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SoCalGas Comments for IEPR on Draft Building Decarbonization Assessment

Additional submitted attachment is included below.

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June 15, 2021

The Honorable J. Andrew McAllister
The Honorable Siva Gunda
California Energy Commission
Docket Unit, MS-4
Docket No. 21-IEPR-06
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on IEPR Building Decarbonization

Dear Commissioners McAllister and Gunda:

Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the California Energy Commission (CEC) Integrated Energy Policy Report (IEPR) Building Decarbonization. As stated in our written comments (TN#: 238157) submitted to Docket No. 21-IEPR-06 on June 8, 2021, attached please find a copy of our comments on the draft Building Decarbonization Assessment (TN#: 238184) in Docket No. 19-DECARB-01. The attached comments are specific to the State's building decarbonization activities and focus on:

1. Opportunities to improve decarbonized, cost-saving solutions for low-income customers.
2. The implications of uncertainties expressed in the draft Building Decarbonization Assessment prepared by CEC Staff.
3. The role of and recent trends in demand response capacity.
4. The need for clean gaseous molecules for an increasingly decarbonized building sector.
5. A cautionary tale of analogous tariff reform.

We appreciate the opportunity to continue our engagement with the CEC, policymakers, and stakeholders on mitigation policies to meet the State's building decarbonization goals by 2030.

Respectfully,

/s/ Kevin Barker

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June 11, 2021

The Honorable J. Andrew McAllister
The Honorable Siva Gunda
California Energy Commission
Docket Unit, MS-4
Docket No. 19-DECARB-01
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on the California Draft Building Decarbonization Assessment

Dear Commissioners McAllister and Gunda:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide public comments on the California Energy Commission (CEC) workshop on the Draft Building Decarbonization Assessment (Draft Assessment) required by Assembly Bill (AB) 3232 (Chapter 373, Statutes of 2018).[1] Addressing the challenge of climate change is existential and will require the best thinking, engagement, and contributions by all energy market participants. Mitigation policies should advance multifaceted solutions to reduce emissions, while continuing to foster the public interest tenets embodied in law for essential utility services, including reliable and affordable energy, maintain and enhance quality of life for Californians. Reaching the goals set forth by the State requires cost-effective near- and long-term building decarbonization strategies, that, in addition to decarbonizing the energy supply, include substantially increasing energy efficiency, carbon management strategies and building electrification.

As such, our comments focus on (1) opportunities to improve decarbonized, cost-saving solutions for low-income customers; (2) the implications of uncertainties expressed in the Draft Assessment; (3) the role of and recent trends in demand response capacity; (4) the need for clean gaseous molecules for an increasingly decarbonized building sector; (5) and a cautionary tale of analogous tariff reform.

[1] *See* Assembly Bill No. 3232 (Chapter 373, Statutes of 2018). Available at *https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB3232*.

1. Additional Energy Efficiency Investments are the Most Cost-Effective Carbon Reduction Strategy

Since the first Energy Action Plan in 2003,[2] energy efficiency has been at the top of the loading order regarding energy resource procurement because it is by far the most cost-effective resource. As the State charts its path toward achieving deeper climate goals, it is critical to reevaluate and increase energy efficiency deployment, particularly targeting low-income households for whom building electrification will impose asymmetrical and inequitable cost burdens.[3] Accordingly, we recommend increasing the current levels of funding by tenfold, especially for those programs that target low-income households. Targeting low-income households not only achieve energy savings, but also enhances public health and safety for families most in need. Energy efficiency reduces energy consumption and bills, thereby facilitating the decarbonization of the State's resource portfolio.

According to a 2020 American Council for an Energy-Efficient Economy (ACEEE) report,[4] 26 million low-income households experience a national median energy burden 8.1 percent as compared to 5 million non-low-income households that experience an energy burden of only 2.3 percent.[5] Therefore, low-income households spend more than 3.5 times as much of their income on home energy bills as non-low-income households. To combat energy burdens in low-income households, the 2020 ACEEE recommends expanding low-income energy efficiency programs, by ramping up investments in housing retrofits, energy efficiency, and weatherization. In fact, based on prior evidence of how weatherization reduces average customer bills, ACEEE estimated that weatherization can reduce low-income household energy burden by 25 percent.[6]

Additionally, researchers found that targeting funds based on past program and household-specific energy use data could increase the cost-effectiveness of energy efficiency investments by 21 percent.[7] There are opportunities to reconsider the performance and effectiveness of actual appliances in buildings in order to improve energy efficiency programs without increasing energy bills. However, there are barriers in the older housing stock that increases the cost and complexity of encouraging appliance and building upgrades to increase efficiency. For instance, the presence

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[2] California Public Utilities Commission, California Energy Commission, and the Consumer Power and Conservation Financing Authority Adopted the Energy Action Plan on May 8, 2003. Available at *https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/2003%20Energy%20Action%20Plan.pdf*.
The 2003 Plan was updated in 2005 and 2008.

[3] Lucas Davis, Catherine Hausman, *Who Will Pay for Legacy Utility Costs,* Energy Institute at Haas University California Berkeley, June 2021. (Those who are least able to electrify could bear the most burden of building decarbonization, disproportionately impacting low- and middle-income households.) Available at *https://haas.berkeley.edu/energy-institute/research/abstracts/wp-317/*.

[4] Ariel Drehol, Lauren Ross, and Roxana Ayala, *How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United* States, American Council for an Energy-Efficient Economy, September 2020. Available at *https://www.aceee.org/sites/default/files/pdfs/u2006.pdf*.

[5] Energy burden is defined as utility bills as a percentage of income. Per Ariel Drehol, et al., at 10.

[6] Ariel Drehol, et al., at vi.

[7] Fiona Burlig, *Energy Efficiency Can Deliver – Here's How,* Forbes, 24 May 2021. Available at *https://www.forbes.com/sites/ucenergy/2021/05/24/energy-efficiency-can-deliver-heres-how/?sh=138742e87ca0*.

of asbestos is a barrier to energy efficiency building upgrades because of the cost of removal and/or abatement. Currently, it is the building owner's financial responsibility to eradicate the asbestos as doing so is outside the scope of energy efficiency programs. This preclusion in the utilization of funds thereby becomes a barrier for much needed energy efficiency upgrades.

The California Public Utilities Commission's (CPUC's) recently approved changes to the Energy Savings Assistance (ESA) program that streamline furnace replacement and repairs are a step in the right direction.[8] These changes will make it easier to access funds for customer specific needs. For example, we have anecdotal evidence of reluctance to replacing furnaces due to a requirement for city inspectors to enter homes to identify code violations. This hesitancy presents a real barrier to widespread weatherization and energy efficiency upgrades for some residences.

Despite these challenges, SoCalGas' energy efficiency programs include solutions such as providing over 1.8 million customers a monthly personalized Natural Gas Usage Report to help them understand their energy usage patterns. This information can facilitate awareness of energy usage and lead to customers finding ways to save energy and reduce their gas bills during summer and winter months. In 2020 alone, SoCalGas customers were able to collectively save 13.5 million therms, a 1.5 percent reduction in natural gas consumption among more than 1.8 million customers. Additionally, SoCalGas customers were able to lower GHG emissions by more than 211,000 metric tons while saving $44 million on their utility bills.[9]

2. Implications of Uncertainties Expressed in the Draft Assessment

AB 3232[10] requires that the CEC prepare an analysis of different pathways to reduce greenhouse gas (GHG) emissions from buildings by 40 percent below 1990 levels by 2030. The Draft Assessment presents two alternative interpretations of this requirement. The first interpretation considers total building emissions, including the indirect emissions associated with the generation of electric power used in the building sector. The second interpretation considers only direct building emissions, excluding the indirect emissions associated with the generation of the power used in the buildings sector. As stated by Commissioner McAllister in the workshop, the CEC expects for the State Legislature to determine which interpretation of the requirement should be used to set State policy on building emission reductions by 2030.[11]

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[8] *See* California Public Utility Commission Final Decision (D.) 21-06-015.
[9] SoCalGas Company, *SoCalGas Energy Efficiency Programs Save Customers $44 Million,* 10 March 2021. Available at *https://newsroom.socalgas.com/stories/socalgas-energy-efficiency-programs-save-customers-44-million*.
[10] *See* Assembly Bill No. 3232 (Chapter 373, Statutes of 2018). Available at *https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB3232*.
[11] *See* Zoom Recording of the CEC Draft Building Decarbonization Assessment Workshop, 21 May 2022, at 00:44:57. Available at *https://energy.zoom.us/rec/play/7nr3_RE0kTJ2n25TT2qovEVRwS0IsPvPQoFvORNaszyJiGHSta3A9Rr111omahMEHBd1dkGjf2Pm5Oga.MlOCFWOVeQm_lzyu?continueMode=true&_x_zm_rtaid=7smXYFvBRMGcZ7FP2-pP9Q.1623337499605.e0fcf9d150b5c6786da573c9fff812db&_x_zm_rhtaid=761*.

The Draft Assessment analysis of the challenges and uncertainties associated with building decarbonization by 2030 illustrates the importance of this determination. CEC Staff evaluated nine general approaches and a range of variations to meet the 40 percent reduction in building emissions. Only two of the nine general approaches are able to meet the 40 percent reduction target, if the target is defined as direct emissions only. These approaches are the aggressive electrification and efficient aggressive electrification scenarios, reflecting "optimistic" assumptions related to the rate at which the building sector could be decarbonized, based on the rate of electrification of residential and commercial natural gas space heating and water heating.

The Draft Assessment identifies fundamental uncertainties in the analysis, specifically:

> The most important element missing from these analyses is the role that energy consumers will play in making choices for electric appliances rather than gas ones, adopting energy efficiency measures, and heeding the warning of climate scientists to reduce GHG emissions across the board. Better understanding of consumer behavior is essential but will require substantial time and effort to collect the appropriate data and understand how to best guide California's residents toward the state's climate and energy goals.[12]

In significant measure, pathways addressing both the cost and feasibility of electrification at scale are still being developed, (and SoCalGas is collaborating with the CEC, RAND Corporation, market participants and stakeholders to explore such pathways). There are jurisdictional questions as a sizeable portion of building emissions are from commercial and/or noncore customers who procure their own gas in interstate commerce and for whom gas utilities provide transportation service as *common carriers.* Pathways to electrification for such customers entail different routes than for residential customers.

Moreover, customer-borne and system-wide conversion costs have *not yet* been tabulated and projected sufficiently with bearing on scenarios requiring 70 percent early retirement of all existing natural gas furnaces and water heaters in the next 9 years, and without a known pathway for how energy consumers will be able to achieve these targets. Further, during the workshop, CEC Staff identified additional uncertainties, such as the impacts of differences in annual weather patterns and peak period demand patterns (*i.e.*, the recent polar vortex in Texas). The potential impacts of these types of uncertainty on system infrastructure requirements has yet to be addressed. SoCalGas is *not* suggesting that inherent and expressed uncertainties reduces the value of the analysis or implies infirmities within it. The foregoing is intended to contribute by providing both context to this complex challenge and the need for further collaborative work to bring the opportunities identified in the Draft Assessment to fruition.

For certain, the best analyses of California's building decarbonization pathways has a wide range of uncertainty. We respectfully suggest that it is in the public interest for conclusions and

[12] California Energy Commission, *Draft Staff Report: California Building Decarbonization Assessment,* May 2021, at 262. Available at *https://efiling.energy.ca.gov/getdocument.aspx?tn=237733*.

recommendations to be expressed in a manner that contextualizes that uncertainty so that future policymaking, be it by the State Legislature or other agencies, is undertaken with eyes wide open so as to broaden, rather than narrow, the policy pursuit of solutions.

3. The Role of and Recent Trends in Demand Response Capacity

One policy/technology that is rightfully expressed and raised as an important tool for building decarbonization is demand response (DR), which helps balance supply and demand on the electric grid in times of need. The benefits of utilizing DR could "…[give] utility customers more control over their electricity usage; the ability to use technology to respond to rate, GHG intensity, or other signals; the ability to utilize excess renewable generation; the potential to firm variable renewable generation without additional GHG emissions; and the potential to enhance electric system reliability while also providing cost savings to customers."[13] Recent history suggests, however, that achieving benefits from DR technologies is becoming more challenging. For instance, the 2013 CEC Integrated Energy Policy Report (IEPR) focused on breaking down barriers to increase DR capacity.[14] Likewise, in 2015 the CPUC redesigned its DR programs with the goal of stimulating market participation and to capture private sector investments in this low-cost and carbon-free grid balancing resource. Even with an IEPR dedicated to increasing DR capacity and the CPUC redesign changes, the total DR capacity in the State has markedly decreased, from 2,000 MW to about 1,600 MW (*i.e.*, from 2015 until 2020).[15] That is a 20 percent loss in DR capacity notwithstanding focused and targeted efforts to increase DR within the State.

Utilities have also seen DR programs diminish, with about $58M in DR budgets unspent over the past two years. More recently, the CPUC and the California Independent System Operator (CAISO) conveyed skepticism about DR's ability to reliably serve a role in balancing the State's increasingly renewable-powered grid. The Final Joint Agency Root-Cause Analysis Report found that the collection of market dispatched DR failed to provide the level of load drop that program participants could have made available.[16] Yet, the Draft Assessment would rely on DR to enable the electric system to meet system requirements resulting from additional load growth, particularly in the three electrification scenarios. The Draft Assessment scenarios also rely on DR to reduce the cost of reaching the emissions reduction target of 40 percent by 2030. Depending on additional DR capacity as a shoo-in resource for reducing building peak energy consumption, at a time when the performance of DR is diminishing, may not be as easy to achieve as is suggested. Prudency

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[13] Ibid, at 7.
[14] The CEC's webpage states you must contact the CEC to receive a copy of 2003-2016 Integrated Energy Policy Reports (IEPRs). The 2013 IEPR led by Commissioner J. Andrew McAllister focused on Energy Efficiency and Demand Response. Available at *https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report*.
[15] Jeff St. John, *Seeking a Better Way to Pinpoint the Value of Demand Response in California*, GreenTech Media, 25 January 2021. Available at *https://www.greentechmedia.com/squared/dispatches-from-the-grid-edge/seeking-a-better-way-to-pinpoint-the-value-of-demand-response-in-california*.
[16] California Independent System Operator, CPUC, and CEC, *Final Root Cause Analysis: Mid-August 2020 Extreme Heat Wave*, 13 January 2021, at 62. Available at *http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf.*

dictates that data of actual DR performance should be considered and interpreted, within any recommendation to rely so heavily on DR.

4. Clean Gaseous Fuels Are Critical to Decarbonizing the Fuel Supply By 2030 and Beyond

Although electrification plays an important and significant role for building decarbonization, the reality is that decarbonized molecules must likewise play a pivotal role in electrification and end-use decarbonization. Of the 25 percent of GHG emissions emitted from California's residential and commercial buildings, 15 percent are attributable to electric end-uses and 10 percent to natural gas end-uses.[17] Senate Bill 100 (Chapter 312, Statutes of 2018) mandates a path to cut California's electric grid emissions by procuring renewable and carbon free sources by 2045.[18] Likewise SoCalGas' ASPIRE 2045 strategy describes our goal to reduce Scope 1, 2, and 3[19] emissions by 2045.[20] We are currently investing in a diverse portfolio of technologies and applications to leverage Southern California's gas grid to transport low- to zero- (and even negative-) carbon molecules, such as hydrogen and renewable natural gas (RNG). For example, SoCalGas and SDG&E have pushed for the adoption of a renewable gas standard in the Biomethane Rulemaking (R.13-02-008).[21] This program allows natural gas customers to purchase RNG to fuel their homes and businesses, like renewable energy programs available to electric customers. As stated in the recent CPUC Staff report in the Biomethane Order Instituting Rulemaking (R.) 13-02-008, "complete building sector decarbonization may take decades to achieve and even the most aggressive building electrification models envision a role for biomethane and other renewable gas sources in powering operations that are hard to electrify and helping generate flexible electricity that can balance the intermittency of wind and solar generation."[22]

Additionally, European countries have been exploring the potential of a hydrogen economy to help further reduce emissions, such as injection hydrogen into the existing gas grid. For instance, in 2020 the United Kingdom's HyDeploy pilot project to blend carbon-free hydrogen into the gas supply became fully operational in Newcastle, England and will commence a 10-month run. The HyDeploy pilot is injecting up to 20 percent of hydrogen into Keele University's existing natural gas pipeline, which supplies 100 domestic properties and 30 faculty buildings.[23] For this pilot, the

[17] California Air Resources Board, *California Greenhouse Gas Emissions for 2000 to 2018: Trends of Emissions and Other Indicators*, 2020 Edition. Available at *https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf*.
[18] *See* Senate Bill No. 100 (Chapter 312, Statutes of 2018).
[19] Scope 3 emissions are indirect GHG emissions from sources not owned or controlled by the company, such as residential, commercial, and industrial buildings, and electric generation.
[20] SoCalGas Company, *ASPIRE 2045: Sustainability and Climate Commitment to Net Zero*, March 2021. Available at *https://www.socalgas.com/sites/default/files/2021-03/SoCalGas_Climate_Commitment.pdf*.
[21] *See* CPUC A.19-02-015 - Renewable Natural Gas (RNG) Tariff (April 13, 2020). Available at *https://www.socalgas.com/regulatory/A19-02-015*.
[22] Order Instituting Rulemaking to Adopt Biomethane Standards and Requirements, Pipeline Open Access Rules, and Related Environmental Provisions, Rulemaking 13-02-008, Administrative Law Judge's Ruling Directing Parties to File Comments on Phase 4A Staff Proposal and Related Questions, June 3, 2021, at 41.
[23] Aleksandra Dimitrova, *UK hydrogen blended gas project starts operation*, Renewables Now, 02 January 2020. Available at *https://renewablesnow.com/news/uk-hydrogen-blended-gas-project-starts-operation-682129/*.

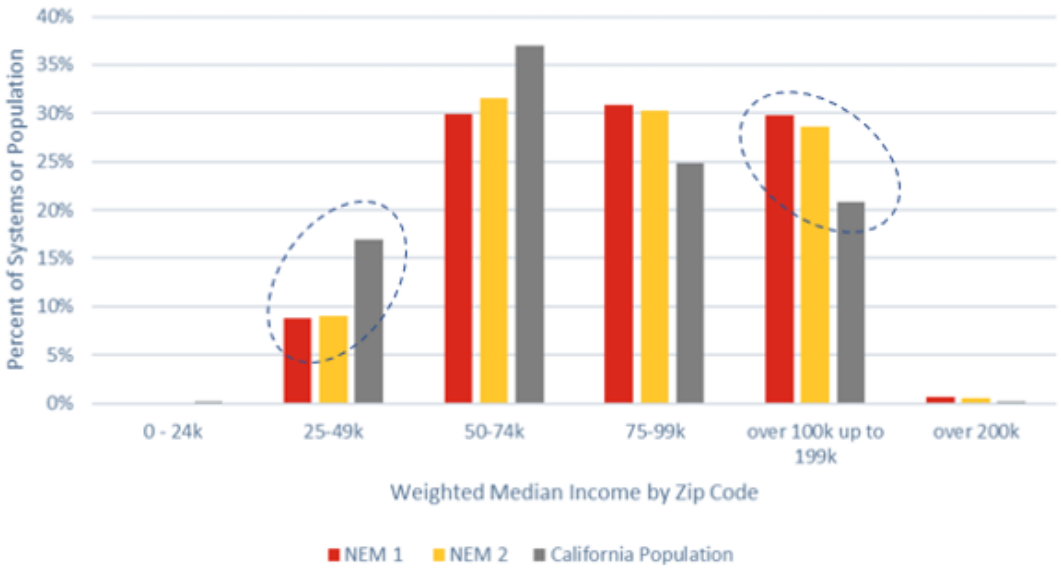
hydrogen gas is created using an electrolyzer powered by electricity. The resulting hydrogen is then injected into the existing gas system, with no need for end-users to change appliances or pipelines. If the pilot is successful, it will be expanded to deliver the 20 percent hydrogen blend to 670 nearby domestic and commercial buildings.

5. Technology-Specific Tariffs Create Untenable Cross-Subsidies for Non-participating Customers

Technology-specific tariffs, like the Net-Energy Metering (NEM) program have been demonstrated to have unintended cost-shifting impacts on non-participating customers. NEM is a program designed to incent customers to generate their own electricity by installing roof-top solar, wind, biogas, or fuel cells.[24] Behind-the-meter (BTM) customers who install roof-top solar, for example, receive a financial credit at the same electric retail rate (including generation, distribution, and transmission components) for every kilowatt-hour (kWh) of excess solar generated.[25] As such, BTM solar customers avoid paying the full cost for services rendered by the electric grid (*i.e.*, both the infrastructure and energy).[26] These avoided costs are shifted by way of higher electric rates to non-solar customers, who typically have lower incomes and thus less discretionary spending, are more likely to be renters, and/or have low credit ratings that impedes access to third-party owned solar systems.[27] In fact, figure 1 shows the delineation between households making $75,000 or more per year having a greater percent of the population participating in the NEM programs than those making less than $75,000 per year, and the discrepancy becomes even greater for the population making less than $50,000 per year. [28]

[24] CPUC webpage on Net Energy Metering (NEM), 2021. Available at *https://www.cpuc.ca.gov/nem/*.
[25] Ibid.
[26] Energy Institute at UC Berkeley's Hass School of Business and NEXT 10, *Designing Electricity Rates for An Equitable Energy Transition*, February 2021. Available at *https://www.next10.org/sites/default/files/2021-02/Next10-electricity-rates-v2.pdf*.
[27] According to Solar Reviews, 'in general your credit score may need to be 700 or higher for a solar loan from a traditional financial institution like a bank.' *See* Solar Reviews blog post on "Is a Mosaic solar loan the best option to finance solar panels," 24 May 2021. Available at *https://www.solarreviews.com/blog/is-a-mosaic-solar-loan-the-best-option-to-finance-solar-panels*.
[28] Graphic colors have been changed, but the data comes from Verdant Associates, LLC's Report "Net-Energy Metering 2.0 Lookback Study," submitted to the California Public Utilities Commission on January 21, 2021. Available at *https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442467448*.

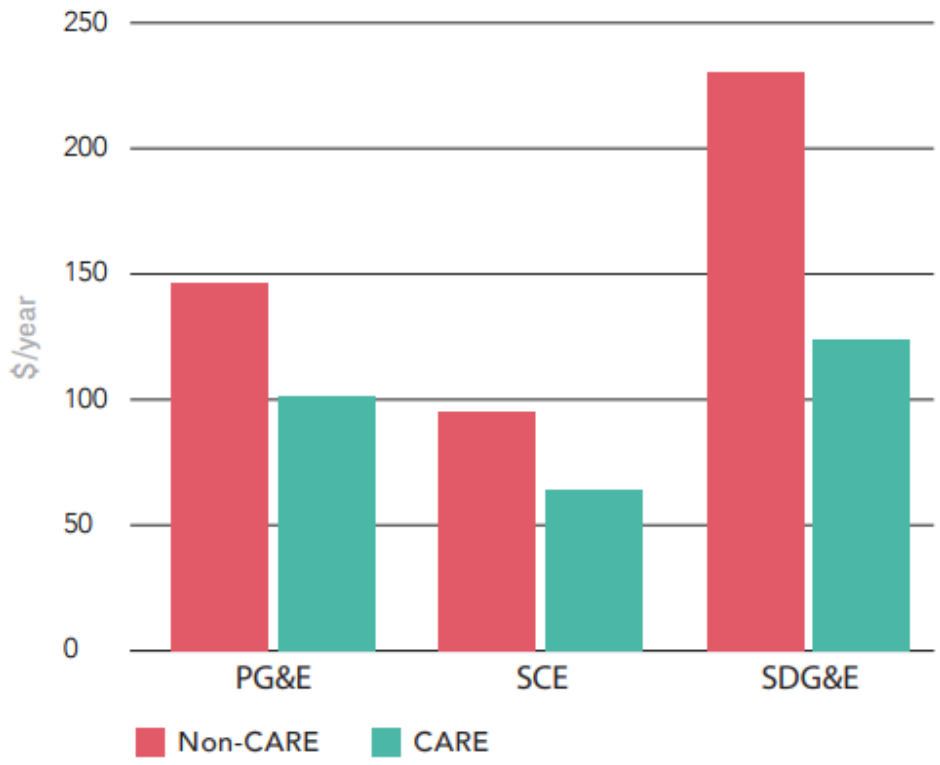
Figure 1. Distribution of NEM Systems and California Population by Median Income in Zip Code



Additionally, a 2021 study by the Energy Institute at UC Berkeley's Haas School of Business and NEXT 10,[29] found that the NEM tariff "…shifts the burden of fixed cost recovery onto customers that have not adopted BTM [solar]."[30] Figure 2[31] further shows the annual household bill impacts of the NEM program on low-income California Alternate Rates for Energy (CARE) and non-CARE customer. Specifically depicting the incremental cost of annual electric bills split between low-income CARE customers, who pay an additional $60 to $120 annually for electricity, and non-CARE customers, who pay an additional $100 to $230 annually. As more affluent households install roof-top solar, low- and middle-income households will increasingly bear the burden of covering the high fixed costs of the electric grid.[32]

[29] Next 10 is an independent nonpartisan organization.
[30] Energy Institute at UC Berkeley's Hass School of Business and NEXT 10, *Designing Electricity Rates for An Equitable Energy Transition,* February 2021, at 27.
[31] Graphic from Energy Institute at UC Berkeley's Hass School of Business and NEXT 10, *Designing Electricity Rates for An Equitable Energy Transition,* February 2021, at 28.
[32] Energy Institute at UC Berkeley's Hass School of Business and NEXT 10, *Designing Electricity Rates for An Equitable Energy Transition,* February 2021, at 4.

Figure 2. Household-Level Bill Impacts of BTM Solar Incentives ($/year)



We highlight the NEM program because there is growing demand for electric rate reform (*i.e.*, eliminating time-of-use or peak pricing) to incent customers to adopt all-electric building standards in the CEC and the CPUC building decarbonization proceedings. Customers that are likely to pay for the up-front costs for all-electric appliances may be more affluent homeowners with high disposal income and credit scores. As such, affluent homeowners may stand to benefit more from electric rate reform than low- and middle-income households because the latter households will likely pay for additional electric infrastructure required to meet increased peak demand. Technology-specific tariffs may further burden low-and middle-income customers, including renters, with increased bills to subsidize more affluent customers' adoption of all-electric building standards. To avoid regressive policies such as the NEM program, a rate structure in which all customers pay their share of electric grid costs and the volumetric price of energy is lowered to support all-electric building standards should be pursued. Fundamentally, the electric grid was built to ensure power is generated, transmitted, and distributed during peak hours to avoid interruptions. Thus, all customers should pay for this essential service. We respectfully suggest that the CEC consider the externalities of programs prior to recommending a rate restructure and/or policy reform to the CPUC.

In closing, Californians do not run from challenges; we innovatively embrace them head on. By collaborating together, diverse stakeholders can achieve ambitious goals, including decarbonizing the State's building sector in a just and reasonable manner. Reducing building sector emissions by 40 percent by 2030 will require consideration of all pathways, and evaluation of any unintended financial consequences for the most energy-burdened Californians. We look forward to continuing to participate in this important dialogue and appreciate your consideration of our comments.

Respectfully,

/s/ Kevin Barker

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