Preliminary Regulatory Analyses:

Including the:

- Preliminary Cost-Benefit Analysis
- Least-Burdensome Alternative Analysis
- Administrative Procedure Act Determinations
- Regulatory Fairness Act Compliance

Chapter 173-443 WAC

Hydrofluorocarbons (HFCs) and Other Fluorinated Greenhouse Gases

By

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For the

Climate Pollution Reduction Program

Washington State Department of Ecology

Olympia, Washington

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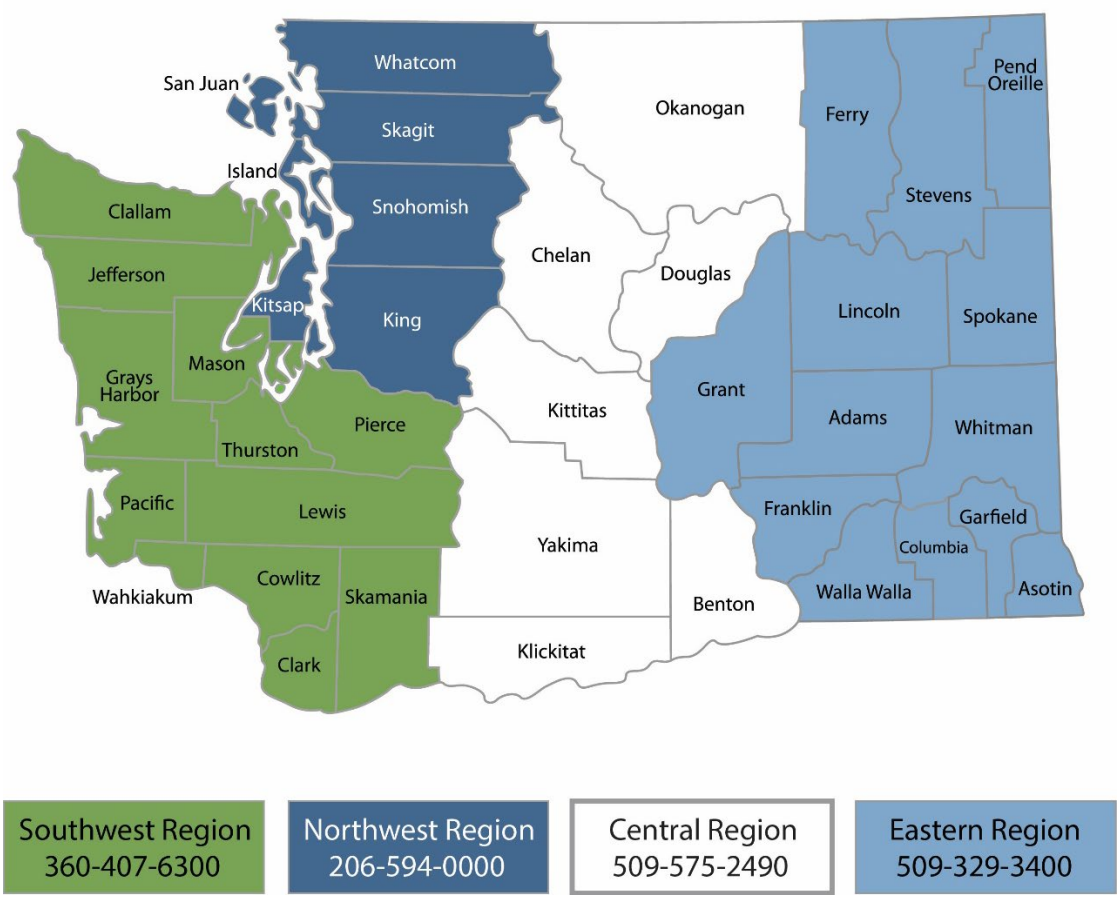

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Preliminary Cost-Benefit Analysis

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Chapter 173-443 WAC, Hydrofluorocarbons (HFCs) and Other Fluorinated Greenhouse Gases

Climate Pollution Reduction Program
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DEPARTMENT OF
ECOLOGY
State of Washington

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Abbreviations and Acronyms

AIM	American Innovation and Manufacturing Act of 2020, 42 U.S.C. 7675
APA	Administrative Procedure Act, Chapter 34.05 RCW
CBA	Cost-Benefit Analysis
C.F.R.	Code of Federal Regulations
EPA	Environmental Protection Agency
GDP	Gross Domestic Product
HFC	Hydrofluorocarbon
HVAC	Heating, ventilation, and air conditioning
LBA	Least-Burdensome Alternative analysis
RCW	Revised Code of Washington
RFA	Regulatory Fairness Act, Chapter 19.85 RCW
SNAP	Significant New Alternatives Policy program, 40 C.F.R. Part 82, Subpart G
U.S.C.	United States Code
WAC	Washington Administrative Code

Executive Summary

This report presents the determinations made by the Washington State Department of Ecology as required under Chapters 34.05 and 19.85 RCW, for proposed amendments to the Hydrofluorocarbons (HFCs) and Other Fluorinated Gases rule (Chapter 173-443 WAC; the "rule"). This includes the:

- Preliminary Cost-Benefit Analysis (CBA).
- Least-Burdensome Alternative Analysis (LBA).
- Administrative Procedure Act Determinations.
- Regulatory Fairness Act Compliance.

The Washington Administrative Procedure Act (APA) requires Ecology to evaluate significant legislative rules before adoption to "[d]etermine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the law being implemented[.]" RCW 34.05.328(1)(d).

The Washington Regulatory Fairness Act (RFA) requires Ecology to evaluate the relative impact of proposed rules that impose costs on businesses in an industry, comparing the relative compliance costs for small businesses to those of the largest businesses affected. Chapter 19.85 RCW.

All determinations are based on the best available information at the time of publication. We encourage feedback (including specific data) that may improve the accuracy of the analysis in this report.

Proposed rule amendments

During implementation of the existing rule, Ecology identified parts of the rule that could be amended to improve clarity, facilitate better and more consistent implementation, and reduce unintended impacts on businesses. These included changes to:

- Sell-through provisions, which allow equipment with prohibited refrigerants manufactured before a certain date to be sold for a period of time after the prohibition effective date.
- Requirements for automated commercial ice machines.
- Clarifications that do not change requirements, but clarify what the rule requires.

The current rulemaking is intended to amend the rule to make those improvements. The proposed rule amendments would:

- Add or amend definitions of:
    - Automatic commercial ice machine, to align with federal definitions.
    - Mothballing or system mothballing.
    - New refrigeration equipment.
    - Remote condensing unit, to align with federal definitions.

    - Stand-alone unit, automatic commercial ice machine, to align with federal definitions.
- Modify prohibited substances for automatic commercial ice machines, to match federal requirements.
- Modify sell-through provisions for refrigeration equipment.
- Modify sell-through provisions for air conditioning equipment.
- Clarify Refrigerant Management Program registration requirements for wholesalers, distributors, and reclaimers.
- Make additional clarifications or corrections without material impact.

Costs and benefits

The proposed rule amendments are **not likely to result in any costs**, as discussed in Chapter 3. They are likely to result in the following benefits.

- Amending the definition of "mothballing": **Avoided costs associated with downtime** for repairs lasting longer than 14 or 45 days (the time limits for repairs under the baseline). These systems need to be mothballed to remain in compliance with the baseline rule. System owners then need to wait until a total of 60 days has elapsed before operating the repaired system.
- Amending the definition of "new refrigeration equipment": **Assurance that retrofits (to reduce greenhouse gas emissions from a system) that do not change the cooling load are clearly allowed under the rule**.
- Aligning prohibitions for automatic commercial ice machines with the EPA Technology Transitions rule: Extending the time before prohibition by two years, **allowing manufacturers and facilities a longer planning timeframe**.
- Establishing consistent two-year sell-through provisions for refrigeration and air conditioning equipment:
    - **Avoided costs of uncertainty** associated with unimplementable baseline rule language, including disrupted supply chains, cost increases to manufacturers or equipment purchasers, and potential difficulty replacing, maintaining, and servicing affected equipment.
    - **Avoided potential interpretation of the baseline as having no sell-through provision** for:
        - New ice rinks.
        - New variable refrigerant flow or volume systems.
    - **Avoided shorter sell-through provisions of only one year** for:
        - New retail refrigeration and chillers.
        - New commercial cold storage.
        - New industrial process refrigeration, excluding chillers.
        - Other new air conditioning in residential and nonresidential uses.
    - Note that Ecology issued interpretive guidance to clarify Ecology's interpretation of the baseline rule (sell-through periods beginning on the applicable prohibition date) while this formal rulemaking sought to make these changes to the rule

language, so the rulemaking is unlikely to provide additional benefits, beyond Ecology's interpretive guidance and enforcement discretion.

- Allowing rental and lease of refrigeration and air conditioning equipment prohibited from sale:
    - **Avoiding the loss of the refrigeration rental market**. Compatible data were only available for the refrigerated truck rental market, which we estimate was valued at $28.7 million in 2024, projected to grow to $52.3 million by 2034. If this loss was ongoing, it would have had a 20-year present value of $993.7 million.
    - **Avoiding the loss of the air conditioning rental market**, the loss of which would have had a 20-year present value of $231.6 million.
    - The above benefits would fall over time as rental sectors are able to purchase new equipment to replace their stock, or if new businesses enter the market, at a later date. But this would come at a cost of replacing entire rental stocks, which may not be financially feasible.

Cost-Benefit Analysis Conclusion

We conclude, based on a reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the proposed rule amendments, as compared to the baseline, that the benefits of the proposed rule amendments are greater than the costs.

Least-Burdensome Alternative

We considered the following alternative rule requirements, and did not include them in the proposed rule amendments.

- Adopting a higher global warming potential for data center refrigerants.

After considering alternatives, within the context of the goals and objectives of the authorizing statute, we determined that the proposed rule represents the least-burdensome alternative of possible rule requirements meeting the goals and objectives.

Regulatory Fairness Act Compliance

We determined that the proposed rule amendments would not result in costs compared to the baseline.

The Regulatory Fairness Act (RFA) requires Ecology to prepare a Small Business Economic Impact Statement if the proposed rule will impose more than minor costs on businesses in an industry (RCW 19.85.030(1)(a)). As the proposed rule amendments would not impose any costs, Ecology is not required to complete the additional analyses required under the Regulatory Fairness Act and complete a Small Business Economic Impact Statement.

The RFA also states that it does not apply to the adoption of a rule if Ecology is able to demonstrate that the proposed rule does not affect small businesses (RCW 19.85.025(4)). As the proposed rule amendments would not impose any costs, Ecology is exempt from performing additional analyses under the RFA.

Chapter 1: Background and Introduction

1.1 Introduction

This report presents the determinations made by the Washington State Department of Ecology as required under Chapters 34.05 and 19.85 RCW, for proposed amendments to the Hydrofluorocarbons (HFCs) and Other Fluorinated Gases rule (Chapter 173-443 WAC; the "rule"). This includes the:

- Preliminary Cost-Benefit Analysis (CBA).
- Least-Burdensome Alternative Analysis (LBA).
- Administrative Procedure Act Determinations.
- Regulatory Fairness Act Compliance.

The Washington Administrative Procedure Act (APA) requires Ecology to evaluate significant legislative rules before adoption to "[d]etermine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the law being implemented[.]" RCW 34.05.328(1)(d). Chapters 1 – 5 of this report describe that determination.

The APA also requires Ecology to "[d]etermine, after considering alternative versions of the rule…that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives" of the governing and authorizing statutes. RCW 34.05.328(1)(e). Chapter 6 of this report describes that determination.

The APA also requires Ecology to make several other determinations about the rule, including the statutory authorization, necessity, context, and coordination with other applicable laws. RCW 34.05.328(1)(a)–(c) and (f)–(h). Appendix A of this report provides the documentation for these determinations.

The Washington Regulatory Fairness Act (RFA) requires Ecology to evaluate the relative impact of proposed rules that impose costs on businesses in an industry, comparing the relative compliance costs for small businesses to those of the largest businesses affected. Chapter 19.85 RCW. Chapter 7 of this report documents that analysis, when applicable.

All determinations are based on the best available information at the time of publication. We encourage feedback (including specific data) that may improve the accuracy of the analysis in this report.

1.1.1 Background

In 2021, Chapter 70A.60 RCW (Hydrofluorocarbons – Emissions Reduction; the authorizing statute for this rulemaking) authorized Ecology to adopt rules to reduce the use of refrigerants with a high global warming potential (a measure of how much a greenhouse gas warms the Earth compared to carbon dioxide) in refrigeration and air conditioning equipment. The statute

also required Ecology to adopt rules establishing a Refrigerant Management Program to reduce emissions of high-global warming potential refrigerants from leaky refrigeration and air conditioning equipment, and to reduce emissions from installation and servicing of equipment. Ecology adopted the current Hydrofluorocarbons and Other Fluorinated Greenhouse Gases rule, Chapter 173-443 WAC, in 2023.

1.2 Reasons for the proposed rule amendments

During implementation of the 2023 rule, Ecology identified parts of the rule that could be amended to improve clarity, facilitate better and more consistent implementation, and reduce unintended impacts on businesses. These included changes to:

- Sell-through provisions, which allow equipment with prohibited refrigerants manufactured before a certain date to be sold for a period of time after the prohibition effective date.
- Requirements for automated commercial ice machines.
- Clarifications that do not change requirements, but clarify what the rule requires.

The current rulemaking is intended to amend the rule to make those improvements.

1.2 Summary of the proposed rule amendments

The proposed rule amendments would:

- Add or amend definitions of:
    - Automatic commercial ice machine, to align with federal definitions.
    - Mothballing or system mothballing.
    - New refrigeration equipment.
    - Remote condensing unit, to align with federal definitions.
    - Stand-alone unit, automatic commercial ice machine, to align with federal definitions.
- Modify prohibited substances for automatic commercial ice machines, to match federal requirements.
- Modify sell-through provisions for refrigeration equipment.
- Modify sell-through provisions for air conditioning equipment.
- Clarify Refrigerant Management Program registration requirements for wholesalers, distributors, and reclaimers.
- Make additional clarifications or corrections without material impact.

1.4 Document organization

The chapters of this document are organized as follows:

- **Chapter 2 - Baseline and the proposed rule amendments:** Description and comparison of the baseline (what would occur in the absence of the proposed rule amendments) and the proposed rule requirements.
- **Chapter 3 - Likely costs of the proposed rule amendments:** Analysis of the types and sizes of costs we expect impacted entities to incur as a result of the proposed rule amendments.
- **Chapter 4 - Likely benefits of the proposed rule amendments:** Analysis of the types and sizes of benefits we expect to result from the proposed rule amendments.
- **Chapter 5 - Cost-benefit comparison and conclusions:** Discussion of the complete implications of the CBA.
- **Chapter 6 - Least-Burdensome Alternative Analysis:** Analysis of considered alternatives to the contents of the proposed rule amendments.
- **Chapter 7 - Regulatory Fairness Act Compliance:** When applicable. Comparison of compliance costs for small and large businesses; mitigation; impact on jobs.
- **Appendix A - APA Determinations:** RCW 34.05.328 determinations not discussed in chapters 5 and 6.

Chapter 2: Baseline and Proposed Rule Amendments

2.1 Introduction

We analyzed the impacts of the proposed rule amendments relative to the existing rule, within the context of all existing requirements (federal and state laws and rules). This context for comparison is called the baseline and reflects the most likely regulatory circumstances that entities would face if Ecology does not adopt the proposed rule amendments.

2.2 Baseline

The baseline for our analyses generally consists of existing laws and rules. This is what allows us to make a consistent comparison between the state of the world with and without the proposed rule amendments.

For this rulemaking, the baseline includes:

- The existing rule: Chapter 173-443 WAC, Hydrofluorocarbons (HFCs) and Other Fluorinated Greenhouse Gases.
- The authorizing statute: Chapter 70A.60 RCW, Hydrofluorocarbons – Emissions Reduction.
- The United States Clean Air Act, 42 U.S.C. 7401 *et seq*.
- The American Innovation and Manufacturing (AIM) Act of 2020, 42 U.S.C. 7675.
- Environmental Protection Agency (EPA) Significant New Alternatives Policy (SNAP) Program, 40 C.F.R. Part 82, Subpart G.
- EPA Phasedown of Hydrofluorocarbons Program, 40 C.F.R. Part 84.
- The EPA Technology Transitions rule: 88 Fed. Reg. 73098, Phasedown of Hydrofluorocarbons: Restrictions on the Use of Certain Hydrofluorocarbons Under the American Innovation and Manufacturing Act of 2020 (Oct. 24, 2023).
- The Kigali Amendment (2016) to the Montreal Protocol on Substances that Deplete the Ozone Layer.

2.3 Proposed rule amendments

The proposed rule amendments would:

- Add or amend definitions of:
    - Automatic commercial ice machine, to align with federal definitions.
    - Mothballing or system mothballing.
    - New refrigeration equipment.

    - Remote condensing unit, to align with federal definitions.
    - Stand-alone unit, automatic commercial ice machine, to align with federal definitions.
- Modify prohibited substances for automatic commercial ice machines, to match federal requirements.
- Modify sell-through provisions for refrigeration equipment.
- Modify sell-through provisions for air conditioning equipment.
- Clarify Refrigerant Management Program registration requirements for wholesalers, distributors, and reclaimers.
- Make additional clarifications or corrections without material impact.

2.3.1 Adding or amending definitions

Baseline

The baseline rule (WAC 173-443-030):

- Does not include a definition of “automatic commercial ice machine”.
- Defines “mothballing” or “system mothballing” as “the intentional shutting down of a refrigeration or air conditioning system for longer than 60 days by the owner or operator of the facility, where the refrigerant has been evacuated from the system or affected component, at least to atmospheric pressure.”
- Defines “new refrigeration equipment” as “any refrigeration equipment or system manufactured for an end-use listed in WAC 173-443-040, Table 2, that is first installed using new components, used components, or a combination of new and used components, and that is one of the following:
    (a) New construction in a new or existing facility;
    (b) An addition or modification that increases the nominal compressor capacity of a system in an existing facility;
    (c) New construction in an existing facility not previously used for retail food refrigeration, cold storage, ice rinks, or industrial process refrigeration; or
    (d) A system in an existing facility used for retail food refrigeration, cold storage, ice rinks, or industrial process refrigeration that is modified such that the system undergoes cumulative replacement of 75 percent of more of its evaporators (by number) and 100 percent of its compressor racks, condensers, and connected evaporator loads.”
- Defines “retrofit” as “to convert an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system

compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings, or appliance components."

- Defines a "remote condensing unit" as refrigeration equipment or units that have a central condensing portion and may consist of one or more compressors, condensers, and receivers assembled into a single unit, which may be located external to the sales area. The condensing portion (and often other parts of the system) is located outside the space or area cooled by the evaporator. Remote condensing units are commonly installed in convenience stores, specialty shops (e.g., bakeries, butcher shops), supermarkets, restaurants, and other locations where food is stored, served, or sold."
- Defines a "stand-alone unit" as retail refrigerators, freezers, and reach-in coolers (either open or with doors) where all refrigeration components are integrated and, for the smallest types, the refrigeration circuit is entirely brazed or welded. These systems are fully charged with refrigerant at the factory and typically require only an electricity supply to begin operation." The rule does not define stand-alone units specifically for automatic commercial ice machines.

The baseline rule also includes requirements that are not definitions, but are relevant to the likely impacts of the proposed rule's amended definitions. The baseline rule requires repairs to be completed within 14 days. This may be extended to 45 days if a technician is not available, parts are unavailable, or the repair would require an industrial process shutdown.

Proposed

The proposed rule amendments would make the following changes to definitions in the rule:

- Add a definition of "automatic commercial ice machine" to align with definitions in federal baseline regulations: "A factory-made assembly (not necessarily shipped in one package) that consists of a condensing unit and ice making section operating as an integrated unit, with means for making and harvesting ice; and may include means for storing ice, dispensing ice, or storing and dispensing ice.
    (a) Batch type ice machine means an ice machine having alternate freezing and harvesting periods.
    (b) Continuous type ice machine means an ice machine that continually freezes and harvests ice at the same time."
- Remove "for longer than 60 days" from the definition of "mothballing" or "system mothballing".
- For part (b) of the definition of "new refrigeration equipment", add: "and increases the cooling load".
- For the definition of "remote condensing unit", add: "For automatic commercial ice machines, remote condensing means a type of automatic commercial ice machine in which the ice-making mechanism and compressor are in separate sections."

- Add a definition of "stand-alone unit, automatic commercial ice machine": "A self-contained type of automatic commercial ice maker in which the ice-making mechanism and storage compartment are in an integral cabinet."

Expected impact

We do not expect the three added or amended definitions related specifically to automatic commercial ice machines to result in impacts as compared to the baseline. These definitions would align with federal definitions[2], as well as being clarifications of specific types of automatic ice machines.

Deleting "for longer than 60 days" from the definition of "mothballing" or "system mothballing" is likely to result only in benefits. The existing rule could create situations that result in unnecessary downtime and lost productivity for system owners without corresponding environmental or public benefits, due to baseline requirements for repair timing. Under the baseline, system repairs are limited to either 14 or 45 days, depending on circumstances. If the refrigerant is drained for a repair, but the repair takes longer than the required repair timeframe, the system owner could be out of compliance with the baseline rule unless the system is mothballed. To remain in compliance using baseline mothballing provisions, they would then need to wait until a total of 60 days had elapsed before operating the repaired system. Depending on the system being repaired, this could affect the owner's operations or productivity. This proposed rule amendment would eliminate this type of potential cost.

Adding "and increases the cooling load" to the definition of "new refrigeration equipment" would similarly result in only benefits to equipment owners performing retrofits. When a system owner replaces a refrigerant that has a high global warming potential with a refrigerant with a lower global warming potential, they may need a larger volume of the new refrigerant or a larger compressor to maintain the same cooling load. The result is a reduction in greenhouse gas emissions from the system, for the same amount of cooling. Under the baseline rule language, it is not clear that this type of activity is a retrofit of an existing system to achieve compatibility with a new refrigerant, rather than a new system. This proposed amendment would ensure that retrofits that do not change the cooling load are clearly allowed under the rule.

2.3.2 Modifying prohibited substances for automatic commercial ice machines

Baseline

In WAC 173-443-040, the baseline rule prohibits a set of refrigerants used in the remote condensing units of automatic commercial ice machines as well as in stand-alone automatic commercial ice machines beginning January 1, 2025. The list of prohibited substances matched the proposed EPA Technology Transitions rule at the time Ecology adopted the baseline rule.

[2] US EPA 40 C.F.R. 84.54, referring to terms for automatic commercial ice machines as defined in 10 C.F.R. 431.132 and .134.

The EPA subsequently adopted the baseline Technology Transitions rule with an expanded list of prohibited substances. On December 30, 2024, Ecology published a policy interpretative statement announcing enforcement discretion for this portion of the rule as long as entities follow the final adopted EPA Technology Transitions rule (published on October 24, 2023) until current rule amendments are finalized.[3]

The final adopted EPA Technology Transitions rule includes a list of prohibited substances in various end-uses. Effective January 1, 2027, this list includes additional prohibited substances for automated commercial ice machines beyond what was included in the baseline rule that Ecology adopted. The Technology Transitions rule also includes a 2026 prohibition on self-contained units using refrigerant with global warming potential greater than 150.

Proposed

The proposed rule would modify prohibited substances to match the final EPA Technology Transitions rule. This would include expanding the list of prohibited substances as well as the effective dates of January 1, 2026 for refrigerants with a global warming potential greater than 150, and January 1, 2027 for specifically listed substances.

Expected impact

These proposed rule amendments would not result in costs, as they would align rule requirements with the EPA Technology Transitions rule. The adopted Technology Transitions rule applies to the refrigerants and equipment that the proposed rule applies to, and applies nationwide. For the specific prohibited substances listed in the baseline rule and effective in 2025, these rule amendments would extend the time before prohibition by up to two years and expand the list of prohibited substances. This benefit of added time would allow manufacturers additional time to prepare for the prohibitions, and would allow facilities that plan to acquire or modify their equipment a longer planning timeframe.

2.3.3 Modifying refrigeration equipment sell-through provision

Baseline

In WAC 173-443-065(2), the baseline rule includes a sell-through provision for refrigeration equipment. It allows equipment that is manufactured prior to January 1, 2024 to be sold, leased, rented, installed, or otherwise introduced into Washington commerce until January 1, 2026.

Prohibition dates for refrigeration equipment using specified substances are listed in WAC 173-443-040, Table 2. Effective prohibition dates vary by end-use, criteria, and prohibited substances, and range from 2024 to 2029.

Proposed

[3] WA Department of Ecology, 2024. Interpretive Statement on the Effective Date of prohibitions Pertaining to Automatic Commercial Ice Machines. December 30, 2024. https://apps.ecology.wa.gov/publications/documents/2414096.pdf.

The proposed rule amendments would replace the baseline sell-through provision for refrigeration equipment with a two-year sell-through provision, running from the respective date of manufacture. This would allow equipment using prohibited substances manufactured before its applicable prohibition date to be sold up to two years after the prohibition date.

The rule amendments would also remove the rental and lease of equipment from the sell-through provision in WAC 173-443-065(2) for refrigeration equipment using prohibited substances in WAC 173-443-040, Table 2.

Expected impact

These proposed amendments would result in two types of benefits, each correcting an unintended consequence of baseline rule language:

- Benefits of consistent two-year sell-through provision running from the date of prohibition: In some cases, the date on which the current baseline sell-through provision would end falls on the same date as the prohibition effective date under Table 2, WAC 173-443-040, effectively leaving no sell-through period after the prohibition is in effect. In others, the baseline provision would result in a shortened sell-through period. In this regard, we are not able to implement the sell-through provision of the baseline rule. The rule language results in an uncertain regulatory landscape during the years between January 1, 2026 (the end of the sell-through provision in the baseline rule) and the actual prohibition date in the baseline rule. Additionally, the baseline rule's restriction to equipment manufactured before January 1, 2024 creates an uncertain regulatory context for equipment manufactured after that date but before the applicable prohibition date.

  Uncertainty about whether equipment can be sold in the state could result in disrupted supply chains, increased cost to manufacturers or purchasers of equipment, and potential difficulty in replacing, maintaining, or servicing affected equipment. The proposed amendments would eliminate this uncertainty.

  We note that Ecology issued interpretive guidance while this rulemaking process is underway to clarify Ecology's interpretation of the baseline rule language.[4]

- Benefits of allowing rental and lease of equipment: Some businesses partially or exclusively provide refrigeration rental and leasing services. Under the wording of the baseline rule, these businesses would be unable to do business that involves equipment with a prohibited refrigerant after January 1, 2026, stranding business assets. This proposed amendment would restore the ability of refrigeration equipment rental and leasing businesses to continue to fully operate, and to rent or lease out the equipment they have invested in.

[4] WA Department of Ecology, 2025. Interpretive Statement on the Sell-through Provisions in WAC 173-443-065 and -075. Ecology publication no. 25-14-027. Issued April 24, 2025. https://apps.ecology.wa.gov/publications/documents/2514027.pdf.

We do not believe environmental costs associated with the lease and rental of equipment are likely, as customers seeking refrigeration equipment would need to purchase it instead under the baseline rule language. By removing this need, the proposed rule amendments would likely not affect emissions. It is also possible that the rule amendments would reduce aggregate use of refrigeration equipment and associated greenhouse gas emissions, since rental equipment could be shared across multiple customers, rather than each customer purchasing equipment.

2.3.4 Modifying air conditioning equipment sell-through provision

Baseline

In WAC 173-443-075(2), the baseline rule includes a sell-through provision for air conditioning equipment. It allows equipment that is manufactured prior to January 1, 2024 to be sold, leased, rented, installed, or otherwise introduced into Washington commerce until January 1, 2026.

Prohibition dates for air conditioning equipment using specified substances are listed in WAC 173-443-040, Table 3. Effective prohibition dates vary by end-use, criteria, and prohibited substances, and range from 2024 to 2029.

Proposed

The proposed rule amendments would replace the baseline sell-through provision for air conditioning equipment with a two-year sell-through provision, running from the respective date of prohibition. This would allow equipment using prohibited substances that is manufactured before its applicable prohibition date to be sold up to two years after the prohibition date.

The rule amendments would also remove the rental and lease of equipment from the prohibitions and sell-through provisions for air conditioning equipment using prohibited substances in WAC 173-443-040, Table 3.

Expected impact

These proposed amendments would result in two types of benefits, each correcting an unintended consequence of baseline rule language:

- Benefits of consistent two-year sell-through provision running from the date of prohibition: In some cases, the baseline sell-through provisions would ban the sale of equipment using prohibited substances on the same date as their prohibition, leaving no sell-through period. In others, the baseline provisions would result in a shortened sell-through period. In this regard, the sell-through provisions of the baseline rule are not implementable. The rule language results in an uncertain regulatory landscape during the years between January 1, 2026 (the end of the sell-through provision in the baseline rule) and the actual prohibition date, if that date is later. Additionally, the baseline rule's restriction to equipment manufactured before January 1, 2024 creates an uncertain regulatory context for equipment manufactured after that date but before the prohibition date.

Uncertainty about whether equipment can be sold in the state could result in disrupted supply chains, increased cost to manufacturers or purchasers of equipment, and potential difficulty in replacing, maintaining, or servicing affected equipment. The proposed amendments would eliminate this uncertainty.

- We note that Ecology issued interpretive guidance while this rulemaking process is underway to clarify Ecology's interpretation of the baseline rule language.[5] Benefits of allowing rental and lease of equipment: Some businesses partially or exclusively provide air conditioning rental and leasing services. Under the wording of the baseline rule, these businesses would be unable to do business with equipment using prohibited substances after January 1, 2026, stranding business assets. This proposed amendment would restore the ability of air conditioning equipment rental and leasing businesses to continue to operate.

  We do not believe associated environmental costs are likely, as customers seeking air conditioning equipment would need to purchase it instead under the baseline rule language. By removing this need, the proposed rule amendments would likely not affect emissions, at worst. It is also possible that the rule amendments would reduce aggregate use of air conditioning equipment and associated greenhouse gas emissions, since rental equipment could be shared across multiple customers, rather than each customer purchasing equipment.

2.3.5 Clarifying Refrigerant Management Program registration requirements

Baseline

In WAC 173-443-125(1), the baseline rule requires refrigerant wholesalers, distributors, and reclaimers that sell, supply, distribute, or reclaim any amount of a refrigerant with a global warming potential of 150 or more in Washington to register with Ecology. It states that this registration must be done by March 15, 2024.

Proposed

The proposed rule amendments would clarify that refrigerant wholesalers, distributors, and reclaimers that began operations before January 1, 2024, were required to register by March 15, 2024, and that those that begin operations after January 1, 2024 must register by March 15 of the calendar year following the year in which they begin operations.

Expected impact

We do not expect this proposed rule amendment to result in costs, as refrigerant wholesalers, distributors, and reclaimers that began or will begin operations after January 1, 2024 would have been expected to register under the baseline. The baseline rule language is unclear about

[5] WA Department of Ecology, 2025. Interpretive Statement on the Sell-through Provisions in WAC 173-443-065 and -075. Ecology publication no. 25-14-027. Issued April 24, 2025. https://apps.ecology.wa.gov/publications/documents/2514027.pdf.

how long after operations begin these entities have to register. This proposed amendment would provide clarity as to when registration must be completed, as well as clarity as to whether beginning operations prior to registering is allowed.

2.3.6 Making additional clarifications or corrections

Baseline

The baseline rule includes the following prohibitions:

- The baseline rule states in WAC 173-443-060(1) that, "No person may offer for sale, lease, rent, install, or otherwise cause to enter into Washington commerce any new product or equipment, as defined in WAC 173-443-030, that contains or uses a prohibited substances listed in WAC 173-443-040, Table 1, unless an exemption is provided for in WAC 173-443-050." The referenced table lists prohibited substances for new products and equipment, by end use.
- The baseline rule states in WAC 173-443-065(1) that, "No person shall offer for sale, lease, rent, install, or otherwise cause to enter into Washington commerce any new refrigeration equipment that contains or uses a prohibited substance listed in WAC 173-443-040, Table 2, unless an exemption is provided for in WAC 173-443-050."
- The baseline rule states in WAC 173-443-075(1) that, "No person shall offer for sale, lease, rent, install, or other cause to enter into Washington commerce any new air conditioning equipment that contains or uses a prohibited substance listed in WAC 173-443-040, Table 3 unless an exemption is provided for in WAC 173-443-050."

The baseline rule also requires exemption or variance applications to be submitted to "Ecology Air Quality Program, HFC Program" by mail, or emailed to HFC@ecology.wa.gov (sections WAC 173-443-235(3) and WAC 173-443-095(3), respectively).

Proposed

The proposed rule would:

- Clarify that the prohibitions apply to the actual sale of restricted products and equipment.
- Correct the typo of "other" to "otherwise" in WAC 173-443-075(1).
- Update the mailing address for submitting exemption or variance applications to reflect current program and section names: "Ecology Climate Pollution Reduction Program, Fluorinated Gases Section".
- Correct the email address for submitting exemption or variance applications, to HFC@ecy.wa.gov.

Expected impact

We do not expect these proposed amendments to result in costs or benefits beyond clarity and using up-to-date naming.

Chapter 3: Likely Costs of the Proposed Rule Amendments

3.1 Introduction

We analyzed the likely costs associated with the proposed rule amendments, as compared to the baseline. The proposed rule amendments and the baseline are discussed in detail in Chapter 2 of this document.

3.2 Cost analysis

The proposed rule amendments would:

- Add or amend definitions of:
    - Automatic commercial ice machine, to align with federal definitions.
    - Mothballing or system mothballing.
    - New refrigeration equipment.
    - Remote condensing unit, to align with federal definitions.
    - Stand-alone unit, automatic commercial ice machine, to align with federal definitions.
- Modify prohibited substances for automatic commercial ice machines, to match federal requirements.
- Modify sell-through provisions for refrigeration equipment.
- Modify sell-through provisions for air conditioning equipment.
- Clarify Refrigerant Management Program registration requirements for wholesalers, distributors, and reclaimers.
- Make additional clarifications or corrections without material impact.

3.2.1 Adding or amending definitions

These proposed rule amendments are not likely to result in costs as compared to the baseline. See Section 2.3.1 for additional discussion.

- We do not expect the three added or amended definitions related specifically to automatic commercial ice machines to result in impacts as compared to the baseline.
- Deleting “for longer than 60 days” from the definition of “mothballing” or “system mothballing” is not likely to result in costs, as this change would not increase compliance requirements for any entity.

- Adding “and increases the cooling load” to the definition of “new refrigeration equipment” is not likely to result in costs, as this change would not increase compliance requirements for any entity.

3.2.2 Modifying prohibited substances for automatic commercial ice machines

These proposed rule amendments would not result in costs as compared to the baseline, as they would align rule requirements with the EPA Technology Transitions rule. Whether the proposed rule amendments are adopted or not, these baseline requirements apply. See Section 2.3.2 for additional discussion.

3.2.3 Modifying refrigeration equipment sell-through provisions

We do not expect these proposed amendments to result in costs as compared to the baseline. See Section 2.3.3 for discussion.

3.2.4 Modifying air conditioning equipment sell-through provisions

We do not expect these proposed amendments to result in costs as compared to the baseline. See Section 2.3.4 for discussion.

3.2.5 Clarifying Refrigerant Management Program registration requirements

We do not expect this proposed rule amendment to result in costs, as refrigerant wholesalers, distributors, and reclaimers that began or will begin operations after January 1, 2024 would have been expected to register under the baseline. See Section 2.3.5 for discussion.

3.2.6 Making additional clarifications or corrections

We do not expect these proposed amendments to result in costs or benefits beyond clarity and using up-to-date naming. See Section 2.3.6 for discussion.

3.2.7 Environmental justice costs

Much as we do not expect the proposed rule amendments to result in costs (only benefits), we do not expect any distributional impacts to costs. See Section 4.2.7 for discussion of environmental justice related to the benefits of the proposed rule amendments.

Chapter 4: Likely Benefits of the Proposed Rule Amendments

4.1 Introduction

We analyzed the likely benefits associated with the proposed rule amendments, as compared to the baseline. The proposed rule amendments and the baseline are discussed in detail in Chapter 2 of this document.

4.2 Benefits analysis

The proposed rule amendments would:

- Add or amend definitions of:
    - Automatic commercial ice machine, to align with federal definitions.
    - Mothballing or system mothballing.
    - New refrigeration equipment.
    - Remote condensing unit, to align with federal definitions.
    - Stand-alone unit, automatic commercial ice machine, to align with federal definitions.
- Modify prohibited substances for automatic commercial ice machines, to match federal requirements.
- Modify sell-through provisions for refrigeration equipment.
- Modify sell-through provisions for air conditioning equipment.
- Clarify Refrigerant Management Program registration requirements for wholesalers, distributors, and reclaimers.
- Make additional clarifications or corrections without material impact.

4.2.1 Adding or amending definitions

We do not expect the three added or amended definitions related specifically to automatic commercial ice machines to result in impacts as compared to the baseline. These definitions would be aligned with federal definitions, as well as being clarifications of specific types of automatic ice machines.

We do, however, expect two of these proposed amendments to generate benefits as compared to the baseline:

- Deleting “for longer than 60 days” from the definition of “mothballing” or “system mothballing” is likely to result in benefits of avoided costs of downtime between repairs

lasting longer than 14 or 45 days (the time limits for repairs under the baseline rule). If the refrigerant was drained from a system for a repair, but the repair took longer than the required 14 or 45 days (as applicable), without the definitional change, a system owner would need to wait until a total of 60 days had elapsed before operating the repaired system. This would render the repaired systems unusable for between 15 and 46 additional days to remain in compliance with the baseline rule via its provisions for mothballed systems.

How often these potential costs occur and how large they are when they do under the baseline are highly uncertain, making the benefits of avoiding these costs similarly uncertain. This is because they would depend on:

- What types of facilities are affected (facilities that identify leaks and take longer than the relevant 14- or 45-day repair timeline). This could be any facility covered under the rule, for which we identified potentially covered facilities in 76 industry groups during the 2023 rulemaking that adopted the baseline rule.[6]
- How much the system being repaired contributes to their production or ability to provide services. A smaller system in a facility with multiple systems would have less of a proportional impact on production and revenues than a large system on which a facility depends to be able to do their work at all.
- How frequently leaks are identified, and their timing. This would depend on the type of equipment and system design, as well as variables such as age, maintenance, and use. For facilities that have seasonal variation in their production, leak identification and repair timing could affect impacted revenues.
- By how much the repair takes beyond the applicable 14- or 45-day limit. To reach the baseline 60-day mothballing definition, this would be between an additional 15 and 46 days.
- The value of production at the facility. In addition to variability in the type of industry that could be affected, individual facilities earn different revenues and face different losses associated with downtime.

While the magnitude and frequency of this benefit are highly uncertain, this proposed rule amendment would eliminate this type of potential cost.

- Adding “and increases the cooling load” to the definition of “new refrigeration equipment” is likely to result in benefits to equipment owners performing retrofits. Retrofitting options that replace refrigerants that have a high global warming potential, with refrigerants with lower global warming potential, may require a larger volume (pressure) or a larger compressor, but would not necessarily change the cooling load. This way, retrofits reduce greenhouse gas emissions from these systems. This proposed

[6] WA Department of Ecology, 2023. Final Regulatory Analyses: Chapter 173-443 WAC, Hydrofluorocarbons and Other Fluorinated Greenhouse Gases and Chapter 173-455, Air Quality Fee Rule. Ecology publication no. 23-02-111. November 2023. https://apps.ecology.wa.gov/publications/SummaryPages/2302111.html.

amendment would ensure that retrofits that do not change the cooling load are clearly allowed under the rule.

This change might be viewed as a clarification of the baseline, but to the extent the baseline rule language creates uncertainty about whether a retrofit counts as "new refrigeration equipment", this change would affect behavior and save the associated costs. On the low end, these might be avoided costs of getting technical assistance from Ecology on whether a potential or planned refrigeration retrofit would count as new equipment. On the high end, these could be avoided costs of choosing different refrigeration options than would be optimal for a business, or incurring duplicative design and planning costs.

4.2.2 Modifying prohibited substances for automatic commercial ice machines

These proposed rule amendments would result in benefits to manufacturers of automatic commercial ice machines, by changing prohibited substances and effective dates to align with the EPA Technology Transitions rule. For the specific prohibited substances listed in the baseline rule and effective in 2025, these rule amendments would extend the time before prohibition by two years. This benefit of added time would allow manufacturers additional time to prepare for the prohibitions, and allow facilities that plan to acquire or modify their equipment a longer planning timeframe.

We identified 39 manufacturers or distributors of automatic commercial ice machines sold in Washington. Most of these businesses are located in other states or countries, while one also has a location in Washington.

4.2.3 Modifying refrigeration equipment sell-through provisions

We identified two types of benefits of these proposed amendments:

- Benefits of consistent two-year sell-through provisions, running from the date of prohibition: In some cases, the baseline sell-through provisions would result in a shortened sell-through period, or no sell-through period. In this regard, we are not able to implement the sell-through provisions of the baseline rule. The current rule language results in an uncertain regulatory landscape during the years between January 1, 2026 (the end of the sell-through provision in the baseline rule) and the actual prohibition date. Additionally, the baseline rule's restriction to equipment manufactured before January 1, 2024 creates an uncertain regulatory context for equipment manufactured after that date but before the prohibition date. Uncertainty about whether equipment can be sold in the state could result in disrupted supply chains, increased cost to manufacturers or purchasers of equipment, and potential difficulty in replacing, maintaining, or servicing affected equipment. The proposed amendments would eliminate this uncertainty.

If we assume the earliest relevant dates in the baseline rule take precedence, the baseline rule as written could effectively result in a shorter sell-through provision of one year for:

- New retail refrigeration and chillers.
- New commercial cold storage.
- New industrial process refrigeration, excluding chillers.

Based on the minimum charge requirements for affected equipment, we looked to information about industrial and commercial refrigeration for an understanding of the size of this benefit. While we did not identify data to sufficiently estimate these avoided costs for all equipment types, we note that the global value of the industrial refrigeration market is estimated to be $25.1 billion annually by 2026, with a North American share of about 36 percent.[7] While data was not publicly available specific to Washington state, if we scale the North American value by the Washington gross domestic product (GDP) proportion of North American GDP (about 2.5 percent),[8] the value of the industrial refrigeration market in the state would be about $227.5 million by 2026. Performing a similar scaling calculation for the estimated value of the market by 2032[9] gives us a Washington state market value of $289.9 million.

The value of this benefit may not be full market loss, however, as full interruption of the market is unlikely when businesses still have time to adapt before the effective prohibition date of the 2026 end of the sell-through period in the baseline rule. It is likely, however, that industry could incur higher costs for switching to lower global warming potential refrigerants sooner than anticipated, through increased demand and upward pressure on prices.

[7] Markets and Markets, 2025. Industrial Refrigeration Market Size, Share and Growth. https://www.marketsandmarkets.com/Market-Reports/industrial-refrigeration-system-market-245749288.html#:~:text=Refrigerated%20warehouse%20applications%20held%20the,applications%20during%20the%20forecast%20period.

[8] Federal Reserve Bank of St. Louis, 2025. Real Gross Domestic Product: All Industry Total in Washington (WARGSP). https://fred.stlouisfed.org/series/WARGSP; US Bureau of Economic Analysis, 2025. Gross Domestic Product. https://www.bea.gov/data/gdp/gross-domestic-product; Trading Economics, 2025. Canada GDP. https://tradingeconomics.com/canada/gdp; World Bank Group, 2025. GDP (current US$) – Mexico. World Bank national accounts data, and OECD National Accounts data files. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=MX.

[9] SNS Insider, 2024. Industrial Refrigeration Market to his USD 33.86 Billion by 2032, Fueled By Demand For Cold Chain Solutions, E-Commerce Growth. September 20,2024. https://www.globenewswire.com/news-release/2024/09/20/2949673/0/en/Industrial-Refrigeration-Market-To-Hit-USD-33-86-Billion-By-2032-Fueled-By-Demand-For-Cold-Chain-Solutions-E-Commerce-Growth-Report-By-SNS-Insider.html.

- We note that Ecology issued interpretive guidance to clarify Ecology's interpretation of the baseline rule language while this formal rulemaking sought to make the change in the rule.[10]
- Benefits of allowing rental and lease of equipment: Some businesses partially or exclusively provide refrigeration rental and leasing services. Under the wording of the baseline rule, these businesses would be unable to do business after January 1, 2026. This proposed amendment would restore the ability of refrigeration equipment rental and leasing businesses to continue to operate after 2026.

  We were not able to identify publicly available data on the overall refrigeration rental industry, which includes segments such as rental of individual refrigeration units, walk-in refrigerators and freezers, portable cold-storage containers, ice machines, and similar equipment for temporary or transportation use. One market segment for which market value estimates were available is refrigerated truck rental. The value of the global refrigerated truck rental market was estimated to be $4.5 billion in 2024 and forecast to reach $8.2 billion by 2034.[11] Scaling based on proportional GDP gave us an estimated Washington value of this market of $28.7 million in 2024, projected to grow to $52.3 million by 2034.[12] Recall this is for just one segment of the overall refrigeration equipment rental market.

  By avoiding the loss of this market beginning in 2026, the 20-year present value of this benefit would be $993.7 million, conservatively assuming linear market growth.[13] Note that this benefit would fall over time as the rental sector is able to purchase new equipment to replace their stock, or if new businesses enter the market, at a later date. But this would come at a cost of replacing entire rental stocks, which may not be financially feasible.

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[10] WA Department of Ecology, 2025. Interpretive Statement on the Sell-through Provisions in WAC 173-443-065 and -075. Ecology publication no. 25-14-027. Issued April 24, 2025. https://apps.ecology.wa.gov/publications/documents/2514027.pdf.

[11] Global Insight Services, 2024. Refrigerated Truck Rental Market. https://www.globalinsightservices.com/reports/refrigerated-truck-rental-market/#:~:text=The%20demand%20for%20short%2Dterm%20rentals%20is%20driven,need%20for%20flexibility%20in%20supply%20chain%20logistics; SNS Insider, 2024. Industrial Refrigeration Market to his USD 33.86 Billion by 2032, Fueled By Demand For Cold Chain Solutions, E-Commerce Growth. September 20,2024. https://www.globenewswire.com/news-release/2024/09/20/2949673/0/en/Industrial-Refrigeration-Market-To-Hit-USD-33-86-Billion-By-2032-Fueled-By-Demand-For-Cold-Chain-Solutions-E-Commerce-Growth-Report-By-SNS-Insider.html.

[12] World Bank Group, 2025. GDP (current US$) – Mexico. World Bank national accounts data, and OECD National Accounts data files. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=MX; Federal Reserve Bank of St. Louis, 2025. Real Gross Domestic Product: All Industry Total in Washington (WARGSP). https://fred.stlouisfed.org/series/WARGSP.

[13] Present values convert flows of future costs or benefits to current values, accounting for inflation and the opportunity cost of having funds later versus now. Ecology uses a 1 percent discount rate to reflect the social rate of time preference capturing these time costs, based on the historic 20-year average real rate of return on US Treasury I Bonds. US Treasury Department, 2025. I bonds interest rates. https://www.treasurydirect.gov/savings-bonds/i-bonds/i-bonds-interest-rates/.

4.2.4 Modifying air conditioning equipment sell-through provisions

We identified two types of benefits of these proposed amendments:

- Benefits of consistent two-year sell-through provisions: In some cases, the baseline sell-through provisions would result in a shortened sell-through period, or no sell-through period. In this regard, the sell-through provisions of the baseline rule are not implementable. The rule language results in an uncertain regulatory landscape during the years between January 1, 2026 (the end of the sell-through provision in the baseline rule) and the actual prohibition date. Additionally, the baseline rule's restriction to equipment manufactured before January 1, 2024 creates an uncertain regulatory context for equipment manufactured after that date but before the prohibition date. Uncertainty about whether equipment can be sold in the state could result in disrupted supply chains, increased cost to manufacturers or purchasers of equipment, and potential difficulty in replacing, maintaining, or servicing affected equipment. The proposed amendments would eliminate this uncertainty.

  If we assume the earliest relevant dates in the baseline rule take precedence, the baseline rule as written could effectively result in no sell-through provision for:

  - Other new air conditioning in residential and nonresidential uses.[14]
  - New variable refrigerant flow or volume systems.

  Based on minimum charge requirements for affected equipment, we looked to information about industrial and commercial air conditioning for an understanding of the size of this benefit. While we did not identify data to sufficiently estimate these avoided costs for all equipment types, we note that the value of the United States heating, ventilation, and air conditioning (HVAC) market is estimated to be valued at $32.5 billion for 2024, and forecast to grow to $50.0 billion by 2030, of which 60.29 percent is in industrial and commercial applications.[15] While data was not publicly available specific to Washington state, if we scale the United States value by the share of Washington GDP (about 2.9 percent), the value of the Washington commercial and industrial HVAC market in the state would be about $577.2 million in 2024, growing to about $888.6 million by 2030.

  The value of this benefit may not be full market loss, however, as full interruption of the market is unlikely when businesses still have time to adapt before the effective prohibition date of the 2026 end of the sell-through period in the baseline rule. It is likely, however, that industry could incur higher costs for switching to lower global

[14] The effective date of the prohibition for "Other new air conditioning in residential and nonresidential uses" is based on the timing of adopted updates to the building code. Washington adopted amendments to the building code in February 2025, which would make the prohibition date for this equipment category February 2027. This would make the end of the sell-through provision under the proposed rule February 2029.
[15] Grand View Research, 2024. U.S. Hvac Systems Market Size & Outlook, 2024-2030. https://www.grandviewresearch.com/horizon/outlook/hvac-systems-market/united-states.

warming potential refrigerants sooner than anticipated, through increased demand and upward pressure on prices.

- We note that Ecology issued interpretive guidance to clarify Ecology's interpretation of the baseline rule language while this formal rulemaking sought to make the change in the rule.[16]
- Benefits of allowing rental and lease of equipment: Some businesses partially or exclusively provide air conditioning rental and leasing services. Under the wording of the baseline rule, these businesses would be unable to do business after January 1, 2026. This proposed amendment would restore the ability of air conditioning equipment rental and leasing businesses to continue to operate.

  The global HVAC rental market was valued at $2.1 billion in 2023, and forecast to grow to $2.2 billion by 2030, with large commercial and industrial applications making up about 85 percent of the market.[17] Scaling the global value to commercial and industrial applications, and by the relative size of Washington's GDP, an estimate of this value is $11.7 million in 2023, and $12.3 million in 2030.

  By avoiding the loss of this market beginning in 2026, the 20-year present value of this benefit would be $231.6 million, conservatively assuming linear market growth.[18] Note that this benefit would fall over time as the rental sector is able to purchase new equipment to replace their stock, or if new businesses enter the market, at a later date. But this would come at a cost of replacing entire rental stocks, which may not be financially feasible.

4.2.5 Clarifying Refrigerant Management Program registration requirements

This proposed amendment would provide clarity as to when registration must be completed, as well as clarity as to whether beginning operations prior to registering is allowed.

[16] WA Department of Ecology, 2025. Interpretive Statement on the Sell-through Provisions in WAC 173-443-065 and -075. Ecology publication no. 25-14-027. Issued April 24, 2025. https://apps.ecology.wa.gov/publications/documents/2514027.pdf.

[17] Grand View Research, 2024. HVAC Rental Services Market Size, Share & Trends Analysis Report By Product (Heating, Ventilation, Cooling (sic), Cooling, By Application (Residential, Commercial, Industrial), By Region, And Segment Forecasts, 2024-2030. https://www.grandviewresearch.com/industry-analysis/hvac-rental-services-market-report

[18] Present values convert flows of future costs or benefits to current values, accounting for inflation and the opportunity cost of having funds later versus now. Ecology uses a 1 percent discount rate to reflect the social rate of time preference capturing these time costs, based on the historic 20-year average real rate of return on US Treasury I Bonds. US Treasury Department, 2025. I bonds interest rates. https://www.treasurydirect.gov/savings-bonds/i-bonds/i-bonds-interest-rates/.

4.2.6 Making additional clarifications or corrections

We do not expect these proposed amendments to result in costs or benefits beyond clarity and using up-to-date naming.

4.2.7 Environmental justice benefits

The benefits discussed above would go to a broad range of entities, including:

- Facilities performing leak repairs.
- Manufacturers of automatic commercial ice machines.
- Manufacturers and sellers of refrigeration equipment.
- Businesses renting or leasing refrigeration equipment.
- Manufacturers and sellers of air conditioning equipment.
- Businesses renting or leasing air conditioning equipment.

Due to the variability of benefits across individual entities, depending on their equipment choices and timing (see discussion in previous sections), it is not possible to confidently identify specific distributional impacts of the proposed rule amendments. Distributional impacts are how different people are affected, such as how benefits (avoided costs) of different sizes are spread across business owners, or across consumers of products sold by those businesses. This is particularly the case for consumers, as each consumer product type that uses refrigeration or air conditioning equipment could have a different set of target consumers. We note, however, that to the extent a community may rely on a smaller number of facilities or businesses (e.g., fewer grocery stores), they may benefit more when those businesses avoid costs.

Chapter 5: Cost-Benefit Comparison and Conclusions

5.1 Summary of costs and benefits of the proposed rule amendments

The proposed rule amendments are not likely to result in any costs, as discussed in Chapter 3. They are likely to result in the following benefits.

- Amending the definition of "mothballing": **Avoided costs associated with downtime** for repairs lasting longer than 14 or 45 days (the time limits for repairs under the baseline). These systems need to be mothballed to remain in compliance with the baseline rule. System owners then need to wait until a total of 60 days has elapsed before operating the repaired system.
- Amending the definition of "new refrigeration equipment": **Assurance that retrofits (to reduce greenhouse gas emissions from a system) that do not change the cooling load are clearly allowed under the rule**.
- Aligning prohibitions for automatic commercial ice machines with the EPA Technology Transitions rule: Extending the time before prohibition by two years, **allowing manufacturers and facilities a longer planning timeframe**.
- Establishing consistent two-year sell-through provisions for refrigeration and air conditioning equipment:
    - **Avoided costs of uncertainty** associated with unimplementable baseline rule language, including disrupted supply chains, cost increases to manufacturers or equipment purchasers, and potential difficulty replacing, maintaining, and servicing affected equipment.
    - **Avoided potential interpretation of the baseline as having no sell-through provision** for:
        - New ice rinks.
        - New variable refrigerant flow or volume systems.
    - **Avoided shorter sell-through provisions of only one year** for:
        - New retail refrigeration and chillers.
        - New commercial cold storage.
        - New industrial process refrigeration, excluding chillers.
        - Other new air conditioning in residential and nonresidential uses.
    - Note that Ecology issued interpretive guidance to clarify Ecology's interpretation of the baseline rule (sell-through periods beginning on the applicable prohibition date) while this formal rulemaking sought to make these changes to the rule language, so the rulemaking is unlikely to provide additional benefits, beyond Ecology's interpretive guidance and enforcement discretion.
- Allowing rental and lease of refrigeration and air conditioning equipment prohibited from sale:

- **Avoiding the loss of the refrigeration rental market**. Compatible data were only available for the refrigerated truck rental market, the loss of which would have had a 20-year present value of $993.7 million.
- **Avoiding the loss of the air conditioning rental market**, the loss of which would have had a 20-year present value of $231.6 million.
- The above benefits would fall over time as rental sectors are able to purchase new equipment to replace their stock, or if new businesses enter the market, at a later date. But this would come at a cost of replacing entire rental stocks, which may not be financially feasible.

5.2 Conclusion

We conclude, based on a reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the proposed rule amendments, as compared to the baseline, that the benefits of the proposed rule amendments are greater than the costs.

Chapter 6: Least-Burdensome Alternative Analysis

6.1 Introduction

RCW 34.05.328(1)(e) requires Ecology to "…[d]etermine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection." The referenced subsections are:

> (a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements;
>
> (b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule;
>
> (c) Provide notification in the notice of proposed rulemaking under RCW 34.05.320 that a preliminary cost-benefit analysis is available. The preliminary cost-benefit analysis must fulfill the requirements of the cost-benefit analysis under (d) of this subsection. If the agency files a supplemental notice under RCW 34.05.340, the supplemental notice must include notification that a revised preliminary cost-benefit analysis is available. A final cost-benefit analysis must be available when the rule is adopted under RCW 34.05.360;
>
> (d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

In other words, to be able to adopt the rule, we must determine that the requirements of the rule are the least burdensome set of requirements that achieve the goals and objectives of the authorizing statute(s).

We assessed alternative proposed rule content, and determined whether they met the goals and objectives of the authorizing statute(s). Of those that would meet the goals and objectives, we determined whether those chosen for inclusion in the proposed rule amendments were the least burdensome to those required to comply with them.

6.2 Goals and objectives of the authorizing statute

The authorizing statute for this rule is Chapter 70A.60 RCW, Hydrofluorocarbons – Emissions Reduction. Its goals and objectives are to reduce hydrofluorocarbon emissions by:

- Establishing a maximum global warming potential threshold for HFCs.
- Regulating HFCs in air conditioning and heat pumps.
- Applying the same emission control requirements to HFCs as apply to ozone-depleting substances.

- Establishing a program to reduce leaks and encourage refrigerant recovery.
- Directing the state building code council to adopt codes that are consistent with the goal of reducing greenhouse gas emissions associated with HFCs.
- Establishing a state procurement preference for recycled refrigerants.
- Allowing the consideration of global warming potential of refrigerants used in equipment under utility conservation programs.

6.3 Alternatives considered and why they were excluded

We considered the following alternative rule requirements, and did not include them in the proposed rule amendments. Each section below explains why we did not include these alternatives.

- Adopting a higher global warming potential for data center refrigerants.

6.3.1 Adopting a higher global warming potential for data center refrigerants

During rule development, we considered amending the rule to match EPA Technology Transitions rule requirements for refrigerants in computer rooms, data centers, and information technology equipment cooling. This would have established a prohibition on refrigerants in this equipment with a global warming potential greater than 700, effective January 1, 2027. Our baseline rule includes a global warming potential threshold of 150 for this equipment, as it is included in the category of industrial process refrigeration, with an effective date of January 1, 2025.

This topic is highly complex, and its context is developing over time. This can be seen in the differences in how equipment is treated under:

- EPA's Significant New Alternatives (SNAP) program (industrial process refrigeration),
- EPA's Technology Transitions rule (separate category),
- EPA's Managing Use and Reuse Rule (air conditioning), and
- California Air Resources Board (residential and light commercial air conditioning).

It is also evident in stakeholder concerns received by Ecology during rule development, expressing concern about the feasibility of compliance with the baseline rule.

Ecology categorizes computer rooms, data centers, and information technology equipment cooling in the baseline rule as industrial process refrigeration. This is because of the similarly complex nature of the cooling equipment and associated leak rates. It is also consistent with EPA's SNAP Program.[19] We acknowledge that due to factors such as available technologies,

[19] 40 C.F.R. Part 82, Subpart G.

building code updates, and equipment testing and development, the ability of facilities to comply with this requirement is uncertain and developing. Building code updates are being made in Washington, allowing for the higher charge sizes required to run this powerful equipment using lower global warming potential refrigerants. Ecology understands that equipment testing following updated codes and approvals and subsequent production of new equipment following these codes will take time.

Rather than making interim changes to this requirement in the proposed rule amendments, Ecology will continue to investigate and evaluate the ability of covered entities to use lower global warming potential refrigerants, and what timelines are feasible. Ecology plans to form a workgroup with manufacturers and interested parties to assess emerging technologies and industry timelines. We believe it is essential to have additional opportunities for input and review by interested parties to appropriately regulate this sector and more effectively meet the statutory goal of setting appropriate global warming potential thresholds for refrigerants in these uses.

Ecology also issued an interpretive statement on February 6, 2025 regarding the enforcement of HFC restrictions in certain data center cooling equipment.[20] The statement highlighted that while the prohibition on certain HFCs in new industrial process refrigeration equipment remains effective January 1, 2025, Ecology will exercise enforcement discretion specifically for data center refrigeration equipment (not including chillers), delaying enforcement until January 1, 2027. This discretion provides time for manufacturers to adapt to new lower global warming potential refrigerants while maintaining compliance with state and federal regulations.

6.4 Conclusion

After considering alternatives, within the context of the goals and objectives of the authorizing statute, we determined that the proposed rule represents the least-burdensome alternative of possible rule requirements meeting the goals and objectives.

[20] WA Department of Ecology, 2025. Interpretive Statement on the Effective Date of HFC Prohibitions About Data Center Cooling Equipment. February 24, 2025. https://apps.ecology.wa.gov/publications/documents/2514012.pdf.

Chapter 7: Regulatory Fairness Act Compliance

We analyzed the costs of the proposed rule amendments in Chapter 3 of this document. We determined that the proposed rule amendments would not result in costs compared to the baseline.

The Regulatory Fairness Act (RFA) requires Ecology to prepare a Small Business Economic Impact Statement if the proposed rule will impose more than minor costs on businesses in an industry (RCW 19.85.030(1)(a)). As the proposed rule amendments would not impose any costs, Ecology is not required to complete the additional analyses required under the Regulatory Fairness Act and complete a Small Business Economic Impact Statement.

The RFA also states that it does not apply to the adoption of a rule if Ecology is able to demonstrate that the proposed rule does not affect small businesses (RCW 19.85.025(4)). As the proposed rule amendments would not impose any costs, Ecology is exempt from performing additional analyses under the Regulatory Fairness Act.

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Appendix A: Administrative Procedure Act (RCW 34.05.328) Determinations

A. RCW 34.05.328(1)(a) – Clearly state in detail the general goals and specific objectives of the statute that this rule implements.

See Chapter 6.

B. RCW 34.05.328(1)(b) –

1. Determine that the rule is needed to achieve the general goals and specific objectives of the statute.

See Chapters 1 and 2.

2. Analyze alternatives to rulemaking and the consequences of not adopting this rule.

This rule supports the transition away from using potent greenhouse gases known as hydrofluorocarbons (HFCs) in certain products and equipment in Washington. HFCs are climate "super pollutants" with global warming impacts up to thousands of times that of carbon dioxide.

Chapter 173-443 WAC establishes requirements for adopting more climate-friendly refrigerants and substitutes in new air conditioning and refrigeration equipment, and in products like aerosol propellants and foam. This chapter also establishes a refrigerant management program to address refrigerants leaking from existing large equipment in Washington.

Therefore, not adopting this rule can increase climate impacts and delay the state's progress in transitioning away from these super pollutants. Transitioning away from the use of super-polluting HFCs through this rule will reduce Washington's overall greenhouse gas emissions by about one million metric tons a year by 2035. Amendments to Chapter 173-443 WAC are also necessary to improve implementation of the statute.

Please see the Least Burdensome Alternative Analysis, Chapter 6 of this document, for discussion of alternative rule content considered.

C. RCW 34.05.328(1)(c) - A preliminary cost-benefit analysis was made available.

When filing a rule proposal (CR-102) under RCW 34.05.320, Ecology provides notice that a preliminary cost-benefit analysis is available. At adoption (CR-103 filing) under RCW 34.05.360, Ecology provides notice of the availability of the final cost-benefit analysis.

D. RCW 34.05.328(1)(d) – Determine that probable benefits of this rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

See Chapters 1 – 5.

E. RCW 34.05.328 (1)(e) - Determine, after considering alternative versions of the analysis required under RCW 34.05.328 (b), (c) and (d) that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated in Chapter 6.

Please see Chapter 6.

F. RCW 34.05.328(1)(f) - Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

This rule does not require any party to take an action that violates existing federal or state laws. While our law establishes timelines that are ultimately more lenient than federal rules, our laws do not require actions that would directly violate federal law, i.e. *requiring* them to purchase a refrigerant that exceeds federal statutes. In practice, our law says you must purchase a system using a refrigerant *below* a certain global warming potential, while the federal limit establishes a (sometimes) lower benchmark. The entity can readily meet both state and federal requirements.

G. RCW 34.05.328 (1)(g) - Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law.

No, this rule does not impose more stringent performance requirements on private entities than on public entities.

H. RCW 34.05.328 (1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter.

Yes, in this rulemaking, Ecology is not planning to consider changes to align with the following provisions in the Environmental Protection Agency's (EPA) rules, as we have reviewed available technologies to meet our rule requirements and provided a variance process to address specialized equipment that are unable to meet our requirements by the prohibition date in the rule:

- The EPA created a new refrigeration application end use, "Data centers, computer room air conditioning, and information technology equipment cooling," separate to industrial process refrigeration, commercial refrigeration, and air conditioning; whereas Ecology considers this type of cooling to fall into the industrial process refrigeration category.
- EPA applies a higher global warming potential threshold for the "data centers, computer room air conditioning, and information technology equipment cooling" category with a compliance date two years after that of Ecology.

While Ecology is not amending its rule to align with these provisions in EPA's rule, the potential of future rulemaking to establish long-term regulations for data center emissions reductions will be evaluated. Ecology also plans on forming a workgroup

with manufacturers and interested parties to assess emerging technologies and industry timelines.

Furthermore, the Environmental Protection Agency's (EPA) sell-through provisions may differ from ours. Some provisions in EPA's rule allow for a three-year sell-through provision, which is longer than Ecology's proposed two-year sell-through provision.

In cases where restriction dates are earlier than, or the same as, EPA's restriction date, sell-through provisions will end sooner than EPA's. For provisions where EPA's restriction date is earlier than Ecology's, such as for "other types of air conditioning", EPA's sell-through restriction will end before Ecology's provision.

For VRF systems, EPA provides a one-year "sell-through" provision to allow for installation of equipment to be sold and installed. This period is shorter than Ecology's two-year sell-through provision.

- If **yes**, the difference is justified because of the following:

  ☒ (i) A state statute explicitly allows Ecology to differ from federal standards. [RCW 70A.60.030(7)(f) and RCW 70A.60.060(5)]

  ☐ (ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated in Chapter 6.

I. RCW 34.05.328 (1)(i) – Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same subject matter.

We are coordinating this rule to the maximum extent practicable, with other federal, state, and local laws applicable to the same subject matter.