



Kimberly Goetz
HWTR Legislative Coordinator
Washington State Department of Ecology
Hazardous Waste and Toxics Reduction Program

Dear Ms. Goetz,

The Environmental Investigation Agency (EIA) appreciates the opportunity to provide input into the Washington State Department of Ecology's recommended design of a program to address end-of-life (EOL) management and disposal of refrigerants, as called for by HB 1050, Section 14. EIA is an independent campaigning organization based in Washington D.C., working worldwide to protect the global climate, forests and threatened species with intelligence, for the benefit of people and wildlife. We have undertaken groundbreaking investigations into the illegal trade in ozone depleting substances (ODS) and other fluorinated substances such as hydrofluorocarbons (HFCs) since the mid-1990s and have been closely involved in international ozone and climate negotiations and domestic policy regarding these substances for several decades.

EIA published a report in 2019, [Search Reuse & Destroy](#), providing an overview about the opportunity and options for U.S. states to take a U.S. leadership role on this area of climate policy. We applaud the state of Washington for taking this important step forward to develop such a program. Our comments today distill key information from this report and make specific recommendations for designing an extended producer responsibility program, also often referred to as a product stewardship program. Similar programs targeting refrigerants have been implemented around the world offering examples and lessons for designing such a program in Washington state.

End-of-life Refrigerant Emissions in the United States

Refrigerants that are not emitted through leaks during use of cooling equipment are most often emitted when they reach their end of life (EOL), that is when equipment is retired, or the refrigerant in the equipment is switched out. The vast majority of refrigerants in the United States are being released at EOL, instead of being sustainably recovered, and reused or destroyed at EOL. This is contributing to the significant emissions of these super greenhouse gases. Nationally, the opportunity to recover and reuse or destroy HFCs and other high-global warming potential refrigerants (GWP >150) such as HCFCs, is estimated to be approximately 75 million tons CO₂ equivalent annually.¹ The proportion of remaining recoverable HCFCs is dwindling,

¹ Environmental Investigation Agency, Search Reuse & Destroy (2019), available at: <https://eia-global.org/reports/20190214-search-reuse-destroy>. Figures 1 and 2 are based on EIA analysis of data from ICF

while the stock of HFCs that are recoverable from equipment is increasing rapidly (see Figures 1 and 2 below). Approximately 15,000 metric tons of HFCs are available for recovery annually in 2020, however EPA reporting indicates that only 6 million pounds or 2,700 metric tons, are being reclaimed, around 18% of what is available.²

Figure 1:

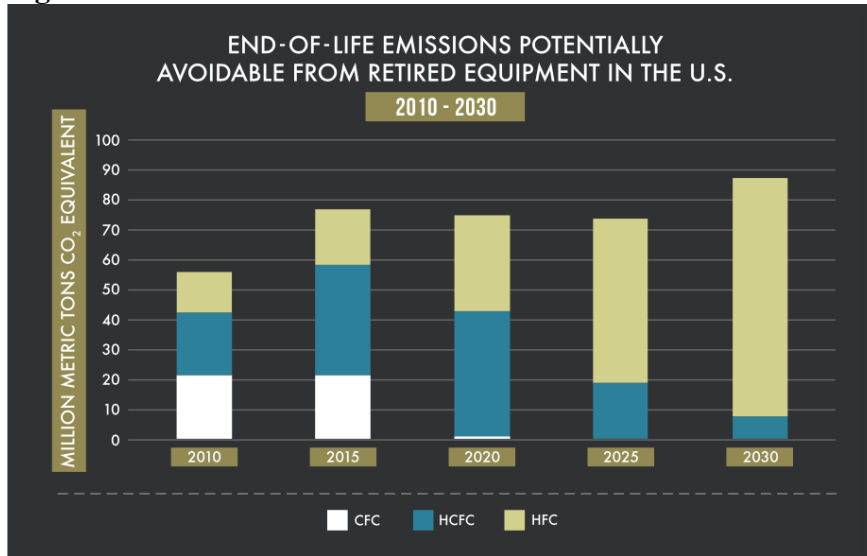
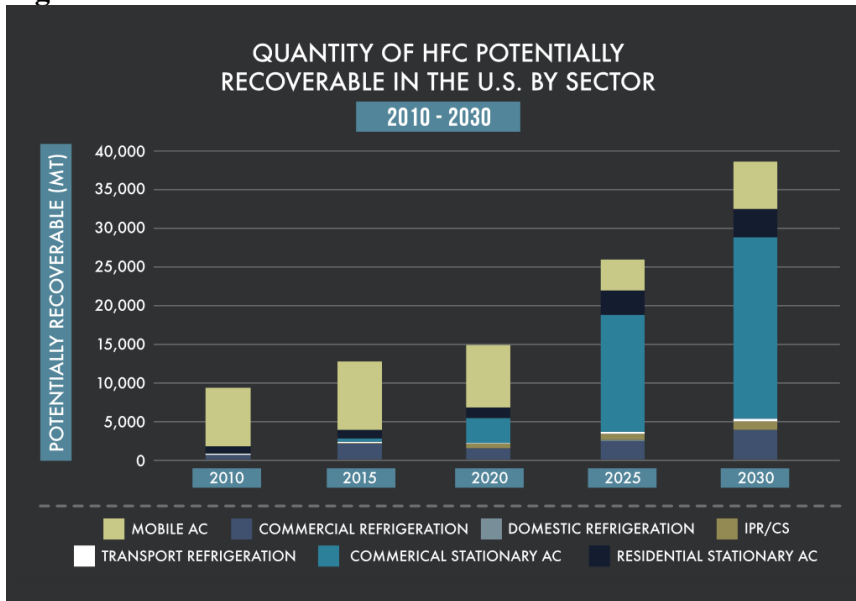


Figure 2:



International: ODS Destruction in the US and Abroad (2018), available at: <https://www.epa.gov/ods-phaseout/ods-destruction-united-states-and-abroad-february-2018>

² EPA, Reclamation Trends, <https://www.epa.gov/section608/summary-refrigerant-reclamation-trends>

Washington State's Role in a National Approach on HFCs

A robust EOL refrigerant management program in Washington and other states can play a key supportive role in ensuring successful national implementation of the American Innovation and Manufacturing Act (AIM Act). The AIM Act aims to reduce HFC consumption by 85% below 2011-13 baseline levels by 2036, with a potential to accelerate the phasedown schedule starting in 2025 if reductions are achieved in the market faster than the prescribed schedule. Increasing recovery and reclamation of HFCs to supply the servicing needs of the installed base of equipment using HFCs can considerably reduce demand and consumption of virgin HFC refrigerants, thereby serving a means to meet and accelerate the national phasedown. The market is facing a steep reduction of 40% beginning in 2024, which will be a challenge to meet without increasing reclamation and reuse of HFCs. Achieving this requires offering some form of incentive to recover the HFCs from equipment, and properly manage and collect them for return to a reclaimer.

Initiating such a program at the state level will at minimum complement future federal measures aimed at enabling increased recovery and reclamation, and at best serve as a national model. If the combination of state and federal measures to increase recovery and reclamation of refrigerants is successful at recovering all estimated recoverable HFCs by 2025, it would yield an estimated 50 million metric tons of CO₂e annually for reclamation, providing an 17% reduction from the baseline HFC consumption nationally, or nearly a half of the needed 40% reduction under the AIM Act.³ Even achieving an increase to a 50% recovery rate, a reasonable target achieved and surpassed in other countries with EOL programs, would provide a significant contribution to the HFC phasedown.

High Cost-effectiveness:

EOL refrigerant management is a highly cost-effective mitigation strategy due to the high-global warming potentials of refrigerants. A technical study conducted by the Montreal Protocol's Technical and Economic Assessment Panel estimated total costs of refrigerant abatement including recovery, collection, transport, and reclamation/destruction in major cooling end-use sectors range from around \$13,000 to \$20,000 per metric ton, or about \$6-9 per pound.⁴ Translated into cost-effectiveness per CO₂e, this ranges \$6-\$9.60 per metric ton CO₂e for HFC-410A used in most stationary air conditioning, and \$10-15 per metric ton CO₂e for HFC-134a used in mobile air conditioning.

Recommendations for Establishing a Product Stewardship Program to Increase Recovery, Reclamation, and Destruction

The technology and know-how exists to sustainably recover, reclaim and destroy all HFCs at end of life. Other countries with programs in place around the world, such as Australia, Denmark, Norway, and the UK, have shown that mandatory extended producer responsibility, or product stewardship, models have been successful in achieving significantly higher recovery rates than are estimated to be currently achieved in the U.S. The fee charged on high-GWP refrigerants also

³ EPA's propose baseline for reductions in HFC consumption is 299 million metric tons CO₂e, as per EPA proposed allocation rule, at: <https://www.epa.gov/climate-hfcs-reduction/proposed-rule-phasedown-hydrofluorocarbons-establishing-allowance-allocation>

⁴ See EIA, Search Reuse and Destroy (2018)

supports the transition to alternatives by making them more cost-competitive. Producer responsibility schemes can more efficiently distribute the burden and costs of properly managing refrigerants across the industry and provide incentive mechanisms where needed. Australia's Refrigerant Recovery Australia program has achieved a reported recovery rate of 47 to 67%.⁵ The United Kingdom has reported recovery rates as high as 65-92% depending on the sector.⁶

In order to maximize the climate benefits of a program to address EOL HFC emissions, it is important to cover the sectors where the largest quantities of refrigerant are available for recovery. Estimates suggest that the greatest and most cost-effective opportunities for recovering large amounts of HFCs exist in mobile air conditioning and residential and commercial air conditioning (See Figure 2). Other sectors should be covered as well, but these sectors in particular should not be excluded from any program.

EIA makes the following recommendations regarding design of an EOL refrigerant management program:

- Establish a product stewardship program with mandatory participation by refrigerant wholesalers, distributors, servicing contractors, and manufacturers of products pre-charged with refrigerants sold in the state of Washington;
- Wholesalers and distributors of bulk HFCs and HCFCs as well as servicing contractors should be required to register for a state license to participate in the product stewardship program;
- Manufacturers of refrigeration and air conditioning systems and appliances placed on the market in Washington containing pre-charged HFCs or other high-GWP refrigerants be required to participate in the product stewardship program;
- The product stewardship program may be jointly managed by industry stakeholders and one or more representatives of the Department of Ecology having oversight of the program including compliance with required recordkeeping and reporting requirements, and periodic review and approval to renew the program's mandated performance targets, fee and rebate rates;
- The product stewardship program should be required to meet a minimum target recovery rate of the estimated HFC and HCFC refrigerants available for recovery in the state of Washington. This rate should be set at 50% at minimum initially, and the target recovery rate should be subject to increase over time as recovery rates improve, as determined by the Department of Ecology in its periodic renewal of the program based on performance and other criteria;
- As a funding mechanism, a mandatory fee should be collected by the product stewardship program from participants based on the quantity of refrigerants placed on the market at first point of sale within Washington state, including both bulk refrigerant and products sold containing pre-charged HFC refrigerants. Proceeds of the fee would be used to fund rebates to wholesalers and contractors for recovery, reclamation, and destruction;

⁵ <https://refrigerantreclaim.com.au/program-performance/potential-recovery/>

⁶ See AHRI (2018):

https://www.ahrinet.org/App_Content/ahri/files/RESEARCH/Technical%20Results/AHRI_8018_Final_Report.pdf ;
as cited by: <https://www.coolingpost.com/world-news/uk-boasts-highest-refrigerant-recovery-rate/>

- All licensed refrigerant wholesalers and distributors would be required to accept, or “take-back” recovered HFCs refrigerant or other high-GWP refrigerants returned to them at all distribution locations in the state, and all recovered refrigerant would be eligible to receive some level of recovery rebate, at a rate to be established by the product stewardship program based on the type and mixture of refrigerant returned and periodically revisited based on market need and recovery rates;
- All refrigerant recovered by program participants should be required to be either reclaimed by an EPA certified reclaimer or destroyed using an EPA approved destruction technology within one calendar year of its recovery;
- All quantities and types of refrigerant recovered by program participants, and any carryover inventories of recovered refrigerant not reclaimed or destroyed in the same annual reporting period, shall be reported to Department of Ecology on an annual basis, and such aggregate data will be made publicly available;
- Department of Ecology may wish to undertake an independent study to estimate the inventory and availability of HFCs and other high-GWP refrigerants for recovery from within the state of Washington, in order to inform a program’s targeted recovery rate amounts.

Conclusions

Thank you for considering EIA’s comments and recommendations regarding establishing a program for EOL refrigerant management. We are happy to discuss these comments or any other aspects in assisting the Department of Ecology’s deliberation on this critical climate action.

Sincerely,

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