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## SENATE COMMITTEE ON APPROPRIATIONS

Senator Anthony Portantino, Chair  
2021 - 2022 Regular Session

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### SB 1206 (Skinner) - Hydrofluorocarbon gases: sale or distribution

**Version:** April 7, 2022

**Urgency:** No

**Hearing Date:** April 18, 2022

**Policy Vote:** E.Q. 5 - 2

**Mandate:** Yes

**Consultant:** Ashley Ames

**Bill Summary:** This bill would prohibit the sale or distribution of bulk hydrofluorocarbons (HFCs) that exceed global warming potential (GWP) limits of 1,400 by 2025 and 750 by 2030, and would require the Air Resources Board to initiate rulemaking for the adoption of very low GWP refrigerant technology in California.

#### **Fiscal Impact:**

- ARB estimates ongoing costs of about \$630,000 annually (Cost of Implementation Account) to prepare and submit a report to the Legislature, and to accommodate accelerated implementation needs due to prohibitions on bulk HFCs or bulk blends offered for sale or distribution in the state.

#### **Background:**

*Greenhouse Gas (GHG) emissions in California.* The primary duties of ARB are to protect the public from the harmful effects of air pollution and develop programs and actions to fight climate change. ARB is tasked with the ambitious goal of achieving a 40% reduction of GHG emissions below 1990 levels by 2030 as set by SB 32 (Pavley, 2016). In order to meet this goal, California will need to reduce its GHG emissions by ~4% each year, but during the latest year emission data are available the state reduced its GHG emissions by only 1.6% (2021 California Green Innovation Index). In order to increase the rate of GHG emission reduction ARB will need to engage in far-reaching rulemaking and regulation.

*Global Warming Potential (GWP).* GWP is a relative measure of how much heat any given amount of a GHG traps in the atmosphere compared to a similar amount of carbon dioxide, whose GWP is standardized to 1. GWP is typically calculated over a specific time interval, commonly 20, 100, or 500 years. ARB uses GWPs calculated by the Intergovernmental Panel on Climate Change (IPCC) that are considered over a 100-year timeframe. GWPs are updated periodically with improvements to the underlying science.

*Hydrofluorocarbons (HFCs) are short-lived pollutants with high GWP potential.* HFCs are man-made chemical organic compounds that contain fluorine and hydrogen atoms and are usually a gas at room temperature. When these gasses are released into the atmosphere, they absorb outgoing infrared radiation which traps heat in the atmosphere and contributes to global warming. They usually have much shorter lifetimes (on average 15 years) in the atmosphere than carbon dioxide (100s of years). Despite their short lifetimes one molecule of a HFC will absorb significantly much more infrared energy than CO<sub>2</sub> because of its carbon-fluorine bonds. Most HFCs have GWPs in the

1,000s meaning that every ton of HFCs emitted is equivalent to releasing 1,000 tons or more of CO<sub>2</sub> for the purposes of global warming.

*HFCs emissions are the fastest growing source of greenhouse gas emissions.* HFCs have many industrial uses, including in use as refrigerants, propellants, insulating foam, solvents, and fire suppressants. According to ARB, “Fluorinated gases—especially HFCs—are the fastest-growing source of GHG emissions both in California and globally. More than three-quarters of HFC emissions in California come from the use of refrigerants in the commercial, industrial, residential, and transportation sectors.”

In 2016, SB 1383 (Lara) was passed, requiring ARB to reduce HFC emissions 40% below 2013 levels by 2030. In order to achieve this goal ARB implemented the Refrigerant Management Program to reduce leaks of high GWP refrigerants, issued prohibitions for high GWP HFCs in several consumer products, implemented a cap-and-trade program compliance offset protocol for the capture and destruction of ozone depleting substances. ARB recently promulgated a regulation requiring all new large refrigeration facilities to use refrigerants with GWP < 150 and new air conditioners to have GWP < 750 with staggered implementations in 2023 and 2026. It has also adopted a refrigerant reclamation program requiring at least 10% reclaimed refrigerant in new AC equipment.

In 2018 ARB estimated that in order to meet the SB 1383 goals California will need to reduce its HFC emissions by half.

*Bulk HFCs are used to replenish existing refrigeration systems as they leak.* ARB has enacted regulations that limit the instillation of new AC and refrigeration systems with high GWP refrigerants and this bill would prompt further restrictions on new units in the future. However, those measures only address a portion of potential HFC emissions because many of the existing systems leak. According to ARB California has enough HFCs currently banked in these existing sources to equal 375 million metric tons of CO<sub>2</sub> if they are emitted. Leaks in such equipment are inevitable, especially as they reach the end of their usage lifespans and are decommissioned. Additionally, because such devices like air conditioning and refrigerators have long lifespans, they must be periodically serviced to replaced leaked HFCs. Bulk HFCs are used to maintain this equipment, but at the cost of replenishing the bank of high GWP emissions. Without regulations on the bulk HFCs used to replenish the emitted gasses there will be little incentive to address these leaks and promote the recovery of HFCs for reuse.

*Low GWP alternatives are commercially available.* The next generation of synthetic refrigerants are hydrofluoroolefins (HFOs). These chemicals are very similar to HFCs, performing the same function in refrigeration. Their chemical bonds are more reactive than HFCs and so they degrade faster in the atmosphere and have a much lower GWP. However, like HFCs, HFOs degrade into several compounds that could be very damaging to human health and the environment.

There are also natural refrigerants available on the market that have low GWP and natural degradation pathways if emitted, though they come with their own drawbacks. Hydrocarbons like propene and ethane are excellent refrigerants with low GWP and toxicity, but are highly flammable and potentially explosive requiring careful precautions to use safely. Ammonia has been widely used as a very efficient refrigerant, though

ammonia is acutely toxic, so systems must be designed, installed, operated and maintained in accordance with national safety standards. Carbon dioxide itself can be used as a refrigerant being non-toxic and non-flammable, but it has poorer efficiencies than other refrigerants which makes operating the equipment more energy intensive.

**Proposed Law:** This bill would:

1. Prohibit the sale, distribution, or entering into state commerce bulk HFCs or bulk blends containing HFCs that exceed:
  - a. GWP of 1,400 after January 1, 2025; and
  - b. GWP of 750 after January 1, 2030, as specified.
2. Empower ARB to establish maximum allowable GWP levels for HFCs entered into commerce in the state that are lower than the targets in the bill.
3. Exempt reclaimed HFCs from the prohibition.
4. Require ARB to initiate rulemaking for requiring deadlines for adoption of new ultra-low GWP refrigerant technologies as they become commercially available.
5. Require ARB to consult with the State Energy Resources Conservation and Development Commission (CEC), the PUC, Department of Resources Recycling and Recovery (CalRecycle), and the Labor and Workforce Development Agency to prepare a proposal to be delivered to the Legislature by Jan 1, 2024 specifying how to transition California's economy from away from HFCs to natural alternatives with a GWP of 15 or lower by 2035.
6. Require the PUC to develop a strategy for including low-GWP and natural refrigerants in equipment funded by the energy efficiency programs it oversees.

**Related Legislation:**

SB 1013 (Lara, Chapter 375, Statutes of 2018) aligned state law related to the use of HFCs with federal regulations ruled invalid under the Federal Clean Air Act (FCAA), developed financial incentives to assist businesses with technology transition, and directed the PUC to consider developing a strategy for using low GWP refrigerants in their equipment.

SB 1383 (Lara, Chapter 395, Statutes of 2016) required ARB to reduce HFC emissions 40% below 2013 levels by 2030.

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