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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking Regarding
Building Decarbonization.

Rulemaking 19-01-011
(Filed January 31, 2019)

**WILD TREE FOUNDATION
REPLY COMMENTS ON PROPOSED DECISION**

April Rose Maurath Sommer
Executive and Legal Director

Wild Tree Foundation
1547 Palos Verdes Mall #196
Walnut Creek, CA 94597
April@WildTree.org
(925) 310-6070

Dated: March 9, 2020

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Pursuant to the Rule 13.4 of the Commission Rules of Practice and Procedure, Wild Tree Foundation (“Wild Tree”) submits the following reply comments on the Proposed Decision Establishing Building Decarbonization Pilot Program (“Proposed Decision” or “PD”).

COMMENTS

A. Climate-Destroying Refrigerants Should not be Eligible for Incentives under the BUILD or TECH Programs

The comments that attack the proposal in the PD regarding limiting BUILD and TECH programs incentives to products that do not use refrigerants with greater than 750 GWP entirely miss the point of the programs. The structure proposed in the PD – a kicker incentive for less than 150 GWP systems and no incentives for greater than 750 GWP systems - will be a perfect complement to CARB and EPA regulatory mandates and is precisely what is envisioned by the programs. For example, as defined in the Code, the TECH program is “statewide market

development initiative.”¹ The point of the initiative is to “advance the state’s market for low-emission space and water heating equipment for new and existing residential buildings” by “identify[ing] and target[ing] key low-emission space and water heating equipment technologies that are in an early stage of market development and that would assist the state in achieving its greenhouse gas emissions reduction goals.”² Use of incentives for technology that will best assist in achieving GHG emission reduction goals but requires statewide market development meets the TECH program goals as clearly defined in the Code.

The PD limitation on high GWP systems perfectly complements any CARB requirements in that BUILD and TECH incentives will help the market move towards future requirements. The commenters that complain that the incentive limits for high GWP systems will “conflict” with CARB goals³, fail to explain how exactly these CARB requirements could be met in 2023 if work towards transforming the market does not begin now. It would be ridiculous to have BUILD and TECH funding installation of heat pumps with high GWP refrigerants into homes on December 31, 2022 that would be illegal on January 1, 2023 per CARB regulations. The point of BUILD and TECH is to actually decrease GHG emissions and to speed the market transformation that will be required by 2023, not to provide incentive for products already in the market that will be illegal in just a short time.

Many of the comments regarding existing low-GWP refrigerant technology are inaccurate. For example, the California Building Industry Association writes, “We are aware of a single water heater product that would meet this standard, and do not know of any efficient

¹ Pub. Util. Code, 922, § subd. (a)(1).

² *Ibid.*

³ See R.19-01-011, A.O. Smith Comments on Proposed Decision (March 3, 2020) at p. 4.

electric space heating options.”⁴ Rheem Manufacturing states and SMUD repeats, almost verbatim, similar complaints about low-GWP refrigerants:

There is currently only one commercially available heat pump water heater (HPWH) and no residential or light commercial heating products that can meet this specification [of less than 750 GWP]. Furthermore, it will likely take three to five years for manufacturers to transition their product offering to a new refrigerant once they receive a clear regulatory signal to do so. As a result, the intended market transformation benefits of these pilots will likely not be observed because many technologies will not be eligible for funding.⁵

First, these statements are factually inaccurate regarding the availability of heat pump heaters using lower GWP refrigerants. CO₂, referred to as R744 in the refrigerant context, obviously has a GWP of 1 and has been used in commercial and residential heat pump in Japan since 2001. Incentivized by the Japanese government and utilities, Panasonic, Daikin, DENSO, Sanden, Itomic, Mitsubishi, Sanyo, and Hitachi have sold millions of “Eco Cute” systems, CO₂ refrigerated water heat pumps.⁶ This is precisely the model that should be followed in this proceeding whereby government funding brings about a market transformation to decrease GHG emissions and reliance on fossil fuel while not sacrificing efficiency or comfort.

In Europe, Stiebel Eltron, enEX, ICS, Thermea, Kylma, CTC, JCA and Viessmann sell CO₂ water heat pumps.⁷ And CO₂ water heat pump systems are available in the United States

⁴ R.19-01-011, California Building Industry Association Comments on Proposed Decision (March 3, 2020) at p. 1.

⁵ R.19-01-011, Rheem Manufacturing Comments on Proposed Decision (March 3, 2020) at p. 2; See also R.19-01-011, SMUD Comments on Proposed Decision (March 3, 2020) at p. 2. (“There is currently only one commercially available heat pump water heater (HPWH) and no residential heating product that can meet this specification. Furthermore, it will likely take three to five years for manufacturers to transition their product lines to a new refrigerant once they receive a clear regulatory signal to do so. As a result, we likely will not see the intended market transformation benefits of these pilots because many technologies will not be eligible for funding, and it will take too long for manufacturers to transition their product lines in time to make them eligible for funding.”)

⁶ Washington State University, Energy Program, *Emerging Technologies – CO₂ Heat Pump Water Heaters*, <http://e3tnw.org/ItemDetail.aspx?id=389> (as of March 9, 2020).

⁷ *Ibid.*

from Sanden.⁸ Denso and Stiebel Eltron released a CO2 space heating system in Europe in 2017.⁹ A combined water and space heating heat pumps that use CO2 – Sanyo Eco Cute by Mitsubishi - has been sold in Europe since 2003.¹⁰ Mitsubishi also has a range of heat pumps, including residential split AC system that utilizes lower GWP refrigerant R454C, with a GWP of less than 150. Stiebel Eltron is also introducing a series of heat pumps this year that utilize R54C.¹¹ These are the types of systems we need brought into the California market with the help of the TECH and BUILD program.

Secondly, the pro-high GWP refrigerant commenters entirely miss the point that the TECH program, in particular, is intended to bring about market transformation, not simply provide funding for products that are already available in California. There are many existing products that can meet the specifications laid out in the PD that the TECH program can help bring to the California market. There is also significant research currently underway into new zero and low GWP refrigerants and heat pump systems that the TECH program can assist in bringing to the California market.

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⁸ Sanden Website, *Eco2 Systems*, <https://www.sandenwaterheater.com/> (as of March 9, 2020).

⁹ Denso Website, Residential CO2 Heat Pump, <https://www.denso-am.eu/products/life-energy/co2-heat-pump/> (as of March 9, 2020.)

¹⁰ University of Strathclyde, Engineering, *CO2 Air Source Heat Pump*, http://www.esru.strath.ac.uk/EandE/Web_sites/10-11/ASHP_CO2/lit-sanyoEcoCute.html (as of March 9, 2020.)

¹¹ Stiebel Eltron, *STIEBEL ELTRON with safe solution for refrigerant phase down - Efficient and environmentally friendly without explosion risks*, <https://www.stiebel-eltron.co.uk/en/company/press-releases/refrigerant.html> (as of March 9, 2020).

Respectfully submitted,

/s/ April Maurath Sommer

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