Mary Nichols, Chair
Air Resources Board
California Environmental Protection Agency
1001 I Street, PO Box 2815
Sacramento, CA 95812

March 19, 2018

Re: EIA Comments on ARB's Proposed Regulatory Language and Additional Measures for Reducing Emissions of Hydrofluorocarbons (HFCs)

Dear Chair Nichols,

The Environmental Investigation Agency (EIA) appreciates the opportunity to comment on the California Air Resources Board (ARB) proposed regulatory language and future measures to reduce HFC emissions by at least 40% from 2013 levels by 2030. EIA continues to support the proposed regulatory language to adopt many of the federal bans under the Significant New Alternatives Policy (SNAP) Program as a reasonable foundational step to ensure the continuation of the current U.S. market transition away from the highest-global warming potential (GWP) HFCs. Putting prohibitions in place at the state level that mirror those under the Environmental Protection Agency's (EPA) SNAP Program will help provide much needed certainty to the market, which has already invested in transitioning away from these substances.

We stand by previous comments on this action that urge ARB to move quickly toward a second round of regulatory measures to more comprehensively address emissions, including through additional equipment bans in key sectors, refrigerant bans to prohibit the sale of virgin high-GWP refrigerants, incentives for new low-GWP technologies, and other potential measures to address the extensive banks and stockpiles of high-GWP refrigerants already circulating on the market.

Managing Refrigerant Banks and End-of-Life Emissions

The vast majority of HFC refrigerant emissions occur at end of life. The recent bestselling book *Drawdown* ranks effective disposal of existing refrigerants as the number one solution to addressing emissions, with the potential to mitigate 89.7 $GtCO_2$ equivalent.[1] Refrigerant banks have yet to be tackled at a global scale under the Montreal Protocol, which controls production and consumption of new HFCs, rather than preventing emissions of the massive quantities already in existence and that will continue to be produced in the coming decades even under the Kigali

[1] http://www.drawdown.org/solutions/materials/refrigerant-management

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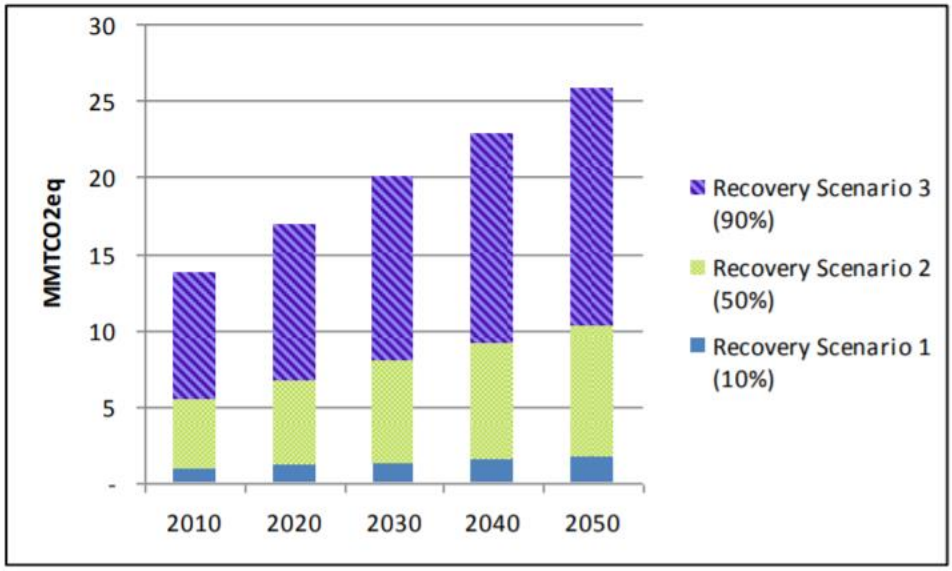
Amendment. This issue represents an opportunity for California's leadership to be transformative on the global stage.

California has already been a pioneer for more responsible refrigerant management with the implementation of its Refrigerant Registration and Reporting System (R3), refrigerant leak detection and repair requirements and prohibition on intentional venting under the Refrigerant Management Program (RMP). However, additional steps need to be taken to reduce end-of-life emissions through measures to increase recovery and collection for responsible reclamation or destruction. A 2011 study by ICF International commissioned for ARB found that **net emissions avoidable in the state of California by increasing the rate of recovery and destruction in stationary refrigeration to 50% would be 5.6 million MTCO$_2$e annually in 2020, or 10.1 million MTCO$_2$e annual under a 90% rate of recovery**.[2] The corresponding rates would yield even higher emission reductions by 2030, as Figure II-4 below from the same study shows.

EIA calls on CARB to make publicly available the top line data on aggregate amounts of HFC refrigerants reported through R3 as recovered, reclaimed, and destroyed annually under the RMP. We further recommend consideration of potential measures to increase recovery, reclamation, and destruction levels to accompany the ban on sale of virgin high-GWP refrigerants that is already under consideration.

Figure II-4: Potential Emissions Savings by Recovery Scenario through 2050 (MMTCO$_2$eq)



[2] ICF 2011, See page 92: https://www.arb.ca.gov/research/rsc/10-28-11/item7dfr07-330.pdf

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Recommendations for Additional Measures:

EIA's recommendations on the additional measures under consideration in the second round rulemaking to ban high-GWP refrigerants sales and their use in new equipment are as follows:

Sector/Measure	**Date/GWP Threshold**	**EIA Position**	**Comments**
Refrigerant ban/ sales restriction on high-GWP refrigerants	2020, GWP > 2500 2024, GWP > 1500	Support, with accompanying measures to manage refrigerant banks	Should be accompanied by measures to incentivize greater recovery of high-GWP refrigerants at end of life for reclamation or destruction. Enforcement of refrigerant ban should include strict reporting requirements on existing stockpiles of new or recovered refrigerant. May also be accompanied by a fee on sale of virgin HFCs with GWP >150 used to provide rebates for recovery and collection of refrigerant by servicing contractors.
Stationary refrigeration	2021, GWP > 150	Support, with comments	Recommend following similar model as EU F-Gas Regulations for splitting up key sub-sectors where 150 GWP is feasible in new equipment with few exceptions: • Supermarket systems and other multipack centralized commercial refrigeration equipment: > 150 GWP, with exception for up to 1500 GWP as primary refrigerant in indirect system where HFC charge is reduced by at least 80%. • Stand-alone commercial refrigeration and vending machines: >150 GWP
New room A/C systems	2021, GWP > 750	**Do not** support	Should be delayed until standards and code changes allow 150 GWP threshold. Work is underway to amend internationally recognized safety standards with a mandate to be completed no later than 2021. It is feasible that GWP <150 equipment will be available for the US market in three to five years.
Chillers	2021, GWP > 150	Support	May consider exception for high pressure chillers.

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Conclusions

EIA commends ARB on the passage of the currently proposed regulatory language to enact many of the existing federal SNAP rules. We urge you to rapidly progress toward additional measures needed to achieve the 2030 emission reductions. These measures should be targeted at maximizing emission reductions, while limiting the phase-in of medium GWP chemicals and incentivizing maximum feasible direct adoption of low-GWP (<150) solutions. Finally, we strongly urge ARB to consider measures that would address the potential avoidance of significant emissions from refrigerant banks, by increasing recovery, reclamation, and responsible disposal through destruction.

Sincerely,

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