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Witness: Ken Cook

PREPARED DIRECT TESTIMONY OF KEN COOK
ON BEHALF OF
THE ENVIRONMENTAL WORKING GROUP

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EXECUTIVE SUMMARY OF RECOMMENDATIONS

The direct testimony of Mr. Ken Cook, the President of the Environmental Working Group (EWG), is offered in this rulemaking proceeding that will determine the successor tariff for net energy metering (NEM) in California.

EWG finds that the NEM 2.0 Lookback study is flawed, incomplete and should not inform the successor tariff. EWG also finds that the tests that the CPUC is relying on to make its decisions are too narrowly framed and fail to consider societal health benefits, societal environmental benefits, the value of energy resilience and other externalities. EWG, therefore, encourages the CPUC to take additional time to conduct a broader analysis.

EWG recommends that the CPUC think more broadly when analyzing program elements and resulting proposals, and consider how these proposals would impact a host of critical issues facing California including: power system resilience, climate change mitigation, electrification, wildfire risks and public health. Moreover, EWG asks the CPUC to uphold equity by promoting more access to solar technology for low and moderate-income Californians and ensuring that current and future low-income NEM participants do not see reduced savings.

EWG recommends that the CPUC retain NEM 2.0 for at least another two years so that critical greenhouse gas reductions can be achieved in the short term while the Commission takes the necessary time to conduct further analysis. If the Commission decides it must move ahead with a successor tariff to NEM 2.0 at this time, EWG urges the Commission to be guided by the proposals put forward by the California Solar and Storage Association (CalSSA), GRID Alternatives, Sierra Club, the Solar Energy Industries Association (SEIA) and Vote Solar.

EWG also strongly recommends that the CPUC *not* adopt the joint proposal of the Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E) and Southern California Edison Company (SCE) (IOU Proposal) or the proposal of the Natural Resources Defense Council (NRDC Proposal) as they will severely curtail rooftop solar adoption for both low-income and non-low-income customers and therefore seriously impede California from reaching its legally mandated climate goals. In addition, EWG urges the CPUC to consider the incentives that IOUs have to make solar less financially attractive to consumers to help preserve their monopoly and distract from underlying IOU business practices that are driving up electricity rates.

Finally, EWG asks the CPUC to question whether the current centralized utility model can truly provide what California needs given the challenges posed by climate change and its impacts and consider what changes may be required.

I. INTRODUCTION

Q: Please state your name, occupation and business address.

A: My name is Ken Cook. I serve as president and chairman of the board of directors of the Environmental Working Group (EWG). We have offices in Sacramento, San Francisco, Washington, D.C. and Minneapolis. My business address is 500 Washington St., Suite 400, San Francisco, CA, 94111.

Q: Please describe your professional background.

A: I graduated from University of Missouri-Columbia with a Bachelor of Arts degree in history, a Bachelor of Science degree in agriculture and Master of Science degree in soil science. In 1992, I co-founded Environmental Working Group and have led the organization for almost 30 years. I also regularly testify before Congressional committees.

Q: On whose behalf are you testifying in this proceeding?

A: I am testifying on behalf of EWG, a 501(c)(3) nonprofit, that is widely recognized as one of the national environmental community's most prominent and influential critics of industrial agriculture, U.S. food and farm policy, U.S. energy policy and the nation's broken approach to protecting families from toxic substances in their air, water, food and consumer products. EWG has more than 1.4 million of online supporters who regularly engage on issues to improve the environment and the environmental health of people, including almost 200,000 in California.

Q: What is EWG's interest in this proceeding?

A: EWG has a long history in energy work, shaping state and federal energy policy on nuclear waste, ethanol, uranium mining, oil company liability for groundwater contamination, fracking and the clean energy transition. EWG advocates for smart policies that support, not slow, the expansion and access to solar energy for all consumers. In recent years, EWG has focused much of our attention on how public and investor-owned electric utilities, such as Duke Energy, operate and how some consistently fail to adopt concrete changes to make renewable energy, like solar, wind and battery storage the prevailing sources of the energy mix. EWG also has long worked to expose the harms done by ill-conceived crop subsidies, crop insurance and runaway agricultural pollution, all of which have a disproportionate, negative affect on people living in poverty and people of color. In addition, the organization has spent decades working to reduce people's exposure to air and water pollution as well as potentially harmful ingredients in food, cosmetics and other household products. Our interest in this proceeding is the pressing need for more rooftop solar energy, given its positive impact on air quality.

Q: Have you ever testified before this Commission?

A: I have not testified previously before the California Public Utilities Commission (Commission, or CPUC).

II. ISSUE #2: What information from the Net Energy Metering 2.0 Lookback Study should inform the successor tariff and how should the Commission apply those findings in its consideration?

A. The NEM 2.0 Lookback Study is flawed, incomplete, and should not inform the successor tariff; the CPUC should take additional time to conduct a broader analysis.

Q: What are the problems with the NEM 2.0 Lookback Study? How should the CPUC proceed given these deficiencies?

A: As detailed by other parties in this proceeding, there are many serious issues with the NEM 2.0 Lookback Study that point to the need to either take the necessary time to fix its deficiencies or throw it out entirely for the basis of CPUC decision making. For example, because the study did not include virtual net metering (VNEM), it is effectively leaving out nearly half of the state population who are renters and significantly undercounting low-income solar adoption.[1] The study used incorrect and outdated costs for solar installation, used questionable data for cost of service analysis, and modeled certain NEM 2.0 bill payments rather than using the actual data that it had available.[2] There was little transparency on how the final version of the model was derived from the draft model.[3] The study also can't be replicated by outside parties because the source code wasn't provided.[4]

[1] Comments of Ivy Energy on the Administrative Law Judge Ruling Presenting the Final Verdant NEM 2.0 Lookback Study, February 4, 2021, p. 3.
[2] Reply Comments of the California Solar and Storage Association on the NEM 2 Lookback Study, February 16, 2021, p. 3.
[3] *Id*.
[4] *Id*.

Q: Are the tests that the CPUC is relying on for its assessment of net energy metering sufficient and appropriate to capture all the potential societal benefits and costs of rooftop solar?

A: No. The tests that the CPUC is relying on to make its decisions are too narrowly framed. The total resource cost (TRC) test asks the question "Will the total costs of energy in the utility service territory decrease?" The participant cost test (PCT) looks at the benefits and costs to participants of the NEM program. The ratepayer impact measure (RIM) test looks at the potential impacts to non-participants. These may all be important questions, but they are also narrow ones. They fail to consider societal health benefits, societal environmental benefits, the value of energy resilience and other externalities that are not currently paid for by ratepayers. The CPUC should not make a decision on changes to NEM without conducting a Societal Cost Test (SCT) that takes these other important issues into consideration. While the Societal Cost test is similar to the TRC, it is more holistic in that it explicitly quantifies externality benefits such as avoided pollutant emissions not represented in market prices and other important non-energy benefits including improved health.[5] The Societal Cost Test reflects the holistic assessment that leads an overwhelming majority of Californians to favor net metering.

[5] Energy Center of Wisconsin, Energy Efficiency Guidebook for Public Power Communities, 2009, p. 32. Available at: http://ceeep.rutgers.edu/wp-content/uploads/2013/11/EEGuidebook2009.pdf.

Q: If the CPUC is concerned about rising electricity rates, is net energy metering the largest concern?

A: No. Any NEM related impact on electricity rates is dwarfed by the rapidly increasing transmission costs customers are experiencing from investor-owned utilities (IOUs). In its recent report, "Utility Costs and Affordability of the Grid of the Future," the CPUC notes that "the sum of the three IOUs' transmission revenue requirements (TRR) has increased 38.1 percent, from $3.14 billion in 2016 to $4.34 billion in 2021" and that "PG&E's TRR has increased over 66 percent during that time and SDG&E's by nearly 45 percent."[6]

The CPUC goes on to state: "The rate of return (ROR) on capital additions allows utility shareholders to earn profits for shareholders' benefit. IOUs have an incentive to seek FERC approval for the highest possible ROR. The more capital additions that go into operation, the more profit the IOUs can attain. Conservative assumptions indicate that every dollar put into transmission rate base costs ratepayers in excess of $3.50 over the life of a transmission asset. For example, the $2.75 billion in capital additions for the three IOUs in 2020 alone can be expected to cost ratepayers at least $9.7 billion over the lives of the assets."[7]

The CPUC also details how "a majority of the California IOUs' spending on capital additions is not related to grid capacity expansion" and that "there is no state

[6] California Public Utilities Commission, Utility Costs and Affordability of the Grid of the Future, February 2021, p. 37. Available at: https://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Reports_and_White_Papers/Feb%202021%20Utility%20Costs%20and%20Affordability%20of%20the%20Grid%20of%20the%20Future.pdf.

[7] *Id*., p. 38.

or federal review on either the need or costs for these projects."[8] The CPUC report explains further that: "In data reported by the IOUs to the CPUC in July 2020, capital additions between 2016 and 2019 for all three IOUs totaled over $7.5 billion. Approximately $4.5 billion (60 percent) of these capital additions were utility self-approved, while $3 billion were CAISO-approved. The annual average for all capital additions for 2016 to 2019 was $1.875 billion. In comparison, in 2010, the capital additions for the IOUs totaled less than $950 million, with the share of self-approved projects in 2010 at 50.6 percent and CAISO-approved projects was 49.4 percent. The annual capital additions projected for just 2020 and 2021 total $5.3 billion, with approximately 60 percent being self-approved projects across all three IOUs, with PG&E exceeding 80 percent self-approved."[9]

Taken together, this information points to where the CPUC should more properly focus its attention in order to assess rising utility rates: not rooftop solar, but rather the rapid increase in infrastructure spending which ratepayers will be asked to pay for over decades to come. Any debate over rate increases has to acknowledge that the elephant in the room is not solar, but the billions of dollars in self-approved infrastructure spending by the IOUs without any state or federal oversight. Pointing to NEM as the reason for rising rates is not only a distraction from the IOUs own business practices, it also does not pencil out as a valid excuse once infrastructure costs are considered. Framing rate increases around rooftop solar does, however, serve the interest of utilities to maintain highly profitable control of electricity supply and distribution.

[8] *Id*., p. 40.
[9] *Id*.

Q: How does distributed solar affect the need for additional transmission investments?

A: Distributed solar lowers the need for additional transmission investments, as do energy efficiency and energy conservation. In fact, in 2018, the California Independent System Operator cancelled 18 transmission projects and revisions of 21 other projects in Pacific Gas & Electric (PG&E) and San Diego Gas & Electric (SDG&E) service areas, to avoid "an estimated $2.6 billion in future costs."[10] In its statement, the agency named "energy efficiency programs and increasing levels of residential, rooftop solar generation" as major reasons for why these transmission projects were not needed. From this perspective, customers who choose to install distributed solar and storage are actually lowering the need for additional transmission investments, which is a cost-shift in favor of non-participants in the NEM system.

Q: What are other factors in cost-shifts that the CPUC should consider when assessing the fairness of electric rates?

A: Average commercial electric rates in 2019 were 15% lower on average than average residential electric rates in California.[11] Is it fair that businesses should pay lower rates than residential customers? One could argue that this is a type of cost-shift that

[10] California Independent System Operator, "Board approves 2017-18 Transmission Plan, CRR rule changes: Plan calls for canceling, modifying projects to avoid $2.6 billion in costs", March 23, 2018, p. 1. Available at: http://www.caiso.com/Documents/BoardApproves2017-18TransmissionPlan_CRRRuleChanges.pdf.

[11] Average residential rate was $19.15 cents/kWh vs. an average commercial rate of $16.67 cents/kWh according to the Energy Information Administration. See: Energy Information Administration, 2019 Average Monthly Bill – Commercial, available at: https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_b.pdf; Energy Information Administration, 2019 Average Monthly Bill – Residential, available at: https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_a.pdf.

is putting more burden on low-income customers. Energy efficiency investments also could make electricity more expensive for those who aren't participating in such investments. Will the IOUs next target energy efficiency programs because they also pose a cost-shift onto non-adopters? We consider this development more than plausible, since this is exactly what has already happened in some states.

In fact, this has been the utility playbook since 2013 when Edison Energy Institute published its Disruptive Challenges Report and highlighted the threat that solar and energy efficiency posed to its business model.[12] The real cost-shift is between investors in the IOUs and ratepayers since ratepayers are the ones paying to finance the investment that make investors their returns. The CPUC should take into account that distributed energy resources present significant benefits to the state and to households and businesses that adopt them, but significant threats to the current centralized utility business model. Utility critiques of rooftop and community solar, in California and nationwide, should be viewed in the context of the threat those energy sources pose to the utility business model.

Q: Does CPUC's analysis of net energy metering factor in the significant resilience benefits that distributed solar and storage can provide?

A: No. None of the tests that the CPUC conducted as part of its analysis is considering the significant need for greater resilience in California's electric system. This is a major oversight. A 2021 joint report by the CPUC, the Air Resources Board and the

[12] Edison Electric Institute, Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business, 2013. Available at: https://www.ourenergypolicy.org/wp-content/uploads/2013/09/disruptivechallenges-1.pdf

Energy Commission titled "Achieving 100 Percent Clean Electricity in California" repeatedly underscored the importance of resilience. The report noted that:

> "Designing for a Changing Climate California's electric grid must meet the state's clean energy goals while maintaining reliability and affordability, protecting public health and the environment, and distributing benefits of clean energy to all Californians — all in the face of fiercer and more frequent wildfires, droughts (reduced hydropower availability), and heat waves (higher loads from air conditioning). Meeting the state's goals also requires scientifically informed, flexible, and adaptive strategies to increase energy sector resilience to climate stressors, with particular attention to high fire threat areas and vulnerable populations. Future investments in electric generation, storage, distribution, and transmission must be designed and operated for a changing climate."[13]

With more wildfire and extreme weather threats, an over-reliance on centralized generation and long-distance power lines is a vulnerability, not a strength. No serious cost-benefit analysis can ignore the value add of local generation and storage capacity.

[13] California Energy Commission, SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future, March 2021, p. 44. Available at: https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349.

Q: How do you recommend that the CPUC move forward with its effort to revisit the net energy metering tariff?

A: Given the urgency to take bold action on climate change, the potential for climate change to disproportionately impact low-income communities, as well as the flaws and deficiencies in the CPUC's analysis, I recommend that the Commission retain the NEM 2.0 tariff for two years or more. This pause would enable distributed solar installation to continue at its current high rate and provide the CPUC time to fix the deficiencies in its analysis and look more holistically at the benefits and costs that distributed solar and storage resources provide. It would also allow the CPUC time to further consider cost-effective ways by which current non-participants could enjoy the many benefits of rooftop and community solar. Given the recent defeat of AB 1139, which would have made many significant and problematic changes to the NEM program if the CPUC failed to act quickly to enact a successor tariff, it is also clear that the legislature sees value in ensuring that solar will continue to grow and allowing the CPUC to take the time it needs to conduct a proper assessment of the issues at hand.

III. ISSUE #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?

A. The CPUC must think broadly when analyzing program elements and resulting proposals, and consider how these proposals would impact power system resilience, climate change mitigation, electrification, wildfire risks, public health, equitable access to solar technology, and current and future low-income NEM participants.

Q: What is a resilient power system and why is it important?

A: According to the U.S. Department of Energy's (DOE) Grid Modernization Initiative, a resilient power system "must be capable of lessening the likelihood of long-duration electrical outages occurring over large service areas, limiting the scope and impact of outages when they do occur, and rapidly restoring power after an outage… A completely resilient electric grid will help communities keep the power on during man-made or natural disruptions."[14] Wildfires, floods, and other natural disasters are expected to increase with climate change, making the need for a resilient power system more important than ever.

[14] U.S. Department of Energy, Solar Energies Technologies Office. Solar and Resilience Basics. Available at: https://www.energy.gov/eere/solar/solar-and-resilience-basics. Accessed June 9, 2021.

Q: What role do solar and storage play in energy system resilience?

A: The US Department of Energy[15] explains the importance of distributed solar and storage in the following way:

> Solar energy technologies can play an important role in strengthening our energy system's resilience. Two key attributes make solar a unique asset for resilience. The first is that solar generation can be distributed, as opposed to centralized. This means individual buildings can host their own solar systems to meet some or all of their power needs. Communities can combine solar with storage and other technologies to create a microgrid that will provide power to critical infrastructure when it is needed.
>
> Most electric power is generated in large, centralized power plants—which then send the electricity to homes and businesses through power lines. This power can be disrupted if the transmission or distribution system gets damaged. Distributed generation in combination with local energy storage allows power to be generated locally, near the customers, and could be used even if the centralized system experiences interference or disruption.
>
> The second attribute that makes solar energy a key contributor to resilience is that sunlight-generated electricity can be stored and discharged without the need for fuel deliveries, unlike conventional

[15] *Id*.

diesel generators, which are the most common source of emergency backup power. In a long outage, solar and its associated energy storage can continue delivering power, even at night, to homes and businesses.

Q: How could the CPUC's decision on NEM 3.0 impact the adoption of distributed storage and microgrids?

A: To a large degree, deployment of local and household storage is happening as a secondary effect of rooftop solar.[16] Since there is no paired solar and storage without solar, if the rate of rooftop solar adoption is lowered, this will undoubtedly lower the adoption rate of distributed storage and, in turn, local resiliency. The day-to-day economic value of storage is closely tied to NEM, allowing solar and storage owners to generate free energy from the sun and then sell it back to the grid or use it themselves when the energy is most needed and most expensive.[17]

Likewise, microgrids with paired storage are also a NEM-based asset. Proposals that make rooftop solar less cost-effective will ultimately make microgrids significantly less economically attractive, and will also reduce the likelihood of achieving greater resiliency in the power system.

[16] U.S. Department of Energy, Solar Energies Technologies Office. Solar Integration: Solar Energy and Storage Basics. Available at: https://www.energy.gov/eere/solar/solar-integration-solar-energy-and-storage-basics. Accessed June 9, 2021.

[17] Gerza, A., "Energy storage net metering: An illustration of why it's so valuable", Solar Power World, April 2020. Available at: https://www.solarpowerworldonline.com/2020/04/energy-storage-net-metering-an-illustration-of-why-its-so-valuable/.

Q: What is the state currently doing to incentivize the adoption of distributed storage?

A: Energy storage is clearly a priority for the state and for the Commission. Explicitly with next year's wildfire season in mind, the CPUC has authorized funding of more than $1 billion through 2024 for the Self-Generation Incentive Program (SGIP). The funding prioritizes "communities living in high fire-threat areas, communities that have experienced two or more utility Public Safety Power Shut-off (PSPS) events, as well as low income and medically vulnerable customers."[18] It would be highly counterproductive, therefore, for the CPUC to expand SGIP but then adopt proposals that would significantly reduce the benefits of NEM since this will not help the state achieve greater resilience and perhaps provide a classic example of one hand not knowing what the other was doing.

Q: How could the CPUC's decision on the NEM 3.0 tariff impact California's resilience in the face of climate events?

A: Given the importance of increasing local energy resilience, the CPUC must consider the impact of how a new NEM tariff would affect the adoption of distributed solar, storage and local microgrids. If the Commission chooses to lower the economic benefits of rooftop solar currently provided through the NEM tariff, this would also lower the adoption of household and community-based energy storage, which of course would have the effect of weakening local resilience.[19] Moreover, the proposed

[18] California Public Utilities Commission, Self-Generation Incentive Program (SGIP). Available at: https://www.cpuc.ca.gov/sgipinfo/. Accessed June 9, 2021.
[19] Gerza, A., "Energy storage net metering: An illustration of why it's so valuable", Solar Power World, April 2020. Available at: https://www.solarpowerworldonline.com/2020/04/energy-storage-net-metering-an-illustration-of-why-its-so-valuable/.

changes to NEM in the IOU Proposal and the NRDC Proposal would highly favor a centralized energy production and delivery system which by its very nature will continue to be more vulnerable and less resilient to climate change's extreme heat and other weather events. Rooftop solar puts production as close to load as possible and that is the most resilient strategy.

Q: How could the CPUC's decisions on the NEM 3.0 tariff affect the likelihood of meeting California's climate goals?

A: In order to meet California's legally binding climate goals such as SB 32's goal of cutting emissions by 40% from 1990 levels by 2030[20] or SB 100's goal of zero carbon electric power by 2045[21], this Commission itself, along with CARB and the CEC in its joint 2021 report "Achieving 100% Clean Electricity in California," projected that rooftop solar will need to be installed at a rate of 1 GW per year to meet SB 100's goals.[22] The prospects of attaining and sustaining that level of rooftop solar adoption will be significantly diminished if a new NEM tariff makes solar a worse value proposition financially for potential solar owners. Again, the CPUC strategy should be to encourage participation in rooftop solar to spread its benefits and beneficiaries even more widely. As described later in this testimony, California cannot rely on future utility-scale electric resources alone to meet its GHG goals. The joint study's projections already require a very ambitious deployment of utility scale

[20] SB-32 California Global Warming Solutions Act of 2006: emissions limit. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32.
[21] SB-100 California Renewables Portfolio Standard Program: emissions of greenhouse gases. (2017-2018). Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100.
[22] California Energy Commission, SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future, March 2021, p. 7. Available at: https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237168&DocumentContentId=70348.

renewable energy.[23] Assuming that this rate of production capacity could increase significantly to make up for the decrease in rooftop solar is unrealistic because utility-scale is already being built out nearly as fast as possible. It is often a struggle to build additional transmission lines[24] and because of permitting concerns around biodiversity and the economics of interconnection to the transmission lines that do exist, it is not an easy matter to secure viable land for utility scale renewable development in California.[25] It is dubious to expect significantly more development than current projections given all the constraints facing large scale solar developers.

Q: How could the CPUC's decisions on the NEM 3.0 tariff affect California's efforts to meet its electrification goals?

A: Meeting California's greenhouse gas emission reduction goals will require a significant electrification of homes, other buildings, and the transportation sector. Solar plays a key role within California's electrification efforts. As people adopt solar, they are more likely to adopt other electrification measures such as electric vehicles, electric heat pumps, electric ovens and other appliances.[26] For this reason, if the CPUC adopts proposals on NEM that will make solar less attractive there will likely be unintended consequences that will make it more difficult for California to meet its electrification goals.

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[23] *Id*.
[24] Campbell, A., "The More We Get Together, The Happier We'll Be." Energy Institute Blog, Haas School of Business University of California, Berkeley, May 2021. Available at: https://energyathaas.wordpress.com/2021/05/03/the-more-we-get-together-the-happier-well-be-2/.
[25] ECONorthwest and The Nature Conservancy, Green Light Study: Economic and Conservation Benefits of Low-Impact Solar Siting in California, 2019. Available at: https://www.nature.org/content/dam/tnc/nature/en/documents/FINAL_Green_Light_Report_LR.pdf.
[26] California Public Utilities Commission, Net Energy Metering 2.0: Lookback Study, 2021, p. 62.

Q: How could changes to the NEM tariff increase or decrease the likelihood of wildfires, blackouts and Public Safety Power Shutoff (PSPS) events?

A: Less rooftop solar will increase the need for more power lines and therefore create more wildfire risks. We now live in an era where there are more extreme heat days than ever.[27] Widespread power outages due to wildfires, overheated, downed or turned off power lines are not hypothetical, they are the new California reality. From 2013 to 2019, California saw 57,000 wildfires and 33 PSPS de-energizations by IOUs[28] and there is no question that power lines sparked some of the state's most destructive fires. Indeed, PG&E is paying millions in claims to thousands of Californians whose property was damaged or destroyed by wildfires its transmission system started.[29] Promoting a system that's even more reliant on long distance transmission may serve some interests, but it is negligent in the context of the wildfires and PSPS events that have plagued California in recent years.

Q: What public health impacts arise from PSPS events and wildfires?

A: People with medical conditions that rely on electrical equipment are at particular risk during power shut-offs.[30] Such individuals must be able to access these essential medical technologies and therefore need to be able to generate and store their own energy if utilities can no longer guarantee service. In addition, the direct public health

[27] States At Risk website, California Extreme Heat. Available at: https://statesatrisk.org/california/extreme-heat. Accessed June 9, 2021.
[28] California Public Utilities Commission, Public Safety Power Shutoff (PSPS) / De-Energization. Available at: https://www.cpuc.ca.gov/psps/. Accessed June 9, 2021.
[29] Penn, I., "PG&E, Troubled California Utility, Emerges From Bankruptcy." The New York Times, July 1, 2020. Available at: https://www.nytimes.com/2020/07/01/business/energy-environment/pge-bankruptcy-ends.html.
[30] Murphy, P., "Preventing Wildfires with Power Outages: the Growing Impacts of California's Public Safety Power Shutoffs." PSE Blog, March 19, 2021. Available at: https://www.psehealthyenergy.org/news/blog/preventing-wildfires-with-power-outages-2/.

impacts of wildfire smoke are profound. The fine particulate matter emitted into the air from wildfires known as PM 2.5 has been shown to increase the risk of strokes, heart attacks, and premature death.[31] A recent study by Stanford researchers found that for a single 40 day period during 2020, wildfire smoke killed between 1,200 to 3,000 people over the age of 65 and led to an additional 4,800 emergency room visits.[32] As the CPUC evaluates proposals, it must recognize that any policy change that increases the risk of wildfires in California is ultimately also increasing the risk of significant public impacts.

Q: Are the public health impacts of wildfire smoke equally distributed?

A: No. Older adults and people with underlying conditions are more likely to be impacted by poor air quality. In addition, low-income individuals and people of color are more likely to be impacted since they are already taxed with the most locally-emitted pollution and the areas where they live contain a greater share of population with asthma and other condition vulnerable to poor air quality.[33]

Q: How else could the changes to the NEM tariff potentially impact air quality and public health?

A: Reducing the usage of fossil fuel "peaker" plants helps improve air quality and public health for many low-income communities, who are living on the frontline in

[31] Du, Yxing, et al., "Air particulate matter and cardiovascular disease: the epidemiological, biomedical and clinical evidence," Journal of Thoracic Disease, January 2016. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4740122.
[32] Neilson, S., "Smoke from California's wildfires likely killed more than 1,200 people – nearly 50 times the number who perished in the flames." Insider, September 24, 2020. Available at: https://www.insider.com/california-wildfire-smoke-likely-killed-over-1200-people-2020-9.
[33] Cho, R., "Why Climate Change is an Environmental Justice Issue." State of the Planet, News from Columbia Climate School, September 22, 2020. Available at: https://news.climate.columbia.edu/2020/09/22/climate-change-environmental-justice/.

proximity to these power plants and other pollution sources. Peaker plants are generally older, dirtier and less efficient than other power plants. They are powered up on days when the electric system is under stress due to extreme heat and the higher load caused when additional air conditioning is turned on by those who can afford to do so.[34] California already averages 35 extreme heat days, and that number is projected to rise to 50 by 2050.[35] Distributed solar, when paired with storage, can shift the load and help flatten the "duck curve" because of its ability to shift the availability of clean energy to different times of the day.[36] With the proper price signals and software, local rooftop solar owners can automatically sell power back to the grid during peak demand. This is an even greater asset to the grid, allowing CAISO to meet demand without firing up their least efficient and dirtiest power plants when the system is most stressed. Sustained growth of paired solar and storage will reduce the need to fire up these facilities and would result in measurable air quality and public health improvements, perhaps even eliminating the need for "peaker" plants because distributed solar and storage can handle the increased demand.[37]

[34] Physicians, Scientists, and Engineers for Healthy Energy, California Peaker Power Plants Energy Storage Replacement Opportunities, 2020. Available at: https://www.psehealthyenergy.org/wp-content/uploads/2020/05/California.pdf.
[35] States At Risk website, California Extreme Heat. Available at: https://statesatrisk.org/california/extreme-heat. Accessed June 9, 2021.
[36] Kosowatz, J., "Energy Storage Smooths the Duck Curve." American Society of Mechanical Engineers, May 17, 2018. Available at: https://www.asme.org/topics-resources/content/energy-storage-smooths-duck-curve.
[37] PSE Healthy Energy, California Peaker Power Plants Energy Storage Replacement Opportunities, 2020. Available at: https://www.psehealthyenergy.org/wp-content/uploads/2020/05/California.pdf.

Q: How could changes to the NEM tariff impact equitable access to solar technology?

A: Currently, almost 50% of solar is installed in low or middle-income neighborhoods.[38]

The Commission should consider the potential for proposals to substantially shift this installation distribution such that only the wealthiest residents will be able to afford solar, with a narrow band of low-income residents being able to take advantage of solar access programs.

Q: How could the changes to the NEM tariff impact current low-income NEM participants?

A: Proposals that decrease the savings for existing low-income NEM participants through changes in export rates and/or fixed charges would have a negative impact on households who already have participated in California's low-income solar programs. Such changes would hurt those who can least afford it, break the promise of savings made when people signed up, and increase the distrust already felt by many in frontline communities towards government and other institutions.

Q: Should low-income solar access be limited to existing programs?

A: No. Proposals that would make solar significantly less accessible overall and focus benefits on a narrowly qualified class of low-income homeowners would be problematic because the current programs, while valuable, are not achieving the necessary scale that is called for by the climate crisis. The Single-family Affordable

[38] Lawrence Berkeley National Laboratory**,** Income Trends among U.S. Residential Rooftop Solar Adopters, 2020, p.5. Available at: https://eta-publications.lbl.gov/sites/default/files/solar-adopter_income_trends_report.pdf.

Solar Homes (SASH) program installed 9128 systems between 2010-2020.[39] That's a modest success, but in the context California's 1,255,360 total installs through 2020,[40] it is clearly an effort that needs to be expanded dramatically, not curtailed or impeded. The small scope of these programs is due in part to the types of households that qualify for such programs. First, most low-income families are renters and need to be served through a VNEM or Community Solar program. Both kinds of programs are limited in California by policy design, relatively underfunded and ultimately underutilized. Acknowledging and making recommendations to rectify that problem should also be a central goal of the Commission in this proceeding. Second, there are hundreds of thousands of households that are struggling to make ends meet and earn below median income, but earn "too much" to qualify for the current programs. When considering proposals, the CPUC should be thinking broadly about equitable access and promoting policies that expand low- and moderate-income households' access to the benefits of solar and storage.

[39] GRID Alternatives, Single-family Affordable Solar Homes (SASH) Program Semi-annual Progress Report, 2021. Available at: https://gridalternatives.org/sites/default/files/SASH%20semiannual%20report_Q3-4%2C%202020%20FINAL%201.30.21.pdf.

[40] Solar Energy Industry Association, California Solar 2020 fact sheet. Available at: https://www.seia.org/state-solar-policy/california-solar. Accessed June 9, 2021.

IV. ISSUE #5: Which of the analyzed proposals should the Commission adopt as a successor to the current net energy metering tariff and why? What should the timeline be for implementation?

A. Rather than adopting any of the proposals, the California Public Utility Commission (CPUC) should retain NEM 2.0 for at least two years.

Q: What are scientists pointing to as the most critical time period for preventing the most catastrophic impacts of climate change?

A: In 2018, the Intergovernmental Panel on Climate Change (IPCC) highlighted the next 12 years as being highly critical to prevent the worst impacts of climate change.[41] Debra Roberts, one of the co-authors of the IPCC report, stated that: "The next few years are probably the most important in our history."[42] The CPUC's decision on its net energy metering (NEM) policy, therefore, must be informed by the incredible urgency of the climate crisis since the consequences of not taking bold action to combat climate change will be immense. Indeed, the devastating wildfires that have ravaged the state each year for the past four years only underscore the need for California to ensure that all of its policy decisions accelerate efforts both to cut greenhouse gas emissions and to make its underlying systems more resilient within a changing climate.

[41] International Panel on Climate Change, Special Report on Global warming of 1.5°C, 2019. Available at: https://www.ipcc.ch/sr15/.

[42] International Panel on Climate Change, Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C, 2019. Available at: https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/.

Q: What is the role that rooftop solar plays in combatting the climate crisis and meeting California's SB 100 goals?

A: In a recent joint report[43] authored by the CPUC, the California Air Resources Board and the California Energy Commission found that "California will need to sustain its expansion of clean electricity generation capacity at a record-breaking rate for the next 25 years"[44] to meet its clean energy goals mandated by SB 100, and that the solar and wind build rates need to nearly triple. These goals simply cannot be met without the 1 gigawatt (GW) of rooftop solar that the report expects to be installed each year for the next 25 years.[45]

Unimaginable just a decade ago, when California's solar revolution was still in its infancy, today we can clearly see the prospect that rooftop solar and battery storage can broadly democratize distributed, clean, resilient and lowest-cost electric power across our state. We urge the Commission to center its leadership in this proceeding on that expansive yet pragmatic vision of rooftop solar's role in California's clean energy future.

Q: Could California just increase utility-scale solar and wind generation over current projections to offset declines in rooftop solar adoption?

A: No. The joint report is already modeling significant increases in utility-scale solar and wind production, which may already be overestimates of what is truly possible given

[43] California Energy Commission, SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future, March 2021. Available at: https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId =70349.
[44] California Energy Commission, 2021 SB 100 Joint Agency Report Summary Achieving 100% Clean Electricity in California. March 2021, p. 7. Available at: https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237168&DocumentContentId=70348.
[45] *Id*.

the state's land use constraints and the need for both technologically and economically feasible siting. Given California's goal to conserve 30 percent of the state's land by 2030 to fight species loss and ecosystem destruction,[46] and the fact that both utility-scale solar and wind are highly land-intensive technologies with limited sites where installation is possible and appropriate, it would not be appropriate to assume that utility-scale generation capacity could expand sufficiently to offset drops in rooftop solar deployment. When Governor Newsom announced California's goal of conserving 30 percent of the state's land, the state's press release[47] highlighted the following facts:

> California is considered one of the world's 36 "biodiversity hotspots" because of its high concentration of unique species that are also experiencing unprecedented threats. Of the estimated 5,500 plant species found in California, 40 percent are "endemic," found nowhere else on Earth. California relies on 100 million acres of land for food, water and habitat, and feeds the nation and world through its agricultural activities. The $50 billion California agriculture industry produces over 400 commodities, including over a third of the nation's vegetables and two-thirds of the nation's fruits and nuts.

[46] California Energy Commission, SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future, March 2021, p. 128. Available at: https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349.
[47] California Climate Investments, Governor Newsom Launches Innovative Strategies to Use California Land to Fight Climate Change, October 2020. Available at: http://www.caclimateinvestments.ca.gov/press-releases/2020/10/26/governor-newsom-launches-innovative-strategies-to-use-california-land-to-fight-climate-change-conserve-biodiversity-and-boost-climate-resilience.

Simply put, California's lands are precious and limited resources; the state will likely always face land-use related pressures. Residential and commercial building rooftops, on the other hand, along with countless other siting locations in built environments (parking lots, schools, road verges, etc.) are plentiful and still remain in many ways an untapped, localized resource for solar installations. Utility-scale solar has an important role to play in helping California reach its climate goals but there are also land use tradeoffs that don't exist in the same way with distributed solar and should not be underestimated.

Q: How should the CPUC consider California's climate goals in its decision on net energy metering?

A: Given the importance and urgency of addressing the climate crisis, the CPUC shouldn't be too hasty in changing a net energy metering program that has made California a leader in rooftop solar and put it on track to meeting its climate targets. In an all-hands-on-deck climate emergency, the CPUC must take the necessary time to ensure that any changes to the NEM program won't jeopardize California's steady progress on converting its entire economy to clean energy.

Q: Are certain communities more vulnerable to climate change related impacts?

A: Yes. Low-income communities often have higher rates of underlying conditions that make them more vulnerable to the effects of heat, wildfire smoke, and other stressors that are likely to increase with climate change.[48] In addition, low-income communities are more likely to be located in "urban heat islands" where there are

[48] Public Health Institute and American Public Health Association, Climate Change, Health, and Equity: A Guide for Local Health Departments, 2018. Available at: https://www.apha.org/-/media/files/pdf/topics/climate/climate_health_equity.ashx.

fewer trees and more asphalt and concrete.[49] These neighborhoods can become significantly hotter than surrounding areas, making the expected climate change related heat waves more intense and even more deadly. The climate crisis is also leading to more frequent natural disasters such as fires and floods. Low-income households have fewer resources to deal with these events; they are less likely to have disaster insurance and have more difficulty navigating displacement from their homes, making low-income families less able to successfully recover.[50] Moreover, low-income families are often already living in frontline communities with higher levels of air pollution and other health hazards, making them more vulnerable to additional environmental stressors.[51]

Q: What did the National Climate Assessment conclude about the disproportionate impacts of climate change on low-income communities?

A: The Fourth National Climate Assessment, published in 2018, found that while the "impacts of climate change are already being felt in communities across the country," these impacts are expected to increase.[52] Furthermore, the Assessment concluded that low-income communities would be impacted the most:

> "Future climate change is expected to further disrupt many areas of life, exacerbating existing challenges to prosperity posed by aging and

[49] *Id*., p. 24.
[50] *Id*., p. 40.
[51] Adapting to Rising Tides, Addressing Social Vulnerability and Equity in Climate Change Adaptation Planning, 2012, p. 17. Available at: http://www.adaptingtorisingtides.org/wp-content/uploads/2015/04/ART_Equity_WhitePaper.pdf.
[52] U.S. Global Change Research Program, Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II, 2018, p. 25. Available at: https://nca2018.globalchange.gov/.

deteriorating infrastructure, stressed ecosystems, and economic inequality. Impacts within and across regions will not be distributed equally. People who are already vulnerable, including lower-income and other marginalized communities, have lower capacity to prepare for and cope with extreme weather and climate-related events and are expected to experience greater impacts."[53]

Q: Why are these disproportionate impacts of climate change important as the CPUC considers the future of the NEM program?

A: Low-income communities bear the greatest energy burdens so they have a greater need for affordable electricity and the benefits of access to renewable energy technologies that can provide cost savings and resilience benefits. In addition, these communities need their government to take bold action to address climate change since they have the most to lose. Successful policies that combat climate change are critical to protecting low-income communities in the long-term since so many of them will be on the frontline of facing climate change's worst impacts. The CPUC's decisions on NEM and how they affect California's ability to meet its climate targets, therefore, must take into account the potential long-term consequences on low-income communities.

[53] *Id*.

B. If a successor tariff must be adopted at this time, the CPUC should adopt proposals submitted by CALSSA, GRID Alternatives, Sierra Club, SEIA and Vote Solar.

Q. Please summarize your primary conclusions regarding the proposed successor tariffs to NEM.

A: EWG recommends that the CPUC retain NEM 2.0 for at least another two years so that critical greenhouse gas reductions can be achieved in the short term while the Commission takes the necessary time to conduct further analysis. If the Commission decides it must move ahead with a successor tariff to NEM 2.0, we urge the Commission to be guided by the proposals put forward by CalSSA, GRID Alternatives, Sierra Club, SEIA and Vote Solar.

Q: Why should the CPUC be guided by those proposals specifically?

A: While these proposals may differ in specifics, with some focused on the NEM program in its entirety and others focused specifically on the low-income component, they would allow the CPUC to create a successor tariff truly aligned with its guiding principles.

Q: What are the program elements and specific features in these proposals that should be included in NEM 3.0 tariff?

A: These proposals allow more gradual changes in rate structure that would over time align the costs and benefits of solar adoption for both participating and non-participating ratepayers. They preserve the customers right to self-generate, and would ensure that customer-sited renewable distributed generation continues to grow

sustainably, with a payback period of approximately seven years.[54] These proposals include specific alternatives designed for growth among residential customers in disadvantaged communities, and would ensure that savings for existing low-income NEM participants would not be affected. They would increase access to NEM for low-income homeowners, renters, and customers in disadvantaged communities, and include no fixed charges for any NEM participants. They would also incentivize the transition to solar and storage which California needs to see expanded both to increase resilience and to flatten the load curve.[55]

C. The CPUC should *not* adopt the joint proposal of PG&E, SDG&E and SCE (IOU Proposal).

Q: What is the first guiding principle that the CPUC adopted to guide the development and evaluation of a NEM successor tariff?

A: The first guiding principle is that "A successor to the net energy metering tariff should comply with the statutory requirements of Public Utilities Code Section 2827.1."[56]

[54] California Solar and Storage Association's Proposal for a Successor to the Current Net Energy Metering Tariff, March 15, 2021, p. 23.
[55] Kosowatz, John, American Society of Mechanical Engineers, Energy Storage Smooths the Duck Curve, 2018. Available at: https://www.asme.org/topics-resources/content/energy-storage-smooths-duck-curve.
[56] Decision Adopting Guiding Principles for the Development of a Successor to the Current Energy Metering Tariff, February 11, 2021, p. 34.

Q: What does Public Utilities Code 2827.1 require in terms of customer-sited renewable distributed generation growth?

A: The Code requires that a tariff: "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."[57]

Q: What kind of fees are the IOUs proposing for solar customers?

A: Under the IOU Proposal,[58] a customer with a six kW solar system would be paying $56 per month as a SCE customer, $86 per month as a PG&E customer, and $91 per month as a SDG&E customer, according to analyses conducted by the California Solar and Storage Association; these solar access fees would be the highest in the country.[59] For a school, or other organization that installs a 250 kW solar system, this would translate into a $950 monthly fee in PG&E territory, $1,100 in SCE territory, and $3,400 per month in SDG&E territory.[60]

Q: What would be the impact of the proposed high fees on rooftop solar adoption?

A: The proposed fees would severely impact the number of residents and businesses who would install solar. According to the US Energy Information Administration,[61] the average electric bill in California is $101.92. While one could argue about the

[57] California Public Utility Code Section 2827.1(b)(1).
[58] Joint Proposal of PG&E, SDG&E and SCE, March 15, 2021. Accessed June 9, 2021.
[59] According to an analysis conducted by California Solar and Storage Association; see: https://calssa.org/press-releases/2021/3/16/ious-pressure-cpuc-to-make-rooftop-2x-more-expensive-slash-value-of-solar-exports-by-77.
[60] *Id*.
[61] U.S. Energy Information Administration. 2019 Average Monthly Bill- Residential. Available at: https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_a.pdf.

percentage decline in savings that customers might expect to see in one utility territory or another, the simple fact is that most people are not going to be interested in paying for a solar system when much of their savings would simply be replaced by fixed charges from the utility. It follows, therefore, that the IOU proposal does not comply with Public Utilities Code Section 2827.1. It should also be noted that these fees would decrease incentives to conserve energy.

Q: Are low-income customers exempted from these proposed fees?

A: No. While the IOUs propose a "discount" on the fees charged to low-income NEM households, low-income customers are not exempt from these fees.[62]

Q: When would the proposed low-income fee discount expire, and what would be the impact of this change?

A: The IOU Proposal is only guaranteeing a low-income fee for three years, at which point the IOUs can decide how they want to proceed. If they decide to discontinue it, the low-income customers who are currently enjoying the discount will continue to receive it for another seven years and any new low-income household will not receive any discount on the proposed fees.[63]

Q: How would these additional fees impact the ability for low-income households to benefit from solar?

A: The proposed fees will decrease the financial benefits that low-income households would otherwise see from solar installation, and would be a new barrier to low-income solar adoption. Such fees are therefore at odds with the Public Utilities Code

[62] Joint IOU Proposal, p. 37.
[63] *Id*., p. 38.

Section 2827.1 directive to ensure that there is "growth among residential customers in disadvantaged communities" for customer-sited renewable energy generation.

Q: What do the IOUs assert regarding solar payback periods under their Proposal and what will be the impacts of these significantly longer payback periods?

A: According to data presented in the Joint IOU Proposal, the solar payback period would increase from 3-4 years (a figure that was derived from modeling and is likely an underestimate) to 11-15 years.[64] While there is general consensus[65] in the solar industry that payback periods could extend to seven years, quadrupling the payback period will simply make solar financially infeasible for many residents. This will inevitably hurt the ability of California to meet its rooftop solar goals and decimate an industry that employs thousands across the state.

Q: How will the IOU Proposal affect the solar payback period for low-income households?

A: The IOUs state that their proposed "income-qualified rider" would have solar payback periods 10-13 years as compared to 11-15 years for non-low-income residents.[66] The benefit of this proposed reduction of 1-2 years in payback time is a minimal benefit and is essentially laughable considering that a payback of 10-13 years is triple to quadruple what the IOUs say is the current average payback period for non-low income customers.[67] It is also important to note that, as described above, the "income-qualified rider" is only guaranteed for three years. After this time, low-

[64] *Id*., p. 9.
[65] California Solar and Storage Association's Proposal for a Successor to the Current Net Energy Metering Tariff, March 15, 2021, p. 23.
[66] Joint IOU Proposal, p. 35.
[67] *Id*., p. 9.

income households may also see an 11-15 payback time for their solar systems. The proposed payback periods are clearly a major new barrier to low-income solar adoption and therefore at odds with the Public Utilities Code Section 2827.1 directive to ensure that there is "growth among residential customers in disadvantaged communities" for customer-sited renewable energy generation.

Q: What do the IOUs say in their proposal about designing rates around solar payback periods?

A: The IOUs state that rates shouldn't be developed around payback periods since NEM technologies are investments and any investment carries risks and that similar investments don't have guaranteed returns. This is a curious and deeply ironic argument to make given that the utilities' own rates are set by the CPUC to ensure a certain level of guaranteed returns. Accordingly, if the utility would simply accept a lower guaranteed level of profit, solar-related rate impacts could be compensated for quite easily.

Q: Do the IOUs recommend increasing funding to existing low-income solar programs in their proposal?

A: No. In their proposal, the IOUs recommend against expanding funding to existing programs designed to increase access to solar in low-income communities.[68] This is yet another reason why its proposal is at odds with the Public Utilities Code Section 2827.1 directive to ensure that there is "growth among residential customers in disadvantaged communities" for customer-sited renewable energy generation.

[68] *Id*., p. 35.

Q: What do the IOUs say about the need for a market transition credit in their proposal?

A: The IOUs claim that no additional "market transition credit" is needed in part because "it will have been nearly a decade since the passage of AB 327 by the time the new tariff is implemented."[69] The IOUs are missing the point. It's not about how long ago a piece of legislation has passed, it's about how far we have to go until California reaches its mandated climate goals and what would be helpful in creating a resilient and sustainable grid of the future.

Q: Do distributed energy resources such as solar and storage pose a threat to investor-owned utilities?

A: Yes. The fact that IOUs have long enjoyed a monopoly on electricity generation gives them an incentive to try to push out any competitors that are challenging their dominance. Rooftop solar may be the single biggest threat to that monopoly since a customer that makes their own energy is not much of a customer for buying energy. In addition, the fact that the utility business model relies on making a return on large capital intensive investments in transmission lines also gives them an incentive to push out any competitors that lessen the need for such lines. This also gives utilities an incentive to make sure as many ratepayers as possible are paying for those lines.

[69] *Id*., p. 15.

Q: What were the findings of the Edison Electric Institute on the risks that distributed energy resources pose to the centralized utility model?

A: In 2013, the Edison Electric Institute, the association that represents all U.S. investor-owned electric companies[70], published a report titled "Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business."[71] Among their findings were:

> "The threats posed to the electric utility industry from disruptive forces, particularly distributed resources, have serious long-term implications for the traditional electric utility business model and investor opportunities."[72]

> "Today, a variety of disruptive technologies are emerging that may compete with utility-provided services. Such technologies include solar photovoltaics (PV), battery storage, fuel cells, geothermal energy systems, wind, micro turbines, and electric vehicle (EV) enhanced storage. As the cost curve for these technologies improves, they could directly threaten the centralized utility model."[73]

> "While the cost--recovery challenges of lost load can be partially addressed by revising tariff structures (such as a fixed charge or demand charge service component)…. even if cross-subsidies are removed from

[70] Edison Electric Institute, About EEI. Available at: https://www.eei.org/about/Pages/about.aspx. Accessed June 15, 2021.
[71] Edison Electric Institute, Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business, 2013. Available at: https://www.ourenergypolicy.org/wp-content/uploads/2013/09/disruptivechallenges-1.pdf.
[72] *Id*., p. 17.
[73] *Id*., p. 3.

rate structures, customers are not precluded from leaving the system entirely if a more cost-competitive alternative is available (e.g., a scenario where efficient energy storage combined with distributed generation could create the ultimate risk to grid viability). While tariff restructuring can be used to mitigate lost revenues, the longer-term threat of fully exiting from the grid (or customers solely using the electric grid for backup purposes) raises the potential for irreparable damages to revenues and growth prospects. This suggests that an old-line industry with 30-year cost recovery of investment is vulnerable to cost-recovery threats from disruptive forces."[74]

"While the various disruptive challenges facing the electric utility industry may have different implications, they all create adverse impacts on revenues, as well as on investor returns, and require individual solutions as part of a comprehensive program to address these disruptive trends. Left unaddressed, these financial pressures could have a major impact on realized equity returns, required investor returns, and credit quality."[75]

"The electric utility sector has not previously experienced a viable disruptive threat to its service offering due customer reliance and the solid economic value of its product. However, a combination of technological innovation, public/regulatory policy, and changes in consumer objectives and preferences has resulted in distributed generation and other DER

[74] *Id*.
[75] *Id*., p. 1.

being on a path to becoming a viable alternative to the electric utility model."[76]

Q: What were the "Strategic Implications" of these findings, according to the Institute and how do they relate to the IOU Proposal?

A: Faced with the "disruptive threat"[77] posed by distributed energy resources such as solar and storage, the Edison Electric Institute recommended several "Immediate Actions"[78] that should be taken. The first such action that it recommended was to:

> "Institute a monthly customer service charge to all tariffs in all states in order to recover fixed costs and eliminate the cross-subsidy biases that are created by distributed resources and net metering, energy efficiency, and demand-side resources."[79]

It should not come as a surprise that the Joint IOU Proposal follows this playbook. This has been the path that investor-owned utilities have been following since 2013 when the Edison Electric Institute highlighted the significant threats posed by solar and storage to their business model. As detailed earlier in this testimony, utilities also have an incentive to use solar's rate impacts to distract from the fact that their massive unregulated spending on additional infrastructure is a much larger factor in driving up customer rates (with much of this spending having no state or federal oversight).

[76] *Id*., p. 13.
[77] *Id*.
[78] *Id*., p. 24.
[79] *Id*.

D. The CPUC should *not* adopt the proposal of the Natural Resources Defense Council (NRDC Proposal).

Q: How does NRDC assert its proposal would impact the growth of distributed energy generation?

A: NRDC claims that it has developed a proposal that "ensures the sustainable growth of distributed generation, including rooftop solar, in California,"[80] and therefore complies with the statutory requirements of Public Utilities Code Section 2827.1.

Q: Do you agree with this assertion?

A: No. The underlying assumptions in NRDC's proposal about what kind of payback times would be attractive to prospective solar customers are flawed.

NRDC states in its proposal that: "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."[81] There are several issues with this statement, related both to the ten year payback time period and to the reference to what makes a "viable product."

[80] Natural Resources Defense Council Proposal for the Successor Net Energy Metering Tariff, March 15, 2021, p. 2.
[81] *Id*., p. 11.

Q: Why would a ten-year payback period be problematic?

A: The average amount of time that people own their homes in the US is eight years, and ten years in major California metropolitan areas.[82] Given that most people aren't living in their houses for more than ten years, it's difficult to imagine how "a 10 year payback ensures that customers recoup their investment in the near-term while earning on their investment in the long term,"[83] as NRDC is claiming. If you aren't expecting to be living in the same place a decade from now, you are probably not going to see an investment that only pays off after a decade as attractive.

Q: Do you agree that NRDC's proposed upfront incentive "provides solar contractors with a viable product to sell"?

A: No. In addition to the reasons detailed above regarding the 10-year payback period, the fact is that if customers are offered only minimal bill savings and also must pay a range of fixed charges[84] (which is essentially what NRDC is proposing), few people are going to choose to invest in a solar system, even if there is a large upfront incentive. Moreover, it is bad public policy to bait lower- and middle-income people into financial arrangements that seem good up front, but then commit them to a decade of high payments. The financial proposition solar offers to homeowners is to lower their electric bills for years to come, not to offer something closer in design to a payday loan.

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[82] Lanser, J. 5 California metros top U.S. rankings for longer homeownership: The typical U.S. seller owned the home 8 years, up 3.6 years in a decade, Orange County Register, October 23, 2019. Available at: https://www.ocregister.com/2019/10/23/nobodys-moving-california-metros-top-u-s-growth-in-length-of-homeownership/.

[83] NRDC Proposal, p. 20.

[84] *Id*., pp. 8, 15 and 16.

Q: What does Public Utilities Code Section 2827.1 require and does it make reference to product viability?

A: The Code requires that a tariff ensure that "customer-sited renewable distributed generation continues to grow sustainably and include specific alternatives designed for growth among residential customers in disadvantaged communities." [85] The question therefore is not whether solar contractors will have a "viable product to sell,"[86] but rather whether its proposal would allow sustainable growth in customer-sited renewable distributed generation. Solar must be more than just a "viable product," it must be a sufficiently economically attractive product for a large number of residents to choose to invest in it, in order to help distributed generation grow sustainably and enable California to meet its ambitious and critical climate goals.

Q: How would middle-income, low-income and high-income residents be impacted by NRDC's proposal?

A: High-income residents who do not already have solar would still probably be able to afford to invest in a solar system with what would now be a very long-term and uncertain payoff; however, they would likely be less inclined to do so since the economic value proposition would be much less appealing. Low-income residents who are not currently benefiting from solar would be able to see benefits through existing programs, which could be expanded under NRDC's proposed "Equity Fund"; with the changes to NEM that NRDC is proposing, it is clear that no low-income residents would be able to afford solar outside of these programs. For middle-income residents, NRDC's proposal would make solar largely inaccessible and unattractive.

[85] California Public Utility Code Section 2827.1(b)(1).
[86] NRDC Proposal, p. 11.

Given the 10-year payback period, minimal bill savings, and additional fixed charges that NRDC is proposing, few middle-income residents would choose to go solar and because middle income Californians are still about half the state's population,[87] we can confidently expect that if NRDC's proposal is adopted we would see the market collapse at its center, killing thousands of solar industry jobs and stopping the progress we need on clean energy to meet the state's climate goals.

V. ISSUE #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 tariffs, net energy metering aggregation tariff, the Renewable Energy Self-Generation Bill Credit Transfer program, and the net energy metering fuel cell tariff.

A. The CPUC should question whether the current centralized utility model can truly provide what California needs.

Q: Why should the CPUC question the current centralized utility model?

A: California's three major IOUs were created over a century ago in a very different, fossil fuel dependent era.[88] Even now IOUs are currently operating in a system structured more to deal with the energy crisis of two decades ago than equipped to

[87] Sharma, A., California's middle class is in decline, despite the state's immense wealth, Cal Matters, KPBS, March 8, 2018. Available at: https://calmatters.org/economy/2018/03/california-middle-class-decline-despite-states-immense-wealth.

[88] Pacific Gas and Electric Company, Company Profile. Available at: https://www.pge.com/en_US/about-pge/company-information/profile/profile.page; Edison International, A Look Back: Our History. Available at: https://www.edison.com/home/about-us/our-history.html; San Diego Gas & Electric, About Us. Available at: https://www.sdge.com/more-information/our-company/about-us. Accessed June 9, 2021.

rapidly face the challenges posed by a rapidly changing climate.[89] EWG believes that the Commission needs to ask itself whether the centralized utility model remains the right one to successfully meet California's climate goals, serve low-income communities, provide both reliability and resilience, minimize wildfire risks, minimize land use impacts, and ultimately provide enough value to rate payers.

Q: Why might IOUs have a difficult time facing today's climate challenges?

A: In California, IOUs are highly regulated monopolies given exclusive rights to service territories and overseen by the CPUC. For decades they have been entrusted by the public and regulated by this Commission to provide reliable power at reasonable rates. IOUs make profits for their investors through the infrastructure assets they build, not selling energy to customers.[90] As a result, IOUs are risk-averse large-scale enterprises that must be pushed into working for cleaner and more efficient energy use by the public through legislators and regulators. They are not designed for innovation, efficiency or saving ratepayers money. Nor are they designed to embrace the decentralized power system that we need to provide greater community resilience.

Q: How are IOUs incentivized and how do they make profits?

A: In the current system, there's no incentive for IOUs be efficient because almost all costs are passed onto ratepayers after an approval by the CPUC. Because IOUs don't

[89] U.S. Energy Information Administration, Subsequent Events-California's Energy Crisis. Available at: https://www.eia.gov/electricity/policies/legislation/california/subsequentevents.html. Accessed June 9, 2021.

[90] Feinstein, L. and de Place, E., "Playing Monopoly; Or, How Utilities Make Money: Are utility business models aligned with our decarbonization goals?" Sightline Institute, May 18, 2020. Available at: https://www.sightline.org/2020/05/18/playing-monopoly-or-how-utilities-make-money/.

make money for shareholders from selling more clean power or less total power,[91] they don't have the proper incentives for the climate crisis era we live in, which demands cleaner energy and a more efficient approach to all energy usage. In fact, unlike most private enterprises with millions of customers, IOUs have no market incentive to sell more or less of their product to their customers but instead make profits based on the returns generated by capital expenditures.[92] This is not hypothetical; since 2012, IOUs in California have made $20 billion in profits.[93] Not perhaps coincidentally, California's ratepayers have been charged for more than $20 billion in transmission line projects during roughly the same time period.[94] In short, IOUs are not set up to be adaptive to changes in the market, but to be dependable in providing a continuous service and a steady return to capital investors.

Q: Given what California has experienced over the past four years, can IOUs truly claim reliability?

A: Unfortunately, IOUs can no longer claim success on reliability in this new extreme heat era. The Public Service Power Shutoffs (PSPS) have been a disaster. Utilities have either enacted them too late – letting lines fail when still live and sparking massive unprecedented fires, or cutting off power preemptively to millions causing inconvenience and harm to ratepayers, but limiting their forest fire liability. Either way, both the public and the utilities lose. The problem is that the centralized model

[91] *Id*.
[92] *Id*.
[93] California Solar and Storage Association, "IOUs Pressure CPUC to Make Rooftop 2x More Expensive, Slash Value of Solar Exports by 77%." March 16, 2021. Available at: https://www.prnewswire.com/news-releases/ious-pressure-cpuc-to-make-rooftop-2x-more-expensive-slash-value-of-solar-exports-by-77-301248936.html?tc=eml_cleartime.
[94] *Id*.

is not resilient enough for the climate situation we now face in California. There are major concerns about allowing unaccountable utility staff to make decisions to deprive hundreds of thousands of people of power. Some have called for the state government to take over that responsibility because they do not trust the utility to make the right choice given its incentives.

Q: Do IOUs actually deliver on providing low rates to Californians?

A: Generally, no. California IOUs are known to have some of the highest rates in the country.[95] Even within California itself, IOUs are actually more expensive for customers than California's municipal utilities, which are not regulated by the CPUC but instead are overseen by local governments and are able to offer cheaper power to their customers. A 2015 study found that IOU rates in California were double what municipal utilities were charging.[96] In part, this is because municipal utilities do not have shareholders that need to see a profit on investments and have no financial pressure to make new expensive investments simply for the anticipated returns.

Q: Why do IOUs have a greater stake in preserving the status quo rather than in continued innovation in the way many successful California companies do?

A: Because IOUs make their returns from capital investments; these investments generate steady revenue over their lifetime to pay off the financing and provide the promised returns. The average lifetime of a natural gas power plant is over 20 years,

[95] Borenstein, S., "Reinventing Fixed Charges." Haas School of Business University of California, Berkeley, Energy Institute Blog, May 2020. Available at: https://energyathaas.wordpress.com/2020/11/16/reinventing-fixed-charges/.

[96] Trabish, H., "California IOU rates found to be twice the cost of muni power." Utility Dive, June 17, 2015. Available at: https://www.utilitydive.com/news/california-iou-rates-found-to-be-twice-the-cost-of-muni-power/400858/.

for coal it is 39 years and for nuclear 36 years.[97] This means that despite whatever is suggested by science or demanded by policy, IOUs have a major incentive to keep these facilities online, otherwise they have a "stranded asset."[98] As of 2019, California's three IOUs owned over 11 GW of generating capacity, most of which is hydro, nuclear and gas power plants.[99] These assets must be functional and generate revenue for decades in order to pay off their financing. With that scale of investment, IOUs are not only incentivized to keep their dirty energy assets online for their entire useful lifetimes, but they must maintain the model of centralized power production, with electricity generated in power plants on a massive scale and then sent to load centers by transmission lines; otherwise, IOUs will face additional stranded assets and diminished returns.[100]

B. A new, more decentralized system is required to meet California's future.

Q: Why could an overreliance on centralized power production pose problems for California?

A: Centralized power has its place as a foundation to the power system, but in this day and age of prolonged extreme heat, wildfires and PSPS events we need a more

[97] U.S. Energy Information Administration website, Today in Energy. April 20, 2017. Available at: https://www.eia.gov/todayinenergy/detail.php?id=30872. Accessed June 9.
[98] Sauer, N., "Gas Plants Face Stranded Asset Risk In California Drive To 100% RE." The Energy Mix, November 5, 2018. Available at: https://theenergymix.com/2018/11/05/gas-plants-face-stranded-asset-risk-in-california-drive-to-100-re/.
[99] Stanfield, J., "California utilities' role as energy providers faces uncertain future." S&P Global Market Intelligence, April 5, 2019. Available at: https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/california-utilities-role-as-energy-providers-faces-uncertain-future-50786307.
[100] Carr, M., "Putting a Price on the Risk of Climate Change." Bloomberg Businessweek May 29, 2019. Available at: https://www.bloomberg.com/news/articles/2019-05-29/putting-a-price-on-the-risk-of-climate-change?utm_source=newsletter&utm_medium=email&utm_content=2019-09-08&utm_campaign=greenbuzz.

balanced system with significant energy production closer to load centers, local energy storage and less reliance on long distance transmission.[101] A new, more effective system wouldn't mean zero utility scale solar power; rather, it would aim for a healthy balance that enhances resilience from blackouts, wildfires and other events through a locally resourced distribution grid that can island itself and provide basic services independently of the utility.[102]

Q: Does the IOU system serve low-income families well?

A: If California was to design an electricity system that truly put the needs of low-income households first, this system would prioritize making sure that these households had affordable access to solar, storage and other distributed energy resources that would save them money on their bills and provide back-up power during power outages and emergencies. It would also do everything it could to move polluting energy generation away from lower income communities. Relatively few of the IOUs low-income CARE rate participants have distributed energy resources, yet even with the 30-35% discount offered by the program, they are still paying the same as the average customers of municipal utilities[103] and often living with the worst

[101] Rocky Mountain Institute, A Practical Guide to Navigating Utility Business Model Reform, 2018. Available at: https://rmi.org/insight/navigating-utility-business-model-reform.
[102] Roberts, D., "Clean energy technologies threaten to overwhelm the grid. Here's how it can adapt." Vox, November 11, 2019. Available at: https://www.vox.com/energy-and-environment/2018/11/30/17868620/renewable-energy-power-grid-architecture.
[103] Sacramento Municipal Utility District, How Our Rates Compare. Available at: https://www.smud.org/en/Rate-Information/Compare-rates. Accessed June 9, 2021.

public health impacts of our current power system.[104] This suggests that if the CPUC wants to serve low-income ratepayers it should look at the IOU model itself.

Q: Are IOUs trusted by Californians to face the climate challenge?

A: IOUs are not trusted to face the challenge of climate change by the people of California. PG&E in particular is deeply unpopular and untrusted. A 2019 UC Berkeley poll found that nearly 90% of Bay Area residents wanted to get rid of PG&E.[105] The company has gone through bankruptcy and has paid out billions in settlements for causing massive forest fires in 2015, 2017 and 2018.[106] It's not just PG&E; people across the entire state are leaving IOUs when they have the chance. Over 200 California cities, towns and counties with more than 11 million customers across California are now served by Community Choice Aggregators.[107] Local communities are choosing to take back the power from IOUs when they can. That's clearly not a sign of confidence in their performance.

[104] Physicians, Scientists, and Engineers for Healthy Energy, California Peaker Power Plants Energy Storage Replacement Opportunities, 2020. Available at: https://www.psehealthyenergy.org/wp-content/uploads/2020/05/California.pdf.
[105] UC Berkeley IGS Poll, Tabulations from a Late November 2019 Survey of California Voters About Recent Power Blackouts in California and the Problems Facing the Pacific Gas and Electric Company, 2019, pp. 428-429. Available at: https://escholarship.org/content/qt3x16866b/qt3x16866b.pdf?t=q2agx1&v=lg.
[106] Penn, I., "PG&E, Troubled California Utility, Emerges From Bankruptcy." The New York Times, July 1, 2020. Available at: https://www.nytimes.com/2020/07/01/business/energy-environment/pge-bankruptcy-ends.html.
[107] California Community Choice Association, Powered by Community. Available at: https://cal-cca.org. Accessed June 9, 2021.

Q: How does the NEM tariff debate relate to this fundamental question about utility structure?

A: As the CPUC considers decisions about NEM, EWG urges the Commission to think about the NEM successor tariff in the broader context of what kind of power system would best serve all Californians in the future as we face the continued and increasing impacts of climate change. What kinds of new models would instill public trust, fix the broken incentives inherent in the current utility system, and actually provide the kind of resilience that California needs to manage the growing realities of climate change? If the Commission focuses too narrowly on the questions at hand, it will miss a key opportunity to move towards the kind of power system California really needs.

Q: How do you suggest the CPUC approach these fundamental questions of utility structure within the NEM proceeding?

A: EWG recommends that the CPUC leave NEM 2.0 in place for two years while the Commission launches a study of the utility business model and its capability to meet the demands of the future. With California facing such huge stakes around climate change, it would be imprudent to make changes now that are likely to lessen the greening of California's grid and impede our efforts to make that grid more resilient. Not only should the Commission broaden the parameters of the current cost effectiveness analysis, but it should also take a much wider and comprehensive look at what customer and system benefits can be gained from a distributed grid design and how best to ensure those benefits are realized. Otherwise, the state and stakeholders will be constantly revisiting issues of resiliency, customer access to solar and efficiency (particularly for low-income customers), and utility complaints of

eroding margin. It would be wise for the Commission to actually ask if California's climate goals and the reality of the impacts of climate change itself make the current centralized IOU business model incompatible with achieving those climate goals and ensuring customer benefits consistently flow to all rate payers.

Q: Does this conclude your testimony?

A: Yes.