SUBMITTED ELECTRONICALLY

California Air Resources Board

1001 I Street

Sacramento, CA 95814

**Re: California Air Resources Board’s Request for Information (RFI) Regarding Senate Bill 1206 Assessment Report for Transitioning Hydrofluorocarbons (HFCs) to Ultra-Low Global Warming Potential (GWP) and/or No-GWP Alternatives**

Dear California Air Resources Board:

On behalf of Hudson Technologies, Inc. (“Hudson”) , I appreciate the opportunity to submit the following written comments to the California Air Resources Board (CARB) as it prepares an assessment report that will specify how to transition California’s economy, by sector, away from hydrofluorocarbons (HFCs) and to ultra-low global warming potential (GWP) and/or no-GWP alternatives no later than 2035 through maximizing recovery and reclamation of high-GWP HFCs and the adoption of ultra-low-GWP and/or no-GWP alternatives, as directed by California Senate Bill (SB) 1206.

As background, Hudson is one of the nation’s largest EPA-certified reclaimers. Hudson’s reclamation industry experience is time-tested, having been (and currently acknowledged as) an industry leader in refrigerant reclamation for nearly three decades. Hudson was founded by Kevin Zugibe who created the very first commercially recognized reclamation center in the United States. Our founder’s vision, which we continue to implement today, was to support the circular economy through the reuse of existing chemical substances, preserving the atmosphere by reducing emissions and economically incentivizing contractors to follow applicable legal requirements to recover chemical substances. Today, Hudson – a U.S. Small Business Administration “small business” – operates three reclamation centers in California, Georgia, and Illinois. We employ over 150 employees in these centers, ranging in skill sets from clerical to plant operations to chemists and engineers to support the needs of meeting industry standards for the resale of reclaimed refrigerants.

**Hudson offers the following comments with respect to the SB1206 Assessment Report RFI.**

**Section 6: Recovery and Reclamation**

24. Despite venting prohibitions, refrigerant recovery rates are low, especially in the residential sector. What practices and processes can be put in place to ensure proper recovery?

**Response:** A [2016 Navigant repor](https://www.ahrinet.org/system/files/2023-08/AHRI_8018_Final_Report.pdf)t produced for the Air-conditioning, Heating and Refrigeration Institute (AHRI) examined international practices and processes. Of the numerous findings, the countries with the highest recovery rates were those with substantial product stewardship policies and often those that included upfront funding based on a price per pound of products sold. Hudson recommends CARB commission a diverse cross-functional task force to identify and leverage local, state, national, and international research and training. Action items for this Task Force should include, at a minimum:

* Literature research and interviews with technicians and contractors, to determine current best practices and policies regarding recovery.
* Education and issuance of information to homeowners and landlords to raise awareness.
* Demonstration of the economic value of refrigerants.
* Evaluate utility energy efficiency programs for domestic appliances offering rebates and free pickup and build upon existing California utilities offer residential customers incentives (free pickup, financial incentive) to recycle appliances.
* Evaluate the usage and cost of Refrigerant Management Software (RMS) to capture, manage, and report record all refrigerant activity (tracking) where the data is entered into RMS and checked by a neutral party in a central location.

Learnings from a 2021 Guidehouse final [report](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.nyserda.ny.gov%2F-%2Fmedia%2FProject%2FNyserda%2FFiles%2FPublications%2FEnergy-Analysis%2F21-28-HFC-Emissions-Inventory-and-Mitigation-Potential-in-New-York-State.pdf&data=05%7C01%7Crmoore%40hudsontech.com%7C62a4a27a451642a7468908dbc12d17ed%7Ce3af4d119e7d46d593cf0cbc5d5d62a5%7C1%7C0%7C638316172012338331%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=zeSSBDN5ZwTrbKOVO0BEX1%2B1EgnOJMdibJafYNKpCmU%3D&reserved=0) (entitled ““Hydrofluorocarbon Emissions Inventory and Mitigation Potential in New York State”) developed for NYSERDA could be included in this Task Force work and applied to California. Guidehouse found a significant increase in recovery/reclaim rates, and proper disposal of equipment at its end-of-life state will be needed at a national level to achieve AIM Act targets in 2024 and 2029. In support of this, Guidehouse recommended that NYSERDA should do the following:

* Conduct a market assessment of current HFC recovery and reclaim practices in NYS.
* Develop an education and outreach strategy for local industry stakeholders.
* Provide technical, economic, and training support to aid local industry with this transition.

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25. What incentives can be provided to technicians for investing their time and effort to properly recover HFCs from equipment, especially from the residential sector?

**Response**: In addition to enhanced training that includes continuing education units (CEUs), consideration should be given to providing a financial award once an “x” number of CEUs is reached, possibly funding coming from an upfront funding program. Evaluate devising a process to offer incentives for the return of refrigerants based on pounds of refrigerant recovered that includes parameters to ensure transparency and accountability to avoid misrepresentation of the amount of recovered refrigerant. CARB may consider holding focus group sessions across California with technicians to hear directly from technicians.

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

**Response:** Transporting refrigerant to/and from reclamation facilities is not viewed as a material issue. Reclaimers like Hudson have made it convenient and effective for technicians to either drop off recovered refrigerant at a local wholesaler, or to aggregate and direct ship recovered refrigerant back to a reclaimer using common carriers at no cost to the technician or firm. Establishing effective incentives for technicians to do the work of recovering and returning is a material issue, however proposals like a recovery incentive fund should be considered.

27. Are there emerging reclamation technologies that show promise in addressing potential barriers, such as reclaiming contaminated or blended HFCs, or cost-effective reclamation on a small scale?

**Response:** Small-scale reclamation (such as used appliance, heels, etc.) is being addressed by some, but the economics remain challenging. Governmental or producer subsidies should be created to make this activity more cost effective.

28. When is it appropriate to destroy HFCs?

**Response:** One scenario for destroying HFCs is when all the equipment in service that utilizes a specific HFC reaches end-of-life, and new technology calls for an HFC substitute and new technology.

29. How can the State enable financial and/or regulatory mechanisms, like extended producer responsibility schemes or other fees, to improve the recovery and reclamation of HFC refrigerants? Are there successful examples from international markets that can be applied in California?

**Response:** Upfront funding program fees work best. The [Navigant report](https://www.ahrinet.org/system/files/2023-08/AHRI_8018_Final_Report.pdf) concluded that capturing funding for refrigerant management programs upfront (through explicit fees or increased retail price) incentivizes consumers to handle products responsibly at the end of life. Any program that funds operation by collecting fees at the end of life may disincentivize full compliance.

**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.**

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

**Response:** Workforce training includes safety regarding flammability and recovery practices. The equipment material of construction is vital to understanding the compatibility with materials to prevent corrosion, leakage, or degradation of components or lubricants.

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

**Response:** CARB could contract with reclaimers to provide periodic training for in-person sessions or online classes.

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?

**Response**: The critical role is collaboration and working together. Enhancing training and implementing best practices warrants a process such as forming a consortium that can leverage other governments, industry groups, research, and training programs. The consortium may also explore upfront funding program scenarios by original equipment manufacturers and chemical manufacturers. A consortium organization allows for holding best practices and information in a shared location. The consortium must protect individual companies' confidentiality.

I thank you for considering these written comments. Should you wish to exchange further regarding the above, please contact me directly at (845) 925-0581 or by email at [rmoore@hudsontech.com](mailto:rmoore@hudsontech.com).

Sincerely,

Ruth Ivory-Moore

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