DOCKETED

Docket Number:	17-BSTD-01
Project Title:	2019 Building Energy Efficiency Standards PreRulemaking
TN #:	221558
Document Title:	Sierra Club Comments on the 2019 Building Efficiency Standards PreRulemaking Workshop on October 4th- October 5th 2017
Description:	N/A
Filer:	System
Organization:	Sierra Club/Ashley Hammerbacher
Submitter Role:	Public
Submission Date:	10/20/2017 10:17:10 AM
Docketed Date:	10/20/2017

Comment Received From: Sierra Club/Ashley Hammerbacher
Submitted On: 10/20/2017
Docket Number: 17-BSTD-01

Sierra Club Comments on the 2019 Building Efficiency Standards PreRulemaking Workshop on October 4th- October 5th 2017

Additional submitted attachment is included below.

October 20, 2017

Sierra Club Comments on the 2019 Building Efficiency Standards
Pre-Rulemaking Workshop on October 4th- October 5th 2017

Sierra Club appreciates the opportunity to provide comments on the 2019 Building Efficiency Standards discussed at the workshops on October 4th and 5th 2017.

We are increasingly seeing the devastating and costly impacts of climate change in California and across the country with more frequent occurrences of fires, droughts, hurricanes, and other extreme weather events. Sierra Club recognizes that California's Building Efficiency Standards are an important component of a successful climate stabilization strategy. Strong 2019 Building Efficiency Standards would significantly reduce use of fossil fuels in the buildings sector and thereby help California achieve its needed greenhouse gas, energy, and air quality goals.

There is growing consensus that to implement the state's doubling energy efficiency and long-term climate goals, thermal loads in buildings need to be electrified with efficient electric heat pump water heaters. The Lawrence Berkeley National Laboratory and UC Berkeley recently found that California cannot wait to 2020 to begin to electrify residential water heating to achieve 2030 and 2050 climate goals in a cost-effective manner. [1]

We are at a critical moment in the development of the 2019 Building Efficiency Standards. At a minimum, we urge the California Energy Commission (CEC) in the 2019 code cycle to level the playing field between mixed-fuel and all-electric buildings through the creation of rigorous independent compliance pathways (both prescriptive and performance path) for water heating. Ultimately, we look to the CEC to consider more ambitious code revisions needed to place California on the path to all-electric zero-emission buildings. As we described in previous submittals,[2] the larger changes we seek in the code entail improvements to or overhaul of the TDV metric and more effective consideration of GHG emissions in code compliance.

With respect to the issues presented at the October 4-5th, 2019 workshop, Sierra Club recommends the following:

1. ***The Building Efficiency Standards should include an independent compliance pathway for electric water heating using the performance path.***

Sierra Club appreciates the development of the prescriptive option for electric heat pump water heaters in 150.1(c)8a and all of the efforts that CEC has completed to ensure that this path is included in the 2019

[1] Shuba V. Raghavan, Max Wei, Daniel M. Kammen, Scenarios to decarbonize residential water heating in California, In Energy Policy, Volume 109, 2017, Pages 441-451, ISSN 0301-4215, https://doi.org/10.1016/j.enpol.2017.07.002.

[2] Docket Number: 16-BSTD-06 "Sierra Club Comments on 2019 Draft TDV Updates"

code. Yet, as highlighted by the Natural Resources Defense Council (NRDC), the vast majority of builders use the performance path, not the prescriptive path to evaluate proposed projects. In order to ensure that efficient all-electric homes are a viable option, it is critical that the electric heat pump water heater evaluation criteria in the prescriptive path be extended to the performance path. E3 demonstrated in the CEC's July 15, 2016 Title 24 workshop how all-electric water heating with a heat pump produces at least 50% less lifecycle greenhouse gas (GHG) emissions than gas water heating in mixed-fuel buildings across all climate zones.[3] However, despite these important benefits, the all-electric buildings modeled had a higher TDV than mixed-fuel buildings and thus face design hurdles to comply with the code.[4] This is seen below in Figure 1 produced by E3.

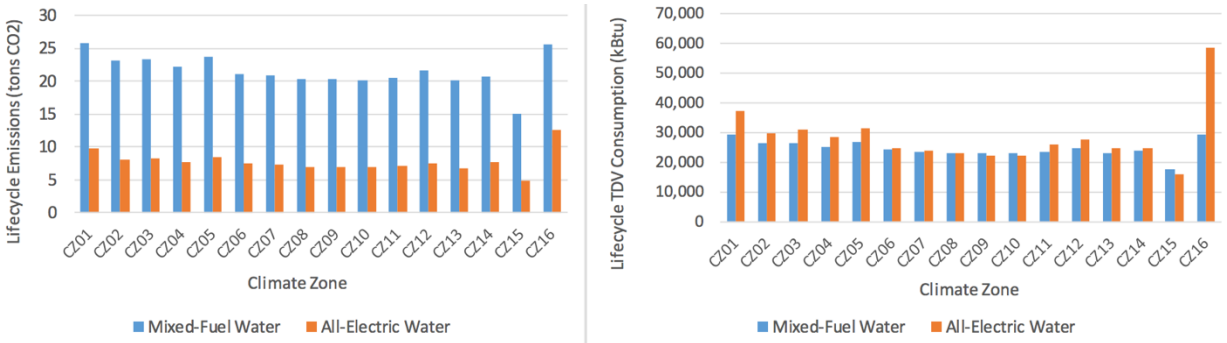

Figure 1: *(Left)* Lifecycle CO_2 Emissions from Mixed-Fuel and All-Electric Water Heating, *(Right)* Lifecycle TDV Emissions from Mixed-Fuel and All-Electric Water Heating (E3 Workshop, 2016)[5]

In order to ensure that the Building Efficiency Standards do not deter construction of high-efficiency lower-carbon all-electric buildings, we urge the CEC to establish an electric water heating baseline that uses a NEEA Tier 3 heat pump water heater, which is consistent with the proposed prescriptive option.

Lastly, we ask the CEC to clarify that this electric water heating baseline is an option whether or not gas is "available," just as is the case for space heating. Failing to make this electric water heating option available to all buildings (irrespective of gas availability) would significantly limit the benefits of and utilization of the code update.

2. ***The Building Efficiency Standards should include the full costs of gas in the TDV metric, including costs of bringing gas infrastructure to a new home.***

In their comments, Redwood Energy and Stone Energy Associates provided the CEC with comprehensive economic analysis on the cost differences between Electric and Mixed-Fuel buildings. Redwood Energy[6] finds significant savings per unit for both low and medium income homes that avoided new gas infrastructure. More broadly, Stone Energy Associates finds substantial savings from avoiding trenching and piping for gas lines and compiled a strong line of evidence that there are cost savings from all-electric building construction.[7] However, these gas infrastructure costs are not currently included in the TDV metric. Sierra Club recommends the CEC consider this evidence and expand its TDV analysis to include

[3] Docket Number: 16-BSTD-06 "E3 7-15-16 2019 TDV Workshop Presentation"
[4] Ibid.
[5] Ibid.
[6] Docket Number: 17-BSTD-01 "Redwood Energy Comments Gas costs should be included in cost effectiveness study"
[7] Ibid.

the full costs of gas, including the piping costs in the building, the removal of combustion by-products, and the costs to the utility bringing gas to the building.

3. ***The Building Efficiency Standards should incorporate 'Electric Ready' requirements to facilitate a faster and lower cost transition to all-electric buildings.***

To meet California's 2050 emissions target, the electrification phase-in needs to happen quickly and according to LBNL, needs to begin 2020.[8] The CEC should develop 'Electric Ready' requirements for buildings to meet these long-term greenhouse gas goals in a cost-effective manner. An electric ready requirement for new homes would accelerate the transition to all-electric appliances, such as heat pump water heaters, at lower cost and reduce obstacles to the homeowner. Installing electric-ready infrastructure in the initial design stage is more cost-effective as it will avoid significant retrofit costs, including permits and electrical upgrades.[9]

Thank you for your consideration of these comments.

Dated: October 20, 2017

Respectfully submitted,

Rachel Golden
Senior Campaign Representative

Ashley Hammerbacher
Clean Energy Fellow

[8] Shuba V. Raghavan, Max Wei, Daniel M. Kammen, Scenarios to decarbonize residential water heating in California, In Energy Policy, Volume 109, 2017, Pages 441-451, ISSN 0301-4215, https://doi.org/10.1016/j.enpol.2017.07.002.
[9] Ibid.