



California Energy Commission
Docket Office, MS-4
Re: Docket No. 19-BSTD-03
1516 Ninth Street
Sacramento, CA 95814
docket@energy.ca.gov

Re: Support for All-Electric Buildings in the 2022 Building Energy Efficiency Standards Update

Dear Commissioners:

On behalf of the undersigned organizations, we urge the California Energy Commission (CEC) to adopt an all-electric code for new construction in the 2022 Building Energy Efficiency Standards. We understand that revising the building code alone will not bring the transformation necessary to address the overlapping crises of unsafe and unaffordable housing, high energy burdens, air pollution, and climate change that disproportionately harm California's Black and Brown communities and low-income communities of color. Legacies of extractivism, sprawling development patterns, exclusionary zoning practices, and racist siting of industrial facilities have contributed to these crises in distinct and intersecting ways.

Yet we also recognize that a built environment which supports human health and resilience will not be realized as long as our buildings continue to rely on burning fossil fuels. Zero-emission buildings are one essential component of enabling lower-cost housing construction, reducing health impacts from indoor and outdoor air pollution, enabling more efficient, comfortable, and affordable energy use, and achieving the State's climate goals. With the climate crisis deepening every day, California must act in this code cycle to halt the expansion of fossil fuel infrastructure to new buildings that will stand long past

the deadline for the state’s climate goals. The CEC is well-positioned to initiate the necessary transformation by adopting an all-electric code for the 2022 Building Energy Efficiency Standards for all building types. Notably, adoption of an all-electric code is a piece of a larger suite of measures that must also include policies that ensure low-income customers realize finance and public health benefits of electrification. In addition to moving forward with all-electric new construction, the CEC, together with its sister agencies, should ensure the transition away from fossil fuels centers low-income customers and disadvantaged communities.

1. Alleviating Energy Burdens

a. California’s Energy Transition Must Center Low-Income Customers and Disadvantaged Communities

According to the CEC’s *Low-Income Barriers Study*, a third of California households are classified as low-income.¹ 70 percent of these households are renters, and about half live in multi-family housing. Moreover, 25 percent of California families are energy insecure—meaning they choose between utility shutoffs, medical or rent payments, food, or keeping their home at unsafe temperatures during inclement weather. A majority of these families are Black and Latino.² California’s energy transition will not succeed if it simply proceeds outside the housing and energy affordability crises that ensnares these communities.³

As explained below, electrification offers a path to financial savings, cleaner air, greater resilience, and protection against rising gas prices. But these benefits are not guaranteed—in fact, a hands-off approach means low-income ratepayers that lack the upfront capital to electrify will be locked out of these benefits, and remain tethered to the increasing rates and pollution of gas.

To avoid this untenable outcome for the State’s low-income and disadvantaged communities (DACs), **the CEC should work with the CPUC to craft bill protections that ensure elective electrification and new construction codes do not increase rates for remaining low-income mixed-fuel customers.**

Furthermore, the CEC must take an active and vigorous role in guaranteeing that the benefits of electrification can be realized by low-income and DAC households through adequate funding assistance and improved program design. The CEC’s Low Income Barriers Study from 2016 pointed to limitations of clean energy and energy efficiency programs in reaching qualifying households. Electrification will present both similar and unique challenges. To ensure the uneven distribution of clean energy benefits and costs are not repeated, and **we recommend that the CEC undertake a new low-income and DAC barrier study specifically for electrification.** This study should align with the Equitable Building Electrification Framework developed by The Greenlining Institute and Energy Efficiency For All.⁴

b. All-Electric Construction Can Reduce Energy Bills

¹ California Energy Commission, *Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities*, (Dec. 2016) at 12 <https://efiling.energy.ca.gov/getdocument.aspx?tn=214830>.

² The Utility Reform Network (TURN), *Living Without Power—Health Impacts of Utility Shutoffs in California*, (May 2018) at 5 http://www.turn.org/wp-content/uploads/2018/05/2018_TURN_Shut-Off-Report_FINAL.pdf

³ Greenlining, EEFA; Equitable Building Electrification, *A Framework for Powering Resilient Communities*, (Sept. 2019) https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

⁴ Id.

Energy bills take a disproportionately large share of lower incomes. Thus, reducing energy bills for households, small businesses, and city operations is a form of progressive stimulus, having greater positive benefit for low-income homes and businesses who spend a larger percentage of their income on energy.⁵ All-electric buildings can lower total utility bills. Even with current technology and without incentives, all-electric new construction yields lifecycle (upfront + operating cost) savings of \$130-\$540 per year.⁶ While most of these savings are driven by the lower operating costs of electric appliances, the upfront cost of replacement is an obstacle for too many low-income renters.⁷ Ensuring that new construction is all-electric results in needed economies of scale for the appliances and workforces necessary to drive down the costs for eventual retrofits. Bill savings potential can be amplified if electrification is thoughtfully incorporated with energy storage, rooftop solar, and energy efficiency upgrades. The Commission should begin exploring programs that pair storage options and other clean energy programs with new all-electric construction and home electrification retrofits to evaluate how energy bill and greenhouse gas savings can be maximized.

Furthermore, by eliminating the need to connect to gas distribution pipelines, all-electric buildings can lower the cost of new construction. Addressing the high cost of new construction in California is crucial to ensuring that more affordable homes are available. All-electric construction can also reduce the length of new construction project timelines by only requiring connection to one utility service. Affordable housing advocates have highlighted how additional changes to the Title 24 code could better support both affordable housing development and decarbonization.⁸

c. Gas System Expansion is a Liability for Low-Income Households and Renters

The high cost of safely maintaining the State's aging gas infrastructure is rapidly eroding the notion that gas is an affordable fuel source. PG&E recently secured a 21.8% increase to its gas revenue requirement by 2022, and SoCalGas requested a 42% percent increase for the same period.⁹ Even setting aside the State's climate goals requiring a rapid decline in gas use, residential gas demand will to shrink from increasing energy efficiency and elective electrification.¹⁰ The increasing costs of gas system maintenance will be spread over fewer customers and fewer therms of gas, leading to sky-rocketing rates for the remaining customers. These customers are likely to be low-income households and renters who face the most barriers to electrifying.

Unless we halt the gas system's expansion, the scale of the challenge will continue to grow. Every year, thousands of new buildings are connected to the gas grid, increasing the size and cost of a system that must rapidly be contracted. Managing an equitable transition will require careful, community-led

⁵ Basav Sen, *Five Ways Using Stimulus Funds for Energy Efficiency Would Reduce Inequality and Protect the Planet*, (Mar. 19, 2020) <https://inequality.org/research/stimulus-energy-efficiency/>

⁶ E3, *Residential Building Electrification in California—Consumer Economics, Greenhouse Gases and Grid Impacts* (Apr. 2019) https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

⁷ Greenlining, EEFA; *Equitable Building Electrification, A Framework for Powering Resilient Communities*, (Sept. 2019) https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

⁸ See, e.g. Merriam Borgeson and Srinidi Sampath Kumar, "The Pathway to New All-Electric Low Income Housing in CA" (June 29, 2020) <https://www.nrdc.org/experts/merriam-borgeson/pathway-new-all-electric-low-income-housing-ca>

⁹ Gridworks, *California's Gas System in Transition; Equitable, Affordable, Decarbonized, and Smaller at 1* (Oct. 2019) https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf

¹⁰ *Id.*

planning and meaningful engagement with residents not traditionally centered in the State’s clean energy programs.¹¹ But the initial step is clear: to mitigate future stranded gas infrastructure and the lock-in of decades of gas combustion, we must stop digging the hole deeper and require all new residential and commercial construction to be all-electric as early as possible.

2. Improving Public Health and Resilience

a. Gas Combustion Drives Indoor and Outdoor Air Pollution

California’s buildings emit seven times more nitrogen oxide (NOx) pollution than the State’s entire gas power plant fleet, and the direct combustion of fossil fuels leads to one of the largest area-wide sources of NOx pollution in extreme non-attainment regions, such as the San Joaquin Valley and South Coast air basins. In addition to outdoor air pollution, gas-burning buildings impose appalling levels of indoor air pollution on their inhabitants. A 2013 study found that children growing up in homes with gas stoves are 42 percent more likely to develop asthma symptoms than those who don’t.¹² A recent report by UCLA’s Fielding School of Public Health confirms that pollution from gas appliances—including carbon monoxide, nitrogen oxides, formaldehyde, and fine particulate matter—can lead to indoor air quality that, if measured outside, would violate both state and national air quality standards.¹³ The impacts are much worse for homes with old or ineffective range hoods and in smaller homes or apartments—nearly every small apartment (98 percent) that the researchers examined violated outdoor NO₂ air-quality standards after just an hour of cooking on a gas stove.¹⁴

If all gas appliances in California could be replaced with electric alternatives, NOx and particulate matter reduction from outdoor air pollution alone would result in 350 avoided deaths and 300 fewer cases of chronic bronchitis *every year*, or an estimated \$3.5 billion in health benefits annually.¹⁵ **Eliminating exposure to the contaminants that result from burning gas in our homes, schools, and offices is of particular importance at a time where Californians are asked to spend more of their time sheltering indoors to avoid the spread of COVID-19—a virus that attacks the respiratory system.** We will not fully address the air quality crisis impacting our communities without ending gas combustion in buildings.

b. Electrification Increases Climate Resilience

In addition to providing public health benefits, building electrification provides a path to more resilient communities. Many Californians, but especially low-income folks, lack access to affordable air conditioning. As the climate crisis worsens, regions like the Central Valley and the Inland Empire are expected to see lethal levels of extreme heat for longer durations. Affordable access to cooling systems, once seen as a luxury, is rapidly becoming a basic necessity for survival in some of California’s most

¹¹ Greenlining, EEFA; Equitable Building Electrification, A Framework for Powering Resilient Communities, (Sept. 2019) https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

¹² Weiwei Lin et al, Meta-Analysis of The Effects of Indoor Nitrogen Dioxide and Gas Cooking on Asthma and Wheeze in Children (Aug 2013) <https://pubmed.ncbi.nlm.nih.gov/23962958/>

¹³ Yifang Zhu et al, Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California (Apr. 2020) <https://ucla.app.box.com/s/xyzt8jclixnetiv0269qe704wu0ihif7>

¹⁴ Id.

¹⁵ Id.

environmentally challenged regions.¹⁶ Modern heat pump technology provides both efficient heating and cooling service, allowing a single piece of equipment to replace the need for two systems.¹⁷

Contrary to industry talking points, all-electric homes can be more resilient during a power outage compared to mixed fuel homes. Many gas appliances also require electricity to operate and will also not work during a power outage. But when incorporated as part of a holistic approach to clean and resilient communities, building electrification, plus community solar, storage, and electric vehicle ownership can enable layered or grid-independent energy security.¹⁸ Unlike gas water heaters, modern heat pump water heaters can use electricity from rooftop or community solar to heat water and store it for more than 24 hours.¹⁹

3. The Urgency of the Climate Crisis Demands Meaningful Action in this Title 24 Code Cycle

From frontline communities to youth climate advocates to international scientific bodies, diverse voices continue to sound the alarm about the level of rapid, unprecedented action necessary to stave off the very worst effects of climate change.²⁰ The window we have remaining to keep average warming below the barely-safe level of 1.5 degrees means only immediate and transformative climate action will be sufficient.

Buildings account for a quarter of the State's greenhouse gas emissions,²¹ and while implementation of SB 100 moves more of our electrical grid toward renewable energy, direct emissions from fossil gas combustion for heating remains a stubborn and growing share of climate pollution. Because new construction projects lock-in energy system appliances for decades, every new gas-reliant building takes us in the wrong direction. **With the climate crisis deepening every day, we simply do not have the luxury to defer addressing the expansion of fossil fuel infrastructure until the 2025 code cycle.**

Moreover, there is no reason to defer action. All-electric construction is feasible for everything from affordable multi-family residential buildings to large commercial developments and university laboratories.²² The CEC has the power to take action in *this* code cycle, and no new technological or economic breakthrough is necessary. Switching to available, electric options results in substantial GHG reductions today, and increased reductions over time as the share of renewable energy on the grid continues to increase.²³

¹⁶ Sammy Roth, "Pandemic. Heat. And For the Most Vulnerable, No A/C" (May 28, 2020)

<https://www.latimes.com/environment/newsletter/2020-05-28/climate-change-covid-19-heat-waves-boiling-point-newsletter-boiling-point>

¹⁷ E3, The Challenge of Retail Gas in California's Low Carbon Future (Apr. 2020) at 54

<https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-F.pdf>

¹⁸ Greenlining, EEFA; Equitable Building Electrification, A Framework for Powering Resilient Communities, (Sept. 2019) https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

¹⁹ Rachel Golden, "Electrification for Climate Resiliency" (Oct. 2019)

<https://www.sierraclub.org/articles/2019/10/electrification-for-climate-resiliency>

²⁰ See, e.g. Intergovernmental Panel on Climate Change ("IPCC"), IPCC Special Report on Global Warming of 1.5

²¹ https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

²² See, e.g., Redwood Energy, *Development Projects (A Small Sample)*, <https://www.redwoodenergy.tech/development-projects/>.

²³ Rachel Golden and Cara Bottorf, "New Analysis: Heat Pumps Slow Climate Change in Every Corner of the Country" (Apr. 23, 2020) <https://www.sierraclub.org/articles/2020/04/new-analysis-heat-pumps-slow-climate->

Any path to pollution-free, climate-stable, affordable homes in California requires eliminating our reliance on fossil fuels. The code cycle is an opportunity for the CEC to leverage its power in furtherance of the mission for a just and sustainable energy system. We urge the CEC to move swiftly in adopting an all-electric code and look forward to working with the Commission and community partners in the broader clean energy transition.

Sincerely,

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