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Sierra Club comments on IEPR Scoping Order

Additional submitted attachment is included below.



Sierra Club Comments on the 2018 Integrated Energy Policy Report Update Scoping Order Docket No. 18-IEPR-01

February 26, 2018

The Sierra Club, on behalf of our more than 180,000 members in California, appreciates the opportunity to provide comments on the Scoping Order for the 2018 Integrated Energy Policy Report (IEPR) Update.

The IEPR is a key opportunity to review progress in implementing energy policies and shed light on new topics that warrant greater attention by state agencies and policymakers for the purposes of achieving California's overarching clean energy, climate, and air quality goals.

We appreciate the range of important energy topics included in the Scoping Order and plan to engage in the Commission's 2018 IEPR update. We share the Commission's interest in reviewing the implementation of key energy policies to reduce greenhouse gas emissions, increase renewable energy, and advance energy efficiency and clean transportation in California. We particularly support a focus point on how the state's energy and transportation policies support, or could better support, increased access to clean energy technologies and affordable energy, and an improvement in air quality in low-income and disadvantaged communities.

Greenhouse gas reduction in buildings

The Sierra Club strongly supports the inclusion of "advancing greenhouse gas reductions in buildings" as a priority issue in the IEPR update. The following topics, as outlined by the Scoping Order, are critical to positioning California as a leader in deeply decarbonizing the built environment and moving towards 100% clean energy:

The 2018 IEPR Update will discuss the long-term role of natural gas in California buildings, the Pacific Coast Collaborative's thermal decarbonization regional goals, and other greenhouse gas reduction policies and strategies relevant to California's built environment. This update will also identify market barriers, data collection needs, and building performance metrics to develop recommendations that advance California's energy-related policies and programs on greenhouse gas reductions from buildings.¹

Residential and commercial buildings are a major source of greenhouse gas emissions in California. The carbon emissions from fossil fuels burned in buildings are roughly on par with the emissions of

¹ CEC IEPR 2018 Scoping Order

all in-state power plants.² Factoring in methane emissions would greatly increase the greenhouse gas footprint of sectors of the economy like buildings that primarily consume gas. In fact, modest leakage rates of 3% would roughly double the greenhouse gas emissions of gas combustion in buildings.

Unlike electricity generation which has a renewable portfolio standard and other supportive measures to speed a shift off of fossil fuels like gas, California has limited policies in place to deeply decarbonize and electrify the buildings sector. California's energy efficiency policies have historically preferred gas use over electricity in new construction and appliance replacement,³ leading to today's situation where roughly 75 - 90% of homes and buildings use gas for space heating and water heating.⁴

There is growing consensus among academics, energy experts, and policymakers that in order to achieve the deep reductions in greenhouse gas emissions necessary to meet the statewide goals, it is necessary to electrify residential and commercial buildings and power them with the state's increasingly renewable grid.⁵ As California Air Resources Board put the issue in the latest update to the Climate Change Scoping Plan, "Moving forward, reducing use of fossil natural gas wherever possible will be critical to achieving the State's long-term climate goals."⁶

The timing for a transition to clean electric zero-emissions buildings is an important consideration in the state's policymaking decisions. Our analysis, which looks at the stock turnover of appliances necessary to achieve 2050 climate goals at least cost suggest that by 2020 all new residential construction must have high-efficiency electric space and water heating, and that by the early 2030s, we we need to begin replacing all gas-fired water heaters and space heaters with high-efficiency electric appliances powered by clean energy.⁷ A study by UC Berkeley and Lawrence Berkeley National Laboratory demonstrate that fuel substituting to electricity without the forced retirement of existing gas equipment cannot wait beyond 2020 for California to achieve the 2050

² CARB GHG Inventory, 5-year average

³ Most notably the CEC's Title 24 Building Energy Efficiency Standards and the CPUC's Three Prong Fuel Substitution Test.

⁴ Raghavan et. al, *Scenarios to Decarbonize Residential Water Heating in California*, Lawrence Berkeley National Laboratory and UC Berkeley, 2017. <https://rael.berkeley.edu/wp-content/uploads/2017/07/Raghavan-Wei-Kammen-WaterHeating--ENergyPolicy-2017.pdf>

⁵ See, e.g., Lawrence Berkeley National Lab, *Scenarios For Meeting California's 2050 Climate Goals*. California Energy Commission (Sept. 2013), p. 80, available at <http://www.energy.ca.gov/2014publications/CEC-500-2014-108/CEC-500-2014-108.pdf> (meeting California's 2050 goals requires full electrification of all space and water heating in residential and commercial buildings); Johan Rockstrom and Jeffrey Sachs, *Sustainable Development and Planetary Boundaries*, United Nations Sustainable Development Solutions Network (Mar. 15, 2013), available at http://www.post2015hlp.org/wp-content/uploads/2013/06/Rockstroem-Sachs-Oehman-Schmidt-Traub_Sustainable-Development-and-Planetary-Boundaries.pdf (electrification of vehicle transport and building heating is a key element of an 80 percent reduction in greenhouse gases).

⁶ Air Resources Board, *California's 2017 Climate Change Scoping Plan* (Nov. 2017), p. 88. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

⁷ Imran Sheikh, *Lowest cost reduction of space and water heating emissions in California*, November 2017.

emissions goal.⁸ The take-away is clear: the sooner California has the policies in place to electrify and decarbonize buildings, the less costly and more impactful electrification will be to achieving our climate, air quality, and clean energy goals.

California needs a comprehensive energy policy framework to achieve a wholesale shift away from gas to zero emission buildings. We appreciate the CEC's leadership to make this a key topic in the IEPR update.

In addition to the topics listed in the Scoping Order, we recommend the IEPR include:

1. In collaboration with the CPUC and CARB, evaluate and set targets for the electrification of space and water heating in residential and commercial buildings that will result in greenhouse gas reductions in the 2019-2030 period in line with SB 32.
2. Review of the policy and market barriers to fuel-switching and electrification of the building sector, and evaluate actions that are needed to speed the transition and achieve needed greenhouse gas reductions in the 2019-2030 period.
3. Evaluation of whether the fuel substitution assumptions in the 2017 IEPR for Doubling Energy Efficiency as part of SB 350 reflect the level of electrification needed to achieve climate goals. The CEC's 2017 IEPR estimate that fuel substitution in California accounts for a reduction in 229 MMtherms of gas use by 2029 is far too low. For context, Southern California Edison's goal to electrify 30% of the buildings in its territory means a reduction of 963.5 MMtherms of gas. We recommend the CEC's estimate for 229 MMtherms be reviewed and updated in the 2018 IEPR.

Fugitive methane emissions

From the Aliso Canyon blow out in 2015 to the daily leakage of methane in every stage of the gas system (i.e. from production to end use), fugitive methane emissions are a major contributor to global warming, but are currently insufficiently accounted for. There is a large range of methane leakage rates in academic literature, from 1.4 to 12 percent.⁹ The climate impact of methane even at the low end of this leakage range is significant and merits more attention by energy policymakers. A recent report by San Francisco Department of the Environment found that "there is growing evidence that policymakers and operators are underestimating the climate and health risks

⁸ Raghavan et. al, *Scenarios to Decarbonize Residential Water Heating in California*, Lawrence Berkeley National Laboratory and UC Berkeley, 2017. <https://rael.berkeley.edu/wp-content/uploads/2017/07/Raghavan-Wei-Kammen-WaterHeating--ENergyPolicy-2017.pdf>

⁹ San Francisco Department of the Environment, *Methane Math: How Cities Can Rethink Emissions from Natural Gas*, November 2017 https://www.usdn.org/uploads/cms/documents/methane-math_natural-gas-report_final.pdf

associated with the natural gas system, especially when it comes to accounting for the heat-trapping power of methane emissions from extracting, transporting, and using natural gas.”¹⁰

The global warming impact of fugitive methane emissions is not sufficiently included in California’s Greenhouse Gas (GHG) Inventory or in the state’s policymaking decisions, particularly with respect to the buildings sector. Roughly 90% of the natural gas consumed in California is imported from out-of-state. Fugitive methane emissions that occur in the production, processing, and transmission of that gas out-of-state are not included in the California Air Resources Board GHG Inventory. Further, the GHG Inventory does not factor in major methane leakage events (like Aliso Canyon) or daily methane leakage according to the sector of the economy that consumes the gas. Rather, the methane leakage that is accounted for gets lumped into the industrial emissions estimate, thereby underestimating the full climate impacts of gas combustion in buildings and other sectors of the economy.

As state agencies make decisions related to the expansion of or phased pairing back of gas infrastructure, it is critical to fully understand the greenhouse gas and safety implications of that infrastructure, with a particular focus on fugitive methane emissions.

We recommend the IEPR include:

1. In collaboration with the Air Resources Board, review of how fugitive methane emissions are accounted for in the California GHG inventory, and recommend an updated methodology.
2. Recommendation for how the climate impact of the life-cycle of gas should be considered in energy policies, particularly in the CEC’s Building Energy Efficiency Standards.
3. Review how factoring in fugitive methane emissions impacts the state’s progress in and projections to achieving 2030 and 2050 climate goals, and recommend what policies should be hastened to mitigate the global warming impact of methane leakage.

Technology to support California’s transition to 100% clean energy

As California rapidly increases penetration of renewable energy (both utility-scale and distributed), it will be vital to understand the feasibility of a range of technologies to support both the integration of renewables onto the grid and local utilization of distributed renewables. The role of thermal storage technologies, like heat pumps, and other electric appliances in supporting grid harmonization and self-utilization of rooftop PV merit greater focus and understanding.

¹⁰ San Francisco Department of the Environment, *Methane Math: How Cities Can Rethink Emissions from Natural Gas*, November 2017 https://www.usdn.org/uploads/cms/documents/methane-math_natural-gas-report_final.pdf

We recommend the IEPR include:

1. Review how thermal storage technologies, like heat pump water heaters, and other electric appliances can support load shifting, grid flexibility, and use of renewable electricity.
2. Development of a policy framework to spur market transformation and broad use of electric appliances as load management resources.

Thank you for your consideration of these comments and we look forward to engaging in the IEPR process.

Sincerely,

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