SOUTHERN CALIFORNIA EDISON

January 19, 2022

Rajinder Sahota
Division Chief
Industrial Strategies Division
California Air Resources Board

RE: Public Workshop on Building Decarbonization of the 2022 Scoping Plan Update to Achieve Carbon Neutrality by 2045.

Dear Ms. Sahota,

Southern California Edison (SCE) appreciates the opportunity to provide comments on the Building Decarbonization Workshop of the 2022 Scoping Plan Update (SPU) to lay out a path to achieve carbon neutrality by 2045, held on December 13 by the California Air Resources Board (CARB).

SCE appreciates CARB's efforts to assess how building decarbonization can help meet the State's climate goals and how it will inform the development of the 2022 SPU. As we all are aware, California has ambitious decarbonization goals, and we are less than eight years away from the 2030 milestone for reducing greenhouse gas (GHG) emissions. Electrification of space and water heating has been identified as one of the most readily achievable pathways to GHG emission reductions. Many studies agree that Building electrification is a critical component of reaching California's decarbonization targets.[1]

In the building sector, the current trajectory is not aggressive enough to meet the GHG reduction goals.[2] As such, SCE strongly recommends that CARB establish statewide building electrification heat pump and other electric end-use targets in order to set the path for achieving decarbonization within this sector. Also, given the inherent uncertainty in distribution, pace, and trajectory of expected load demand increases due to the scaling up of electrification, it is imperative to explore a range of realistic building electrification and energy efficiency scenarios that align with the energy resource needs. SCE offers the following comments for consideration with a focus on answering two of the questions requested by CARB staff at the workshop regarding (1) what building end uses and building types should be prioritized for building decarbonization through electrification efforts and (2) what complementary policies are the most important to advance in the near term and how should they be prioritized.

I. Heat Pumps in Residential and Commercial Buildings Should Be Prioritized for Building Electrification

The California Energy Commission (CEC) recently released the AB 3232 California Building Decarbonization Assessment (AB 3232 Assessment) which indicates that building electrification is

[1] California Building Decarbonization Assessment. California Energy Commission. August 13, 2021. https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment
[2] Mind the Gap: Policies for California's Countdown to 2030. Edison International. September 2021. https://www.edison.com/home/our-perspective/mind-the-gap.html

necessary and must play an immediate and vital role in the State's decarbonization efforts to meet its GHG emissions reduction target of 40% below 1990 levels by 2030.[3]

The AB 3232 Assessment states that residential and commercial buildings account for approximately 25% of California's GHG emissions and that roughly 40% of building-related emissions — 10% of the State total — are due to onsite combustion, primarily of fossil gas.[4] The AB 3232 Assessment concluded that reducing direct emissions in buildings requires a shift toward electric end uses and that electrification must be a major component of any decarbonization plan.[5] The report highlights that efficient electrification of space and water heating, with the use of efficient electric heat pump technologies, in California's buildings combined with refrigerant leakage reduction presents the most readily achievable pathway to a greater than 40% reduction in the building sector GHG emissions by 2030. Necessary actions for the residential and commercial buildings sector to reduce GHG emissions are significant. Aggressive decarbonization action, including 100% new construction fully electrified by 2030, 90% of space and water heating and other gas appliances at the end of their useful lives replaced and electrified by 2030, and 70% of space and water heating and other gas appliances retired early and replaced and electrified by 2030, are required for the buildings sector to achieve 40% reduction of onsite GHG emissions.[6] Therefore, heat pump adoption for space and water heating should be prioritized for building electrification in order to reach the state's GHG reduction goals.

II. Setting a California Quantifiable Electric Heat Pump Target in the 2022 Scoping Plan Would be the Most Important Policy to Advance in the Near Term

The AB 3232 Assessment further demonstrates that buildings would require aggressive decarbonization efforts to achieve a 40% reduction by 2030, and even its most aggressive building electrification scenario would be challenged in sufficiently supporting the achievement of the 2045 carbon neutrality target.[7] As described in SCE's recently published *Mind the Gap* paper, the current trajectory of programs and policies supporting building electrification is insufficient to help achieve California's GHG emissions target[8] and a huge gap remains to be filled. Accelerating efficient electrification of building end-uses in both new and existing buildings represents the most predictable pathway to achieve deep reductions in building emissions.

One important takeaway from the workshop was a statement made by the Deputy Director of CEC's Efficiency Division emphasizing the importance of the AB 3232 Assessment conclusions that achieving the State's 2030 40% GHG emissions reduction goal is feasible but will take a large-scale, coordinated deployment of heat pumps as the starting point.

While Transportation Electrification has a State-established electric vehicle (EV) goal, buildings do not have a quantifiable goal to enable state agencies to collectively work towards with urgency to establish programs that increase heat pump adoption. Setting electric heat pump targets, similar to EV

[3] California Energy Commission, Final Commission's Report California Building Decarbonization Assessment, (Aug. 2021) p. 14 and 33, *available at* https://efiling.energy.ca.gov/GetDocument.aspx?tn=239311.
[4] *Id., p. 33.*
[5] *Id., p. 10.*
[6] *Id., at p. 45.*
[7] *Id., p. 13.*
[8] Mind the Gap, SCE, September 2021, p. 16

goals, would spur the State to develop a clear and coordinated transition plan and support policies to electrify buildings efficiently. A quantifiable heat pump adoption goal would also send an important signal to the private sector to substantially increase heat pump adoption.

Therefore, SCE urges CARB to utilize the analysis in the AB 3232 Assessment and complementary sources such as SCE's Pathway 2045 and the analyses cited therein to establish a statewide quantitative target for electric heat pumps by 2030.[9] A technology adoption trajectory should also be determined so that state agencies can develop a clear and coordinated transition plan to shift buildings to electric end-uses, reduce direct emissions, and put California on a cost-effective path to carbon neutrality by 2045.

III. Elimination of Unnecessary Gas Line Extensions Would Support California's Efforts to Meet its Climate Goals and Improve Public Health

In addition to adopting statewide quantitative goals for emissions reduction through building electrification, SCE further recommends the SPU support setting more aggressive standards for appliances and evaluate a path for transitioning away from the sale of combustion appliances for use indoors, particularly heating appliances. Eliminating combustion emissions and their associated criteria pollution within and directly adjacent to residential homes from gas stoves, water heaters, and similar equipment, will have a substantially greater health impact than reducing emissions from more distant sources. As highlighted during the building decarbonization workshop[10], studies show that gas cooking produces NO_2 and other pollutants such as ultrafine particles, and therefore, children living in a home with gas cooking have an overall 32% increased risk of having current and lifetime asthma.[11] In addition, research shows that children with asthma are affected by indoor air pollution from gas stoves, and children living in areas with high levels of outdoor air pollution and low-income, African-American and Hispanic children with asthma are likely the most disproportionately burdened by indoor air pollution from gas stoves.[12]

Another needed step toward improving the comprehensive understanding of GHG emissions resulting from fossil gas in buildings is to further study upstream methane leakage and quantify the benefits from avoided impacts with decreasing use of fossil gas. The AB 3232 Assessment states, "Methane emissions from extraction, processing, transmission, and distribution of gas are a significant contributor to global GHG emissions. More research is also needed on the causality of building fossil gas usage on upstream methane leakage."[13] In 2020, CARB commissioned a study prepared by the Gas Technology Institute (GTI) that quantified methane leakage from customers' gas meters.[14] SCE

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[9] Pathway 2045: Update to the Clean Power and Electrification Pathway. Southern California Edison. November 2019. https://www.edison.com/home/our-perspective/pathway-2045.html

[10] CARB, California Green Building Standards (December 13, 2021) slide 13. https://ww2.arb.ca.gov/sites/default/files/2021-12/CARB-sp22-buildings-ws-12-13-21.pdf

[11] Weiwei Lin, Bert Brunekreef, Ulrike Gehring, Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children, International Journal of Epidemiology, Volume 42, Issue 6, December 2013, Pages 1724–1737, https://doi.org/10.1093/ije/dyt150

[12] Health Effects from Gas Stove Pollution. Rocky Mountain Institute. May 2020. Page 15. https://rmi.org/insight/gas-stoves-pollution-health.

[13] *Id., at p. 38.*

[14] California Air Resources Board (CARB). Quantifying Methane Emissions from Natural Gas Residential Customer Meters in California. May 2020. https://ww2.arb.ca.gov/sites/default/files/2021-01/Final_CARB_MSA%20Study_1-14-21.pdf

recommends CARB take that needed additional step toward quantifying the benefits of building electrification with a follow-on study assessing upstream methane leakage.

The 2022 SPU should also support ending state incentives for fossil gas appliances and end uses and increasing incentives for electric appliances and electric panel upgrades to accommodate new electric appliances where necessary. To meet the State's goals, the market needs to deliver clean, efficient electric equipment as the default. State incentives are needed for direct subsidies as well as market support actions such as increasing contractor comfort with electric technologies, reducing risk premiums priced into electrification retrofits, and improving the stocking of efficient electric equipment through the distribution supply chain. Aggressive decarbonization actions like these are required now to meet the State's 2030 and 2045 climate goals.

IV. The State Must Act Now to Make an Affordable Transition to Building Electrification

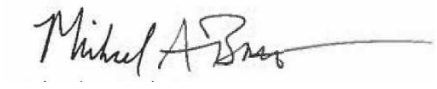
As previously stated, the electrification of the building sector is a fundamental element for California to achieve its 2030 and 2045 climate goals. However, we must affordably execute this transition while simultaneously adapting to a changing climate and ensuring communities who have carried the cumulative emission burden historically do not carry that burden into the future. SCE is committed to maintaining affordability for all customers while undertaking the work to provide safe, reliable, resilient, and clean energy.

Taking the bold actions needed to mitigate climate change will require investment, but that cost will be much lower than the harm the State will suffer if we fail to act now. While electrifying California's building sector is a cost-effective climate change mitigation strategy, it will require aggressive policymaking as one part of complementary policies for decarbonization across the state's economy. This clean energy future will reduce total energy costs for most customers, and it is important that all customers, particularly those disproportionately burdened by climate change, are able to participate in the transition to clean energy.

V. Conclusion

SCE thanks CARB for taking into consideration the above comments on the Building Decarbonization workshop. Please do not hesitate to contact me at (626) 302-8442 with any questions or concerns you may have. I am available to discuss these matters further at your convenience.

Sincerely,



Michael A. Backstrom
Vice President, Regulatory Policy
Southern California Edison
8631 Rush Street, Rosemead, CA 91770
T. 626-302-8442
Email: michael.backstrom@sce.com