

California Refrigerant Regulations Overview

This document focuses on supermarket refrigeration rather than domestic or household refrigerators. Domestic refrigerators are of lesser concern because they rarely leak, they have a very small amount of refrigerant, and natural refrigerants can already be used in domestic refrigerators with fewer barriers to adoption.

Hydrofluorocarbon (HFC) Refrigerants Are Potent Greenhouse Gases (GHGs)

- Scientists have estimated that unless something changes, emissions from HFC refrigerants could contribute to a rise in global temperatures [up to 0.5°C](#) by 2100.
- HFCs have been identified as the fastest growing source of greenhouse gas emissions globally, growing at a rate of [10% to 15% annually](#). Between 1990 and 2016, HFC emissions [increased by 249%](#) in the United States alone.
- Supermarkets and other commercial refrigeration applications have been identified as the greatest contributor to HFC emissions in California. The [roughly 24,000](#) commercial refrigeration systems in California are responsible for [36% of California HFC emissions](#).

California Has Set Ambitious Climate Goals for GHG & HFC Refrigerant Emissions Reductions

- California has set ambitious GHG and HFC emissions reductions goals, including:
 - Reduction of GHG emissions [to 1990 levels by 2020](#) (approximately 30% reduction);
 - Reduction of GHG emissions [to 40% below 1990 levels by 2030](#); and
 - Reduction in statewide HFC refrigerant emissions to [40% below 2013 levels by 2030](#).

Refrigerant Regulations Are A Core Component of The State's Strategy to Meet Their HFC Refrigerant Emissions Goals

- To meet its HFC refrigerant emissions goals, California needs to reduce emissions by 17 million metric tons of CO₂ equivalent emissions (MMTCO₂e) from business as usual (BAU) by 2030.
- The California Air Resources Board's (CARB's) 2017 [proposed strategy](#) to reduce HFC refrigerant emissions included:
 - Financial incentives for early adoption of climate-friendly refrigerants;
 - HFC supply reduction;
 - Prohibition on sales of HFC refrigerants; and
 - Prohibition on sale & installation of new equipment containing HFC refrigerants.
- In 2018, California [adopted a prohibition](#) on specific high-global warming potential (GWP*) refrigerants in new and retrofit equipment. The impact of this regulation on the supermarket industry is relatively low as most supermarkets were already planning to follow these regulations, which were originally implemented at the federal level, but were [vacated in 2017](#).

CARB Has Proposed the Nation's Most Stringent HFC Refrigerant Regulations

- In 2018, CARB [proposed new regulations](#) that would ban the use of:
 - Greenhouse gas refrigerants with a GWP ≥ 750 in new residential and commercial air conditioning starting in 2023;
 - Sale or installation of new systems containing refrigerants with a GWP ≥ 150 starting in 2022 (applies to commercial and industrial systems and not domestic or small convenience store systems); and
 - Sale, distribution, or import for use in California, of new refrigerants (not reclaimed or recycled from other systems) with a GWP ≥ 1500 starting in 2022.
- Currently, most supermarket refrigeration systems use refrigerants with GWPs close to 4,000. As a result, these regulations will impact all supermarkets in California.

*GWP is the global warming potential of a substance, defined as the amount of heat that substance traps in the atmosphere relative to an equal amount of CO₂ (e.g., GWP of CO₂ = 1; GWP of HFCs can be in the thousands).

Supermarkets and Grocery Stores Will Be Impacted by The Proposed Regulations

- Because natural refrigerant technologies still represent a cost premium, the proposed regulations will result in additional expenses and cost premiums for supermarkets and grocery stores.
- Average supermarket profit margins are [roughly 1%](#). Consequently, most supermarkets do not have the means to adopt refrigeration technologies that represent a cost premium.
- CARB has acknowledged the incremental expense that would negatively impact supermarkets, and also established an incentive program for low-GWP refrigerants as part of SB 1013. \$1 million was allocated to the incentive program in the [state's 2019-2020 fiscal year budget](#).
- Other states have begun to follow California's lead. New York, Connecticut, Maryland, Washington, Vermont, and Delaware have announced intentions to regulate HFCs at the state level (2018) and the rest of the [24 states and territories](#) involved in the [U.S. Climate Alliance](#) (a coalition of states committed to reducing greenhouse gas emissions consistent with the goals of the Paris Agreement) are expected to adopt HFC refrigerant regulations in the future.