



Via Electronic Mail

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Members of the Strategic Growth Council:

Earthjustice, the Natural Resources Defense Council, Rocky Mountain Institute, and Sierra Club California write to express our significant concerns with the failure of the Round 6 Program Guidelines for the Affordable Housing and Sustainable Communities (“AHSC”) Program to include all-electric construction as a baseline requirement for affordable housing developments funded by the program’s grants and instead award it only two out of 100 potential scoring points for proposed projects. The purpose of the AHSC Program is to reduce greenhouse gas pollution and support policy objectives that include “reducing air pollution,” “improving conditions in disadvantaged communities,” and “supporting or improving public health.”¹ Housing projects that continue to rely on gas undermine these objectives by locking in new fossil fuel infrastructure and polluting appliances. Indeed, in a recent presentation at a California Energy Commission (“CEC”) workshop on indoor air quality, the California Air Resources Board (“CARB”) determined that gas appliances “cause health impacts” and that “building electrification can eliminate these health impacts.” In failing to require all-electric construction and instead proposing to only award two out of 100 potential scoring points for all-electric construction, the Draft Program Guidelines would condemn future residents of AHSC funded projects to significant and avoidable health impacts in direct contravention of the Program’s stated purpose.

¹ California Climate Investments and California Strategic Growth Council, *Affordable Housing and Sustainable Communities Program, Round 6 Draft FY 2019–2020 Program Guidelines*, at 3 (Sept. 16, 2020) (“Draft Program Guidelines”), https://sgc.ca.gov/programs/ahsc/docs/20200916-AHSC_Round_6_Draft_Guidelines.pdf.

Awarding financial incentives to projects that perpetuate reliance on fossil fuels is also a fundamental misuse of the Greenhouse Gas Reduction Fund (“GGRF”). The purpose of the GGRF is for proceeds from the state’s cap-and-trade program to “facilitate comprehensive *and coordinated investments throughout California that further the State’s climate goals.*”² In its Integrated Energy Policy Report (“IEPR”), the CEC determined that “[t]here is a growing consensus that building electrification is the most viable and predictable path to zero-emissions buildings” and is “essential to California’s strategy to meet its [greenhouse gas] reduction goals for 2030 and 2050.”³ California will not achieve its decarbonization objectives absent widespread building electrification. The Draft Program Guidelines impede California’s climate goals by allowing GGRF funding to be used for projects that perpetuate reliance on fossil fuels and further buildout of gas infrastructure.

In addition to the public health, climate and air quality benefits, all-electric homes can be less costly to build due to avoided gas infrastructure costs. For example, Pacific Gas and Electric Company (“PG&E”) records demonstrate the average cost of gas infrastructure to serve a single family home in an existing subdivision may be \$8,700 or more. With regard to operational costs, while electric rates are expected to experience long-run stability due to increased sales resulting from electrification of vehicle and gas end uses, gas rates are likely to rise substantially as gas throughput decreases—particularly in an unmanaged scenario where avoidable capital investments in the gas system continue. Allowing the AHSC Program to incentivize fossil fuel dependent housing locks residents that can least afford to subsequently electrify into higher gas rates and creates additional stranded assets on the gas system through avoidable expansion of gas delivery infrastructure.

As Californians across the state experience the increasingly catastrophic effects of climate change, Governor Newsom has recognized the need for accelerated action, stating that “across the entire spectrum, our goals are inadequate to the reality we’re experiencing.”⁴ Enabling the state subsidy of polluting fossil-fueled homes is wholly inadequate to meet this moment. While we understand that the Council must balance a number of concerns, including giving developers time to familiarize themselves with all-electric design, it is imperative that the state’s climate goals and the health and safety of AHSC-funded developments’ residents receive

² See California Climate Investments, *About California Climate Investments*, <http://www.caclimateinvestments.ca.gov/about-cci> (last visited Oct. 12, 2020).

³ CEC, Docket No. 18-IEPR-01, *2018 IEPR Update Volume II*, at 28, 32 (Mar. 21, 2019) (emphasis added) (2018 IEPR Update Volume II), <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2018-integrated-energy-policy-report-update>.

⁴ Sammy Roth, *Boiling Point newsletter: Gavin Newsom just promised ‘giant leaps forward’ on climate. Will he follow through?*, LA Times (Sept. 17, 2020), <https://www.latimes.com/environment/newsletter/2020-09-17/gavin-newsom-just-promised-giant-leaps-forward-on-climate-will-he-follow-through-boiling-point>.

the highest priority. To the extent the Council finds it infeasible to require all-electric construction in this round of the AHSC Program, it should do the following:

- 1) Provide at least 10 scoring points for all-electric designs for affordable housing funded by the AHSC Program to properly reflect the greenhouse gas, air quality and health benefits of all-electric construction;
- 2) Require induction stoves and electric convection ovens for all projects in this funding round to avoid the indoor air quality and health impacts of gas cooking;
- 3) Commit to incorporating all-electric design as a threshold requirement starting in next year's Round 7 Program Guidelines; and
- 4) Provide technical assistance for all-electric construction to affordable housing developers.

1. An All-Electric Requirement is Necessary to Protect the Health of the Residents of AHSC-Funded Developments and Avoid Exacerbating Public Health Inequities.

Key purposes of the AHSC Program are “reducing air pollution, improving conditions in disadvantaged communities,” and “supporting or improving public health.”⁵ Allowing the AHSC Program to fund gas-reliant homes undercuts each of these objectives. Gas appliances in buildings make up a quarter of California’s nitrogen oxide (NO_x) emissions from natural gas. NO_x is a precursor to ozone and particulate matter, which are key pollutants to curb in order to comply with state and federal ambient air quality standards. All-electric buildings reduce NO_x and ground level ozone, improving outdoor air quality and benefiting public health. A recent study from the UCLA Fielding School of Public Health found that immediate replacement of all residential gas appliances with clean electric alternatives would result in 354 fewer deaths, 596 fewer cases of acute bronchitis, and 304 fewer cases of chronic bronchitis *annually* in California due to improvements in outdoor air quality alone—the monetized equivalent of \$3.5 billion in health benefits per year.⁶

Requiring all-electric appliances in AHSC-funded developments is also necessary to ensure that these developments have healthy *indoor* air quality. On average, Californians spend 68 percent of our time in our homes, and 90% of our time indoors, making indoor air quality a key determinant of human health.⁷ And as this year’s devastating wildfire season and COVID-19 pandemic have made especially clear, it is crucial for homes to provide a safe respite from

⁵ Draft Program Guidelines at 3.

⁶ Dr. Yifang Zhu et al., *Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California*, UCLA Fielding School of Public Health, at 7 (Apr. 2020) (“Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California”).

⁷ N E Klepeis et al., *The National Human Activity Pattern Survey (NHAPS): A Resource for Assessing Exposure to Environmental Pollutants*, 11 *Journal of Exposure Analysis and Env'tl. Epidemiology* 231, 231–52 (2001).

dangerous conditions outdoors. The combustion of gas in household appliances, such as stoves, produces harmful indoor air pollution, specifically nitrogen dioxide, carbon monoxide, nitric oxide, formaldehyde, acetaldehyde, and ultrafine particles, often in excess of the levels set out by the California Ambient Air Quality Standards and the National Ambient Air Quality Standards.⁸

In particular, CARB warns that “cooking emissions, especially from gas stoves, are associated with increased respiratory disease.”⁹ Children in homes with gas stoves are particularly at risk, a meta-analysis examining the association between gas stoves and childhood asthma found that “children in homes with gas stoves have a 42 percent increased risk of experiencing asthma symptoms (current asthma)” and “a 24 percent increased risk of ever being diagnosed with asthma by a doctor (lifetime asthma).”¹⁰ Other health effects of NO_x in children may include cardiovascular effects, increased susceptibility to allergens and lung infections, irritated airways and other aggravated respiratory symptoms, such as chest tightness, wheezing, and coughing, and learning deficits.¹¹ The following slides from a CARB presentation in the CEC’s September 30, 2020 Indoor Air Quality workshop sum up the issue, and solution as well:¹²

⁸ See, e.g., Jennifer M. Logue et al., *Pollutant Exposures from Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern California*, 122 *Envtl. Health Perspectives* 43, 43–50 (2014); Victoria L. Klug et al., *Cooking Appliance Use in California Homes—Data Collected from a Web-Based Survey*, Lawrence Berkeley National Laboratory (Aug. 2011); John Manuel, *A Healthy Home Environment?*, 107 *Envtl. Health Perspectives* 352, 352–57 (1999); Nasim A. Mullen et al., *Impact of Natural Gas Appliances on Pollutant Levels in California Homes*, Lawrence Berkeley National Laboratory (2012); *Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California*, at 12–13.

⁹ CARB, *Combustion Pollutants & Indoor Air Quality*, <https://ww2.arb.ca.gov/resources/documents/combustion-pollutants-indoor-air-quality> (last visited Oct. 12, 2020).

¹⁰ Brady Seals and Andee Krasner, *Health Effects from Gas Stove Pollution*, Rocky Mountain Institute, Physicians for Social Responsibility, and Sierra Club, 2020, at 13 (May 2020) (“Health Effects from Gas Stove Pollution”), <https://www.psr.org/wp-content/uploads/2020/05/health-effects-from-gas-stove-pollutionpdf>.

¹¹ *Id.*

¹² CEC Commissioner Workshop re: Advances in Scientific Understanding of the Impact of Indoor Cooking and Associated Ventilation on Indoor Air Quality, Panelist Presentation from Pat Wong and Qunfang Zoe Zhang, CARB Staff (Sep. 30, 2020); see <https://www.energy.ca.gov/event/webinar/2020-09/commissioner-workshop-2022-energy-code-pre-rulemaking-advances-scientific>.

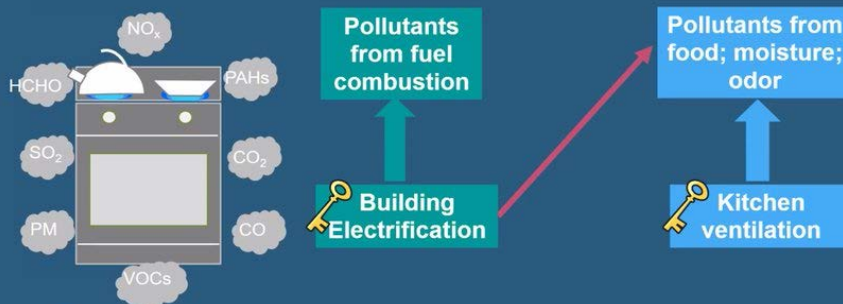
SUMMARY

- NG Appliances cause health impacts
- High Capture Efficiency on Range Hoods is Necessary BUT not Sufficient
- Building Electrification can eliminate these health impacts



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TWO KEYS TO IMPROVE AQ DURING COOKING



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CARB cannot, on the one hand, determine gas appliances cause health impacts that electrification avoids, and on the other, direct GGRF incentives to projects that perpetuate these impacts on low-income communities. Indeed, given the disproportionately high asthma rates in low-income communities it is essential that the AHSC Program require all-electric development to ensure that affordable housing is safe for its residents.¹³ Children from low-income households who have asthma often experience greater exposure to outdoor air pollution and are more susceptible to the health effects of pollution than asthmatic children from higher-income families.¹⁴ Ensuring safe indoor air quality in AHSC's affordable housing developments is a bare minimum step toward addressing the public health inequities associated with poor air quality, and not contributing to the healthcare cost burden on families who will live in these homes.

¹³ Health Effects from Gas Stove Pollution at 15.

¹⁴ *Id.*

2. Allowing AHSC-Funded Developments to Rely on Fossil Fuels Undermines the Goals of the Program and the Purpose of the GGRF.

Notably, the Council administers the AHSC Program using funds from the cap-and-trade program collected in the GGRF.¹⁵ The purpose of the GGRF is for proceeds from the state’s cap-and-trade program to “facilitate comprehensive and coordinated investments throughout California that further the State’s climate goals.”¹⁶ California’s climate goals--which Governor Newsom now acknowledges must be accelerated--include achieving carbon neutrality by 2045,¹⁷ reducing greenhouse gas emissions 80% below 1990 levels by 2050,¹⁸ and doubling energy efficiency savings and demand reductions in electricity and natural gas end uses by 2030.¹⁹ As the CEC has found, deep decarbonization of the building sector and electrification of gas end uses, such as furnaces and water heaters, present “the most viable and least-cost path to immediate zero-emission residential and commercial buildings.”²⁰ In 2018, the CEC concluded in its IEPR that “[t]here is a growing consensus that building electrification is the most viable and predictable path to zero-emissions buildings” and is “essential to California’s strategy to meet its [greenhouse gas] reduction goals for 2030 and 2050.”²¹ Similarly, a recent CARB draft report found that “[a]chieving carbon neutrality by 2045 requires ambitious near-term actions around deployment of . . . building electrification,” which is a least-regrets strategy across all policy-compliant scenarios.²²

Any program funded through the GGRF must operate under parameters that are compatible with the state’s goals. The omission of an all-electric requirement for affordable housing developments funded by the AHSC Program does not maintain a neutral status quo with regard to these goals, but rather, tethers affordable housing stock to decades of reliance on fossil

¹⁵ See California Strategic Growth Council, *AHSC Fact Sheet*, <https://sgc.ca.gov/programs/ahsc/docs/20180731-Update-Fact%20Sheet-AHSC.pdf>.

¹⁶ See California Climate Investments, *About California Climate Investments*, <http://www.caclimateinvestments.ca.gov/about-cci>.

¹⁷ Cal. Exec. Order No. B-55-18 (Sept. 10, 2018), <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>.

¹⁸ Cal. Exec. Order No. S-3-05 (June 1, 2005), <https://www.library.ca.gov/Content/pdf/GovernmentPublications/executive-order-proclamation/5129-5130.pdf>.

¹⁹ *Clean Energy and Pollution Reduction Act of 2015*, 2015 CA S.B. 350 (NS), http://leginfo.legislature.ca.gov/faces/billCompareClient.xhtml?bill_id=201520160SB350 (codified at Pub. Res. Code § 25310(c)(1)).

²⁰ CEC, *2019 California Energy Efficiency Action Plan*, at 84 (Nov. 2019) (“2019 CEC Report”), [https://ww2.energy.ca.gov/business_meetings/2019_packets/2019-12-11/Item_06_2019%20California%20Energy%20Efficiency%20Action%20Plan%20\(19-IEPR-06\).pdf](https://ww2.energy.ca.gov/business_meetings/2019_packets/2019-12-11/Item_06_2019%20California%20Energy%20Efficiency%20Action%20Plan%20(19-IEPR-06).pdf).

²¹ 2018 IEPR Update Volume II at 28, 32.

²² Energy and Environmental Economics (“E3”), *Achieving Carbon Neutrality in California*, at 8 (Aug. 2020), https://ww2.arb.ca.gov/sites/default/files/2020-08/e3_cn_draft_report_aug2020.pdf.

fuels that actively obstruct progress toward California’s climate goals. As long as buildings continue to rely on gas combustion, there is no legitimate path to eliminating their contribution to climate change short of an all-electric retrofit. Accordingly, all-electric construction should be a threshold requirement for AHSC funding.

3. All-Electric Construction Avoids the Substantial Cost of Gas Infrastructure.

AHSC funds can go further in an all-electric construction project because all-electric new construction costs less than dual-fuel new construction. As an initial matter, in a home with four gas appliances, over \$1,600 of the total cost may be added to the utility’s rate base and paid for by all ratepayers in their gas bills for gas main extensions.²³ Further, PG&E has provided the following information about the full cost of connecting a new home to the gas system in its territory:²⁴

Table 1: PG&E Gas Infrastructure Cost Estimates

	Existing Subdivision/Development	New Greenfield Subdivision/Development
Mainline Extension	N/A ³	<u>Single-Family</u> \$17/ft ⁴ <u>Multi-Family</u> \$11/ft ⁴
Service Extension (Typically 1” pipe from mainline to the meter)	\$6750 per service/building ⁴ (excludes trench costs) \$9200 per service/building ⁴ (includes trench costs)	\$1300 per service/building ⁴ (includes mainline extension costs within the subdivision; excludes trench costs) \$1850 per service/building ⁴ (includes mainline extension costs within the subdivision; includes trench costs)
Meter	<u>Residential Single Family</u> \$300 per meter ⁵ <u>Residential Multi-Family</u> \$300 per meter + \$300 per meter manifold outlet ⁵ <u>Small/Medium Commercial</u> \$3600 per meter ⁶	<u>Residential Single Family</u> \$300 per meter ⁵ <u>Residential Multi-Family</u> \$300 per meter + \$300 per meter manifold outlet ⁵ <u>Small/Medium Commercial</u> \$3600 per meter ⁶

In addition to these up-to-the-meter costs, PG&E estimates that the additional cost of gas plumbing is on average \$800 per home.²⁵ Plan review for gas service varies by city, but PG&E

²³ See PG&E, *Gas Rule No. 15*, https://www.pge.com/tariffs/assets/pdf/tariffbook/GAS_RULES_15.pdf; Southern California Gas Co. (“SoCalGas”), *Rule No. 20, Gas Main Extensions*, <https://www2.socalgas.com/regulatory/tariffs/tm2/pdf/20.pdf>; San Diego Gas & Electric Co., *Rule 15, Gas Main Extensions*, http://regarchive.sdge.com/tm2/pdf/GAS_GAS-RULES_GRULE15_2005.pdf.

²⁴ PG&E, *Letter from Janice Berman to Commission Staff*, at 2 (Dec. 2019) (Letter from Janice Berman is attached as Attach. 1).

²⁵ *Id.* at 3.

provides an estimate of \$850.²⁶ Added together, PG&E’s records demonstrate that the average cost of gas infrastructure to serve a new single-family home in an existing subdivision may be \$8,700 or more.²⁷ In a new greenfield development, the cost just to connect one home averages \$3,250, plus the additional cost of the mainline extension to reach and extend throughout the new development, which costs as much as \$17/foot, and can escalate rapidly.

When it comes to the cost of appliances in the home, all-electric new buildings can reduce costs by combining the cost of separate heating and cooling systems into a single heat pump. Research conducted by Rocky Mountain Institute for the City of Oakland estimated that installing two separate systems in a home could cost between \$2,400 to \$2,700 more per home over the cost of a single heat pump.²⁸ Even taking into account the estimated \$1,050 cost premium over gas appliances to install a heat pump water heater and an induction stove, purchasing all-electric appliances results in net savings of \$1,350 to \$1,650.²⁹

4. All-Electric Construction Is Necessary for a Managed Transition Away from Gas and to Protect Future Residents from Gas Rate Shock as the State Continues to Advance Toward Decarbonization.

An all-electric threshold requirement will safeguard AHSC-funded developments from dependence on gas infrastructure that is already in the process of being phased out, and it will protect the residents of the properties from the corresponding rises in gas rates as advances in decarbonization reduce gas demand. The CEC’s Final Project Report, *The Challenge of Retail Gas in California’s Low-Carbon Future*, predicts the relative costs savings from living in an all-electric home will grow markedly over the next three decades as gas rates rise disproportionately to electric rates.³⁰ Accounting for the incremental cost from wildfire-related costs, the CEC’s report found that “electric rate increases are relatively muted compared to those seen in the gas system.”³¹ Unlike gas rates, which will increase as gas demand decreases through electrification and other decarbonization policies, “electric rates exhibit long-run stability because the state’s

²⁶ *Id.*

²⁷ This estimate is comprised of the following expenses: \$6,750 (service extension, excluding trenching under the conservative assumption trenching is always performed for electricity) + \$300 (single family meter) + \$800 (gas plumbing) + \$850 (plan review) = \$8,700. *See also* E3, *Residential Building Electrification in California—Consumer Economics, Greenhouse Gases and Grid Impacts*, at 55 (Apr. 2019) (finding all-electric homes have “a capital cost advantage ranging from \$3,000 to more than \$10,000 over a mixed-fuel home” due to avoided gas infrastructure costs).

²⁸ Rocky Mountain Institute, *The Economics of Electrifying Buildings*, at 29 (2018), <https://rmi.org/insight/the-economics-of-electrifying-buildings/>.

²⁹ E3, *Residential Building Electrification in California—Consumer Economics, Greenhouse Gases and Grid Impacts*, at 32, 34 (Apr. 2019)

³⁰ *See* CEC, *The Challenge of Retail Gas in California’s Low-Carbon Future*, at 39–40 (Apr. 2020), <https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-F.pdf>.

³¹ *Id.* at 53.

rising electric revenue requirement is partially paid for by new electrification loads.”³² Indeed, substantial increases in gas rates are not a distant prospect. SoCalGas sought a 42% increase in its overall gas revenue requirement by 2022 relative to 2018, and PG&E received approval for a 21.8% increase relative to 2018 for transmission and storage, with a pending request for a 26.6% increase for distribution revenue.³³ Accordingly, to the extent mixed-fuel construction has any operational cost advantages today, this “cost advantage [will] erode[] over time.”³⁴

Studies examining the transition away from the gas system have highlighted equity concerns, noting that “the expected increases in the cost of gas service, even in the absence of significant electrification, would fall especially harshly on low-income consumers” that are least able to convert their homes to electric technologies and leave off the gas system.³⁵ It is crucial that affordable housing not be left behind in this transition toward electrification that is already underway. On top of the increased climate, outdoor and indoor air pollution from mixed-fuel homes, failure to require all-electric construction as a threshold requirement for AHSC-funded developments will needlessly commit residents to the gas system and higher future bills. The Council should plan for this future by instead funding clean, all-electric affordable housing through its program.

Thank you for your consideration of these comments.

Respectfully submitted,

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³² *Id.*

³³ Gridworks, *California’s Gas System in Transition - Equitable, Affordable, Decarbonized, and Smaller*, at 1 (2019), https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf.

³⁴ See CEC, *The Challenge of Retail Gas in California’s Low-Carbon Future*, at 54 (Apr. 2020).

³⁵ Gridworks, *California’s Gas System in Transition - Equitable, Affordable, Decarbonized, and Smaller*, at 7 (2019).