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**Sierra Club Comments on 2019 Title 24 Building Energy Efficiency Standards
Rulemaking 45-Day Language Update**

Additional submitted attachment is included below.



February 21, 2018

Sierra Club Comments on 2019 Title 24 Building Energy Efficiency Standards Rulemaking 45-Day Language Update

Sierra Club appreciates the opportunity to provide comments on the 45-day language express terms for the 2019 Building Efficiency Standards. The Sierra Club supports the California Energy Commission's (CEC) updates to the 2019 code to achieve the state's zero net energy (ZNE) goals. However, in order to align with the state's overarching climate goals, the Commission should go further and create a pathway to zero net *emissions* buildings.

California is already experiencing the devastating impacts of climate change-- from the 2015 drought that cost the state over \$2.7 billion and 20,000 lost jobs, to the 2017 wildfires which were the deadliest in California's history.¹ It is imperative that the CEC and sister agencies deeply decarbonize all sectors of the economy to align with or exceed the greenhouse gas (GHG) reduction targets established in Senate Bill (S.B) 32 and mitigate the worst impacts of climate change.

The residential and commercial buildings sector represents one of the largest sources of GHG emissions in California.² While California has some of the nation's most stringent building energy efficiency standards, the state is not a leader in low- or zero-carbon construction due to energy policies that support use of natural gas as the primary heating fuel. Using natural gas for water and space heating limit the climate benefits of an increasingly renewable grid and rooftop solar.

In order to achieve the deep reductions in GHG emissions necessary to meet or exceed S.B. 32, buildings in California need to shift from gas-fired end use appliances to high efficiency electric appliances powered by the state's rapidly decarbonizing electricity supply and on-site renewables.³ As the 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-

¹ California Air Resources Board, 2017 Climate Change Scoping Plan, https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

² California Air Resources Board, <https://www.arb.ca.gov/cc/ghgsectors/ghgsectors.htm>

³ 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-SchmidtTraub 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).

term climate goals.”⁴ In the context of this accelerating need for decarbonization across the energy economy, the Sierra Club recommends the CEC update the Building Energy Efficiency Standards to support a transition to energy efficient zero-emission electric residential and commercial buildings. To that end, Sierra Club recommends the CEC evolve Title 24 to become a GHG-based code, and to overcome the limitations posed by use of an outdated TDV metric that does not account for the full cost of natural gas (i.e. infrastructure, methane leakage).

In response to the CEC’s 45-day Language Update and the presentations at the hearing on February 5-6, 2018, Sierra Club offers the following comments:

1. Support the prescriptive PV requirement for residential buildings.

Sierra Club supports the integration of prescriptive requirements for installing solar PV systems. According to E3, adding PV systems to offset electric consumption are a clear net economic benefit to residents under current state policy.⁵ Implementing prescriptive requirements for PV installation allows for “stability and standardization which can foster solar market development and solar market growth.”⁶ Additionally, homes and buildings can be designed with solar in mind, thereby taking into account important factors like roof type and equipment placement at the start, to make solar more suitable and feasible. Rooftop PV is a critical element of achieving the state’s zero net energy and GHG reduction goals.

2. Support the CEC’s planned addition of an electric water heater baseline.

At the California Energy Commission *2019 Title 24 Building Energy Efficiency Standards Lead Commissioner* hearing on February 5 2018, CEC staff announced that the next CEC update to the 2019 Code would include a new baseline for proposed electric water heaters using a federal minimum heat pump water heater (Energy Factor 2.0) plus extra drain water heat recovery and compact distribution efficiency measures in 150.1(c)8A. This electric baseline was announced to be an option whether or not natural gas is technically “available.”

Sierra Club strongly supports the addition of an electric water heater baseline in the 2019 code that is available whether or not gas is available. The proposed baseline will ensure energy efficiency savings, while at the same time, create a pathway for cost-competitive electric construction that is aligned with the state’s GHG reduction goals and overall direction.

Without this electric baseline for water heating, the Sierra Club is concerned that TDV will pose a significant obstacle to the deployment of electric heat pump water heaters and electric construction. Despite the climate benefits, the TDV metric favors mixed fuel buildings over electric. E3’s modeling

⁴ Air Resources Board, California’s 2017 Climate Change Scoping Plan (Nov. 2017), p. 88. Available at https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

⁵ California Energy Commission, “Rooftop Solar PV System Report,” October 2, 2017. http://docketpublic.energy.ca.gov/PublicDocuments/17-BSTD-01/TN221366_20171002T104342_Rooftop_Solar_PV_System_Report.pdf.

⁶ Clean Energy States Alliance, “Standards and Requirements for Solar Equipment, Installation, and Licensing and Certification,” February 2017 <https://www.cesa.org/assets/2017-Files/Standards-and-Requirements-for-Solar.pdf>

shows that all-electric water heating with a heat pump uses less source energy and produces less greenhouse gases than gas water heating systems, though has a higher TDV value.⁷ Creating a same fuel baseline for proposed designs is an important near-term solution to prevent TDV from becoming an obstacle to climate-friendly electric construction. Ultimately, however, we recommend the CEC replace or pair TDV with a GHG-based metric.

3. Recommend including Thermal Storage in the Energy Storage Credit

Sierra Club recommends that the CEC include a thermal storage credit in the proposed energy storage credit in the 15 day language. Grid-connected electric heat pump water heaters, space heaters, and A/C offer thermal storage and flexible loads that can support increased utilization of rooftop solar and grid harmonization. In order to gain the full benefits from PV systems, it is important to expand the battery storage credit to thermal storage technologies that are grid-connected and can be controlled similar to battery storage. This complementary measure will support the deployment of lower cost storage technologies that support grid flexibility and deep decarbonization of both buildings and the grid.

4. Recommend including a social cost of carbon (SCC) and electric ready requirements in CALGreen

Local jurisdictions are increasingly interested in decarbonizing local construction to align with municipal Climate Action Plans and the state's overall goals. Sierra Club recommends that a social cost of carbon option should be available for local jurisdictions that are interested in adopting GHG-based building codes. Sierra Club appreciates that the research version of the CBECC-Res software offers this option; the CALGreen code should reflect this same option.

CALGreen should also incorporate "Electric Ready" requirements to facilitate a faster and lower cost transition to all-electric buildings. Similar to "EV-ready" requirements, an electric-appliance ready requirement for new homes would save money, accelerate the transition to efficient all-electric appliances like heat pump-based appliances, and reduce fuel-switching obstacles to the homeowner down the road such as permitting and electrical upgrades.

Thank you for your consideration of these comments.

Respectfully submitted,

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⁷ Docket Number: 16-BSTD-06 "E3 7-15-16 2019 TDV Workshop Presentation"