OFFICE OF SUSTANABILITY
Oregon Department of Administrative Services

MEMORANDUM

To: Agency facility managers

From: DAS Office of Sustainability

Date: October 15, 2023

Subject: Refrigerant management best practices

As agencies explore ways to reduce greenhouse gas (GHG) emissions in their operations, one opportunity is the effective management of refrigerants in air conditioning, refrigeration, heat pumps and other applications in agency buildings.

Hydrofluorocarbon (HFC) refrigerants have a high global warming potential (GWP), many times higher than that of carbon dioxide. Reducing the production and consumption of HFC refrigerants and managing refrigerants properly can play a significant role in reducing GHG emissions from state facilities.

This memorandum summarizes, as applicable to state agencies, the Sustainable Procurement Leadership Council (SPLC) Recommendations for Climate Friendly Refrigerant Management and Procurement. It includes opportunities for agencies to avoid refrigerants with high GWP when purchasing new equipment, such as refrigeration and HVAC equipment. It also provides agencies with recommendations to reduce refrigerant leakage and associated GHG emissions in maintaining and servicing existing equipment. Agency facility managers are encouraged to read the full SPLC report.

Refrigerant regulations

Current federal statute and regulations already direct the phaseout of refrigerants with high global warming potential (GWP). Specifically, the U.S. Environmental Protection Agency (EPA) has begun phasing down the production and consumption of HFCs under the 2020 American Innovation and Manufacturing Act and EPA rules for refrigerant management. Under this statute, by 2036 EPA will phase down HFC production and consumption by 85 percent.

In Oregon, ASHRAE Standard 34 sets limits for refrigerant types found in the 2022 Oregon Mechanical Specialty Code (OMSC) Table 1103.1. If a refrigerant is not listed in Table 1103.1 or in the referenced version of ASHRAE 34, the refrigerant cannot be used.

In October 2023, EPA published a final rule restricting the GWP of refrigerants used in new equipment manufactured and sold in the U.S., with phased-in implementation beginning in January 2025.

Other regulations, as noted below, govern the maintenance and use of refrigerants, and the technicians that service equipment containing refrigerants.

Procuring New Refrigerant Equipment

Agencies should proactively plan for switching to low-GWP refrigerants in early design for new construction or major renovations. Agencies can reduce heating and cooling energy use - and associated refrigerant needs - with design elements like shading, orientation, natural lighting, ventilation and smart energy management. Building options such as thicker thermal insulation, better door seals and temperature settings that save energy can also help to reduce refrigerant needs.

Alternatives to high GWP refrigerants include hydrofluoroolefins (HFOs); lower impact HFCs; and in some applications ammonia, hydrocarbons or carbon dioxide (CO_2). As the U.S. EPA is phasing out refrigerants with higher GWP, their Significant New Alternative Policy (SNAP) program provides guidance on which refrigerants are permissible by equipment category. The U.S. EPA prohibits use of a high GWP refrigerant where EPA has determined there are other available refrigerants that pose less risk to human health and the environment. This guidance is continually updated as new products come to market.

The U.S. EPA's Energy Star Program allows users to filter products by the GWP of refrigerants; for example, central air conditioning systems. Climate Friendly Cooling provides information on energy efficient products that use low-GWP refrigerants including refrigerators, air conditioners, freezers, laboratory equipment, vending machines, heat pumps, water coolers and other equipment.

Equipment installation

Agencies should ensure that technicians installing equipment using refrigerants follow manufacturer instructions, industry best practices and where applicable, the Quality Installation standards issued by the Air Conditioning Contractors of America. Best practices include optimizing charge size and choosing appropriate capacity for the intended operation.

Vendors installing new refrigerators, freezers or other appliances and removing old appliances are required by the U.S. EPA to certify that old products are property recovered and reclaimed or disposed of, with refrigerants and/or insulation containing high-GWP chemicals or ozone depleting substances properly recovered and recycled. Their Responsible Appliance Disposal program provides guidance and resources for the disposal of such equipment.

Maintaining existing equipment using refrigerants

U.S. EPA regulations (40 CFR, Part 82) under the Clean Air Act require that technicians, owners and operators of equipment - which includes state agencies - properly manage refrigerants. Certification is required for technicians who maintain, service, repair or dispose of equipment that could release refrigerants.

Refrigerant leaks can have a significant impact on the environment by contributing to GHGs as well as ozone-depleting emissions. For example, a typical food retail store leaks an estimated 25 percent of refrigerant, or approximately 1,000 pounds, annually. A study commissioned for the City of Seattle estimated annual refrigerant leakage from building heating and cooling systems in the City of between 4 and 9 percent annually.

Agencies must also require contractors and technicians to track and report on the amounts of refrigerants, including HFCs and HFC blends, added or removed during installation, maintenance, service, repair and disposal of equipment, appliances and supplies. EPA regulations under Section 608 of the Clean Air Act include recordkeeping and reporting requirements that are specific to different persons or companies involved with stationary refrigeration and air-conditioning equipment.

For servicing existing equipment not yet ready to be replaced, agencies should use reclaimed refrigerant from a U.S. EPA-certified refrigerant reclaimer, unless it is not available or does not meet the specifications of the manufacturer. Reclaimed refrigerant is existing refrigerant that has been recovered from equipment and purified before being reused. This helps prevent release of refrigerant from old equipment and displaces demand for virgin refrigerant. Agencies are encouraged to recover refrigerant in their equipment at end of life and use it elsewhere in equipment that they own.

Agencies must take corrective action when an appliance with a full charge of 50 or more pounds is discovered to be leaking ozone depleting refrigerant at a rate that exceeds the applicable trigger rate, according to U.S. EPA Stationary Refrigeration Leak Repair Requirements (40 CFR, Part 82, Subpart F). Agencies should repair leaks within 30 days from the date the leak was discovered. Where this is not possible, Agencies must develop, within 30 days, a plan to retrofit or retire the appliance and complete the actions under that plan within 1 year.

Developing a refrigerant management plan

Under HB 3409, agencies will be required to develop refrigerant management plans. Such plans will need to consider agency policy and practices such as:

- Smart building design to reduce refrigerant needs.
- Energy efficiency to reduce cooling or refrigeration loads.
- Procurement of new equipment that can effectively use lower GWP refrigerants.
- Proper maintenance of equipment using refrigerants.
- Keeping logs and tracking refrigerant use, including leaks, and including refrigerants in your agency's GHG inventory.

The federal government offers tools and resources that agencies can use for free to calculate refrigerant use. This refrigerant management plan from New York State shows what agencies can include in such plans.

Agencies are also encouraged to include refrigerants in their GHG inventories. The DAS Office of Sustainability can assist with including refrigerants in your "Scope 1" GHG inventory using the state agency climate action planning tool.

Over the course of the 2023-25 biennium, DAS will be developing new sustainable design guidelines for state new construction and major renovation projects that are likely to address equipment using refrigerants. The Office of Sustainability will keep agencies updated on the progress of this project.