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Executive Summary

California's renewable energy journey has been remarkable and the popularity of "rooftop solar" has played a major role in it. For over two decades, this has been driven by the State's Net energy metering (NEM) policy which has gone through multiple revisions since its introduction in 1996. This policy brief discusses a few urgent equity issues with the latest NEM 3.0 rate design and proposes some tweaks. First, an increase in both the fixed 'grid participation' charge and the variable price paid for electricity exports to the grid are proposed. This is designed to revive flagging solar industry growth while also addressing equity concerns in how the grid's fixed costs are shared by utility customers. Next, policy recommendations are made for increasing low-and-middle income communities' participation in renewable energy. The proposed policy changes seek a balance between competing but equally critical environmental justice goals.

Background

Ambitious renewable energy targets are a key element of California's pathway to [Net Zero carbon emissions by 2045](#). Over the past two decades the State has emerged as a leader in renewable energy. This has been due in large part to the rapid growth of residential solar driven by the generous economic incentives offered to households in the form of **Net energy metering (NEM)**. Under this policy, California's investor-owned utilities (PG&E, SCE, and SDG&E) are required to compensate customers for electricity exported to the grid based on a tariff structure determined by the California Public Utilities Commission (CPUC).

The current version of the Net energy metering policy viz. NEM 3.0 was introduced by the CPUC in December 2022 as the successor to the previous NEM 2.0 following a contentious rulemaking process

involving [extended public consultations](#) with advocacy and industry groups.

Under NEM 2.0 one unit of electricity exported to the grid would precisely offset one unit of power consumed. Those in favor of an overhaul of the policy argued that the current rate design was over-incentivizing rooftop solar while failing to encourage investment in battery storage. By compensating NEM customers at the full retail rate, utilities were allowing them to bypass the grid's fixed costs and, in effect, use the grid like a battery. Therefore, there was a need to bring incentives in line with the value of the exported power *to the grid*.

They further contended that NEM participants are, on average, high-income families able to afford the upfront investment for rooftop solar while non-participants tend to be low-to-middle income BIPOC communities. NEM 2.0 was creating energy inequity by subsidizing wealthy families at the expense of poorer families.



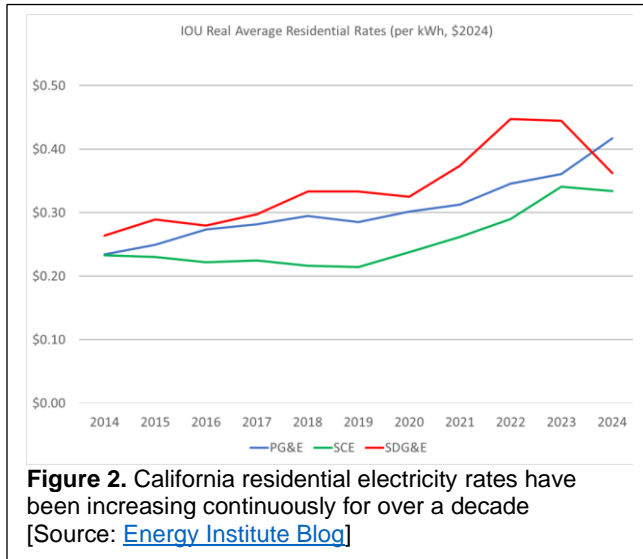
Figure 1. Demand for new solar installations dropped by ~80% following the introduction of NEM 3.0 [Source: [CALSSA](#)]

Those opposed to the NEM 3.0 proposal feared that tampering with net metering incentives would put the brakes on California's Net Zero journey and cause a downturn in its solar industry, leading to widespread economic distress and job loss. Indeed, within a year of NEM 3.0 coming into effect, there was already [a bill in the California Assembly](#) to repeal it and revert to the tariff structures prevalent under NEM 2.0. This, it was claimed, would arrest the slide in demand for new solar installations.



Issue Analysis

Against this background, three distinct sets of issues associated with the current NEM 3.0 policy can be identified. Some of these issues require urgent resolution.



- 1. Utility rate increases benefit some while penalizing others.** As NEM participants avoid paying their fair share of utility fixed costs, the burden gets passed on to non-participants. This drives rate increases that further exacerbate inequity as higher rates translate to *even higher* cost savings for high-income NEM customers to be subsidized by low-to-middle income non-participants. Even utility customers belonging to the lowest income group, who receive a 30% discount on their electric bill under the [CARE program](#), end up paying more with every rate increase.
- 2. Policy uncertainty leaves the solar industry in a limbo.** To try and address the above issue NEM 3.0 slashed the compensation offered by the previous NEM 2.0 policy by approximately 75%, extending the payback period for a typical rooftop solar installation from 3-4 years to 10 years. This was followed by a crash in demand for new solar installations in 2023 [by 80% year-on-year](#)

and associated industry job cuts in the tens of thousands.

Many skilled workers trained for solar installation tasks, who had migrated to California from neighboring states, returned home in a state of distress. To add to this, the majority of solar industry workers and small-time entrepreneurs come from disadvantaged communities. This issue needs *immediate* attention. Over time, irreversible changes in the labor market may render California's solar industry unable to rebound even if demand picks up at a later stage.

- 3. New incentives encourage customers to go "off the grid".** Low rates of compensation for electricity exported to the grid incentivize NEM customers to install smaller solar systems coupled with battery storage and use up all generation on-site, driving electric bills down to zero. Such a customer is effectively being compensated at the full retail rate as they would have been under NEM 2.0. Utilities would again need to recover their fixed costs from non-participants, taking the system back where it started. If utilities want to entice customers to export power to the grid, they need to enhance compensation.

Policy Recommendations

A revised NEM policy which addresses all of the above issues would have to contend with conflicting objectives. For instance, the goal of providing equitable energy to all communities needs to be balanced against that of maintaining a high growth rate of rooftop solar towards meeting California's Net Zero targets. The policy recommendations that follow are **for the attention of the CPUC**.

- Increase fixed grid participation charge.** In the absence of significant fixed charges, the burden of grid fixed costs tends to fall disproportionately on customers who cannot afford to (or choose not to) participate in NEM. A significantly higher fixed grid participation



charge payable by all customers, whether participating in NEM or not, would reduce the huge gap between these two groups in the sharing of grid fixed costs. It would also allow utilities to turn a profit at lower usage-based tariff rates. This would benefit families that have the lowest per head energy usage, typically low-income families.

- **Partially restore net metering incentives.** NEM 3.0's drastic reduction in compensation for electricity exported to the grid is at least partly responsible for the downturn in California's solar industry. The new incentives seem inadequate to induce NEM customers to sell surplus electricity back to the grid which could allow utilities to save on transmission infrastructure costs. A policy change which pays a *modest premium* above the current NEM 3.0 rates would help support solar industry growth without disproportionately imposing grid fixed costs on NEM non-participants. It would meet the opponents of the NEM 3.0 reforms midway, avoiding a potential rollback.
- **Monitor and control utility fixed costs.** In addition to the usual transmission and distribution infrastructure costs, utilities in California have incurred billions of dollars in liabilities on account of wildfires caused by their poorly maintained equipment. In 2019, this nearly drove PG&E to bankruptcy. Unless fixed costs are checked, they will drive rate increases as utilities seek to recover them through usage-based billing. When this happens, the blame for retail rate inflation could fall on NEM.
- **Continue to support low-income communities.** The cost of a rooftop solar installation, ranging from \$12,000 to \$20,000, is beyond the reach of low-income households. As part of NEM 3.0 a \$600 million fund was established to subsidize the participation of historically excluded communities in renewable

energy. These funds would need to be targeted to the right populations i.e. families who would otherwise not have access to the necessary capital.

Federal incentives also exist for home-scale renewable energy, such as the [Residential Clean Energy Tax Credit](#) which subsidizes solar panels and battery storage. All homeowners, but particularly low-income families, should be made aware of these incentives. For instance, companies already in the business of household solar installation could be paid a small "commission" for each low-income household they help bring into the renewable energy fold.

These policy recommendations attempt to strike a balance between the environmental justice goals of (1) providing clean, affordable, and reliable energy to communities and families of all income groups and (2) supporting the growth of the renewable energy industry which provides "green jobs" to skilled workers, including many from disadvantaged communities.

Further Reading

- National Academies (2023). The Role of Net Metering in the Evolving Electricity System: 92-130.
- California Public Utilities Commission (CPUC): [Net Billing Tariff \(2023\)](#)
- Borenstein, S. (2021). Rooftop Solar Inequity. *Energy Institute Blog*: energyathaas.wordpress.com/2021/06/01/rooftop-solar-inequity/
- Chhabra, M. (2021). Debunking Myths Surrounding California's Net Metering Reform. *NRDC Blog*: www.nrdc.org/bio/mohit-chhabra/debunking-myths-surrounding-californias-net-metering-reform

Authorship

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