



September 20, 2021

Ms. Rajinder Sahota
Deputy Director for Climate Change
California Air Resources Board
1001 I Street Sacramento, CA 95814

Re: 2022 Scoping Plan Update - Short-Lived Climate Pollutants Workshop

Dear Ms. Sahota,

On behalf of the North American Sustainable Refrigeration Council (NASRC), I am submitting this comment in response to CARB's request for input on strategies to further reduce HFC emissions, address existing banks of HFC emissions, and preserve building electrification benefits with respect to HFC refrigerants.

NASRC is a California-based 501c3 non-profit organization focused on eliminating hydrofluorocarbon (HFC) emissions from supermarket refrigeration by advancing the adoption of climate-friendly natural refrigerants. We work in partnership with the supermarket industry to address the barriers preventing the transition to natural refrigerants in the United States. Our network includes major equipment manufacturers, service contractors, engineering & design firms, consultants, utilities, and food retailers representing over 38,000 locations nationally and nearly 70% of California's estimated 4,000 supermarket locations.

HFCs are commonly used in air-conditioning and refrigeration and are potent greenhouse gases (GHGs) with thousands of times more impact on global warming than carbon dioxide. HFCs are growing faster than any other GHG globally, and the recent IPCC report noted that HFCs are one of the GHGs growing in concentration in every region. Experts have projected that swift mitigation of HFCs could help avoid up to 0.5 °C of global warming by the end of the century. Furthermore, it has been acknowledged that transitioning food retail facilities away from high global warming potential (GWP) hydrofluorocarbon (HFC) refrigerants is one of the most impactful and cost-effective strategies to achieve carbon neutrality.

The greatest opportunity to address HFC emissions in food retail facilities is in the existing store base. As CARB noted in their presentation, the total installed base ("Banks") of HFC potential emissions is equivalent to 60% of annual statewide greenhouse gas (GHG) emissions. Despite action at the federal and state level to phasedown HFCs, these regulations will not sufficiently address existing banks and meet CARB's HFC reduction targets or the global timeline for staying below the catastrophic 1.5°C temperature rise.

HFC-free natural refrigerants, such as CO₂, Ammonia, and Hydrocarbons, have zero or near-zero GWP and are considered technically viable, climate-friendly alternatives to HFCs. However, they face significant market barriers and as a result, less than 2% of current US supermarket refrigeration systems use HFC-free refrigerants. This is in large part because the transition requires the replacement of HFC-based refrigeration equipment with HFC-free equipment, which represents an exponential cost burden

on food retailers compared to the cost of a gas retrofit to a medium-GWP refrigerant. This cost burden is particularly challenging for small food retailers operating in disadvantaged communities that lack the financial resources to transition their stores, risking store closures and the emergence of food deserts.

To address these challenges, and to reduce HFC emissions as quickly as possible, we recommend CARB explores the following strategies:

1. **Support ultra-low GWP modular technologies** – The majority of food retailers will not have the capital or flexibility to replace the entire refrigeration system and will need “modular” technologies to transition away from the HFC-based rack over time. Examples include:
 - a. Self-contained refrigerated cases using R290 with higher charges, which requires an update to the California building codes.
 - b. Condensing units using CO2 or R290, which are not yet readily available in the US market, but are widely available in other countries.
2. **Incentivize leak reduction** – Leak rates are the largest source of HFC refrigerant emissions in the food retail sector. The average supermarket leaks approximately 25% of its refrigerant charge on an annual basis. Unfortunately, fixing refrigerant leaks is typically addressed in a reactive approach. There are opportunities to incentivize a proactive approach to refrigerant management and reduce overall leak rates.
3. **Invest in workforce development** – There is an acute shortage of technicians that are trained in installing, servicing, and maintaining ultra-low GWP systems. After the initial cost barrier, this is the primary challenge that is slowing the transition away from HFC refrigerants.

Furthermore, we encourage CARB to continue to coordinate closely with the California Public Utilities Commission to ensure refrigerants are incorporated into existing energy programs. Specifically, programs should offer incentives and funding for the GWP value of the refrigerant and reassess energy baselines and tools that currently reference HFC technologies. This alignment will help to drive demand for optimized ultra-low GWP technologies and preserve the benefits of building electrification.

NASRC is available to discuss these strategies in more detail. Thank you for the opportunity to comment on the public workshop on Short Lived Climate Pollutants.

Sincerely,

Danielle Wright
Executive Director
North American Sustainable Refrigeration Council
Email: danielle.wright@nasrc.org