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California Air Resources Board
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Attention: Comments for SB1206 Request for Information

Dear California Air Resources Board,

The San Francisco Environment Department's (SFE) Energy Team submits the following comments beginning on page 2 in response to the California Air Resources Board (CARB) Request for Information (RFI) for the Senate Bill 1206 Assessment Report.

Sincerely,

Lowell Chu

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SFE's Comments

Section 1: Commercial and Industrial Stationary Refrigeration (Retail Food, Cold Storage, Industrial Process Refrigeration, and Ice Rinks)

CARB's regulations, and the United States Environmental Protection Agency's (US EPA) proposed regulations, 17 will facilitate a transition to refrigerants with a GWP less than 150, or 300, in new equipment depending on system size, particularly in new facilities. Some technological solutions that comply with these regulations are ultralow-GWP and are readily available for new facilities, although market adoption is slow. However, installing them in existing facilities will require market transformation. 18 Below are questions regarding transitioning small- and large-sized refrigeration systems to ultra-low GWP or no-GWP refrigerant technologies:

1. What potential technological solutions are available for existing facilities and how can their adoption be accelerated?

As an administrator of a commercial refrigeration program since 2016, the San Francisco Environment (SFE) Department is aware of synthetic low-GWP refrigerants such as Fluorinated gases (F-gases) and Hydrofluoroolefins (HFO) and derivatives. SFE is also aware of natural low-GWP refrigerants such as carbon dioxide, ammonia, and propane.

The adoption of environmentally friendlier refrigerants can be accelerated by advancing the following:

- Establish and/or fund existing programs to provide technical trainings to refrigeration contractors in order to expand the pool of contractors with expertise to conduct retrofits and charge them with low-GWP refrigerants.
- Establish a voucher program to provide targeted businesses – such as those with small refrigeration systems (<50-lbs refrigerant charge) – with a vetted contractor and generous financial support to make the switch to low- and no-GWP refrigerants.
- Establish a program to provide mid-stream rebates for low- and no-GWP refrigerants and systems.
- Support local governments and community-based organizations to conduct local outreach in multiple languages to their contractors, businesses, and supply-houses to make them aware of the benefits of switching to low- and no-GWP refrigerants.
- Provide education to contractors, consumers, and building officials, in multiple languages to ensure a smooth and informed transition and to address any safety-related questions or issues that may arise.

2. What incentives are needed to transition existing refrigeration facilities and what GWP limit should be set for technologies supported through incentives?

In 2016, SFE received funding through from the local utility to launch the pilot "Keep It Tuned." The pilot's purpose is to remediate issues from deferred maintenance in small refrigeration systems in San Francisco's food service sector, such as corner-stores, restaurants, and grocery stores. In 2018, the pilot received



additional funding from the Bay Area's air quality regulator to assess the connection between energy efficiency and high GWP refrigerants.

From implementation, SFE staff found that high incentives (covering at least 50% or more of the costs of the new equipment and refrigerant (R448A)) were needed for the businesses' decision-maker to take action. Almost universally, the targeted businesses needed to see a payback period of three years or less.

To prepare for the launch of a new refrigerant-replacement program in 2024, SFE has actively sought feedback from small businesses and other stakeholders. The program, similar to Keep It Tuned, is specifically designed for small businesses in the food service sector whose equipment uses less than 50-lbs of refrigerant.

Many of these small businesses are still grappling with the economic repercussions of the pandemic, as they work to repay loans taken to stay afloat and are now grappling with rising inflation. To address these challenges, we recommend providing substantial incentives that cover 50-75% or even more of the costs to small businesses with equipment that uses less than 50 pounds of refrigerant. Without these incentives, these businesses will likely find it financially challenging to invest in new equipment that uses environmentally friendly natural refrigerants.

If the GWP limit for incentives is set at 1,200 or below (eliminating R-448A), higher incentives will be needed because businesses will have to replace entire systems instead of merely replacing refrigerants.

3. What safety testing and safety standard updates, if any, are needed for the transition to ultra-low GWP or no-GWP alternatives in this sector?

Through our recent outreach efforts, we've found that when people first learn about natural refrigerants like propane, they often have concerns related to safety and building code compliance. In addition to conducting safety testing and updating safety standards, it is essential to provide education to both contractors and consumers in multiple languages to ensure a smooth and informed transition and to address any safety-related questions or issues that may arise.

4. What barriers exist in bringing technologies such as ejectors, CO2 condensing units and others, to the California market, particularly for smaller refrigeration systems such as those found in convenience stores?

A major barrier for small businesses is cost. Please see our responses to questions #2 and #3.

Language is also a barrier as many small business owners in the food service sector speak English as a second language and may not be aware of regulations or newer equipment alternatives.



Finally, trust and lack of time are also barriers. Some decision-makers may be skeptical of the benefits of the new refrigerant or may fear that it would incur additional maintenance costs. They may not trust the voucher program. Many of them are busy with running their businesses and have no time to research or coordinate a retrofit project. Therefore, a voucher program – single step to pair the business with vetted contractor (service provider) and rebates – would be appealing and result in greater uptake.

Section 6: Recovery and Reclamation

SB 1206 prohibits the sale of bulk, newly produced, i.e., non-reclaimed, high-GWP HFCs through a phase-out schedule, complementing the US EPA's phasedown on the production of HFCs through the AIM Act. Recovery and reclamation of existing HFCs will be an important step as industries transition to ultra-low and/or no-GWP alternatives.

26. What are some of the barriers that technicians face in transporting recovered HFCs to reclamation facilities and how can those barriers be addressed?

SFE suggests conducting stakeholder interviews with both local disposal sites that currently accept refrigerants and those that do not, to determine whether there is a need to expand the overall number of disposal sites. In doing so, we aim to identify the specific requirements for increasing the availability of disposal sites.

It's important to note that SFE is concerned with the adequacy of the current disposal site numbers near San Francisco. Previous research related to a refrigerant pilot program by SFE indicates that there are presently only two (2) disposal sites in the Bay Area. This limited availability of accessible disposal sites results in increased travel costs and time for contractors, which in turn acts as a deterrent for proper refrigerant disposal.

SFE is also aware that contractor supply houses (that sell refrigerant) also accept reclaimed refrigerants, and exchange the designated reclamation cylinders. It could be that there are only a limited number of sites that directly handle disposal.

28. When is it appropriate to destroy HFCs?

To encourage their phase-out, it is appropriate to destroy HFCs upon reclamation to ensure they are not reintroduced into the market.

Section 7: Workforce Training

Additional training for AC and refrigeration technicians is needed to better handle existing systems that use fluorinated refrigerants and to adapt to new technologies that utilize ultra-low and/or no-GWP alternative refrigerants.



31. How can technicians be held accountable for better refrigerant management?

The State could collaborate with industry stakeholders to develop a consistent quality assurance program to assess and maintain the quality of refrigerant-training programs, ensuring that technicians receive accurate and up-to-date information.

32. What workforce training will be required for technicians to transition to ultralow GWP and/or no-GWP alternatives?

The workforce training required for technicians include:

- **Refrigerant Knowledge:** Technicians must understand the characteristics and properties of ultralow GWP and no-GWP refrigerants, including their environmental impacts, safety requirements, and compatibility with equipment.
- **Safety Protocols:** Training should emphasize safety measures specific to handling new refrigerants. Training should also highlight the factual safety aspects of propane as a refrigerant.
- **Equipment Familiarity:** Technicians must learn how to install the new equipment. This includes installation, maintenance, and troubleshooting of systems designed for these refrigerants in various spaces and conditions.
- **EPA Regulations and Compliance:** Understanding and adhering to regulations set by the state and federal agencies. Technicians should be trained in the legal requirements associated with these new refrigerants.
- **Environmental Benefits Awareness:** Technicians should be educated on the environmental benefits of refrigerants and the role of ultralow GWP and no-GWP alternatives in mitigating climate change.
- **Optimization and Diagnostic:** Training should cover optimizing the new systems and diagnostic techniques specific to the new refrigerants.

33. How can the necessary training become more available and accessible for technicians?

The State could provide funding to expand existing Community College classes focusing on refrigeration and HVAC systems. The State could also provide funding for regional organizations and utilities with existing codes and standards trainings to include ultralow- and no-GWP alternatives. The State could provide refrigerant distributors and manufacturers with incentives to host technical seminars and conduct outreach to their clients.

34. What is the role of the State, equipment manufacturers, and/or other industry stakeholders in providing and standardizing training and best practices, and how could this be enhanced?

- **State:** The role of the State is to establish the policy and appropriate funding for its implementation.



- **Equipment Manufacturers:** The role of the equipment manufacturers is to create and distribute consistent, up-to-date training Materials. This can include manuals, online resources, and hands-on training sessions to ensure technicians are well-versed in handling their products. They can also design and maintain Certification Programs to technicians who have successfully completed their training with industry-recognized credentials. Finally, they can provide technical support to assist technicians in the field and address any questions or challenges related to their equipment.
- **Other Industry Stakeholder:** The role other industry stakeholders can play with state and local governments and equipment manufacturers is to establish standardized training programs and best practices.
- **Local Governments:** Local government entities have an important role to play in providing and standardizing training and best practices. Many have economic and workforce development and apprenticeship programs that could be expanded to include new refrigerants and their systems.

Section 10: Overarching Questions

38. What factors around PFAS (per- and polyfluoroalkyl substances) should be considered as California transitions to ultra-low- and/or no-GWP alternatives?

Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are a class of chemicals linked to a range of adverse health effects, including breast and other cancers, immune suppression, liver and thyroid disease, interference with vaccines, and hormone disruption. These chemicals do not break down in our bodies or in the environment. That means, the more they get used, the more they build up and the bigger risk they pose to our health.

PFAS products are washed down the drain and the polluted wastewater ends up in our environment. PFAS chemicals have already contaminated the drinking water of more than 16 million Californians. In addition, so-called shorter chain PFAS, including HFOs, can slip through water treatment, making it much harder and much more expensive to address.

HFOs are a subset of PFAS, and fall under CA's statutory definition of the class of PFAS that has been used in four (4) other PFAS ban bills. The California Department of Toxic Substances Control also employs this definition when addressing the chemicals. The "one fully fluorinated carbon atom" PFAS definition - which includes HFOs - is also the most widely used PFAS definition across the United States, with at least eighteen (18) states, including [AR](#), [AZ](#), [CA](#), [CO](#), [CT](#), [KY](#), [HI](#), [IL](#), [LA](#), [MD](#), [ME](#), [MN](#), [NH](#), [NV](#), [NY](#), [RI](#), [VT](#), and [WA](#), having adopted this definition into law.

40. Are there additional control measures for refrigerant management, such as requirements for maintenance, servicing, and leak detection/repair, that could support California's climate goals?

Additional control measures for refrigerant management include:



- Regional or local voucher program for small businesses and residents to partially or wholly fund annual refrigeration maintenance – depending on business size (as measured by number of employees, gross annual revenue or another metric) and other consumer assistance qualifiers.
- Train and hire staff from community-based organizations to conduct free refrigerant leak detection and do-it-yourself trainings at their communities' small businesses.
- Develop guidelines for food-service business owners to conduct routine maintenance and distribute them through the annual renewal of their business licenses.

41. Do you have any suggestions for legislative, or regulatory changes that are needed to transition away from HFCs and to ultra-low GWP and/or no-GWP alternatives?

Additional funding should be appropriated by the state legislature to help ensure the equitable transition away from HFCs and to ultra-low GWP and/or no-GWP alternatives. Switching to ultra-low GWP and/or no-GWP alternatives will require replacing entire refrigeration systems, which is significantly more expensive. Small businesses will not be able to afford this transition without a high level of incentives, which will require funding from the state.

42. Do you have any other comments that would support the SB 1206 assessment report?

To gain a better understanding of equipment using natural refrigerants with a charge of less than 50 pounds, primarily intended for small businesses, it would be beneficial to investigate the following aspects:

1. The typical cost of such equipment and their cost-effectiveness to remove greenhouse gas emissions.
2. The average expenses associated with its installation.
3. Average maintenance costs.
4. The licensing and training prerequisites for contractors responsible for installation.
5. Summaries of industry-standard fire and life-safety requirements.