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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Building Decarbonization.	Rulemaking 19-01-011

ASSIGNED COMMISSIONER'S RULING REGARDING THE PROHIBITION ON HIGH GLOBAL WARMING POTENTIAL REFRIGERANTS USED IN APPLIANCES INCENTIVIZED BY BUILDING DECARBONIZATION PROGRAMS

This Ruling modifies the deadline for phasing out the use of high Global Warming Potential (GWP) refrigerants used in appliances of building projects incentivized by the Building Initiative for Low-Emissions Development (BUILD) Program and the Technology and Equipment for Clean Heating (TECH) Initiative. Today's Ruling (1) extends the deadline from January 1, 2025, to January 1, 2027, for refrigerants used in heat pump water heaters (HPWHs) and heat pump dryers; and (2) sets out clarifications for heat pump heating, ventilation, and air conditioning (HVAC) systems reserved before January 1, 2025, but installed after that date.

1. Background

On March 26, 2020, the California Public Utilities Commission (CPUC or Commission) adopted Decision (D.) 20-03-027, which established the BUILD Program and the TECH Initiative per the requirements of Senate Bill (SB) 1477 (Stern, 2018). That same decision set a deadline that by January 1, 2023, incentives from both the BUILD Program and the TECH Initiative would only be provided for appliances that use refrigerants with a GWP of 750 or below. Ordering Paragraph (OP) 37 of D.20-03-027 authorized the Assigned

Commissioner with the discretion to extend that deadline administratively after taking into account market conditions and the ability of manufacturers to comply with more stringent refrigerant use requirements.

On September 26, 2022, former assigned Commissioner Rechtschaffen issued an Assigned Commissioner's Ruling (ACR) extending this deadline to January 1, 2025, in order to align with a California Air Resources Board (CARB) deadline for phasing out high-GWP (i.e., greater than 750 GWP) refrigerants used in residential HVAC equipment.[1]

While the TECH Initiative was originally intended to incentivize only space heating equipment and water heating equipment, the recent enactment of Assembly Bill (AB) 157 (Gabriel, 2024) authorized new program funding that could result in incentives directed to additional appliances that use refrigerants, such as heat pump dryers. Additionally, the BUILD Program provides incentives for whole units that utilize appliances that use refrigerants, including heat pump HVAC systems, HPWHs, heat pump dryers, and refrigerators.

1.1. Heat Pump HVAC Systems

The original January 1, 2023[2] deadline and the January 1, 2025[3] extended-deadline aligned with CARB's own timeline for phasing out high-GWP refrigerants used in residential HVAC equipment.[4] Moreover, it should be noted that the federal Environmental Protection Agency (EPA) had set its rule and adopted a threshold of 700 GWP for refrigerants used in new HVAC systems,

[1] ACR on Permissible Refrigerants in the Build Program and TECH Initiative, at 3.
[2] CARB Technical Working Group Meeting: Afternoon Session.
[3] California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4. Final Regulation Order.
[4] Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Chillers, Aerosols-Propellants, and Foam End-Uses Regulation | California Air Resources Board

which is slightly lower than CARB's.[5] We also acknowledge that this federal EPA rule supersedes our own rule specific to heat pump HVAC systems.

In addition, the federal EPA's Technology Transition Rule[6] includes a one-year sell-through period for products manufactured before January 1, 2025, to be able to be installed until January 1, 2026.[7] In reviewing ENERGY STAR's Qualified Products List (QPL) for heat pump HVAC systems incentivized through the TECH Initiative, heat pump HVAC systems using refrigerants below 750 GWP make up 33.3 percent of all heat pump HVAC systems in the QPL. Specifically, heat pump HVAC systems using the R-454b refrigerant with a GWP of 470 make up 32 percent of all heat pump HVAC systems, with the other heat pump HVAC systems using the R-32 refrigerant with a GWP of 675 making up the remaining 1.3 percent.[8] This percentage represents a much higher number of heat pump HVAC systems whose refrigerants are below 750 GWP than HPWHs and heat pump dryers found below.

1.2. HPWH Market

Under the current QPL for HPWHs in the TECH Initiative, HPWHs using the R-134a refrigerant with a GWP of 1,430 make up 94 percent of all HPWHs.[9] While some manufacturers like SanCO2 and Embertec[10] use refrigerants with a

[5] Technology Transitions HFC Restrictions by Sector | U.S. EPA.

[6] *ibid.*

[7] *ibid.*

[8] ENERGY STAR Certified Air-Source Heat Pumps | ENERGY STAR. Data retrieved on January 15, 2025.

[9] California Energy Commission (CEC) JA13 compliant and either Northwest Energy Efficiency Alliance (NEEA) with EcoPort or ENERGY STAR ®. Incentive resources | The Switch Is On.

[10] SanCO2 uses R-744 as a refrigerant with a GWP of 1, while Embertec uses R-513a refrigerant with a GWP of 630.

GWP of 750 and below, this statistic demonstrates that the industry is still predominantly using refrigerants with a GWP higher than 750.

1.3. Heat Pump Dryer Market

Under the ENERGY STAR QPL for heat pump dryers, which the BUILD Program utilizes,[11] heat pump dryers using the R-134a refrigerant with a GWP of 1,430 make up 33 percent of all heat pump dryers on the QPL while 58 percent do not list a refrigerant type with associated GWP.[12]

1.4. Other Appliances

In addition to heat pump appliances, refrigerants are used in other appliances as well. The refrigerator market has made significant strides toward increasing the number of units using lower GWP refrigerants. Thanks to the federal EPA's Significant New Alternatives Policy Program, starting in 2021, 28 refrigerants were deemed unacceptable in new household refrigerators and freezers.[13] For example, CFC-12 refrigerant with a GWP of 10,900 is no longer used in new equipment. Aside from HFC-134a refrigerant with a GWP of 1,430, refrigerants R-513a, R-450a, R-441a, HFO-1234yf, R-290, and R-600a, which all have a GWP below 750, continue to be available to the market.[14]

More recently, battery storge manufacturers have started to use refrigerants to improve product efficiency. Because this innovation is nascent, however, not as much is known about the refrigerants being used, and data is

[11] BUILD Implementation Plan. California Energy Commission: Docket Log.

[12] ENERGY STAR Certified Residential Clothes Dryers | ENERGY STAR. Data retrieved on January 15, 2025.

[13] U.S. EPA Transitioning to Low-GWP Alternatives in Domestic Refrigeration. Transition to Low-GWP Alternatives in Domestic Refrigeration

[14] *ibid*.

not widely available as to GWP associated with refrigerant use. Nevertheless, this is an area to track and be aware of moving forward.

1.5. Discussion

In order to ensure a smooth market transition away from the use of refrigerants with a GWP greater than 750 in the appliances of building projects incentivized by both the BUILD Program and the TECH Initiative, we opt to move forward now with the 750 GWP cap for HP HVAC systems and refrigerators while recognizing that the market for HPWHs and heat pump dryers needs more time to transition off of high-GWP refrigerants.

Regarding heat pump HVAC systems, we align with the federal EPA's Technology Transition Rule, which places a one-year sell-through period for stationary residential and light commercial air conditioning systems manufactured before January 1, 2025, needing to be installed before January 1, 2026.[15] This means that heat pump HVAC systems incentivized by the BUILD Program and/or the TECH Initiative may install new heat pump HVAC systems that exceed a GWP of 750 or above until January 1, 2026, as long as those units were manufactured before January 1, 2025. All heat pump HVAC units manufactured after January 1, 2025, however, must comply with the prohibition on high-GWP refrigerant usage. We also acknowledge that the federal EPA's rule supersedes our own in limiting the GWP of new HVAC systems, including heat pump HVAC systems, to 700 or below rather than 750 or below.

Regarding HPWHs, we extend the deadline to phase out high-GWP refrigerants to January 1, 2027. We believe this will give industry enough time to reach the desired 750 GWP or below threshold. We also apply the same

[15] Technology Transitions HFC Restrictions by Sector | U.S. EPA.

extension to heat pump dryers, as we believe more research and time are needed to fully identify the makeup of the refrigerants and associated GWP for the ENERGY STAR QPL for heat pump dryers. As such, we believe this extension will help us better understand where the industry is to meet the desired refrigerant GWPs target.

We decline to impose any deadline on the phase-out of high-GWP refrigerants used in battery storage systems or any other appliances at this time. We will, however, continue to monitor such refrigerant usage as more information becomes available.

IT IS RULED that:

1. The BUILD Program and TECH Initiative shall align with the one-year sell through period for heat pump HVAC systems, as listed in the federal EPA's Technology Transition Rule. New installations occurring after January 1, 2025, may only use heat pump HVAC systems with refrigerants that have a GWP of 750 or above if those systems were manufactured before January 1, 2025, and shall not use such systems any longer starting January 1, 2026.
2. The deadline to only incentivize refrigerants with a GWP of 750 or below is extended for HPWHs and heat pump dryers through January 1, 2027. The deadline shall not apply to refrigerants used in battery storage systems.

Dated February 14, 2025, at San Francisco, California.

/s/ DARCIE L. HOUCK
Darcie L. Houck
Assigned Commissioner