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Sierra Club Comments on 2022 Energy Code Compliance Metrics

Additional submitted attachment is included below.

April 10, 2020

Via online submission

California Energy Commission
Dockets Office, MS-4
1516 9th Street
Sacramento, CA 95814-5512

Re: Sierra Club Comments on 2022 Energy Code Compliance Metrics (Docket No. 19-BSTD-03)

Dear Commissioners and Staff:

Sierra Club, on behalf of our 500,000 members and supporters in California, appreciates the opportunity to comment on the California Energy Commission's ("CEC") 2022 Energy Code Compliance Metrics. Sierra Club strongly supports the CEC's intention that this round of revisions to the code focus on building decarbonization, and specifically on removing the current barriers that are slowing the needed transition to all-electric buildings.

All-electric new construction is a key climate and affordability measure, and a foundational way for the CEC to adhere to the Warren-Alquist Act's requirement of cost-effective energy efficiency improvements. Several studies, including those authored or commissioned by the CEC, find that electrification of new construction and halting new gas hookups are needed to achieve California's climate goals, and to protect affordability and health.[1] These studies also find that electrification must begin as soon as possible in order to minimize both stranded assets in the gas system and to overall societal costs: by one estimate, the societal cost of delaying building electrification will cost California $18 billion per year by

[1] *See, e.g.*, CEC, 2018 Integrated Energy Policy Report Update, *available at* https://ww2.energy.ca.gov/2018_energypolicy/; CEC, Natural Gas Distribution in California's Low-Carbon Future, (Oct. 2019) (prepared by Energy & Envtl. Economics ("E3") and UC Irvine), *available at* https://ww2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-D.pdf ("E3 Natural Gas Distribution Report"); E3, Draft Results: Future of Natural Gas Distribution in California (June 26, 2019) (commissioned by CEC), *available at* https://www.ethree.com/at-cec-e3-highlights-needfor-gas-transition-strategy-in-california/; E3, Deep Decarbonization in a High Renewables Future (June 2018) (commissioned by CEC), *available at* https://www.ethree.com/wpcontent/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012-1.pdf; Gridworks, California's Gas System in Transition: Equitable, Affordable, Decarbonized, and Smaller (Sept. 2019), *available at* https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf ("Gridworks Report").

2050.[2] As the most recent cost effectiveness study on all-electric reach codes demonstrates, all-electric construction is technically feasible and cost effective today.[3] Indeed, in less than one year, 30 cities across California have adopted electrification reach codes as evidence of the affordability, technical feasibility, and health and safety benefits of all-electric construction.[4]

To facilitate a transition to low- and zero-carbon buildings in time to achieve our climate goals, the next iteration of the building code must be ambitious. The buildings constructed under this code cycle will still stand—and consume energy – for many decades, until long after the time when the use of gas must drastically decline in order to meet state climate change mitigation goals, and long after the state's 2045 deadline to achieve carbon neutrality. Occupants of buildings that continue to burn gas will also be locked into paying gas utility bills for many decades, and will be increasingly burdened by exponentially increasing bills as overall gas throughput declines and a shrinking number of customers must pay for all the stranded assets of the gas system.[5] The 2022 building code must be structured to require, or at a minimum strongly encourage all-electric climate-friendly building designs, including removing historic code barriers to all-electric designs.

With this reality in mind, Sierra Club urges the CEC to (1) update compliance baselines to provide strong greenhouse gas reduction signals, (2) adopt at least a 15% adjustment to the Time Dependent Valuation ("TDV") retail rate adder, and (3) use comprehensive estimates for the non-combustion emissions from gas use that appropriately account for the near-term warming impact of methane emissions and for methane leaks both inside buildings and during the production process.

While we do not address air quality concerns from gas combustion appliances in these comments, we do support the comments and concerns submitted by Rocky Mountain Institute.

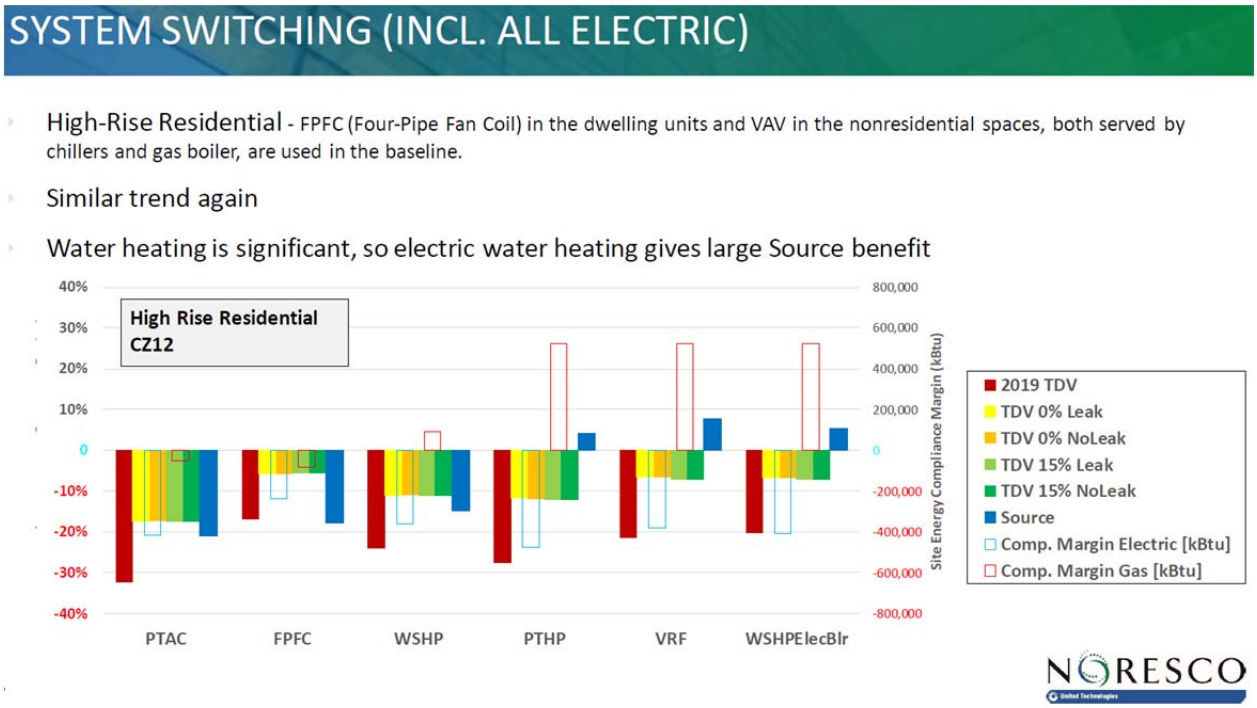
1. In addition to revising the compliance metrics, baselines must also be updated to send a strong signal to reduce greenhouse gas emissions.

While updates to the compliance metrics are important, these changes alone will have little impact if the prescriptive building designs used to evaluate proposed buildings are not aligned with decarbonization objectives, or not even reflective of standard industry practices. The next code cycle must adjust the baselines for all building types to reflect the building fuels that would produce the lowest greenhouse gas emissions.

The current system, which applies gas baselines to some categories of all-electric buildings, inappropriately penalizes electric designs that would have led to large reductions in

[2] Gridworks Report at 9.
[3] *See* 2019 Cost-Effectiveness Study: Low-rise Residential Construction and 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study (July 25, 2019), *available at* https://localenergycodes.com/content/2019-local-energy-ordinances/.
[4] Matt Gough, *California Cities Lead the Way to a Gas-Free Future* (March 27, 2020), *available at* https://www.sierraclub.org/articles/2020/03/californias-cities-lead-way-gas-free-future.
[5] *See* E3 Natural Gas Distribution Report.

greenhouse gas emissions compared to an equivalent gas design. As demonstrated in the presentation by Roger Hedrick of NORESCO, even though standard electric system options for many occupancy types show greenhouse gas savings under the new Time Dependent Source ("TDS") energy metric, they are penalized under TDV – and the proposed code compliance approach suggested in the workshop proposed that designs will need to meet both TDV and TDS standards under the "2-EDR" approach.[6]



Large TDV penalties for electric construction affect many building types, including large office building with central plants, medium retail buildings, hotels/motels, and restaurants. These penalties for electric designs exist even after the proposed changes to the 2022 TDV metrics, and will continue as long as electric buildings are compared with a gas baseline using TDV. This result is the opposite of what the new code should incentivize. Going forward, we urge the CEC set electric baselines for all building types to send a strong signal for buildings to minimize greenhouse gas emissions.

While all-electric designs are needed across all building types, it is especially important to ensure all new multi-family and high rise residential buildings are all-electric. Residents of apartment buildings and other types of multi-family housing are much more likely to be low-income. They are also more likely to be renters, who will be unable to change the energy sources in their home later when gas becomes prohibitively expensive, which is likely within the lifetime of a building constructed with this set of standards. Shielding these households from the rapidly increasing costs of natural gas by ensuring all new multi-family construction is electric should be a priority when updating the building code.

[6] NORESCO, Impacts of 2022 Metrics on Nonresidential and High Rise Residential Building Performance Compliance (TN #232661) at slide 7.

2. The proposed 15% retail rate adjustment is a step in the right direction.

Sierra Club supports the CEC's proposal to modify the TDV metric so that 15% of the retail rate adjustment factor is distributed across all hours of the day in proportion to the other TDV components. Distributing the retail rate adjustment proportionally, corresponding with wholesale energy costs, gives more value to load flexibility measures like demand response, precooling, and energy storage that shift building energy consumption to make use of abundant midday renewables. In addition, as more customers are transitioned onto time of use rates, this TDV adjustment helps to reflect the actual utility costs they face.

Changing the distribution of just 15% of the retail rate adjustment has a small impact on overall TDV, and Sierra Club would support a larger adjustment in light of the crucial role load management will play in building decarbonization and in lowering overall grid system costs. However, we support this change as an improvement on the current TDV metric that sends the right market signal for load shifting technologies.

3. Inputs to TDV should be updated to reflect the full impact of methane leakage.

Sierra Club appreciates the CEC's proposal to update the TDV metric to include the impacts of methane leakage within buildings. Incorporating the non-combustion emissions associated with gas use into TDV helps the metric more accurately reflect the full costs of gas consumption. However, the current metric, which estimates 0.7% of gas used will leak, underestimates the impacts of methane emissions in three respects.

First, the CEC should use a 20-year global warming potential ("GWP") figure -- not a 100-year GWP -- when evaluating methane leakage. Methane has 86 times the GWP of CO_2 over a 20-year period, which means these emissions have an immediate detrimental effect on our atmosphere and climate. We encourage the CEC to follow the leadership of the California Air Resources Board ("CARB"), which uses 20-year GWPs to quantify emissions of Short-Lived Climate Pollutants ("SCLP") such as methane.[7] As CARB explains, the "use of GWPs with a time horizon of 20 years better captures the importance of SLCPs and gives a better perspective on the speed at which SCLP emission controls will impact the atmosphere relative to CO_2 emission controls."[8] CARB has found that GWPs over a 20-year time horizon are more appropriate for SLCPs than a 100-year time horizon.[9]

Second, new studies support a higher estimate for behind-the-meter methane leakage. A recent study from Stanford shows leakage of 0.91% for tankless gas water heaters alone.[10] This

[7] California Air Resources Board, Short-Lived Climate Pollutant Reduction Strategy at 5 (March 2017), *available at* https://ww2.arb.ca.gov/sites/default/files/2018-12/final_slcp_reduction_strategy_w_appx_march2017%20Final%202017.pdf.
[8] *Id.* at 40.
[9] *Id.* at 45.
[10] Eric Lebel *et al.*, *Quantifying Methane Emissions from Tankless and Storage Water Heaters*, *available at* https://stanford.app.box.com/s/uwclf565jk30oe58hzuyrol2ch4isfp4.

figure is significant, as it is nearly double the current CEC estimate is 0.5% behind-the-meter leakage for all uses, including space heating, cooking, fireplaces.

Finally, and most crucially, the gas TDV must account for upstream methane leakage, including leaks that occur outside of California. CARB's estimate of upstream methane leaks does not include out-of-state leakage, but California imports 90% of the gas it uses.[11] The electricity sector's out-of-state emissions are accounted for in CARB's GHG inventory, and out-of-state impacts should be included for gas as well. Although there is some uncertainty around attribution of methane leakage to building demand, zero attribution is not the answer. If all California buildings were electrified, and the gas infrastructure decommissioned, this would clearly result in fewer gas wells drilled, less gas processed and distributed and therefore lower methane emissions from leakage. Flatly ignoring these emissions is unjustifiable.

Thank you for considering these comments.

Respectfully,

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[11] E3, Title 24 2022 TDV Update at slide 77 (March 26, 2020).