Comments on California Air Resources Board Proposed Amendments to the Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Chillers, Aerosols-Propellants, and Foam End-Uses Regulation

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The Environmental Investigation Agency (EIA) appreciates this opportunity to comment on the California Air Resources Board (CARB)'s proposed regulation order on hydrofluorocarbons (HFCs). We applaud CARB's sustained efforts to propose measures toward meeting a 40% reduction in HFC emissions below 2013 levels by 2030. CARB's proposed measures are groundbreaking for the US and should encourage other leading states, and ideally our federal government, to take similar ambitious and feasible measures. Certain elements of the proposed measures represent the first US adoption of the most ambitious existing measures on HFCs in place elsewhere globally, such as the 150 GWP limit for stationary refrigeration systems, while others are truly groundbreaking, including the required reductions in the existing HFC footprint of supermarkets. This regulation will accelerate the transition away from high and mid GWP HFC refrigerants to available ultra-low GWP cooling solutions that are consistent with science-based targets of reaching net-zero emissions by mid-century. Indeed, CARB's continued leadership on HFCs is a beacon toward encouraging further feasible acceleration of the global HFC phase-down and other national and sub-national emission reduction measures, by other states, the US, and the world.

Although the proposal will achieve substantial emission reductions by 2030, it is unlikely to be sufficient to fully meet the target under SB 1383, even assuming full federal implementation of the Kigali Amendment. Therefore, following prompt finalization of the current proposal, CARB must begin the process of considering through an additional rulemaking, means of achieving additional near-term reductions. This should include additional measures to reduce refrigerant leaks and end-of-life emissions from equipment. EIA strongly supports the proposal and calls for swift adoption of the proposed regulation order with small adjustments as further detailed in our comments herein.

1. **Any delay to a 2023 effective date for a 750 GWP limit in AC equipment can and must be fully offset through recovery and reclamation of R410A available from retired equipment within California**

EIA strongly urges CARB to require manufacturers to offset the full lifetime footprint of any new R410A air conditioning (AC) equipment sold after January 1 2023 through jumpstarting a market for recovery and reclamation of R410A from retired AC equipment in California. Our proposal included in Appendix D of the regulatory proposal documents sets out a recommended framework for calculating and achieving this full offset, with the goal of demonstrating the feasibility of a more sustainable solution to the vast problem of end-of-life refrigerant emissions. Our comments here provide additional analysis to support the feasibility of such a reclamation compliance option, and some additional important substantive points regarding proposals of other stakeholders for such an option.

EIA undertook an analysis to estimate the available R410A from retired equipment within California for the period of 2022-2030, shown in Table I below.[1] This analysis conservatively assumes that 30% of the new AC systems installed were using R22 from 2010 - 2016 until a Department of Energy regulation closed the dry-shipment loophole. Therefore, it assumes only 70% of the AC systems were using R410A during this period, reducing the total amount being retired in this time period. It also assumes no R410A installed prior to 2010, although public sources indicate some manufacturers had transitioned prior to this date. As such, this estimate is highly conservative and likely underestimates the availability of recoverable R410A during this period.

Our analysis shows the feasibility to offset the entire lifecycle emissions of new AC equipment using R410A placed on the market in 2023 and 2024 through recovery of R410A from equipment being retired within California, by 2030. The emissions footprint of new R410A equipment sold in 2023 and 2024, including lifetime leaks, is expected to be up to approximately 14,000 tons or 29 million metric tons CO_2e at maximum. Provided companies are required to offset the difference between a 750 GWP limit and the 2088 GWP of R410A, the total offset required would then be reduced to 9,000 tons. The cumulative recoverable R410A from retired equipment in California between the year 2022 and 2030 is conservatively estimated at 19,250 tons, therefore requiring an overall recovery rate of 47% from 2022 to 2030 to achieve the offset.

Table I: R410A Available for Recovery in California (Retired Equipment)

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Metric tons R410A	1763	1803	1830	1844	1943	2062	2206	2377	3428

(EIA analysis based on assumptions in CARB 2019 HFC Emissions Model)

It is desirable for the increased recovery and reclamation for this offset compliance to take place earlier in this time period by 2025, and that it be accompanied by other regulatory measures supporting the new market for reclaimed refrigerant to sustain permanent emission reductions in 2030 and thereafter. EIA therefore recommends that although manufacturers be permitted until 2030 to fully offset these additional emissions, CARB consider requiring at least

[1] EIA analysis based on CARB's 2019 HFC emissions model's assumptions

50% of the total equivalency amount be recovered and reclaimed by the end of 2025, and verified as such in early 2026.

If CARB allows for other refrigerants used in other applications, that already achieve higher baseline rates of recovery to count toward this offset (such as R-404A from a supermarket for example), then such recovery should be appropriately discounted. Thus, if the relevant sector achieves a 50% rate of recovery according to CARB's HFC emissions inventory assumptions, the recovery of that refrigerant should only count for a 50% offset. In other words, AC manufacturers should not receive credit for other refrigerant that is already being recovered anyway, since the emissions avoided should be in the form of *additional* recovery; instead, manufacturers must prioritize recovery of R410A in residential air conditioning where these recovery rates are understood to be the lowest.

EIA, joined by AHRI and other stakeholders, also calls for additional CARB regulations to ban the sale of virgin high-GWP refrigerants, including R410A, for servicing equipment and to require the use of reclaimed refrigerant, thereby increasing recovery and reducing end-of-life emissions. Based on results of analysis shown in Table I above, it would be feasible for such regulation to require reclaimed refrigerant recovered from within California beginning in 2030, but supply may be insufficient in earlier years requiring some supply of refrigerant recovered from outside the state. Given the broader nature of such a ban and reclaim requirement, CARB may wish to consider expediting an additional regulation process to implement this by 2021, rather than adopting it within the current proposal.

Finally, EIA strongly opposes any offset credit for a later transition to refrigerants with a GWP incrementally lower than 750, such as R32, as suggested in AHRI's proposal. Such refrigerant choices were already baked into baseline compliance with the proposed regulation and do not constitute any additional emission reduction.

2. Apply 150 GWP limit for ice rinks applies to existing facilities already using ultra-low GWP refrigerants

With 80% of existing ice rinks in California using ultra-low GWP refrigerants, primarily ammonia, EIA calls for the replacement of chillers in *existing* ice rink facilities be captured under the proposed 150 GWP limit. As CARB's current proposal is limited in applying the 150 GWP threshold to new construction, it covers only a small minority of the market for this equipment and would allow unnecessary displacement of near-zero GWP refrigerants by ~600 GWP HFC-based refrigerants, and an increase in emissions from this application setting a poor national and global precedent. A letter to CARB submitted jointly by EIA and the International Institute of Ammonia Refrigeration calling for a 150 GWP limit for all new and replacement ice rink systems received widespread support from over 120 organizations in the refrigeration and ice rink industry.[2] Our letter, along with supporting information and data provided to CARB demonstrates

[2] EIA & IIAR letter along with full list of supporters, available at: https://eia.salsalabs.org/climatefriendlyicerinks/index.html

that sufficient alternatives using ultra-low GWP refrigerants are widely available, safe, energy efficient, and already in use throughout California. EIA strongly urges CARB to amend the proposed regulation order to include replacement of existing ice rink systems using <150 GWP refrigerants in the definition of 'new facility' so as to include them in the 150 GWP limit in the rule. This would be consistent with the treatment of other refrigeration end uses with far less widespread low-GWP refrigerant use, including supermarkets.

Conclusion

Thank you for considering our comments as CARB finalizes this highly anticipated set of additional regulatory measures to reduce HFC emissions and demonstrate true U.S. climate leadership.