FILED
10/05/20
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 (Filed August 27, 2020)

COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL ON THE 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.

October 5th, 2020

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I. Introduction

The Natural Resources Defense Council (NRDC) respectfully submits these comments on the 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 ("Commission Rulemaking") issued on September 3, 2020. 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.

Senate Bill 350 (SB350), codified at Public Utilities Code Section 454.52, sets carbon reduction goals for California's power sector at 40 percent below 1990 levels by 2030, and further requires that the California Public Utility Commission (CPUC) facilitate a planning process to identify a resource mix that will reduce carbon emissions to the necessary levels while maintaining reliability and minimizing electric rate increases. Senate Bill 100 (SB100), signed into law in 2018, further sets a goal of zero-carbon electric retail sales by 2045. Executive Order (E.O.) B-55-18 establishes a goal of carbon neutrality by 2045.

To achieve these goals, California must develop a cost-effective mix of clean energy resources to decarbonize the electric sector and develop complementary policies that encourage the efficient use of clean electricity across all sectors to maximize the benefits of clean energy and ensure that these benefits are distributed equitably, including to under-resourced Californians and

residents of disadvantaged communities.

Clean, distributed generation, including rooftop solar, is an important contributor to California's portfolio of zero-carbon energy resources. Net energy metering (NEM) has been instrumental in driving investment and developing the market for rooftop solar in California: installed capacity of rooftop solar has exceeded 8.5 GW in investor-owned utility (IOU) territory alone. This and future distributed solar will play an important role in meeting California's clean energy goals.

Given this high level of penetration and the impacts associated with it, we must re-examine how the benefits and costs of rooftop solar investments are allocated, as well as the impact that current NEM compensation has on all customers' electric rates and bills. Initial evidence suggests both that utility customers are over-paying for the benefits of rooftop solar and the benefits and costs of rooftop solar are inequitably allocated. If this is true, then better policies should be able to drive as much or more distributed solar and provide more resources to those communities that need them the most.

To better align with California's policy objectives of getting to a zero-carbon power sector and a carbon-free economy in the least-cost and most equitable manner will most likely require amending not just the NEM tariff but also how California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) are funded and calculated, increasing efforts to provide solar access to all. In this proceeding, the CPUC should develop a NEM successor tariff that follows these principles:

- Sustainable: a NEM successor tariff should support the sustainable growth of clean distributed generation. This growth should facilitate getting to California's clean energy goals in a least-cost and equitable manner while minimizing impact on electric rates and customer bills.
- Accurate: a NEM successor tariff should reflect total resource benefits, including electric system and climate policy benefits, that participating NEM customers provide the grid, the costs these customers impose on the grid, and the services that NEM customers receive from being connected to the grid. Future benefits and costs should be aligned with California's energy needs and climate policy goals.
- Equitable: Firstly, non-NEM customers should not continue to or further subsidize NEM customers in excess of the total energy system and climate benefits all customers receive from NEM exports. Secondly, 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 customers; currently it does not. Finally, complementary policies must strive to provide bill savings to all customers, including low-income customers, from distributed solar.

- Policy Aligned: NEM tariff structure should incentivize electricity use and solar generation aligned with grid needs and achieving California's broader decarbonization goals.
- Timely Resolution: Because the existing NEM tariff appears to be increasingly misaligned with the above principles, timely review and reform to the existing NEM tariff are necessary.

To expedite this proceeding, NRDC suggests that the CPUC adopt NRDC's proposed principles instead of devoting the first part of the proceeding to develop principles of engagement as proposed in Section 4 of the OIR.

II. Discussion

A. The NEM Successor Tariff Should Support Sustainable Growth of Clean Distributed Generation

A NEM successor tariff should support the sustainable growth of clean distributed generation. This growth should facilitate getting to California's clean energy goals in a least-cost and equitable manner while minimizing impacts on electric rates and customer bills.

The Public Utility Code requires that the NEM successor tariff support sustainable distributed generation growth and include specific alternatives designed to grow distributed generation in disadvantaged communities.[1] This growth must be sustainable from the point of view of all utility customers; i.e., this growth must be cost effective and equitable. Adopting NRDC's proposed principles will help achieve this.

For markets to fully and accurately value distributed resources and variable resources more generally, many changes will be needed over time to transmission and distribution planning and wholesale power markets. In the meantime, load serving entities (LSE) can and should set up complementary programs to encourage clean distributed generation adoption for specific use

[1] Section 2827.1(b)(1) of the Public Utilities Code instructs the CPUC to "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." (emphasis added.)

cases, such as providing resiliency to vulnerable customers, as necessary. Despite imperfect markets and infrastructure still built around central generation, a NEM tariff should strive to accurately reflect the full costs and benefits of clean distributed generation. An accurate NEM tariff should be the base on which any additional incentives are layered-on by LSEs grounded on their customers' needs. This will be easier, more flexible, and accurate than trying to build all these incentives within the NEM tariff that applies to all customers. As explained below, offering an accurate NEM tariff that reflects the total benefits coupled with targeted incentives allows LSEs and the CPUC to target clean, sustainable distributed generation growth where it is most valuable while making sure that the NEM tariff is fair to all customers.

B. The Successor NEM Tariff Should Be Accurate

A NEM successor tariff should accurately reflect total resource benefits, including electric system and climate benefits, that participating NEM customers provide the grid, the costs these customers impose on the grid, and the services that NEM customers receive from being connected to the grid. Future benefits and costs should be aligned with California's energy needs and climate goals.

As noted above, full and accurate market prices for distributed resources will require on-going evolution of the electric system and markets. In the meantime, the CPUC develops useful estimates of all benefits--including energy system related and policy recognized non-energy benefits--of distributed generation through the Avoided Cost Calculator.[2] The value of rooftop solar generation, modeled by the CPUC's Avoided Cost Calculator, is much lower than the compensation rooftop solar customers currently receive through the existing NEM tariff. Using the Avoided Cost Calculator, NRDC estimates that the weighted average value of rooftop solar in San Diego Gas & Electric (SDG&E) and Pacific Gas and Electric (PG&E) is approximately 5 cents/ kWh in 2020.[3] Applying that methodology, the current NEM customers are compensated at a much higher rate, approximately 3 to 6 times depending on the their NEM tariff structure. E3's Value of Solar Study[4] similarly found that the value of distributed solar is between 3 and 7

[2] See: https://www.cpuc.ca.gov/General.aspx?id=5267
[3] NRDC calculated this value by multiplying an hourly solar generation profile in San Diego and Oakland with the CPUC's hourly avoided costs for those two cities. This weighted average benefit of solar is not meant to be precise, but to give a rough approximation of the total benefits that a kWh of distributed rooftop solar generation provides to the grid. Details regarding this calculation are available here.
[4] E3 Consulting, *Value of Solar and Solar + Storage Study,* (August 2020), at 2.

cents/kWh in Sacramento Municipal Utilities District (SMUD) territory. NRDC does not suggest that these results are definitive, and acknowledges that other parties have stated that these valuations undercount the value of rooftop solar.[5] However, they underscore the importance of conducting this proceeding in a timely manner to examine whether the existing NEM tariff overvalues solar imports to ensure that NEM tariffs are aligned with the principles above.

Assuming for the moment that value estimates for rooftop solar are at least directionally correct, this discrepancy between the export compensation provided by the NEM tariff and the actual value of distributed generation exports represent excess payments, or subsidies, that customers with rooftop solar currently receive from all other utility customers. This subsidy leads to an increased cost burden for customers without rooftop solar. If the record establishes that the current NEM subsidy imposes a cost shift on customers without rooftop solar even close to the levels suggested by these initial estimates, the CPUC should design a successor tariff to correct it.

Distributed generation customers also receive benefits from being connected to the grid. A NEM successor tariff should account for this grid access benefit and ensure that distributed generation customers pay for it. This includes NEM customers' fair share of funding public purpose programs such as the Electric Program Investment Charge (EPIC), CARE, and FERA.

Finally, NEM tariffs should also recognize that rooftop solar imposes benefits and costs on the distribution grid. When distributed generation helps defer costly distribution upgrades by relieving electric congestion, it benefits all utility customers. These benefits are accounted for in the CPUC's Avoided Cost Calculator. However, distributed generation can also impose additional costs on the distribution system in the form of upgrades. Recent research conducted at Stanford found that two-thirds of the average distribution network price increase between 2003 and 2016 in California can be attributed to required distribution system upgrades due to adoption of distributed solar.[6] These costs are not accounted for in the CPUC's Avoided Cost Calculator.

C. The NEM Successor Tariff Should Lead to Equitable Outcomes

Firstly, non-NEM customers should not continue to or further subsidize NEM customers in excess of the total energy system and climate benefits all customers receive from NEM exports.

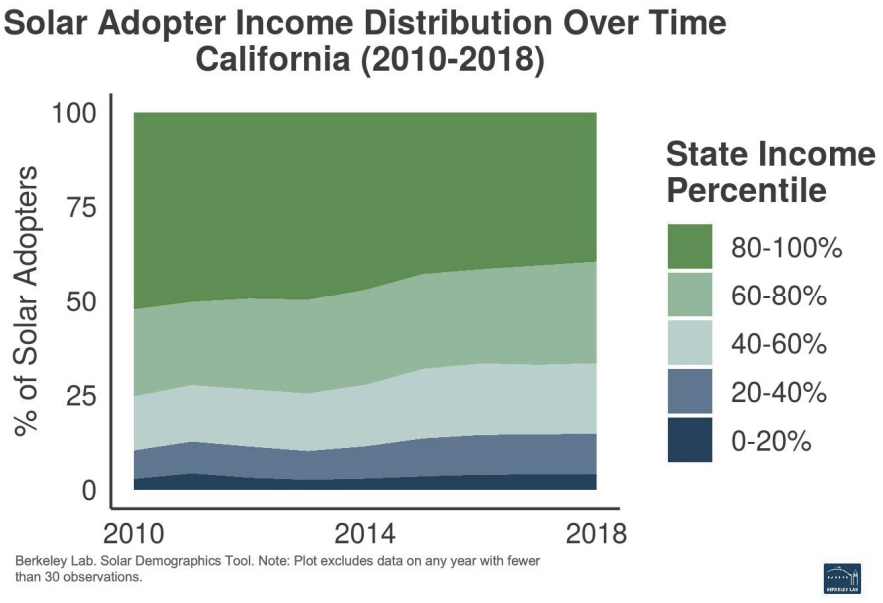
[5] Comments from SunRun, California Solar and Storage Associate, and other parties who dispute the E3 study's conclusions are available here: https://www.smud.org/en/Rate-Information/Getting-solar-right/Value-of-Solar-Study-public-comments

[6] Frank A. Wolak, *The Evidence from California on the Economic Impact of Inefficient Distribution Network Pricing,* National Bureau of Economic Research (September 2018), at 20.

Secondly, 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 customers; currently it does not. Finally, complementary policies must strive to provide bill savings to all customers, including low-income customers, from distributed solar.

The generous level of NEM compensation has not changed the fact that low-income customers face many obstacles to installation of solar panels, including high upfront costs and low homeownership. Moreover, rooftop solar tends to be disproportionately installed by wealthier households as shown in Figure 1, which, assuming the estimates of the value of solar exports are directionally correct, results in a significant cost-shift from low-income to moderate and high-income customers. Figure 1 clearly illustrates that in 2018 less than 5% of the solar adopters in the state come from the bottom percentile, whereas the ~40% of solar adopters come from the top income percentile – even though they are likely many more Californians in the bottom income percentile than the top income percentile. This effect becomes even more pronounced as it relates to installed capacity: bigger and higher energy consuming homes occupied by wealthier Californians likely have a larger average capacity of rooftop solar than smaller, lower income homes.

Figure 1. Solar Adoption Demographic Data from Lawrence Berkley Labs[7]



[7] See: https://emp.lbl.gov/solar-demographics-tool

CPUC Decision D.16-01-044 recognized that existing NEM tariffs could lead to inequitable outcomes.[8] The recently completed CPUC Energy Division NEM 2.0 Look Back study found that NEM benefits and costs are inequitably distributed; customers with distributed generation are over-compensated and customers without distributed generation pay for this over-compensation.[9]

This cost-shift appears to be substantial: SDG&E estimates that the cost-burden of excess NEM subsidy imposed on non-rooftop-solar customers is approximately $425 million per year.[10] Similarly, the SMUD Value of Solar Study found that the SMUD NEM tariff in 2020 results in an annual cost-shift of between $25-41 million, resulting in an annual cost increase in $26-45 per household. The study forecasts that by 2030 the total cost-shift will increase to $92 - $94 million annually, or an increase in cost per household of $90 - $92 per year.[11] These studies are currently being scrutinized and the results are in part due to the markets and infrastructure we have today not the system we need to achieve our societal goas. Nevertheless, even if they are off by a factor of two, the equity impacts are unacceptable.

Equity and affordability must be viewed from the perspective of low-income customers for whom rooftop solar is currently not usually an option, and from the perspective of customers for whom rooftop solar is possible but may be infeasible due to the lack of supportive policies. Equity further requires that the NEM successor tariff should not function to increase the energy burdens for non-NEM customers, especially those Californians on the California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) programs.

Moreover, because NEM export compensation is set at the electric rate, low-income customers who pay reduced amounts for electricity are also paid a comparatively lower amount for their solar exports. This not only serves to pay CARE and FERA customers less for their solar

[8] CPUC Decision 16-01-044, (January 28, 2016), at 81, stated that "the principal potential disadvantage of continuing the current full retail rate NEM tariff is economic. The IOUs lose revenue from NEM customers, particularly residential NEM customers, because those customers pay less to cover distribution costs through their volumetric rates. This revenue is recovered through increases in rates paid by all customers."

[9] Itron, *Net Energy Metering 2.0 Lookback Study*, prepared CPUC Energy Division, (August 2020), at 1-1 and 1-11, respectively. "NEM 2.0 participants benefit from the structure, while ratepayers see increased rates" and that "on average, customer-sited renewables taking service under a NEM 2.0 tariff have a RIM benefit-cost ratio less than 1, indicating that the NEM 2.0 program may result in an increase in rates for ratepayers."

[10] San Diego Gas & Electric, *SDG&E Electric Rate Issues & Drivers – Assembly Utilities and Energy Committee*, presentation to the legislature, (February 2019), at 4.

[11] E3 Consulting, *Value of Solar and Solar + Storage Study,* (August 2020)*,* at 50.

exports but also makes installing clean distributed generation on these homes a less attractive proposition for companies that lease solar systems to individual customers.

The CPUC, through this proceeding, should develop mechanisms to overcome these existing inequities and prioritize eliminating any cost burden faced by CARE and FERA customers due to the current NEM tariff. To achieve this, the Commission should consider in this proceeding the length of time existing NEM customers can stay on their current NEM tariffs before they are moved over to successor tariff. This would require the CPUC to develop a solution that balances the expectations of existing rooftop-solar customers with the imperative to eliminate the cost burden that non-NEM customers, especially CARE and FERA customers, currently bear.

D. NEM Successor Tariff Should Encourage Efficient Use (Production, Consumption, and Export) of Electricity

NEM tariff structure should incentivize electricity use aligned with grid needs and achieving California's broader decarbonization goals.

California's economy-wide decarbonization goals will require the electrification of transportation and buildings, which in turn requires that electricity be both carbon-free and affordable. An accurate and cost-effective NEM tariff will ensure no unnecessary increases in electric rates and will help ensure that electricity remains affordable relative to alternative fuels.

Moreover, Californians, especially those with rooftop solar, should be encouraged to use electricity efficiently to ensure that we get the most out of our renewable resources, which will more quickly facilitate the clean energy transition. To do so, the NEM successor tariff should encourage customers to shift energy use to daytime when carbon free energy, including solar energy, is cheap and abundant and use less energy during evening hours when energy supply is constrained, and exports are more valuable to the grid.

E. A Timely Resolution Is Necessary

As the existing NEM tariff appears to be increasingly misaligned with the above principles, reform to the existing NEM tariff is needed quickly.

To expedite this proceeding, NRDC suggests that the CPUC adopt NRDC's proposed principles to develop a successor NEM tariff instead of devoting the first part of the proceeding to develop these principles of engagement as proposed in Section 4 of the OIR.

III. Conclusion

NRDC looks forward to working with the CPUC and stakeholders to develop a successor NEM tariff in a timely manner.

Dated: October 5th, 2020

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