions and grid exports greatly exceeds the incremental benefits. This misalignment leads to higher bills for non-NEM customers, as retail rates must increase to make up for the unrecovered utility costs.” E3, *Alternative Ratemaking Mechanisms for Distributed Energy Resources in California: Successor Tariff Options Compliant with AB 327* (January 2021), at 8.

C. Export Compensation at Near-Term Hourly Avoided Costs

Just like all other demand-side services, distributed generation exports should be valued at the total hourly benefit as estimated by the avoided cost calculator (ACC) for all, CARE and non-CARE, customers. Specifically, the export compensation should be set as follows:

- Set the export rate for each hour equal to the total benefit of distributed generation, as estimated in the ACC, using a three-year forward looking average. A three-year average ensures that future trends of avoided costs are captured while balancing the fact that avoided cost estimates in the out years (i.e., beyond three years) get more uncertain.
- These near-term levelized hourly avoided costs estimates should be updated every two years to be kept current with ACC updates.
- New NEM customers would get locked-in to the prevailing solar export rate for a period of ten-years to provide consistency and a clear market signal.

The near-term avoided costs that should be used as the NEM export rate are presented below:

Figure 1 Three Year Hourly Average Levelized Avoided Costs for SDG&E Climate Zone 7

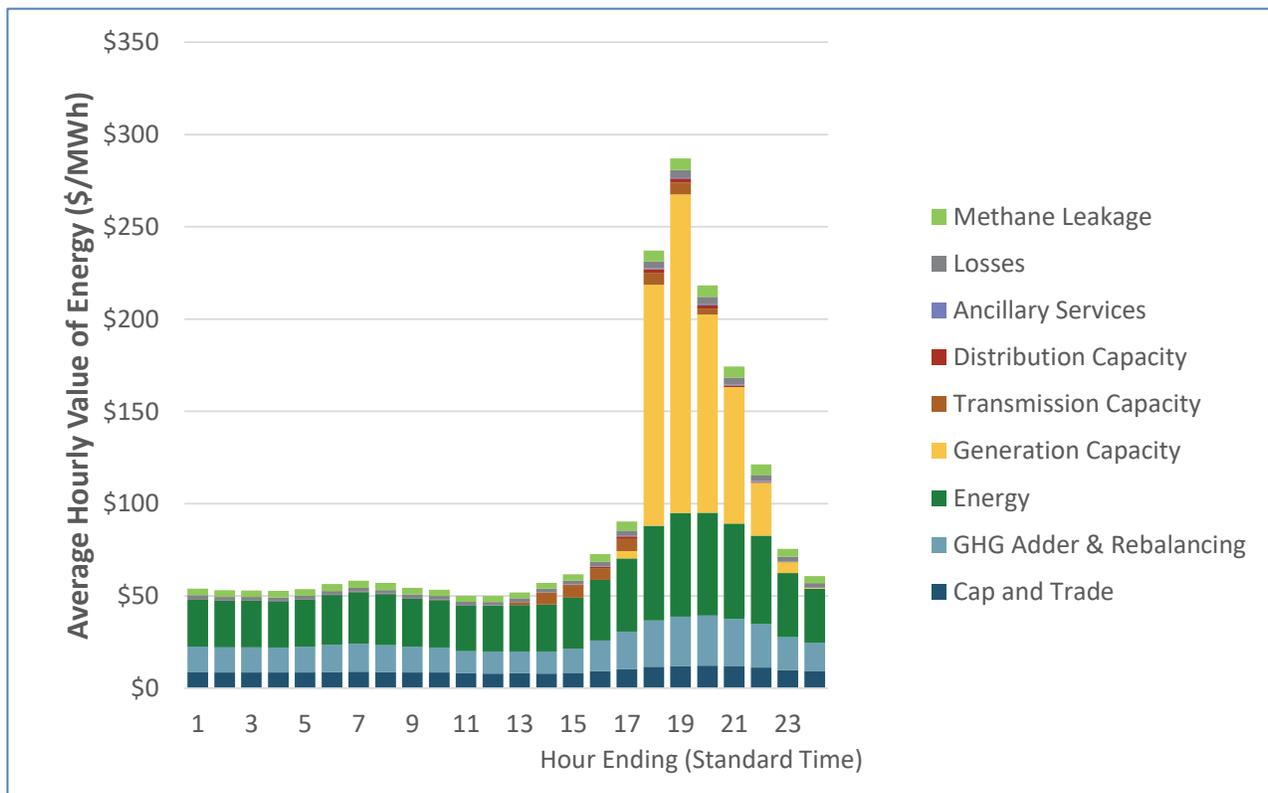
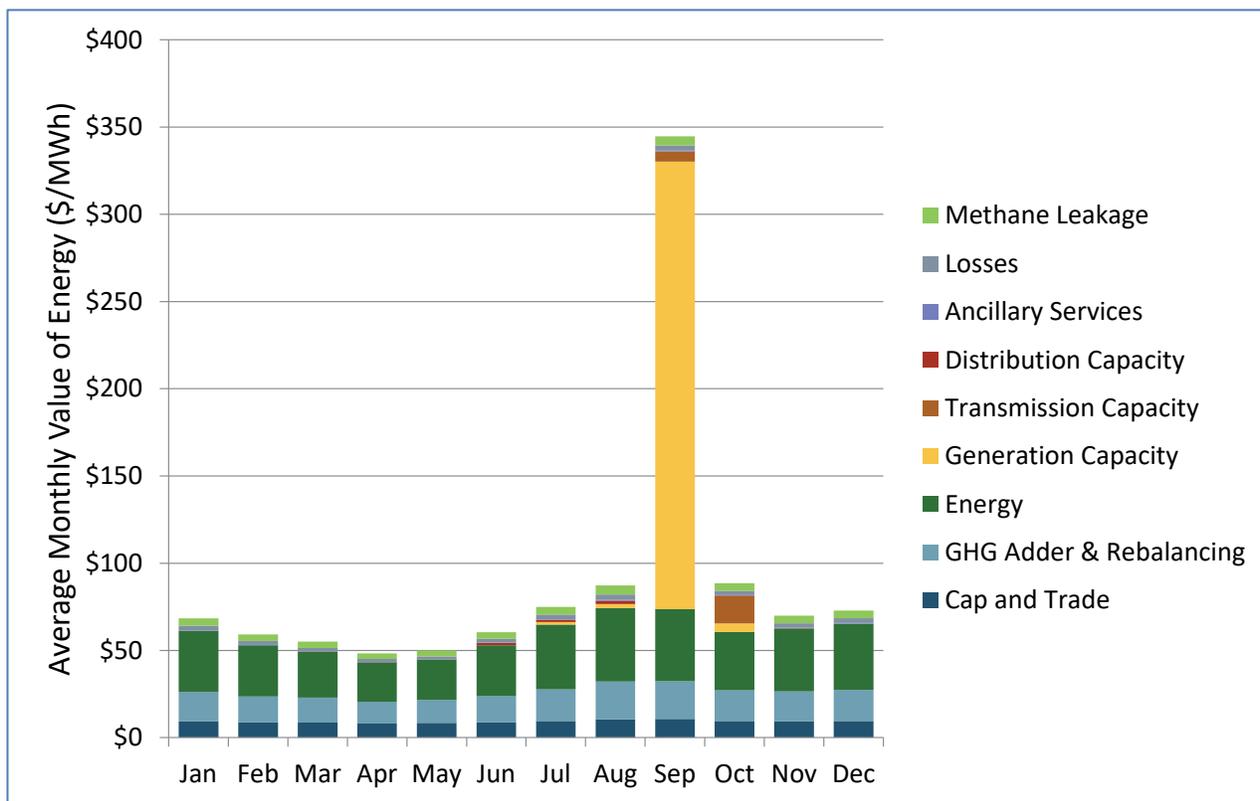


Figure 2. Three Monthly Hourly Average Levelized Avoided Costs for SDG&E Climate Zone 7



Setting the hourly export value at near-term ACC levels has the following advantages:

- This would help align customer behavior with grid needs by encouraging customers to export electricity when it is most valuable to the grid. By doing so, NEM customers that provide the most benefit to the grid would be compensated appropriately.
- Setting export credit at ACC encourages customers to pair solar with storage through which they can store electricity when the export rate is low and export it when most needed by the grid.
- The ACC benefits apply to all distributed energy resources and are thus technology neutral.
- ACC benefits comprise of all energy system and policy benefits, see Figure 1 and Figure 2, and thus provide an estimate of the true value of DER benefits.

Updating the export value that is locked in for new NEM customers every two years is also important to keep the credits aligned with the value new rooftop solar provides. While stability in value is important, at the scale of rooftop solar deployment in California, if the value of NEMs credits are not adjusted regularly (i.e. after the lock-in period and every two years) the

value of solar and the credits can get out of alignment as they are now.

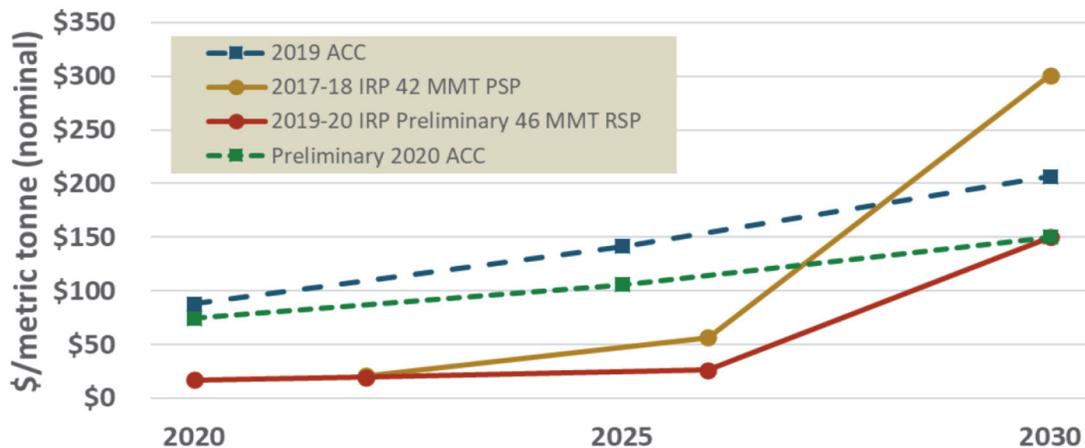
A Note on the Inclusion of Air Quality Benefits

Clean energy also provides air quality benefits when power plants operate less and thus emit less pollutants. EPA has aggregated analysis to quantify and monetize these benefits; 95% of the benefits of reduced air pollution come from reduction in mortality due to decreased exposure to particulate matter smaller than 2.5 microns (PM 2.5). The two questions that confronts this proceeding are (1) whether clean distributed generation – predominantly rooftop solar – provides incremental air quality benefits over alternative investments that would be made to meet California’s energy needs and comply with the state’s clean energy goals? And (2) to what extent do the avoided costs already account for these incremental benefits.

The CPUC’s GHG adder benefit, included in the avoided cost calculator, accounts for other policy benefits over and above a valuation for carbon as shown in the figure below. NRDC has not been able to determine whether incremental air quality benefits of distributed generation, now that California is on its way to zero-carbon electricity per Senate Bill 100, require an adder in addition to what is already included in this GHG Adder. NRDC looks forward to working with other stakeholders who are interested in conducting this analysis. If an air pollution adder is included, it needs to vary hourly according to the amount of conventional generation on the margins; so that the air quality adder has a higher value when clean distributed generation displaces polluting resources and a lower value otherwise.

In Figure 3 below, the dotted green line represents the GHG adder value included in the avoided costs. The red line is the corresponding value of carbon estimated through the CPUC’s Integrated Resource Planning Proceeding. The difference between the red and the dotted green line is the extra benefit provided to DER to give DER programs a stable signal and for additional hard to quantify policy goals that DER help achieve.

Figure 3 GHG Adder Includes Value of Carbon and An Adder for Additional DER Policy Contribution⁷



D. Market Transition Credit Paid as An Upfront Incentive

NRDC recommends a market transition credit paid as an upfront incentive for rooftop solar adoption. A one-time up-front subsidy limits the rate impact to exactly what California’s policy priorities require the subsidy to be.

This upfront incentive should be calculated to ensure that a solar system has approximate customer pay-back period of approximately ten years. Solar panels degrade at ~0.5% annually.⁸ With adequate maintenance, such as inverter repair and/or replacement approximately every ten years, a solar system will last for at least twenty-five years if not more. This provides solar customers ample opportunity to earn money on their investment after the ten-year payback period; therefore, this upfront incentive provides solar contractors with a viable product to sell.

This market transition credit should be estimated as follows:

- Segment each IOU territory into broad regions, such as urban and rural, according to which solar system install costs are expected to significantly vary.
- Average system install costs for each sub-region should be established by using rigorous

⁷ California Public Utilities Commission, *Administrative Law Judge’s Ruling Confirming Use of Recommendations From Rulemaking 14-08-013 and Introducing Staff Proposal for Major Updates to Avoided Cost Calculator*, at 13.

⁸ National Renewables Energy Laboratory, *Photovoltaic Degradation Rate – An Analytical Review*, June 2012

and trusted data sources such as National Renewable Energy Labs data⁹ and should be adjusted to be forward looking so that it accounts for expected changes in installed costs of these systems.

- Apply the NEM 3.0 tariff (up to date solar export value, consumption tariff, and grid benefit charges all locked-in for 10 years) to determine what the payback period for a distributed generation system would be for a typical/ average NEM customer in each IOU sub-region without an upfront incentive.
- Finally, add in an upfront incentive such that the typical/average customers' payback period is approximately ten years.
- This market transition credit should be updated every two years in lock-step with the NEM export rate update. This will ensure that the market transition credit will reflect the latest solar system costs and the latest avoided costs.
- The CPUC should revisit the need for this upfront incentive in six years.

NRDC strongly recommends the CPUC require that the market transition credit be administered as an upfront payment, and not be built into rates, for the following reasons:

- Increased accuracy: NEM 1.0 and NEM 2.0 build subsidies into the retail rate for NEM customers through a combination of setting a high export compensation rate for distributed generation and not recouping enough grid costs. This rate impact exists as long as the value of the credits are fixed. A one-time up-front subsidy limits the rate impact to exactly what California's policy priorities require the subsidy to be.
- Up to date: As solar system prices decrease this subsidy will also decrease. Currently, the subsidy for distributed generation increases over time, as rates increase, even though solar system prices continue to decline.
- Increased flexibility: an upfront subsidy can be tailored by customer class and region (as explained above). Moreover, the amount of the subsidy can be adjusted to target specific customers. E.g., if the CPUC identifies certain locations on the grid where distributed generation has a much higher value, it could offer greater incentives for customers in that region.
- Increased transparency: An upfront incentive makes the subsidy visible to the CPUC and

⁹ See NREL technology baseline cost data: <https://atb.nrel.gov/>; and NREL quarterly solar industry update data: <https://www.energy.gov/eere/solar/quarterly-solar-industry-update>

all stakeholders. CPUC and the California legislature clearly value distributed generation and require it to sustainably grow for policy reasons such as protecting our natural lands. Having such a process to determine what this incentive should be will enable the CPUC to transparently determine, through public input, how much this subsidy should be.

- Possibility of co-funding from non-ratepayer funds: This opens up the possibility that this transition credit could be funded from sources outside ratepayer funds as new legislation or creative regulatory solutions emerge. Because advancing distributed generation is a legislatively mandated policy priority, and has societal benefits that go beyond utility benefits, this subsidy should be funded from sources other than utility rates if possible.

E. Appropriately Differentiated Time of Use (TOU) Electric Consumption Rates

NRDC recommends that the distribution and generation consumption charges accurately reflect time of use variation in costs to deliver electricity. Each IOU should offer a TOU tariff with the greatest cost-reflective differential between on-peak and off-peak electricity rates along with the NEM 3.0 tariff to non-CARE customers. This will align customer incentives and behavior with the needs of the electric grid. CARE customers should be given the option of whether they want to be on this TOU tariff at a CARE discounted rate or being allowed to stay at their current tariff. IOUs should work with CARE customers to ensure that they are able to take advantage of a TOU tariff.

There is no situation in which California meets its climate goals at a reasonable cost that does not involve significant building and transportation electrification. Rates can convey important price signals regarding when to use electricity in ways that can benefit all electric customers. The Commission has long recognized this potential for TOU rates to provide wide ranging benefits to all customers. As stated in D.17-01-006,

TOU rates better reflect cost causation and motivate customers to shift their usage to periods that promote more efficient use of the electrical system. This shift should assist in reaching state energy goals by minimizing costs, encouraging energy conservation at appropriate times, and increasing electric supply at times that best serve the needs of the electric grid.¹⁰

Well-designed TOU rates encourage customers to shift load away from hours with higher costs and emissions to hours with abundant, low-cost renewable energy. For NEM 3.0 customers TOU

¹⁰ *Id.*

rates encourage aligning systems for late afternoon exports to the grid and coupling systems with storage. This will be increasingly important as we shift more of the state's energy uses to run on clean electricity to meet our climate goals.

The electric grid is significantly underutilized during the overnight hours when most residential customers are asleep; similarly, California's grid is often flooded with inexpensive solar power during sunny mid-days when residential demand also wanes. Carbon emissions from electricity tend to be lowest at both of these times, when it would be ideal for customers to pre-cool or pre-heat their homes and water for later use and charge their cars. Flexible electricity use can help integrate even more renewable power into the electric grid and can reduce the cost of meeting California's economy wide carbon reduction goals by tens of billions of dollars per year:

[I]f flexible loads in buildings, flexible electric vehicle charging, and flexible hydrogen electrolysis are also not available and other sectoral strategies are unchanged, the annual cost premium would reach \$36 billion per year by 2050.¹¹

F. A Fixed (Grid Benefit) Charge That Scales with Distributed Generation Capacity

The NEM 3.0 tariff should include a demand related charge – a grid benefit charge (GBC) – for new NEM customers to recoup a fair share of distribution charges. I.e., this charge will ensure that the costs to serve a NEM customer are recouped by the utility. An estimate of the costs to serve a NEM customer, absent the value of electricity generation, should account for both the grid investments already made by the utility with consideration for the NEM customer and the benefits of avoided future investments that the NEM customer may provide in excess of those already accounted for in the avoided costs. NRDC proposes that this GBC should scale with the size of distributed generation installed. i.e., the GBC would be in the units: \$/ kW. Customers with bigger NEM systems would thus pay a greater GBC than customers with smaller loads and smaller systems. The CPUC can also levy this charge as a minimum bill that scales with installed solar capacity. This minimum bill can apply to all customers (whether they are NEM customers or not) that opt to sign-on to the TOU rate that accompanies the NEM 3.0 successor tariff; however, the minimum bill would only be triggered for NEM customers.

¹¹ 2018 Integrated Energy Policy Report Update: Building Electrification, Docket No. 18-IEPR-09, E3 Report on Deep Decarbonization in a High Renewables Future, at 41 (Cal. Energy Comm'n June 2018), available at https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf.

NRDC recommends that CARE qualified customers be either exempt from paying this GBC or pay a discounted GBC. We look forward to reviewing party proposals and party rationale before recommending whether and how the GBC should apply to CARE customers.

G. Non-Bypassable Charges Based on Estimated Total Consumption

All customers, including NEM customers should pay their fair share of non-bypassable and unavoidable charges – which include public purpose program, nuclear decommissioning, wildfire mitigation costs and liability insurance, etc. Currently NEM customers only pay these non-bypassable charges on their net-consumption (electricity imports from the grid less electricity exports) which is minimal because systems are sized to minimize net consumption.

NRDC recommends that these charges be determined by multiplying the non-bypassable rate component, which is volumetric and in \$/kWh, with an estimate of the NEM customers total energy consumption. This total consumption estimate should be calculated as the sum of the NEM customers' net metered consumption (total electric imports less exports) and an estimate of the total electricity generated by their solar system through a standard tool such as NREL's PV Watts.¹²

H. Equity in Clean Energy Fund

The CPUC NEM 2.0 [Lookback Study](#) found that currently that the credit NEM customers receive for exports is much more than the system benefits the provide.¹³ The Lookback Study also found that rooftop solar is installed on predominantly wealthy neighborhoods and homes. To help address this inequity and to guarantee clean energy benefits – rooftop solar, electrification, energy efficiency, etc. – to lower income Californians, NRDC recommends the CPUC include an equity fee in all NEM tariffs. The proceeds from this equity fee will build an Equity in Clean Energy Fund, or Equity Fund, to bring clean energy benefits to qualifying low-income customers.

We propose the equity fee be charged in the following manner:

1. All existing non-CARE and non-FERA residential customers, who continue under NEM 1.0 and NEM 2.0, will be required to pay an equity fee of \$2.50 per kWdc of distributed generated capacity installed per month.

¹² <https://pvwatts.nrel.gov/>

¹³ Verdan Associates, *Net-Energy Metering 2.0 Lookback Study* (January 2021). Available at: <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M360/K524/360524821.PDF>.

2. New non-CARE and non-FERA NEM customers, who will be under the forthcoming NEM 3.0 structure, will pay this equity fee starting after a period of ten years from system install (their payback period). This gives new NEM 3.0 customers an opportunity to recoup their investment in a timely manner before they contribute toward this equity enhancing fund.
3. This equity fee amount should be revisited every two years to adjust for inflation. This will also help the CPUC decide a more appropriate equity fee for NEM 3.0 customers based on current market conditions ten years hence.

An equity fee of \$2.50/ kWdc per month, levied as a fixed, non-generation charge, on these non-low-income residential customers will generate approximately \$130 million per year. For now, as described in 1. above, the equity fee will be incorporated into the retail rate and charged to existing non-CARE and non-FERA NEM customers from IOUs and CCAs. NRDC will work with stakeholders to ensure that this equity fee is levied in accordance with relevant laws and Public Utilities Commission code. The CPUC can also levy this charge as a minimum bill that scales with installed solar capacity. This minimum bill can apply to all customers (whether they are NEM customers or not) that opt to sign-on to the TOU rate that accompanies the NEM 3.0 successor tariff; however, the minimum bill would only be triggered for NEM customers.

The equity fee does not violate the non-discriminatory requirement for rate design set by the Public Utility Regulatory Policies Act (18 C.F.R. 292.305(a)(1)) because the equity fee addresses costs to serve solar customers under NEM 1.0 and 2.0 policies that do not exist for other classes of customers; this fact allows a different rate structure to be established for NEM customers. The proposal is also aligned with CPUC Rate Design Principles established by D.15-07-001. Specifically, Principle 7 states that “Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals.” The equity fee explicitly aims to allow California to achieve the clean energy goals in an equal and affordable manner. In that sense, it is well aligned with California’s RDP.

We also propose that a new regulatory process be started to determine how to appropriate these funds. The CPUC should, with the input of representatives of disadvantaged communities, environmental justice groups, and consumer advocates, decide how these funds should be spent to meet pressing needs of low-income Californians and achieve energy equity through actions such as advancing solar panels installation, providing additional discounts on energy bills, and supporting policy goals aimed to achieve an equitable decarbonization.

For more information on the equity fee, please see Appendix A.

I. Transition period for NEM 1.0 and 2.0 Customers

NRDC supports and recommends the California Public Advocates' proposal to provide NEM 1.0 and NEM 2.0 customers incentives for behind the meter (BTM) storage installations if they voluntarily switch to the NEM 3.0 tariff. Although NRDC does not have any other specific recommendations on this issue, NRDC does support continued deliberation on this topic through this proceeding.

NRDC supports Sierra Club and Earthjustice proposal to switch NEM 1.0 customers to TOU rates if feasible. Having NEM 1.0 customers on TOU rates will incent customer behavior to be aligned with the state of California's current grid and future decarbonization goals. The total monetary benefit to non-NEM customers from moving NEM 1.0 customers to a TOU rate would be the increase in monthly bills that these customers would incur after being moved to the TOU rate and the system benefits created by any behavioral changes induced by the rate structure.

J. NRDC Supports Applying TURN's NEM 3.0 Tool to Evaluate Party Proposals

TURN has developed a simple excel based tool to compare and evaluate party proposals for a Successor Tariff and apply all California Standard Practice Manual (SPM) cost-effectiveness tests. NRDC has rigorously audited the tool for accuracy and strongly recommends that it be applied to compare party proposals. The CPUC should first develop standard input assumptions for the tool, such as system costs and lifetime, and then apply each tariff to the tool to study cost-effectiveness under each SPM test.

IV. Compliance with NEM Successor Tariff Principles Adopted in D.21-02-007

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

NRDC's tariff proposal complies with the statutory requirements of Public Utilities Code (PUC) Section 2827.1, as summarized in Section II.B of this proposal.

B. Principle (b) – A successor to the net energy metering tariff should ensure equity among customers

NRDC suggests that the Commission aim for the following equitable outcomes, in the following order: (i) non-NEM customers should not subsidize NEM customers in excess of the total energy system and climate benefits all customers receive from NEM exports; (ii) the successor tariff should provide as much compensation to exports from rooftop solar customers that qualify for California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) as it provides to all other NEM customers; and (iii) customer-sited renewable generation should be readily accessible to all customers, including CARE and FERA customers.

NRDC's proposed tariff design will achieve the first two equity goals. NRDC's equity fee proposal will address goal n. (iii).

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

NRDC proposes no change to existing consumer protection measures and nor does the NRDC proposal impact existing consumer protection measures.

D. Principle (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

NRDC's tariff proposal does not unduly prioritize one technology over another. The hourly export rate proposed by NRDC is derived from the CPUC's avoided cost calculator (ACC) and was specifically designed to apply to all distributed energy resources. These avoided costs are specifically designed by the CPUC to encourage marginal investments that are best aligned with California's grid needs and emissions reduction goals.

E. Principles (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, Senate Bill 100 (2018, DeLeon), the Integrated Resource Planning process, Title 24 Building Energy Efficiency Standards, and California Executive Order B-55-18

NRDC's proposal complies with this principle because:

- Setting the export rate for distributed generation at hourly avoided costs incentivizes customers to export electricity provides most electric and societal benefit and is thus aligned California’s decarbonization goals.
- Similarly, a TOU consumption rate with appropriate on- and off-peak differential encourages electricity consumption best aligned with California’s decarbonization goals.
- Customers, utilities, and regulators then can design energy efficiency standards that prioritize load-shifting and energy savings when they are most valuable to the grid – as reflected in the export rate and TOU consumption charge – to further ensure our state’s decarbonization goals are met cost-effectively.
- A guaranteed payback ensures growth of distributed generation which is aligned with California’s environmental and natural lands’ protection goals.
- The equity fund enhances equity in clean energy, a state priority.

F. Principle (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

NRDC’s tariff complies with this principle because:

- The same tariff design would apply to all utilities.
- NRDC’s proposal locks-in a customer’s export compensation for ten years. This provides developers and customers with the stable signal they need to understand bill impacts of NEM 3.0 for the foreseeable future.
- An upfront incentive is a transparent and flexible subsidy (for all involved) that can be responsive to policy needs as explained in Section III.D.

G. Principle (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

NRDC’s proposal complies with this principle because:

- NRDC sets export credits at hourly avoided costs. CPUC avoided costs include all electric system benefits of distributed generation. These benefits also include benefits to comply with climate policy goals for the electric sector such as emissions reduction and meeting renewable portfolio standards.

- This hourly export credit and a TOU consumption charge combine to give the customers the right signals to consume and export electricity in a manner that maximizes the value of distributed generation.

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

To NRDC’s knowledge, NRDC’s proposal does not impact competitive neutrality amongst load serving entities.

V. Plans and timelines

NRDC anticipates for an implementation phase within this proceeding to an estimate of the market transition credit/ up-front incentive, to set the export rate, and to develop guidance on how funds from that incentive would be collected and paid out to NEM 3.0 customers. NRDC does not consider either of these issues to significantly delay the proceeding. These are straightforward calculations and can be conducted via the tool that TURN has developed for this proceeding.

NRDC recommends that regular updates to the export rate and the upfront incentive (as explained in Section III) be conducted via advice letters and workshops on an as needed basis.

NRDC’s equity fund proposal will require a dedicated proceeding. That should not in any way delay the implementation of the new successor tariff which merely collects funds which will be then spent at a future date through the new proceeding.

VI. Response to Questions Included in the CPUC White Paper

What is a reasonable payback period for BTM generation?

NRDC recommends that a reasonable payback period be set at approximately 10 years. BTM generation, which are overwhelmingly solar panels, last for at least 25 years. A 10 year payback ensures that customers recoup their investment in the near-term while earning on their investment in the long term. This should be revisited to ensure alignment with CA policy principles on a regular basis.

Over what period of time should more cost-based retail rates for customer-generators be implemented? How can this rate transition best support other policy goals such as promoting electrification as a key decarbonization strategy?

NRDC recommends that the move toward cost-based tariff start immediately. NRDC’s

successor tariff proposal has elements of a cost-based tariff. A fully cost-based tariff will encourage electrification because the price of electricity consumption will be much lower than what it is today, and then will also be much lower than the price for alternative fuels.

How should a MTC for customer-generators be structured?

NRDC recommends that the MTC be structured as a one-time incentive for adoption. We explain why this is the right way to structure the MTC in Section III.D.

Should MTC vintages be based on time (e.g., annual), number of participants, or capacity (e.g., MW blocks)?

NRDC recommends that MTC vintage be based on time. As recommended in Section III.D., the MTC should be recalculated every two years to reflect decreasing solar system costs and California's evolving policy goals.

From which groups should the MTC recovery surcharge be collected? From the same vintage of customer-generators, future vintages of customer-generators, all customer-generators, all ratepayers, or some other group?

NRDC is open to creative solutions that address this question.

VII. Appendices

Attached to these Comments are the following appendices:

- Appendix A: Full Equity proposal
- Appendix B: A summary of proposals of parties with no financial stake in this proceeding that agreed to share their proposal with NRDC.

VIII. Conclusion

NRDC looks forward to working with Staff and Stakeholders in this proceeding.

Respectfully submitted,

Dated: March 15, 2021

/s/ Mohit Chhabra
Mohit Chhabra
Senior Scientist
Natural Resources Defense Council
111 Sutter St., 21st Floor
San Francisco, CA 94104
(415) 875-6100
mchhabra@nrdc.org

/s/ Julia de Lamare
Julia de Lamare
Climate and Clean Energy Fellow
Natural Resources Defense Council
111 Sutter St., 21st Floor
San Francisco, CA 94104
(415) 875-6100
jdelamare@nrdc.org