Concise Explanatory Statement Chapter 173-443 WAC, Hydrofluorocarbons (HFCs) and Other Fluorinated Greenhouse Gases and Chapter 173-455, WAC Air Quality Fee Rule

Summary of Rulemaking and Response to Comments

Washington State Department of Ecology
Olympia, Washington
November 2023, Publication 23-02-109

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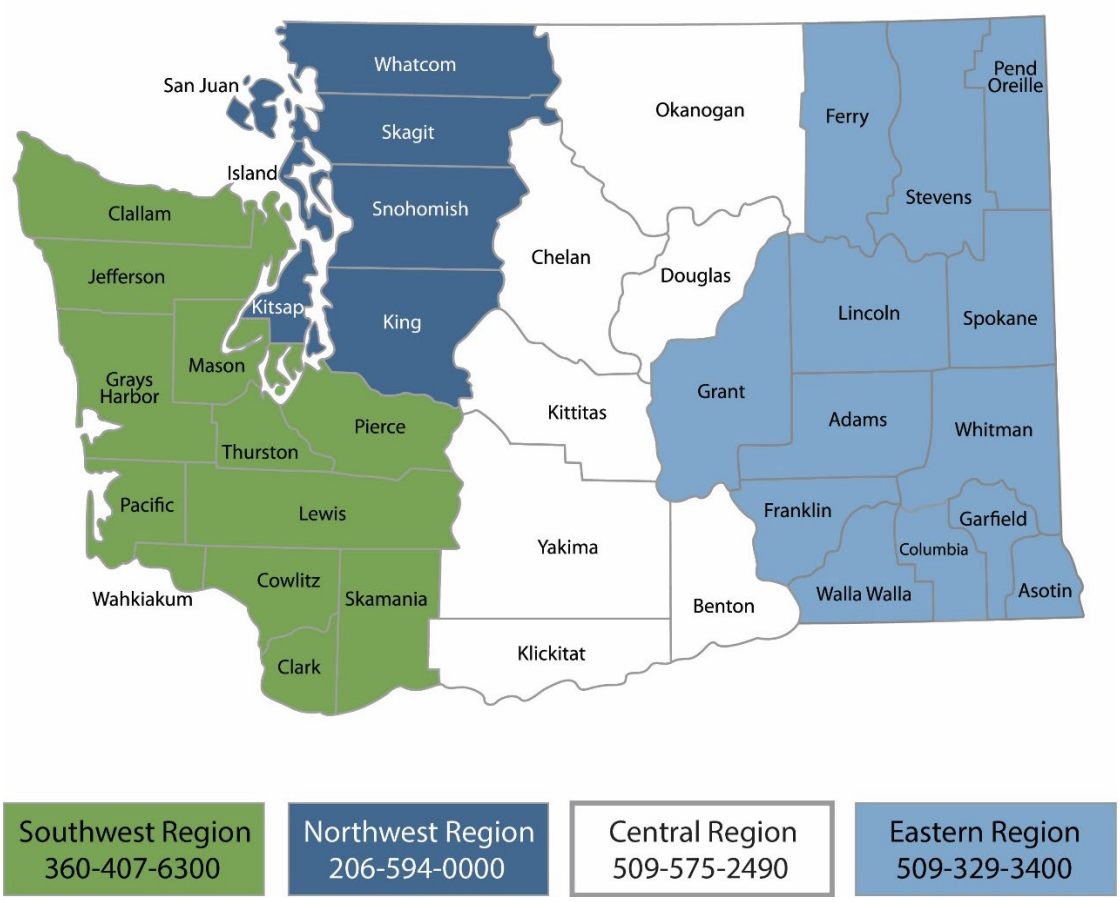
[1] http://www.ecology.wa.gov/contact

Department of Ecology's Regional Offices

Map of Counties Served



Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Concise Explanatory Statement

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

Climate Pollution Reduction Program
Washington State Department of Ecology
Olympia, WA

November 2023 | Publication 23-02-109

DEPARTMENT OF
ECOLOGY
State of Washington

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Acronyms

CARB	**California Air Resources Board**
EPA	**U.S. Environmental Protection Agency**
GWP	**Global Warming Potential**
HFC	**Hydrofluorocarbon**
RMP	**Refrigernant Management Program**
SBCC	**Washington State Building Code Council**

Introduction

The purpose of a Concise Explanatory Statement is to:

- Meet the Administrative Procedure Act (APA) requirements for agencies to prepare a Concise Explanatory Statement (RCW 34.05.325).
- Provide reasons for adopting the rule.
- Describe any differences between the proposed rule and the adopted rule.
- Provide Ecology's response to public comments.

This Concise Explanatory Statement provides information on The Washington State Department of Ecology's (Ecology) rule adoption for:

Title:	Hydrofluorocarbons and Other Fluorinated Greenhouse Gases and Air Quality Fee Rule
WAC Chapter(s):	WAC 173-443 WAC 173-455
Adopted date:	November 30, 2023
Effective date:	December 31, 2023

To see more information related to this rulemaking or other Ecology rulemakings please visit our website: https://ecology.wa.gov/About-us/How-we-operate/Laws-rules-rulemaking.

Reasons for Adopting the Rule

In 2021, the Legislature passed Hydrofluorocarbons – Emissions Reduction (Chapter 70A.60 RCW) to reduce greenhouse gas emissions from hydrofluorocarbons (HFCs) and other high global warming potential (GWP) refrigerants in Washington.

The 2021 law authorized Ecology to establish GWP thresholds for refrigerants used in new stationary refrigeration and air conditioning equipment and to establish a refrigerant management program to reduce greenhouse gas emissions from large stationary refrigeration and air conditioning systems operating in Washington.

The law requires Ecology to adopt rules that:

- Enforce the statutory GWP threshold for HFCs used in new refrigeration equipment in ice rinks.
- Establish a refrigerant management program for large stationary refrigeration and air conditioning systems.
- Amend product labeling and disclosure requirements.

The law authorizes Ecology to adopt rules that:

- Establish maximum GWP thresholds for HFCs used in new stationary refrigeration and air conditioning equipment.
- Establish new reporting, labeling, and recordkeeping requirements.
- Establish required service practices for technicians who service stationary refrigeration and air conditioning systems.
- Establish fees to support the refrigerant management program.

Differences Between the Proposed Rule and Adopted Rule

RCW 34.05.325(6)(a)(ii) requires Ecology to describe the differences between the text of the proposed rule as published in the Washington State Register and the text of the rule as adopted, other than editing changes, stating the reasons for the differences.

There are some differences between the proposed rule filed on July 13, 2023, and the adopted rule filed on November 29, 2023. Ecology made these changes for all or some of the following reasons:

- In response to comments that we received.
- To ensure clarity and consistency.
- To meet the intent of the authorizing statute.

The following content describes the changes and Ecology's reasons for making them. Where a change was made solely for editing or clarification purposes, we did not include it in this section unless it was in response to a comment.

Section	Change	Reason
WAC 173-443-020(4)	Added "with a full charge of 50 or more pounds and that uses a refrigerant with a global warming potential (GWP) of 150 or more"; and	In response to a comment to clarify that the refrigerant management program applies to equipment with 50 or more pounds of refrigerant
WAC 173-443-030 definition of "air conditioning equipment" or "air conditioning system"	Added "or air conditioning appliance" to the defined term; Added "It is a combination of interconnected refrigerant-containing part constituting one closed circuit in which a refrigerant is circulated or the purpose of extracting heat"; and Added "Where an air conditioning system is used for more than one application or end-use, the applicability of the prohibitions set forth in WAC 173-443-040 is determined by the application or end-use for which the majority of the operating capacity is used"	In response to comments to clarify differences, if any, between the terms; In response to comments to clarify that a single refrigerant circuit constitutes a refrigeration or air conditioning system; and In response to comments to clarify how to consider a piece of equipment used for more than one end-use
WAC 173-443-020, -105, -115, -125, -135, -145, -155, -165, -175, -185, -195, -205, -215, and -225	Removed all uses of "high-GWP" and replaced with "GWP of 150 or more"	In response to comments that "high GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-030, definition of "capital cost"	Added recognition for "design, environmental consulting" and "licensing fees" and "financing costs"	In response to a comment to clarify costs for intangible items such as consulting and financing
WAC 173-443-030, definition of "chiller"	Added "Where a chiller is used for more than one application, it will be	In response to comments to clarify how to consider a

Section	Change	Reason
	considered the application for which the majority of the operating capacity is used"	piece of equipment used for more than one end-use
WAC 173-443-030, definition of "commercial refrigeration"	Added definition for "commercial refrigeration" as "refrigeration equipment used in the retail food and cold storage sectors. Retail food equipment includes the refrigeration equipment found in supermarkets, convenience stores, restaurants, and other food service establishments. Cold storage includes the refrigeration equipment used to store meats, produce, dairy products, and other perishable goods"	In response to comments to align terms with those used in EPA's rule
WAC 173-443-030, definition of "full charge, "optimal charge," or "critical charge"	Removed "optimal charge or "critical charge" from the defined term	To add clarification
WAC 173-443-030, definition of "high-GWP refrigerant"	Removed the term "high-GWP refrigerant"	In response to comments that "high GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-030, definition of "industrial process refrigeration"	Changed "appliances" to "equipment" and replaced "Where one piece of equipment is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration if 50 percent or more of its operating capacity is used for industrial process refrigeration" with "Where a chiller is used for more than one application or end-use, the application of the prohibitions set forth in WAC 173-443-040 is determined by	In response to a comment to clarify how to consider a piece of equipment used for two or more applications

Section	Change	Reason
	the application or end-use for which the majority of the operating capacity is used"	
WAC 173-443-030, definition of "leak rate calculation"	Added the formula for the 12-month rolling average leak rate calculation	To clarify requirements
WAC 173-443-030, definition of "manufacturer"	Added "For purposes of WAC 173-443-065(3) and WAC 173-443-075(2), a manufacturer is the installer of the equipment"	In response to comments to clarify labeling responsibilities for field-charged equipment
WAC 173-443-030, definition of "mission-critical military end-uses"	Added definition for "mission-critical military end-uses" to mean "those uses of regulated substances, by an agency of the Federal Government responsible for national defense, that have a direct impact on mission capability, as determined by the U.S. Department of Defense, including, but not limited to, uses necessary for development, testing, production, training, operation, and maintenance of Armed Forces deployable/expeditionary support equipment, munitions, and command and control systems."	To support the addition of an exemption for critical military uses made in response to a comment
WAC 173-443-030, definition of "new air conditioning equipment"	Added "or existing" to (a); and Removed "A system in an existing facility that undergoes a retrofit" from (b)	In response to comments that retrofit equipment should not be considered "new"
WAC 173-443-030, definition of "new refrigeration equipment"	Added "or existing" to (a) Removed "A system in an existing facility that undergoes a retrofit" from (b); and	In response to comments to clarify "new refrigeration equipment" and "commercial refrigeration";

Section	Change	Reason
	Removed "commercial refrigeration" and revised the order of end-uses	In response to comments that retrofit equipment should not be considered "new"
WAC 173-443-030, definition of "other refrigeration" or "other refrigeration equipment"	Removed "commercial refrigeration" and added "refrigeration" at the end of references to "retail food"	To improve clarity and consistency throughout the chapter
WAC 173-443-030, definition of "refrigeration equipment" or "refrigeration system"	Added "or refrigeration appliance" to the defined term; and Added "It is a combination of interconnected refrigerant containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat"	In response to comments to clarify "system" and "equipment" and "appliance In response to comments to clarify that a single refrigeration circuit constitutes a refrigeration or air conditioning system; and
WAC 173-443-040(2) and (3), Tables 2 and 3	Added "or retrofit" Removed all references to "charge capacity" and replaced with "full charge"	In response to comments that retrofit equipment should not be considered "new"; In response to comments for clarity about "charge capacity" and "full charge"
WAC 173-443-040(2) and (3) Tables 2 and 3	Added a new row for retrofit equipment under each end-use with an effective date of January 1, 2029	In response to comments that retrofit equipment should not be considered new or to establish a later effective dates for retrofits
WAC 173-443-040(2) through (4), Tables 2 through 4	Changed "Refrigerants with a GWP of 150 or more" to "Refrigerants with a GWP greater than 150" Changed "Refrigerants with a GWP of 750 or more" to "Refrigerants with a GWP greater than 750"	To reflect statutory language
WAC 173-443-050(1), Table 1	Combined the first two exemptions for aerosol propellants into one	In response to a comment to correct a typographical error

Section	Change	Reason
WAC 173-443-050(2), Table 2	Added "commercial refrigeration" as an umbrella term for retail food refrigeration and cold storage warehouses; and Added "New or retrofit" to end-use column	In response to a comment to use EPA terminology and to improve clarity To support revisions to the retrofit equipment category
WAC 173-443-050(2), Table 2	Added "or retrofit"	In response to comments that retrofit equipment should not be considered "new"; To support revisions to the retrofit equipment category
WAC 173-443-050(2) and (3), Tables 2 and 3	Added "approved" to qualify the building permit exemption; and Added "or mechanical permits approved" to the building permit exemption	In response to comments to add mechanical permits to the building permit exemption
WAC 173-443-050(2) and (3), Tables 2 and 3	Added "mission-critical military end-uses, as defined in WAC 173-443-030," to all refrigeration end-uses	In response to a comment to add an exemption for critical military uses
WAC 173-443-065	Added "or retrofit"	In response to comments that retrofit equipment should not be considered "new"; To support adding retrofit equipment as a separate equipment category
WAC 173-443-065(2)	Added a new subsection: "Sell through provision. Refrigeration equipment that is manufactured prior to January 1, 2024, may be sold, leased, rented, installed, or otherwise introduced into Washington commerce until January 1, 2026."	In response to a comment to add a definitive end date to the sell through period and for consistency with EPA rule
WAC 173-443-065(3)	Added "For field-charged or field-erected equipment, this labeling must be completed	In response to comments to clarify labeling and other responsibilities for field-

Section	Change	Reason
	by the equipment installer at the time of installation."	charged or field-erected equipment
WAC 173-443-065(4)	Added "or retrofit"	In response to comments that retrofit equipment should not be considered "new"; To support adding retrofit equipment as a separate equipment category
WAC 173-443-075	Added "or retrofit"	In response to comments that retrofit equipment should not be considered "new"; To support adding retrofit equipment as a separate equipment category
WAC 173-443-075(2)	Added new subsection: "Sell through provision. Air conditioning equipment that is manufactured prior to January 1, 2024, may be sold, leased, rented, installed, or otherwise introduced into Washington commerce until January 1, 2026."	In response to a comment to add a definitive end date to the sell through period and for consistency with EPA rule
WAC 173-443-075(3)	Added "For field-charged or field-erected equipment, this labeling must be completed by the equipment installer at the time of installation."	In response to comments to clarify labeling and other responsibilities for field-charged or field-erected equipment
WAC 173-443-075(3)(a)(iii)	Added "For field-erected or field-charged equipment, this is the date of first charge	To clarify the date of manufacture for field-erected or field-charged equipment
WAC 173-443-075(4)	Added "or retrofit"	In response to comments that retrofit equipment should not be considered "new"; To support adding retrofit equipment as a separate equipment category
WAC 173-443-105(1)	Removed "commercial"; and	In response to a comment to use EPA terminology and to improve clarity and

Section	Change	Reason
	Changed all uses of "high-GWP refrigerant" to "a refrigerant with a GWP of 150 or more"	consistency throughout the chapter; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-105(2)(a) and (c)	Added "and that uses" Changed all uses of "high-GWP refrigerant" to "a refrigerant with a GWP of 150 or more"	To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-115(1) and (2) and (3)	Added "and that uses"; and Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"	To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-115(1)(b) and (2)(b) and (3)(b)	Added "refrigeration or air conditioning"	In response to a comment to clarify the event that triggers registration in the refrigerant management program
WAC 173-443-115(5)	Added "refrigeration or air conditioning systems" before "operations"	In response to comments to clarify meaning of "beginning operations"
WAC 173-443-115(6)(b)(ix)	Added new subsection (6)(b)(ix): "Operational status. The operational status may be reported as operated year-round, mothballed, standby or emergency, not operated year-round, or retired."	In response to a comment to add operational status to equipment registration information
WAC 173-443-125(1) and (2)	Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more" in (1); and Removed the term "high-GWP" in (2)	In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-135(1) and (2)	Added "and that uses"	To improve clarity; and

Section	Change	Reason
	Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"	In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-135(1)(b)	Added "A facility with a regulated refrigeration and a regulated air conditioning system pays a single initial implementation fee for the facility."	In response to comments to clarify if a facility pays a single fee for the facility or for each piece of equipment
WAC 173-443-135(2(b)	Changed "refrigeration or air conditioning system" to "regulated refrigeration system or regulated air conditioning system" and added "refrigerant" before "charge size"	For clarity
WAC 173-443-135(3)	Added new subsection (3): "There are no initial or annual implementation fees for facilities with refrigeration systems or air conditioning systems with a full charge of less than 200 pounds of refrigerant."	In response to a comment to clarify that a facility with equipment having less than 200 pounds of refrigerant does not pay fees
WAC 173-443-135(4)	Added "initial or annual"	To improve clarity
WAC 173-443-145(1)	Removed "capacity"	In response to comments to use consistent terms
WAC 173-443-145(1)(a)	Changed "By" to "Beginning"; Added "and that uses"; and Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"	In response to comments to comments to clarify when required leak inspections begin: and To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-145(1)(a)(i)	Added "full"; and Added "If a certified technician performs the	To improve clarity; and

Section	Change	Reason
	inspection, the inspection may be conducted using methods determined appropriate by the certified technician."	In response to a comment to allow more methods for leak inspections
WAC 173-443-145(2)(a)	Removed "capacity"; Added "and that uses"; Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"; and Removed "high-GWP" in (b)	In response to comments to use consistent terms; and To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-145(2)(a)(B)(ii) and (2)(b)	Changed "low-GWP refrigerant" to a refrigerant "with a GWP of less than 150" Removed "high-GWP" in (b)	In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-145(2)(d)	Added "or as determined by a certified technician"	To support change made in WAC 173-443-145(1)(a)(i), in response to comment to add additional leak inspection methods
WAC 173-443-145(3)(b) and (4)(b)	Changed "By" to "Beginning"; Changed "2024" to "2026" in (3)(b); and Changed "2024" to "2028 in (4)(b)	In response to a comment to clarify when leak inspections start; and In response to a comment and correct an error in the leak inspection start dates for equipment with less than 1,500 pounds of refrigerant
WAC 173-443-145(7)	Added new subsection (7): "Leak inspection requirements for systems in standby or emergency status. The requirements of this section apply to refrigeration or air conditioning systems in standby or emergency status."	In response to a comment to clarify leak inspection requirements for standby systems
WAC 173-443-155(1)	Added "and that uses"; and	To improve clarity; and

Section	Change	Reason
	Changed all uses of "low-GWP refrigerant" to a refrigerant "with a GWP of less than 150"	In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-433-155(3)	Replaced "the" with "each"	In response to a comment to clarify whether notification is required after each leak rate threshold exceedance
WAC 173-443-155(3)(a)	Added "retail food refrigeration system" and "or cold storage warehouse" and removed "commercial or retail food refrigeration"	To improve clarity
WAC 173-443-165(1)	Added "and that uses"; and Changed "high-GWP refrigerant" to "a refrigerant with a GWP of 150 or more"	To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-165(7)(b)(i) and (ii) and (iii)	Added "as follows: (i) Within 28 days of the initial leak detection if the repair timeframe is 14 days under subsection (2) of this section; or (ii) Within 90 days of the initial leak detection if the repair timeframe is if the repair timeframe is 45 days under subsection (3) of this section; or (iii) Within 240 days of the initial leak detection if the leak repair timeframe is 120 days under subsection (4) of this section."	In response to a comment to clarify the timeframe for repair attempts after an unsuccessful leak repair
WAC 173-443-175(1)	Added "and that uses"; and Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"	To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more

Section	Change	Reason
WAC 173-443-185(1) and (3)	Added "and that uses" and Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"	To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-185(3)(a)(x)	Added new subsection: "Operational status. The operational status may be reported as operated year-round, mothballed, standby or emergency, not operated year-round, or retired."	To support adding "operational status" to refrigerant management registration requirements in WAC 173-443-115(6)(b), in response to a comment
WAC 173-443-195(1)	Added "and that uses"; and Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"	To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-195(1)(b)	Added "and leak rate calculations, as defined in WAC 173-443-030"	In response to a comment to clarify recordkeeping requirements for leak rate calculations
WAC 173-443-195(1)(g)	Removed "low-GWP" and replaced with "with a GWP of less than 150"	To support removal of "high GWP" throughout rule and replace with the applicable GWP value
WAC 173-443-205	Added "and that uses"; and Changed all uses of "high-GWP refrigerant" to a "refrigerant with a GWP of 150 or more"	To improve clarity; and In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-215(1) and (2)	Changed all uses of "high-GWP" to a "refrigerant with a GWP of 150 or more"	In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more
WAC 173-443-225(1) and (2)	Changed all uses of "high-GWP" to a "refrigerant with a GWP of 150 or more"	In response to comments that "high-GWP" has not been recognized as a GWP of 150 or more

Topics

We grouped and organized comments and responses together by topic. We used the following topics to group comments together:

- Costs for businesses
- Costs for consumers
- Definitions
- Federal HFC transition
- General opposition
- General support
- General technical concerns or questions
- Global Warming Potential (GWP) thresholds
    - GWP – building codes
    - GWP – effective dates
    - GWP – exemptions
    - GWP – general
    - GWP – retrofits
    - GWP – small cans of automotive refrigerant
    - GWP – technical concerns
    - GWP –-variances
- Refrigerant Management Program (RMP)
    - RMP – fees
    - RMP – general
    - RMP – leak inspections
    - RMP – leak rate thresholds
    - RMP – leak rates
    - RMP – leak repair
    - RMP – recordkeeping and reporting
    - RMP – start date
    - RMP – technical concerns
    - RMP – terminology
    - RMP – leak rate calculations

List of Commenters

We accepted comments during a formal public comment period that ran from July 13 to September 10, 2023. We received 42 comment submissions during the formal public comment period. Most submissions included several unique comments. These unique comments were organized by topic. We also accepted oral testimony at a public hearing held on August 24, 2023. This document responds to the public comments we received during the formal public comment period, including those received during the public hearing. We summarized comments under each topic with edits for clarity. You can see original content of the comments we received at our online public comments website. These comments remain available online for two years after the rule adoption date. We grouped comments and organized them by topic. This is a complex rulemaking and many issues and questions span multiple topics.

Associated Comment Code	Topic	Commenter	Affiliation
I- 1 -1	General opposition	Doug Myers	
I- 2 -1	General opposition	Andrew Richardson	
I- 3 -1	Costs for consumers	Duane Goehner	
I- 4 -1	General opposition	William The United States, and Craven	
I- 5 -1	Costs for consumers	Alan McCrory	
I- 6 -1	Costs for consumers	Julie Reddick	
I- 7 -1	General support	Ed Norris	
I- 8 -1	Costs for consumers	Deana Riley	
I- 9 -1	GWP - exemptions	Ertan Serince	
I- 10 -1	General support	Patricia Davis	
I- 11 -2	Definitions	Eric Vander Mey	
I- 11 -3	GWP - effective dates	Eric Vander Mey	
I- 11 -4	GWP - technical concerns	Eric Vander Mey	
I- 11 -5	GWP - exemptions	Eric Vander Mey	
I- 11 -6	Definitions	Eric Vander Mey	
I- 12 -1	General support	Devon Kellogg	
A- 1 -2	Costs for businesses	Matt Harris	
A- 1 -3	GWP - technical concerns	Matt Harris	
A- 1 -4	GWP - technical concerns	Matt Harris	
A- 1 -5	GWP - technical concerns	Matt Harris	
A- 1 -6	GWP - technical concerns	Matt Harris	
A- 1 -7	RMP – fees	Matt Harris	
A- 2 -2	Costs for businesses	Senators Shelly Short and Matt Boehnke	WA State Republican Caucus
A- 3 -1	GWP - technical concerns	Amy Speargas Whiteman	Washington State University

Associated Comment Code	Topic	Commenter	Affiliation
A- 4 -2	Request for extension	Karen Coulter	Department of Defense
A- 5 -1	RMP - recordkeeping and reporting	Joe Cook	Seattle-Tacoma International Airport
A- 6 -2	GWP - exemptions	Karen Coulter	Department of Defense
A- 6 -3	RMP - leak repair	Karen Coulter	Department of Defense
B- 1 -2	GWP - retrofits	John Keating	Honeywell
B- 1 -3	Definitions	John Keating	Honeywell
B- 1 -4	GWP - technical concerns	John Keating	Honeywell
B- 3 -2	RMP - technical concerns	Ted Atwood	Trakref
B- 3 -3	RMP-leak rate calculations	Ted Atwood	Trakref
B- 3 -4	Definitions	Ted Atwood	Trakref
B- 3 -5	Definitions	Ted Atwood	Trakref
B- 3 -6	RMP - technical concerns	Ted Atwood	Trakref
B-3-7	Definitions	Ted Atwood	Trakref
B-3-8	Definitions	Ted Atwood	Trakref
B- 3 -9	Definitions	Ted Atwood	Trakref
B-3-10	Definitions	Ted Atwood	Trakref
B- 3 -11	RMP - fees	Ted Atwood	Trakref
B-3-12	RMP – technical concerns	Ted Atwood	Trakref
B- 3 -13	Definitions	Ted Atwood	Trakref
B- 3 -14	RMP - leak inspections	Ted Atwood	Trakref
B- 3 -15	RMP - leak inspections	Ted Atwood	Trakref
B- 3 -16	RMP - technical concerns	Ted Atwood	Trakref
B- 3 -17	GWP - technical concerns	Ted Atwood	Trakref
B- 3 -18	RMP - technical concerns	Ted Atwood	Trakref
B- 3 -19	RMP - leak repair	Ted Atwood	Trakref
B- 3 -20	RMP - leak repair	Ted Atwood	Trakref
B- 3 -21	RMP - leak repair	Ted Atwood	Trakref
B- 4 -2	Federal HFC transition	Ron Shebik	Hussman Corporation
B- 4 -3	GWP - retrofits	Ron Shebik	Hussman Corporation
B- 5 -1	GWP - effective dates	Lisa Saponaro	Vertiv
B- 5 -2	GWP - retrofits	Lisa Saponaro	Vertiv
B- 6 -2	Federal HFC transition	Schuyler Pulleyn	Chemours
B- 6 -3	Definitions	Schuyler Pulleyn	Chemours
B- 6 -4	GWP - general	Schuyler Pulleyn	Chemours
B- 6 -5	GWP - technical concerns	Schuyler Pulleyn	Chemours
B- 7 -2	Federal HFC transition	Helen Walter-Terrinoni	Trane Technologies
B- 7 -3	GWP - technical concerns	Helen Walter-Terrinoni	Trane Technologies
B- 7 -4	GWP - technical concerns	Helen Walter-Terrinoni	Trane Technologies
B- 7 -5	GWP - technical concerns	Helen Walter-Terrinoni	Trane Technologies

Associated Comment Code	Topic	Commenter	Affiliation
B- 7 -6	GWP - technical concerns	Helen Walter-Terrinoni	Trane Technologies
B- 7 -7	GWP - technical concerns	Helen Walter-Terrinoni	Trane Technologies
B- 8 -2	GWP - exemptions	Bryan Mirick	WaferTech, LLC
B- 8 -3	RMP - technical concerns	Bryan Mirick	WaferTech, LLC
B- 8 -4	RMP - leak repair	Bryan Mirick	WaferTech, LLC
B- 9 -2	GWP - technical concerns	Richie Kaur	Effecterra, Inc.
B- 9 -3	GWP - technical concerns	Richie Kaur	Effecterra, Inc.
B- 9 -4	GWP - technical concerns	Richie Kaur	Effecterra, Inc.
B- 9 -5	GWP - technical concerns	Richie Kaur	Effecterra, Inc.
B- 9 -6	GWP - small cans of refrigerant for MVAC	Richie Kaur	Effecterra, Inc.
B- 9 -7	General support	Richie Kaur	Effecterra, Inc.
B- 9 -8	RMP - recordkeeping and reporting	Richie Kaur	Effecterra, Inc.
B- 10 -2	Federal HFC transition	Jennifer Butsch	Copeland
B- 10 -3	GWP - retrofits	Jennifer Butsch	Copeland
B- 11 -2	Federal HFC transition	Chris Forth	Johnson Controls
B- 11 -3	GWP - effective dates	Chris Forth	Johnson Controls
B- 11 -4	Federal HFC transition	Chris Forth	Johnson Controls
B- 11 -5	GWP - retrofits	Chris Forth	Johnson Controls
B- 12 -1	GWP - technical concerns	Steve Owen	
B- 13 -2	RMP - fees	Janna Loeppky	Avista Corporation
B- 13 -3	RMP - leak inspections	Janna Loeppky	Avista Corporation
B- 13 -4	RMP - recordkeeping and reporting	Janna Loeppky	Avista Corporation
B- 14 -2	RMP - terminology	Keilly Witman	Refrigerant Management Solutions
B- 14 -3	RMP - terminology	Keilly Witman	Refrigerant Management Solutions
B- 14 -4	RMP - leak repair	Keilly Witman	Refrigerant Management Solutions
B- 14 -5	RMP - recordkeeping and reporting	Keilly Witman	Refrigerant Management Solutions
B-14-6	RMP – technical concerns	Keilly Witman	Refrigerant Management Solutions
B- 14 -7	RMP-leak rate calculations	Keilly Witman	Refrigerant Management Solutions
B- 14 -8	RMP - leak rate thresholds	Keilly Witman	Refrigerant Management Solutions
B- 14 -9	RMP - leak repair	Keilly Witman	Refrigerant Management Solutions

Associated Comment Code	Topic	Commenter	Affiliation
B- 14 -10	RMP - fees	Keilly Witman	Refrigerant Management Solutions
B- 14 -11	RMP - start date	Keilly Witman	Refrigerant Management Solutions
O- 1 -2	Federal HFC transition	Brandon Houskeeper	Northwest Grocery Association
O- 1 -3	GWP - retrofits	Brandon Houskeeper	Northwest Grocery Association
O- 1 -4	RMP - leak rate thresholds	Brandon Houskeeper	Northwest Grocery Association
O- 2 -2	Costs for businesses	Carissa Linnane	Washington Air Conditioning Contractors Association
O- 2 -3	GWP - variances	Carissa Linnane	Washington Air Conditioning Contractors Association
O- 2 -4	Federal HFC transition	Carissa Linnane	Washington Air Conditioning Contractors Association
O- 3 -2	GWP - technical concerns	Nicholas Georges	Household & Commercial Products Association
O- 3 -3	GWP - small cans of refrigerant for MVAC	Nicholas Georges	Household & Commercial Products Association
O- 4 -2	Costs for businesses	Tammie Hetrick	Washington Food Industry Association
O- 4 -3	GWP - variances	Tammie Hetrick	Washington Food Industry Association
O- 4 -5	Federal HFC transition	Tammie Hetrick	Washington Food Industry Association
O- 5 -2	GWP - general	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -3	Federal HFC transition	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -4	GWP - retrofits	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -6	GWP - retrofits	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -7	GWP - technical concerns	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute

Associated Comment Code	Topic	Commenter	Affiliation
O- 5 -9	Definitions	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -10	GWP - retrofits	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -11	Federal HFC transition	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -12	GWP - exemptions	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -13	GWP - technical concerns	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -14	GWP - technical concerns	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -15	GWP - technical concerns	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 5 -16	Federal HFC transition	Samantha Slater	Air-Conditioning, Heating, and Refrigeration Institute
O- 6 -2	General support	Christopher Douglass	Environmental Investigation Agency
O- 6 -3	GWP - technical concerns	Christopher Douglass	Environmental Investigation Agency
O- 6 -6	RMP - leak rate thresholds	Christopher Douglass	Environmental Investigation Agency
O- 6 -7	RMP - technical concerns	Christopher Douglass	Environmental Investigation Agency
O- 6 -8	RMP - leak inspections	Christopher Douglass	Environmental Investigation Agency
O- 6 -9	GWP - effective dates	Christopher Douglass	Environmental Investigation Agency
O- 7 -1	Request for extension	Peter Godlewski	Association of Washington Business
O- 8 -1	RMP - technical concerns	Andrew Mayer	Port of Seattle
O- 9 -2	Federal HFC transition	Ranie Haas	
O- 10 -2	Federal HFC transition	Peter Godlewski	Association of Washington Business
O- 10 -3	RMP - leak rate thresholds	Peter Godlewski	Association of Washington Business
O- 10 -4	RMP-leak rate calculations	Peter Godlewski	Association of Washington Business
O- 10 -5	RMP - leak repair	Peter Godlewski	Association of Washington Business

Associated Comment Code	Topic	Commenter	Affiliation
O- 10 -6	RMP - leak inspections	Peter Godlewski	Association of Washington Business
O- 10 -7	RMP - recordkeeping and reporting	Peter Godlewski	Association of Washington Business
O- 10 -8	RMP - general	Peter Godlewski	Association of Washington Business
OTH- 1 -2	Definitions	John Wallace	University of Washington
OTH- 1 -3	GWP - building codes	John Wallace	University of Washington
OTH- 1 -4	GWP - effective dates	John Wallace	University of Washington
OTH- 1 -5	Federal HFC transition	John Wallace	University of Washington
OTH- 1 -6	RMP - leak inspections	John Wallace	University of Washington
OTH- 1 -7	RMP - leak repair	John Wallace	University of Washington
OTH-1-8	General questions or technical concerns	John Wallace	University of Washington

Response to Comments

We organized comments and responses by grouping them together by topic. Under each topic heading, you can see a summary of comments Ecology received for that topic followed by Ecology's specific responses to individual comments on that topic.

Costs for businesses

Commenters: Matt Harris (A-1-2), Senators Shelly Short and Matt Boehnke (A-2-2), Carissa Linnane (O-2-2), Tammy Hetrick (O-4-2)

Summary: Four commenters expressed concern that the rule will lead to significant costs to businesses, especially small food retailers and other small businesses.

Commenters assert that Ecology did not adequately consider the relatively larger economic impacts to small businesses as shown in the Preliminary Regulatory Analyses.

Response to comments: A-1-2, A-2-2, O-2-2, and O-4-2

Ecology performs regulatory analyses for most types of rulemakings. These regulatory analyses address the potential economic impacts of each rule, including on small businesses, as the term "small business" is defined in RCW 19.85.020.

The commenters assert that the analyses performed for this rule show a disproportionate impact on small businesses and that the proposed rule does not reflect the consideration

that agencies must give under the Regulatory Fairness Act to reduce regulatory burdens on small businesses.

As discussed in the Preliminary Regulatory Analyses, Ecology determined that the contents of the proposed rule represented the least-burdensome alternative of possible rule contents in light of "the context of the goals and objectives of the authorizing statute." In making this determination, we considered two distinct datasets (Dun & Bradstreet and Data Axle) in identifying the potential numbers of affected facilities under the proposed rule, resulting in a range of potentially affected facilities and future costs and benefits. We agree that the analyses show a higher cost per employee for small businesses in both scenarios.

As discussed in the Preliminary Regulatory Analyses, we faced data limitations in comprehensively identifying the attributes of likely affected facilities and took an approach that was more likely to overestimate the scope and overall impacts of the rule and capture them within ranges. For example, cost estimates reflect an assumption that physical facility size translates to a single system, rather than multiple smaller systems that may fall below certain regulatory thresholds (which would exclude the facility from the Refrigerant Management Program). Our cost per employee comparison considered a range of costs, and to ensure we did not fail to capture any potential disproportionality, it includes unlikely scenarios in which small businesses incur the high end of costs (associated with larger single systems) despite those costs being more likely for larger businesses. Our macroeconomic model (REMI E3+) also models price and employment impacts based on a model structure that aggregates the retail sector and was not able to capture distributional impacts across differently sized facilities.

We do, however, appreciate the commenters' notes that particularly smaller stores may face more difficulty in meeting simultaneous goals of profitability and reasonable prices for consumers – particularly, considering various recent inflationary pressures on food prices. We have added more detail in the Final Regulatory Analyses further discussing modeling limitations, and the complex circumstances that small stores may face.

Under the Regulatory Fairness Act, if compliance cost comparisons across small and large businesses indicate disproportionality, we are required to consider the options listed in the Regulatory Fairness Act, as well as other suggested options, to reduce disproportionate impacts on small businesses in our rulemaking, where it is legal and feasible to do so. Elements that we included in the rule language to reduce disproportionate impacts on small businesses, as well as those that we considered, but that were not legal or feasible, are discussed in Chapter 7 of the Final Regulatory Analyses. In summary, the rule includes the following disproportionate impact-mitigating elements for small businesses:

Refrigeration Management Program:

Registration. As required in the governing statute, the registration start date is phased based on the size of the refrigeration or air conditioning system in operation at the facility. Ecology decided to phase in these registration start dates over a total of four years. The registration start date for facilities with a large-sized system(s) is January 1, 2024. A large-sized system is categorized as having a refrigerant charge of 1,500 or more pounds. The registration start date for facilities with medium-sized systems is two years

later, on January 1, 2026. A medium-sized system is categorized as having a refrigerant charge of 200 to 1,499 pounds. The registration start date for facilities with small-sized refrigeration or air conditioning systems is two years later, on January 1, 2028. A small-sized system is categorized as having a refrigerant charge of less than 200 pounds. We expect most small businesses will have smaller sized equipment for which registration starts four years later than for large systems.

Fees. The statute authorizes Ecology to assess and collect fees from all owners and operators of refrigeration and air conditioning systems that have a charge capacity of 50 pounds or more. Ecology decided not to assess fees of any kind for facilities with small-sized refrigeration or air conditioning systems that have a refrigerant charge of 50 to 199 pounds. Instead, there is a one-time implementation fee and an annual fee for facilities with medium or large-sized systems.

Leak inspections. The minimum leak inspection frequency for facilities with a medium or large-sized system is once every 90 days and once per month, respectively. In contrast, the minimum leak inspection frequency for facilities with small-sized refrigeration or air conditioning systems is once per year.

Annual reporting. The statute authorizes Ecology to establish annual reporting requirements for all owners and operators of refrigeration and air conditioning systems that have a charge capacity of 50 pounds or more. Ecology decided not to require an annual report from facilities with small-sized refrigeration or air conditioning systems that have a refrigerant charge of 50 to 199 pounds.

Exemptions. There is an application process in the rule for regulated parties to request exemptions from the leak repair and retrofit and retirement plan requirements. An "economic hardship" exemption is available specifically for retail food facilities and for any facility that is a small business, as defined in the Regulatory Fairness Act.

GWP Thresholds:

Retrofits. We revised the definitions of "new refrigeration equipment" and "new air conditioning equipment" in WAC 173-443-030 to remove references to "retrofit" equipment and thus exclude such equipment from those definitions and their applicable prohibitions and effective dates. We also added a separate row for retrofit equipment within each end-use in WAC 173-443-040, Tables 2 and 3. The effective date of the GWP thresholds for retrofit equipment is January 1, 2029. This effective date represents a delay of 4 years when compared to new refrigeration equipment listed in Table 2, and a delay of 3–5 years when compared to new air conditioning equipment listed in Table 3.

Variances. There is an application process in the rule for regulated parties to request variances from the requirements for new refrigeration or air conditioning systems to meet the applicable GWP threshold. An "economic hardship" variance is available specifically for retail food facilities and for any facility that is a small business, as defined in the Regulatory Fairness Act.

One commenter also asserted that the GWP thresholds for new residential air conditioning equipment will create supply barriers for compliant refrigerants.

Additional response to comment O-2-2

Ecology's rule is not intended to restrict the availability of compliant refrigerants. Ecology acknowledges that industry's compliance with new federal restrictions will create increased demand for compliant refrigerants, and while it may result in temporary supply challenges, that is not a result of this rule. Additionally, as manufacturers have known about coming HFC restrictions in the U.S. since 2020 with the passage of the AIM Act, they have had several years to plan and prepare for these restrictions.

Moreover, there is an application process in the rule for regulated parties to request variances from the requirements for new refrigeration or air conditioning systems to meet the applicable GWP threshold. An "impossibility" variance is available specifically to address potential supply challenges. This variance is available when a compliant refrigerant "is not currently or potentially available" and the applicant can demonstrate they "made a good faith effort to anticipate, address, and mitigate any potential noncompliance."

Costs for consumers

Commenters: Duane Goehner (I-3-1), Alan McCrory (I-5-1), Julie Reddick (I-6-1), Deana Riley, (I-8-1)

Summary: Four commenters expressed concern that the rule will result in increased costs for consumers in the state, especially for heating venting and air conditioning (HVAC) equipment.

Response to comments I-3-1, I-5-1, I-6-1, and I-8-1

The Washington Administrative Procedure Act, RCW 34.05.328, requires state agencies to conduct a cost-benefit analysis of each significant rule. The Preliminary Regulatory Analyses for this rule indicated the proposed rule amendments are likely to result in costs associated with the new restrictions on substances used in new stationary room air conditioners and residential dehumidifiers for the year 2024. A conservative analysis showed the costs passed on to the purchase of residential and small self-contained air-conditioning equipment is estimated to be between $25-32. These passed-on costs would be associated with the retailer's inability to sell new air conditioning equipment in Washington in 2024 if such equipment was manufactured after the applicable effective date and uses substances with a GWP of 750 or more. However, the regulatory analyses demonstrated the benefits of the rule amendments are greater than the costs.

One commenter also asserts that reducing urban heat should be prioritized over refrigerant emissions.

Additional response to I-5-1

The rule implements statutory direction from the Legislature to implement and enforce certain types of requirements and restrictions in order to reduce emissions of hydrofluorocarbons in Washington. This statutory directive reflects a determination by the Washington State Legislature that this particular regulatory framework will help address the climate crisis.

Ecology agrees that increased effort is needed to address the multiple impacts of increasing temperatures. Our HFC program is one of many programs Ecology has been charged with administering as part of the state's comprehensive approach to climate

mitigation and adaptation. Ecology implements a comprehensive approach for climate mitigation and adaptation across its programs, which in turn, will help reduce and support urban communities in adapting to it.

One commenter is also concerned that the rule and other HFC legislation will make existing equipment unserviceable.

Additional response to comment I-8-1

The services practices required under WAC 173-443-205 do not apply to small refrigeration or air conditioning systems that have a full charge under 50 pounds. They also do not apply to any systems that use a refrigerant with a GWP of less than 150.

RCW 70A.60.030(8)(a) specifically provides that Ecology's rules may require systems to be serviced by technicians who are certified under EPA's standards. EPA's standards for technician certification are set forth in 40 CFR § 82.161.

The rule incorporates this technician certification requirement in WAC 173-443-205(1) and applies it to the servicing of all refrigeration and air conditioning equipment with a full charge of 50 pounds or more. Because this certification is already required under federal law for a significant number of refrigerants, most service technicians should already have these certifications. In particular, service technicians should already be certified under EPA's standards if they are "maintaining, servicing, or repairing appliances containing class I, class II or non-exempt substitute refrigerants."

As a result, Ecology does not expect there will be a shortage of available certified technicians to service regulated equipment. But in the event there is such a shortage, the rule provides an extension of the time period to repair a leak, from 14 days to 45 days, if a certified technician is not available to complete the required repairs within 14 days of leak detection.

Definitions

Commenters: Eric Vander Mey (I-11-2), (I-11-6), John Keating (B-1-3), Ted Atwood (B-3-4), (B-3-5), (B-3-7), (B-3-8), (B-3-9), (B-3-10), (B-3-13), Samantha Slater (O-5-9), Schuyler Pulleyn (B-6-3), John Wallace (OTH-1-2)

Summary: Six commenters requested to change or clarify definitions. Some commenters requested more than one definition change.

One commenter requested additional language to clarify that the rule does not apply to potable or service hot water heating equipment.

Response to comment I-11-2

The statute directs Ecology to adopt rules that address emissions reductions for stationary refrigeration and air conditioning equipment, including heat pumps used to provide air conditioning. It does not authorize Ecology to expand the rule to restrict other possible uses of heat pumps.

The prohibitions set forth in WAC 173-443-040 apply according to the type of equipment and its specific "end-use." In cases where regulated equipment is capable of being operated for more than one listed end-use, the applicability of the prohibition is

determined by the end-use for which the majority of the equipment's operating capacity is used. We added text to the definitions of "air conditioning equipment," "chiller," and "industrial process refrigeration" to clarify this.

If air-to-water heat pumps or reverse cycle chillers are used for the purpose of refrigeration or air conditioning, the equipment is subject to the rule. If the potable hot water produced is used for other purposes, the equipment is not subject to the rule.

One commenter recommended clarifying the definition of "system" by adding a definition from the International Mechanical Code.

Response to comment I-11-6

Ecology revised the definitions of "air conditioning equipment" or "new air conditioning system" and "new refrigeration equipment" or "refrigeration system" in WAC 173-443-030 to incorporate the International Mechanical Code description of a system for added clarification that a refrigeration or air conditioning system is a single refrigerant circuit.

Three commenters recommended that the term "high-GWP" should not be a defined term as meaning a GWP of 150 or more.

Response to comments B-1-3, O-5-9, and B-6-3

Ecology removed the definition of the term "high-GWP refrigerant" in WAC 173-443-030 and replaced the term with the applicable GWP threshold throughout the rule text.

One commenter requested to clarify the definition of "Air Conditioning Equipment" to address data centers, hospitals, morgues, and those responsible for other non-traditional cooling.

Response to comment B-3-4

The term "air conditioning," as defined in the authorizing statute, Chapter 70A.60 RCW, applies to any application involving "the process of treating air to meet the requirements of a conditioned space by controlling its temperature, humidity, cleanliness, or distribution." We believe this statutory definition is sufficiently broad to include the types of applications described in the comment. The definition of "air conditioning equipment" provides more direction as it describes several specific types of air conditioning equipment rather than any specific type of use. Additionally, the term "other types of air conditioning" is defined as "any residential or non-residential air-conditioning equipment or air-conditioning system not otherwise defined as a room air conditioner, residential dehumidifier, or variable refrigerant flow (VRF) system."

The rule also specifically includes data center and computer room cooling in the definition of "industrial process refrigeration," similar to the way this application was considered in the proposed EPA Technology Transitions Rule. While the final EPA Technology Transitions Rule separated data center and computer room cooling into its own category, Ecology believes it is appropriate to include this equipment as industrial process refrigeration under this rule as it shares the complexity of these types of industrial process systems.

One commenter requested to clarify the definition of "capital cost" to address consulting fees and other non-tangible items.

Response to comment B-3-5

Ecology added environmental consulting, licensing fees and financing to the list of examples in the definition of "capital cost" in WAC 173-443-030, as requested.

One commenter requested clarification on how equipment used for more than one purpose is regulated under the rule.

Response to comment B-3-8

Ecology revised terminology in the definitions of "industrial process refrigeration" and "chiller" to avoid possible confusion. Under these revised definitions, if a system is used for multiple end-uses, the applicability of the rule's prohibitions is determined by the application or end-use for which the majority of the operating capacity is used.

One commenter requested to align the definition of "refrigeration" with EPA's definition of "commercial refrigeration" published June 6, 2023.

Response to comment B-3-9

Ecology added a definition of "commercial refrigeration" in WAC 173-443-030 to align with the definition of the term in 40 CFR Part 82.15. We also added the term "commercial refrigeration" in WAC 173-443-040, Tables 2 and 3 to clarify that retail food and cold storage warehouses are considered commercial refrigeration equipment.

One commenter requested adding definitions to address non-mechanical devices, marine applications, and portable rental chillers.

Response to comment B-3-10

The rule does not limit the definition of air conditioning or refrigeration equipment to include only those "vapor-compression" types of systems, so non-mechanical devices are included. If the equipment is used for an end-use that is covered by WAC 173-443-040, as listed in Tables 1 through 4, then that equipment will be subject to the rule, whether that equipment uses vapor compression or non-mechanical heat transfer. Therefore, we did not add the requested terms to the definitions.

Two commenters asked for clarification on the terms "full charge" and "refrigerant capacity"

Response to comments B-3-7 and B-3-13

To deter confusion, Ecology removed the word "capacity" or "maximum capacity" and replaced it with "full charge." The term "full charge" is now used throughout the rule.

The rule offers multiple routes for determining the full charge:

> "Full charge" means the amount of refrigerant required in the refrigerant circuit for normal operating characteristics and conditions of a refrigeration system or refrigeration equipment, as determined by using one or a combination of the following four methods:
>
> (a) Use of the equipment manufacturer's specifications of the full charge;
>
> (b) Use of appropriate calculations based on component sizes, density of refrigerant, volume of piping, seasonal variances, and other relevant considerations;
>
> (c) Use of actual measurements of the amount of refrigerant added to or evacuated from the refrigeration equipment, including for seasonal variances; or

(d) The midpoint of an established range for full charge based on the best available data regarding the normal operating characteristics and conditions for the system.

We changed the rule text to "full charge" and removed references to "charge capacity" in the following sections:

- WAC 173-443-040, Table 2, List of prohibited substances for new refrigeration equipment
- WAC 173-443-145, Leak detection and monitoring requirements

One commenter recommended that the term "cumulative replacement" include a three-year time-period component.

Response to comment B-6-3

Ecology initially considered this timeframe as a limiting factor but decided not to include it in the rule. The allowances within this definition are adequate to address equipment maintenance and repair and are not to be used to replace equipment parts repeatedly every three years.

One commenter requested clarification for the term "facility" to determine if a large campus would be responsible for multiple fees or a single fee for the facility.

Response to comment OTH-1-2

The term "facility" is defined in WAC 173-443-030 as follows:

"Facility" means any property, plant, building structure, stationary source, stationary equipment or grouping of stationary equipment or stationary sources located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right-of-way, and under common operational control, that includes one or more refrigeration systems subject to this chapter. Operators of military installations may classify such installations as more than a single facility based on distinct and independent functional groupings within contiguous military properties.

Ecology added language in WAC 173-443-135 to clarify that there is one fee per facility and that a facility with a regulated refrigeration system(s) and a regulated air conditioning system(s) pays one fee for the entire facility. The fee is based on the equipment located at the facility with the largest refrigerant charge size.

Federal HFC transition

Commenters: Ron Shebik (B-4-2), Schuyler Pulleyn (B-6-2), Helen Walter-Terrinoni (B-7-2), Jennifer Butsch (B-10-2), Chris Forth (B-11-2) and (B-11-4), Brandon Houskeeper (O-1-2), Carissa Linnane (O-2-4), Tammy Hetrick (O-4-5), Samantha Slater (O-5-3), (O-5-11) and (O-5-16), Ranie Haas (O-9-2), Peter Godlewski (O-10-2), John Wallace (OTH-1-5)

Summary: Ten commenters requested that Ecology refrain from adopting the rule altogether due to the upcoming or newly adopted EPA HFC rulemakings under the 2020 American Innovation and Manufacturing (AIM) Act. These commenters are concerned that the requirements under the state rule are duplicative of current and upcoming federal requirements and will complicate ongoing industry efforts to transition to lower GWP refrigerants.

Response to comments B-4-2, B-6-2, B-7-2, B-10-2, B-11-2, B-11-4, O-1-2, O-2-4, O-4-5, O-5-3, O-5-11, O-5-16, O-9-2, and O-10-2, and OTH-1-5

Ecology is aware of EPA's three rulemakings under the federal AIM Act. While we appreciate that there is overlap with some requirements in this rule and EPA's recently adopted Technology Transitions Rule, we do not believe there is conflict between the two. We also appreciate that there may be overlap with some requirements in EPA's final rule for refrigerant management and EPA's recently proposed Emissions Reduction and Reclamation Rule, but like the Technology Transitions Rule, we do not believe there are any conflicts with our rule.

Moreover, this rulemaking is required by law. The authorizing statute specifically directs Ecology to adopt rules to implement and enforce certain types of requirements and restrictions in order to reduce emissions of hydrofluorocarbons in Washington. This statutory directive reflects a determination by the Washington State Legislature that Ecology's administration of this particular regulatory framework is a necessary component of the state's comprehensive approach to addressing the climate crisis.

The statute allows Ecology to "refrain from or cease administering or enforcing" a requirement of the statute or this rule, but only in two specific circumstances—neither of which apply here. First, Ecology could cease enforcing a specific requirement if EPA adopts requirements that are "substantially duplicative" *and* that "negate the additional emission reduction benefits" of the state's implementation of such a requirement. See RCW 70A.60.040(3)(a). While there is some overlap with the requirements of EPA's Technology Transitions Rule, we do not think it rises to the level of being "substantially duplicative." More importantly, we do not think implementation of EPA's Technology Transitions Rule will negate the additional emission reduction benefits of our rule. As a result, there is no basis for Ecology to cease from administering or enforcing this rule under RCW 70A.60.040(3)(a).

Second, Ecology could cease enforcing a specific requirement if EPA adopts requirements that specifically "preempt state authority." See RCW 70A.70.040(3)(b). None of EPA's rules under the federal AIM Act purport to preempt state authority to enact more stringent requirements related to the emissions of HFCs and other fluorinated greenhouse gases. As a result, there is no basis for Ecology to cease from administering or enforcing this rule under RCW 70A.60.040(3)(b).

As directed by the authorizing statute, Ecology adopted reporting, recordkeeping, and labeling requirements in this rule that are consistent with programs implemented by the EPA, or in other states, to the extent practicable. Examples of requirements that we specifically aligned with other programs include:

- For equipment owner or operator reporting requirements in WAC 173-443-185, the rule is consistent with requirements under California's Refrigerant Management Program.
- For equipment owner or operator recordkeeping requirements in WAC 173-443-195, the rule is consistent with requirements under California's Refrigerant Management Program, which has been in place since 2010.

- For manufacturer labeling and recordkeeping requirements in WAC 176-443-065(2) and (3) and WAC 173-443-075(2) and (3), the rule is consistent with requirements for manufacturers of new equipment under EPA's Technology Transitions Rule.

For the maximum GWP thresholds applicable to manufacturers of new equipment in WAC 173-443-040, Tables 2 and 3, we recognize that the rule does not allow a higher threshold for equipment with less than 200 pounds of refrigerant as the EPA rule does. The statute specifically authorizes a 150 GWP threshold for refrigeration equipment with over 50 pounds of refrigerant, which is in line with the California Air Resources Board's (CARB) HFC rules. The statute also requires that Ecology determine that adequate equipment, refrigerant, and operator training is available to meet the new standards before they are adopted. We have determined that compliance with the 150 GWP threshold is possible for all sizes of regulated refrigeration equipment based on increasing availability of these items. Ecology provides the information on which we made this determination in the list of citations. CARB's 150 GWP threshold for refrigeration systems has been in effect since 2021.

In addition, the statute directs Ecology to adopt a refrigerant management program for refrigeration and air conditioning systems with 50 or more pounds of a high-GWP refrigerant and to adopt leak rates and other regulatory thresholds that achieve greater emissions reductions than those established by EPA. The statute also directs Ecology to review the refrigerant management program every five years, beginning December 1, 2029, to consider the greenhouse gas emissions reductions achieved under the program (RCW 70A.60.030(10). During this five-year review, we will consider how or if our program actually achieves emissions reductions beyond those achieved under EPA's refrigerant management rule under subsection (h) of the AIM Act.

It is not certain that EPA will adopt the refrigerant management rules as proposed, and the EPA has indicated that adoption is not expected until the end of Summer 2024. The objective of Washington's HFC law, Chapter 70A.60 RCW, is to reduce greenhouse gas emissions from hydrofluorocarbons in Washington by establishing GWP thresholds for refrigerants used in new equipment and a refrigerant management program to reduce emissions in existing equipment. We will consider future amendments to the rule as needed to increase consistency with EPA rules if such rules achieve the same objectives as Washington's HFC law.

One commenter noted that the rule's restrictions on "other types of air conditioning equipment used in residential and nonresidential applications" would begin three years later than proposed EPA deadlines.

Additional response to comment O-5-3

Ecology's statutory direction for the establishment of a maximum global warming potential for the "other types of air conditioning equipment" is as follows:

RCW 70A.60.020(2):

The department may adopt rules that establish a maximum global warming potential of 750 for substitutes used in new stationary air conditioning. Rules adopted under this subsection may not take effect prior to:

(a) January 1, 2023, for dehumidifiers and room air conditioners;

(b)(i) January 1, 2025, for other types of stationary air conditioning equipment, but only if before January 1, 2023, the state building code council adopts the following safety standards into the state building code as these standards existed as of January 1, 2022:

(A) American society of heating, refrigerating, and air-conditioning engineers standard 15;

(B) American society of heating, refrigerating, and air-conditioning engineers standard 15.2;

(C) American society of heating, refrigerating, and air-conditioning engineers standard 34; and

(D) Underwriters laboratories standard UL 60335-2-40 edition 4;

(ii) If the state building code council adopts the safety standards referenced in (b)(i) of this subsection after January 1, 2023, the restrictions of this subsection may apply to refrigeration equipment manufactured no earlier than 24 months after the adoption of the safety standards; and

(c) January 1, 2026, for systems with variable refrigerant flow or volume.

The Washington State Building Code Council (SBCC) typically adopts building, mechanical, fire, plumbing, and energy codes into the state building code every three years in November. The SBCC last convened on November 18th, 2022, to vote in the adoption of updated codes. At that time, UL 60335-2-40, Edition 4 had not been published. The SBCC expects to hold a vote for an amendatory rulemaking in November 2023 to adopt Edition 4.

Under the statute, RCW 70A.60.020(2)(b)(ii), a GWP threshold for "other types of stationary air conditioning equipment" cannot take effect sooner than 24 months following the SBCC adoption of the necessary code updates. At the time of Ecology's rule proposal, the SBCC had adopted Edition 3 of UL 60335-2-40, but not Edition 4 as required by RCW 70A.60.020(2)(b)(i)(D). Accordingly, Ecology revised the effective date for "other types of air conditioning equipment" to January 1, 2026, on the condition that the SBCC adopts Edition 4 by December 3, 2023; otherwise, the effective date is 24 months following SBCC's adoption of the new standard.

General opposition

Commenters: Doug Myers (I-1-1), Andrew Richardson (I-2-1), William The United States, and Craven (I-4-1)

Summary: Three commenters expressed general opposition to the rule on the basis that they did not believe the rule addresses the overall climate issue or that actions to address climate change are unnecessary.

Response to comments I-1-1, I-2-1, and I-4-1

Ecology appreciates the concerns expressed. The authorizing statute specifically directs Ecology to adopt rules to implement and enforce certain types of requirements and

restrictions in order to reduce emissions of hydrofluorocarbons in Washington. This statutory directive reflects a determination by the Washington State Legislature that taking action to address climate change *is* necessary and that this particular regulatory framework will help address the climate crisis.

General support

Commenters: Patricia Davis (I-10-1), Devon Kellogg (I-12-1), Richie Kaur (B-9-7), Christopher Douglass O-6-2), Ed Norris I-7-1),

Summary: Five commenters expressed support for the rule in its entirety or requested additional actions to support the emissions reduction objectives of the statute.

Response to comments I-10-1, 1-12-1, B-9-7, O-6-2, I-7-1

Ecology appreciates your support of the rule.

One commenter also requested that Ecology consider rules for emissions of sulfur hexafluoride (SF6) used in electrical power systems.

Additional response to comment I-12-1:

The statute gives authority to Ecology to adopt requirements for fluorinated gases used in refrigeration and air conditioning equipment, certain consumer aerosol propellant products, and foams. Therefore, the inclusion of restrictions on the use of sulfur hexafluoride (SF6) in electrical power systems is beyond the scope of this rulemaking.

General questions or technical concerns

Commenters: John Wallace (OTH-1-8)

Summary: One commenter requested technical changes that we categorized as general.

The commenter recommended providing a penalty fee schedule.

Response to comment OTH-1-8

Violations of this regulation or its authorizing statute, Chapter 70A.60 RCW, are subject to civil and criminal enforcement, including possible monetary penalties, under Chapter 70A.15 RCW, the Washington Clean Air Act. The potential civil penalties are found in RCW 70A.15.3160, which authorizes Ecology to assess a penalty of up to $10,000 per day, per violation. The criminal sanctions are found in RCW 70A.15.3150(1), which provides that knowing violations of Chapter 70A.60 RCW are a gross misdemeanor.

GWP – building codes

Commenter: John Wallace (OTH-1-3)

Summary: One commenter expressed concern that the rule makes it impractical to replace equipment in mechanical rooms due to limitations on the use of mildly flammable refrigerants (A2Ls) under the International Fire Codes.

Response to comment OTH-1-3

Ecology is required to set GWP threshold effective dates based on ASHRAE and UL codes. The use of A2L refrigerants is included in these codes. They are allowed in quantities up to 500 grams per equipment, depending on the room size and other factors. While an A2L refrigerant might not be appropriate in all situations, there are other options available, such as ammonia and CO_2.

GWP – effective dates

Commenters: Eric Vander Mey (I-11-3), Lisa Saponaro (B-5-1), Chris Forth (B-11-3), Christopher Douglass (O-6-9), John Wallace (OTH-1-4)

Summary: Five commenters requested changes to the effective dates of the GWP thresholds or to match those proposed by EPA in its proposed Technology Transitions Rule.

One commenter requested that Ecology add a building permit exemption for chillers that also can be used for heating applications.

Response to comment I-11-3

The statute defines air conditioning as follows:

> RCW 70A.60.010(1):
>
> (a) "Air conditioning" means the process of treating air to meet the requirements of a conditioned space by controlling its temperature, humidity, cleanliness, or distribution.
>
> (b)(i) "Air conditioning" includes chillers, except for purposes of RCW 70A.60.020.
>
> (ii) "Air conditioning" includes heat pumps.
>
> (c) "Air conditioning" applies to stationary air conditioning equipment and does not apply to mobile air conditioning, including those used in motor vehicles, rail and trains, aircraft, watercraft, recreational vehicles, recreational trailers, and campers.

This statutory definition indicates that chillers are considered air conditioning "except for the purposes of RCW 70A.60.020," which is the section of the statute that authorizes Ecology to adopt maximum GWP thresholds. This means that chillers used for the purpose of air conditioning are not subject to a GWP threshold, and therefore do not require an exemption from such thresholds.

Refrigerant restrictions that apply to chillers used for the purpose of air conditioning are outlined in WAC 173-443-040, Table 1. Table 1 sets forth prohibitions of specific substances in accordance with RCW 70A.60.060 rather than applying a GWP threshold pursuant to RCW 70A.60.020. While the statute provides express authority for Ecology to grant variances from GWP thresholds adopted pursuant to RCW 70A.60.020, there is no parallel provision in RCW 70A.60.060 for Ecology to grant variances from Table 1 restrictions. RCW 70A.60.060(3)(a) allows Ecology to modify the effective date of a prohibition on a specific substance, but only up until "the earliest date that a substitute is currently or potentially available."

One commenter asked to clarify if computer rooms and data centers were other types of air conditioning equipment and to revise the GWP threshold effective date to January 1, 2029.

Response to comment B-5-1

Ecology does not consider equipment used in data centers and computer rooms as "air conditioning equipment." Instead, these uses are included in the following definition of "industrial process refrigeration":

> "Industrial process refrigeration" means to cool or heat process streams at a specific location in manufacturing and other forms of industrial processes and applications such as chemical production, pharmaceutical, and petrochemical industries. This also includes appliances used in the generation of electricity and for large scale cooling of heat sources such as data centers and data servers. Industrial process refrigeration not using a chiller is considered a type of refrigeration equipment. Industrial process refrigeration using a chiller is considered a type of other refrigeration application. Where one piece of refrigeration equipment is used for both industrial process refrigeration and other applications, it will be considered industrial process refrigeration if 50 percent or more of its operating capacity is used for industrial process refrigeration.

This interpretation is consistent with EPA's proposed Technology Transitions Rule, which considered equipment used for large scale cooling. While the final EPA Technology Transitions Rule separated data center and computer room cooling into a distinct category, Ecology is comfortable including this equipment as industrial process refrigeration under this rule as it shares the complexity of these types of industrial process systems.

One commenter requested Ecology move the GWP threshold effective date for "other types of air conditioning equipment" to match the date proposed by EPA.

Response to comment B-11-3

The statute outlines the requirements for adoption of new standards by the Washington State Building Code for Ecology to adopt GWP thresholds.

> RCW 70A.60.020(2):
>
> The department may adopt rules that establish a maximum global warming potential of 750 for substitutes used in new stationary air conditioning. Rules adopted under this subsection may not take effect prior to:
>
> (a) January 1, 2023, for dehumidifiers and room air conditioners;
>
> (b)(i) January 1, 2025, for other types of stationary air conditioning equipment, but only if before January 1, 2023, the state building code council adopts the following safety standards into the state building code as these standards existed as of January 1, 2022;
>
> (A) American society of heating, refrigerating, and air-conditioning engineers standard 15;
>
> (B) American society of heating, refrigerating, and air-conditioning engineers standard 15.2;

(C) American society of heating, refrigerating, and air-conditioning engineers standard 34; and

(D) Underwriters laboratories standard UL 60335-2-40 edition 4;

At the time of Ecology's rule proposal, the Washington State Building Code Council (SBCC) had not adopted Edition 4 of UL 60335-2-40 as required by RCW 70A.70.020(2)(b)(i)(D). The SBCC expects to hold an amendatory rulemaking in November 2023 to adopt Edition 4 and other codes not adopted in 2022. As a result, in accordance with RCW 70A.60.020(2)(b)(ii), a GWP threshold can be placed on this equipment no sooner than 24 months following the SBCC adoption. Ecology has changed the effective date to January 1, 2026, which is consistent with that proposed by EPA. Because the rule will be adopted prior to the SBCC adoption of Edition 4 of UL 60335-2-40, Ecology has also included language that specifies that the effective date is 24 months following adoption of the new standard if the SBCC does not adopt Edition 4 before December 31, 2023.

One commenter requested that Ecology add a definitive end-date to the sell through period.

Response to comment O-6-9

Ecology added new text in WAC 173-443-065 and -075 to establish a two-year sell through period on all refrigeration and air conditioning equipment. This two-year sell through period creates the same end date, of January 1, 2026, proposed by the EPA in their proposed Technology Transitions Rule; however, we note that EPA's final rule extends the sell through period to three years.

One commenter expressed concern that the GWP threshold effective dates are too fast to allow for sufficient availability of low-GWP refrigerants to use in existing equipment.

Response to comment OTH-1-4

The rule does not require replacement of equipment that contains restricted refrigerants. Ecology determined there are options available for new equipment. The effective dates are based on this availability, as required by the statute:

RCW 70A.60.020(6)

(a) Prior to adopting final rules to implement restrictions under subsection (2) or (3) of this section, the department must review the availability and affordability of:

(i) Equipment that meets applicable global warming potential requirements;

(ii) Refrigerants that meet applicable global warming potential requirements; and

(iii) Appropriate training to utilize equipment that meets applicable global warming potential requirements.

Ecology presents documentation of our research into these availabilities in the list of citations. Based on this research, we determined there is [adequate/sufficient] availability and affordability of equipment and refrigerants that meet the rule's GWP requirements and of resources to support appropriate training to utilize compliant equipment.

In addition, there is an application process in the rule for regulated parties to request variances from the requirements for new refrigeration or air conditioning systems to meet the applicable GWP threshold. An "impossibility" variance is available specifically to address potential supply challenges. This variance is available when a compliant refrigerant "is not currently or potentially available" and the applicant can demonstrate they "made a good faith effort to anticipate, address, and mitigate any potential noncompliance."

GWP - exemptions

Commenters: Ertan Serince (I-9-1), Eric Vander Mey (I-11-3), (I-11-5), Karen Coulter (A-6-2), Bryan Mirick (B-8-2), Samantha Slater (O-5-12)

Summary: Five commenters requested changes to the exemptions for the GWP thresholds. Some commenters made more than one comment under this topic.

One commenter requested that an exemption apply for chillers used in stationary air conditioning equipment.

Response to comments I-9-1 and I-11-5

The statute defines air conditioning as follows:

> RCW 70A.60.010(1):
>
> (a) "Air conditioning" means the process of treating air to meet the requirements of a conditioned space by controlling its temperature, humidity, cleanliness, or distribution.
>
> (b)(i) "Air conditioning" includes chillers, except for purposes of RCW 70A.60.020.
>
> (b)(ii) "Air conditioning" includes heat pumps.
>
> (c) "Air conditioning" applies to stationary air conditioning equipment and does not apply to mobile air conditioning, including those used in motor vehicles, rail and trains, aircraft, watercraft, recreational vehicles, recreational trailers, and campers.

Within the above definition, RCW 70A.60.010(1)(b)(i) indicates that chillers are considered air conditioning "except for the purposes of RCW 70A.60.020," which is the section of the statute that authorizes Ecology to adopt maximum GWP thresholds. This means that chillers used for air conditioning purposes are not subject to a GWP threshold and therefore do not require an exemption from such thresholds. This is consistent with the rule's definition of "air conditioning," which specifies that the term "includes the use of chillers, except for purposes of applying a maximum GWP threshold for new air conditioning equipment under WAC 173-443-040."

The prohibitions that apply to chillers used for air conditioning are outlined in WAC 173-443-040, Table 1. Table 1 sets forth prohibitions of specific substances in accordance with RCW 70A.60.060 rather than applying a GWP threshold pursuant to RCW 70A.60.020. While the statute provides express authority for Ecology to grant variances from GWP thresholds adopted pursuant to RCW 70A.60.020, there is no parallel

provision for variances in RCW 70A.60.060. RCW 70A.60.060(3)(a) allows Ecology to modify the effective date of a prohibition on a specific substance, but only up until "the earliest date that a substitute is currently or potentially available."

One commenter requested to add "mechanical permits" to the building permit exemption in WAC 173-443-050 and add a specific date rather than linking it to the effective date of the rule.

Response to comment I-11-3

Ecology understands that a mechanical permit is issued for certain work, including for the installation of an HVAC system, but not for other activities for which a building permit is also required to carry out the work.

Ecology clarified the exemptions in WAC 173-443-050, Tables 2 and 3 to allow for a valid approved building and/or mechanical permit for the work of system installation to accommodate this flexibility.

Having a building permit issued by an appropriate authority, in line with the Unified Facility Criteria, before the rule's effective date would satisfy this requirement for the exemption.

One commenter requested specific military exemptions for the GWP thresholds.

Response to comment A-6-2

Ecology has provided military exemptions matching those of the EPA Technology Transitions Rule adopted under the AIM Act. This includes the addition of an exemption for "mission critical military operations" in the exemptions set forth in WAC 173-443-050, Tables 2 and 3. Because this exemption appears in EPA's rule, this change is consistent with RCW 70A.60.060(5).

Outside of specific mission critical exemptions, the U.S. Department of Defense (DOD) may apply for a variance from the requirements for new refrigeration or air conditioning systems to meet the applicable GWP threshold. An "impossibility" variance is available for any facility and may apply in the example provided.

One commenter requested that semiconductor manufacturers be exempted from the rule because they are already required to report f-HTF usage and emissions to Ecology under Chapter 173-441 WAC and that their emissions are regulated under WAC 173-443-446.

Response to comment B-8-2

Ecology utilized exemptions for the semiconductor industry in line with those of the EPA in its final Technology Transitions Rule.

Ecology understands that semiconductor manufacturers use fluorinated heat transfer fluids in several industrial processes, including processes like cleaning, chemical vapor deposition, and etching, in addition to industrial process refrigeration and air conditioning for climate control and comfort cooling. Consistent with the statute, refrigerants used in industrial process refrigeration and air conditioning applications with a full charge of more than 50 pounds are regulated under WAC 173-443-020(4), and any servicing of this equipment is regulated under WAC 173-443-020(5). The use of fluorinated heat transfer

fluids in other applications such as cleaning, chemical vapor deposition, and etching is not regulated under Chapter 70A.60 RCW or this rule.

Consistent with the statute, RCW 70A.60.030, refrigeration or air conditioning equipment containing more than 50 pounds of a refrigerant with a GWP greater than 150 must also comply with the Refrigerant Management Program.

One commenter requested that Ecology exempt all medical, scientific laboratory, and research applications and ultra-low temperature equipment with fluid leaving temperatures less than -58F (-50C).

Response to comment O-5-12

Section WAC 173-443-040 lists exemptions to the prohibitions set forth in Table 2, and includes an exemption for "very low temperature" systems. The rule defines this type of system as "a refrigeration or cooling system that maintains temperatures below -58°F (-50°C) including, but not limited to, medical and laboratory freezers, specialized industrial process cooling applications, and extreme temperature environmental testing." Additionally, the GWP thresholds applicable to refrigeration equipment only apply to equipment with a refrigerant charge of more than 50 pounds.

GWP – general

Commenters: Schuyler Pulleyn (B-6-4), Samantha Slater (O-5-2)

Summary: Two commenters made recommendations or provided comments that we classified as general in nature.

One commenter recommended that the GWP threshold for retail food refrigeration be revised to 300 due to better energy efficiency with refrigerants in the range of 150 to 300 GWP and because refrigerants in this range carry an A2L safety classification.

One commenter asserted that technical and commercial challenges of transitioning product lines remain despite substantial investment by the industry. This commenter also noted that there are no "drop in" replacements for high GWP refrigerants.

Response to comments B-6-4 and O-5-2

Ecology has reviewed available resources throughout the rule development process on the availability of technology, as directed and in accordance with the statute.

RCW 70A.60.020(6)(a)

Prior to adopting final rules to implement restrictions under subsection (2) or (3) of this section, the department must review the availability and affordability of:

(i) Equipment that meets applicable global warming potential requirements;

(ii) Refrigerants that meet applicable global warming potential requirements; and

(iii) Appropriate training to utilize equipment that meets applicable global warming potential requirements.

RCW 70A.60.020(6)(b)

After the review required under (a) of this subsection, the department is encouraged to consider delaying the effective date of restrictions under this section in the event that the department determines that significant training or compliant equipment or refrigerant availability and affordability limitations are expected to occur.

Ecology presents documentation of our research into these availabilities in the list of citations. Based on this research, we determined there is [adequate/sufficient] availability and affordability of equipment and refrigerants that meet the rule's GWP requirements and of resources to support appropriate training to utilize compliant equipment.

Additionally, Ecology included an application process in the rule for regulated parties to request variances from the requirements for new refrigeration or air conditioning systems to meet the applicable GWP threshold in instances of "impossibility." This variance is available specifically to address potential supply challenges, when a compliant refrigerant "is not currently or potentially available" and the applicant can demonstrate they "made a good faith effort to anticipate, address, and mitigate any potential noncompliance."

GWP - retrofits

Commenters: John Keating (B-1-2), Ron Shebik (B-4-3), Lisa Saponaro (B-5-2), Jennifer Butsch (B-10-3), Chris Forth (B-11-5), Brandon Houskeeper (O-1-3), Samantha Slater (O-5-4), (O-5-6), and (O-5-10)

Summary: Seven commenters expressed opposition to considering retrofit equipment as new equipment and subject to the GWP thresholds under WAC 173-443-040, Tables 2 and 3.

Response to comments B-1-2, B-4-3, B-5-2, B-10-3, B-11-5, O-1-3, O-5-4, O-5-6, and O-5-10

Ecology appreciates these concerns and has made changes to reduce the regulatory burden on affected parties. First, we revised the definitions of "new refrigeration equipment" and "new air conditioning equipment" in WAC 173-443-030 to remove references to "retrofit" equipment and thus exclude such equipment from those definitions and their applicable prohibitions and effective dates.

In order to specify the prohibitions and effective dates that apply to retrofit refrigeration and air conditioning equipment, we also added a separate row for retrofit equipment within each end-use in WAC 173-443-040, Tables 2 and 3. The effective date of the GWP thresholds for retrofit equipment is January 1, 2029. This effective date represents a delay of 4 years when compared to new refrigeration equipment listed in Table 2, and a delay of 3–5 years when compared to new air conditioning equipment listed in Table 3.

We believe this revision recognizes that retrofit equipment is a different class of equipment and that additional time should be allowed for owners and operators who are, or have been, in the planning stages of near-term transitions to lower-GWP refrigerants such as R-448/449.

GWP – small cans of refrigerant for motor vehicle air conditioning systems

Commenters: Richie Kaur (B-9-6), Nicholas Georges (O-3-3)

Summary: Two commenters made suggestions or requested changes to the 150 GWP threshold applicable to small refrigerant used for motor vehicle air conditioning systems.

One commenter requested that Ecology confirm the effective date of the 150 GWP threshold is July 25, 2021, rather than the effective date of the rule.

Response to comment B-9-6

The effective date for the GWP thresholds for small containers of automotive refrigerant and non-essential consumer products is correctly listed as July 25, 2021. These prohibitions were established in the 2021 statute, Section 5 of E2SHB 1050 (now codified as RCW 70A.60.080), so they became effective on the date the statute became effective. See Chapter 315, Laws of 2021. They are incorporated into the rule to clarify their relation to the rule's other requirements.

One commenter expressed concern about the restriction and noted that the majority of these small containers are purchased by those in disadvantaged communities.

Response to comment O-3-3

The 150 GWP threshold and 2021 effective date for small cans of automotive refrigerant are dictated by statute, as described above. Although the Legislature provided express authority for Ecology to grant variances from the GWP thresholds that apply to new refrigeration and air conditioning equipment in RCW 70A.60.020(5)(c), there is no parallel provision for Ecology to grant variances from the GWP thresholds set forth in RCW 70A.60.080.

Ecology recognizes the potential disproportionate impact of the statutory restriction on these products. We have published a factsheet to help retailers and consumers understand the reasons behind the change, what the change entails, and how to safely service their motor vehicle air conditioning systems.

GWP – technical concerns

Commenters: Eric Vander May (I-11-4), Matt Harris (A-1-3), (A-1-4), (A-1-5) and (A-1-6), Amy Speargas Whiteman (A-3-1), John Keating (B-1-4), Ted Atwood (B-3-17), Schulyer Pulleyn (B-6-5), Helen Walter-Terrinoni (B-7-3), (B-7-4), (B-7-5), (B-7-6) and(B-7-7), Richie Kaur (B-9-2), (B-9-3), (B-9-4) and (B-9-5), Steve Owen (B-12-1), Nicholas Georges (O-3-2), Samantha Slater (O-5-7), (O-5-13), (O-5-14), and (O-5-15), Christopher Douglass (O-6-3)

Summary: Eleven commenters expressed concerns or requests for clarification that we classified as technical in nature. Some commenters provided more than one comment under this topic.

One commenter asked for clarification if a 4-pipe heat recovery chiller is considered cooling only or cooling and heating.

Response to comment I-11-4

WAC 173-443-040(1), Table 1 identifies different effective dates for restrictions on specific refrigerants used in equipment that does cooling only, heating only, or heating and cooling, with the latter two end-uses having the same effective date. A system used for cooling that has inadvertent, and uncontrolled, waste heat does not make it a combined heating and cooling system. Any refrigeration system that is tasked to utilize that waste heat for another process would be a separate refrigerant circuit and therefore another system separate from the cooling system. A system that simultaneously cools in one area and heats in another would be categorized as "heating and cooling."

Five commenters expressed concerns about a lack of availability of refrigerants, beyond ammonia and carbon dioxide, that can comply with the 150 GWP threshold for commercial purposes. Some commenters made more than one comment under this topic.

One commenter also expressed concern that there is no ability to retrofit old systems that fall outside the scope of UL 60335-2-89.

Response to comments A-1-3, A-1-4, A-1-5, A-1-6, A-3-1, B-1-4, and B-6-5

Ecology has reviewed available resources to comply with the GWP thresholds throughout this rulemaking to determine the availability and affordability of equipment, refrigerants, and technician training in accordance with the statute.

RCW 70A.60.020(6):

(a) Prior to adopting final rules to implement restrictions under subsection (2) or (3) of this section, the department must review the availability and affordability of:

(i) Equipment that meets applicable global warming potential requirements;

(ii) Refrigerants that meet applicable global warming potential requirements; and

(iii) Appropriate training to utilize equipment that meets applicable global warming potential requirements.

(b) After the review required under (a) of this subsection, the department is encouraged to consider delaying the effective date of restrictions under this section in the event that the department determines that significant training or compliant equipment or refrigerant availability and affordability limitations are expected to occur.

Ecology presents documentation of our research into these availabilities in the list of citations. Based on this research, we determined there is [adequate/sufficient] availability and affordability of equipment and refrigerants that meet the rule's GWP requirements and of resources to support appropriate training to utilize compliant equipment.

In addition, there is an application process in the rule for regulated parties to request variances from the requirements for new refrigeration or air conditioning systems to meet the applicable GWP threshold. An "impossibility" variance is available specifically to address potential supply challenges. This variance is available when a compliant refrigerant "is not currently or potentially available" and the applicant can demonstrate they "made a good faith effort to anticipate, address, and mitigate any potential noncompliance."

One commenter also requested clarification if a heat pump is considered an air conditioning unit. This commenter also recommended to replace the term "mothballing" with technical language.

Additional response to comment A-3-1

RCW 70A.60.010(1)(a) defines "air conditioning" as "the process of treating air to meet the requirements of a conditioned space by controlling its temperature, humidity, cleanliness, or distribution." RCW 70A.60.010(1)(b)(ii) states that the term "air conditioning" specifically "includes heat pumps."

The rule defines "air conditioning equipment" or "air conditioning system" as including "room air conditioners and residential and other dehumidifiers; ducted central air conditioners and heat pumps; nonducted air conditioners (both mini and multisplit); packaged roof top units; water source and ground source heat pumps; and remote condensing units used for comfort cooling." Therefore, heat pumps that are utilized for the purpose of air conditioning are considered "air conditioning equipment."

Regarding the definition of "mothballing," Ecology utilized the definition for mothballing in line with that of EPA, in 40 C.F.R. Part 82, and with CARB in their refrigerant management program. This recognizes the statutory direction for Ecology to adopt rules that are consistent with those of EPA and other states whenever practicable.

One commenter requested the definition of "new air conditioning equipment" be aligned with EPA and the California Air Resources Board (CARB). This commenter also requested that Ecology clarify the category of commercial unitary AC (CUAC) and commercial unitary heat pumps (CUHPs) with capacities above 65,000 BTUs.

Response to comment B-7-3

Ecology definitions are in alignment with those used by CARB, in their refrigerant management program and f-gas regulations, and EPA, in 40 CFR 82 and 84, wherever practicable. In some cases, however, the Legislature has provided a specific definition in the statute. Ecology's rule must define and use such terms and phrases consistent with their statutory definitions.

The equipment referred to here—commercial unitary air conditioning equipment and commercial unitary heat pumps—fall into the category of "other types of air conditioning equipment used in residential and nonresidential applications," with the effective date of 2026.

The rule's definition of "new air conditioning equipment," "new air conditioning system," and "new air conditioning appliance" has been updated to remove references to "retrofit" equipment.

A part may be replaced repeatedly as long as the equipment has not undergone the cumulative replacement to include 75 percent or more of indoor evaporator units and 100 percent of its air source or water source condensing units.

Please note that data centers and computer rooms are categorized as "industrial process refrigeration" and not air conditioning. The definition for "new refrigeration equipment" applies to this equipment, and specifies the point at which cumulative replacements render the equipment "new," as follows:

> "A system in an existing facility used for commercial refrigeration or industrial process refrigeration that is modified such that the system undergoes cumulative replacement of 75 percent or more of its evaporators (by number) and 100 percent of its compressor racks, condensers, and connected evaporator loads."

For equipment to be considered "new" and required to use a refrigerant with a GWP of less than 150 by the effective date listed for new equipment, it would need to undergo cumulative replacements meeting the above definition. Replacing a single component multiple times counts only toward the threshold for that component, but once the overall threshold is reached, Ecology considers it to be "new" equipment. Accordingly, the 150 GWP threshold applies to existing equipment that undergoes cumulative replacements beginning in 2024 or 2025, whereas it will not apply to "retrofit" equipment until 2029.

One commenter recommended that Ecology tailor the GWP thresholds for industrial process refrigeration based on the specific type of equipment and split this equipment into different operating temperatures. This commenter also recommended to not place a zero GWP on any product, but otherwise the GWP values are reasonable except for "ultra-low temperature" equipment.

Response to comment B-7-4

This comment appears to be directed to EPA in a show of support for their proposed Technology Transitions rule. Ecology's proposed rule did not list a GWP of zero for any equipment, nor does our final rule.

Ecology has placed GWP thresholds on chillers for industrial process refrigeration and commercial refrigeration but has not placed a GWP threshold on chillers used for air conditioning, in accordance with the statute, RCW 70A.60.010(1)(b)(i). Additionally, Ecology has provided an exemption for "very low temperature" equipment in WAC 173-443-050, Tables 2 and 3. The rule defines this type of equipment as "a refrigeration or cooling system that maintains temperatures below -58°F (-50°C) including, but not limited to, medical and laboratory freezers, specialized industrial process cooling applications, and extreme temperature environmental testing."

One commenter requested to limit ice rinks to a GWP threshold of 700 because they are used interchangeably with chillers. This commenter also recommended that a single GWP threshold apply uniformly to chillers.

Response to comment B-7-5

In RCW 70A.60.020(4)(a) and (b), the Legislature established a GWP threshold of 150 for new equipment used in new ice rinks and a GWP threshold of 750 for new equipment used in existing ice rinks. The statute directs Ecology to implement and enforce those statutory GWP thresholds.

Ecology added "including chillers" to the row for ice rinks in WAC 173-443-040, Table 2 to clarify that chillers used in ice rinks are considered the same type of refrigeration equipment. Additionally, Ecology believes that applying a specific GWP threshold for each type of application for which chillers are used is appropriate based on the wide range of applications and capabilities.

One commenter recommended that Ecology prohibit specific refrigerants rather than establishing a GWP threshold for industrial process refrigeration and transport refrigeration.

Response to comment B-7-6

The current rulemaking applies to stationary air conditioning and stationary refrigeration applications, including heat pumps and ice rinks, and non-essential consumer products. The rule does not apply to refrigeration or air conditioning equipment used in shipping containers. Ecology believes that a GWP threshold for industrial process refrigeration is appropriate and in line with EPA's Technology Transitions rule and with California's HFC rules, consistent with RCW 70A.60.020(5)(b).

One commenter expressed support for an effective date of January 1, 2025, for foams provided there is a caveat for supply chain shortages.

Response to comment B-7-7

This comment appears to have been directed to EPA about their proposed Technology Transitions rule. Ecology is not authorized under RCW 70A.60.020 to apply a GWP threshold to foams. Instead, pursuant to RCW 70A.60.060, Ecology's rule (WAC 173-443-040, Table 1) lists specific HFCs that are prohibited in new foam products and the applicable effective dates.

Additionally, RCW 70A.60.060 does not give Ecology authority to establish a variance process for foams that are subject to these prohibitions. RCW 70A.60.060(3)(a) allows Ecology to modify the effective date of a prohibition on a specific substance, but only up until "the earliest date that a substitute is currently or potentially available."

One commenter recommended that Ecology apply a GWP threshold for chillers used for air conditioning purposes rather than prohibiting specific HFCs.

Response to comment B-9-2

Ecology understands that prohibiting specific HFCs rather than applying a GWP threshold may be confusing. Our rule takes this approach because we are constrained by the statutory direction from RCW 70A.60.010 that expressly excludes chillers from the definition of air conditioning for the purpose of applying a GWP threshold under RCW 70A.60.020.

> RCW 70A.60.010(1)
>
> (a) "Air conditioning" means the process of treating air to meet the requirements of a conditioned space by controlling its temperature, humidity, cleanliness, or distribution.
>
> (b)(i) "Air conditioning" includes chillers, except for purposes of RCW 70A.60.020.

This statutory definition states that air conditioning includes chillers except for the purpose of applying a GWP restriction. RCW 70A.60.020 is the section of the law that authorizes Ecology to adopt GWP thresholds. To comply with this direction while still meeting the objective of the statute to reduce HFC emissions, we applied specific prohibitions to this end-use.

One commenter recommended the rule address hybrid or integrated systems for meeting refrigeration and HVAC loads.

Response to comment B-9-3

Ecology added language in the definitions of "chiller" and "industrial process refrigeration" and "air conditioning equipment" in WAC 173-443-030 to clarify that the applicability of the prohibitions set forth in WAC 173-443-040 is determined by the application or end-use of the equipment for which the highest percentage of operating capacity is used. We recognize that this addition does not automatically require the strictest GWP threshold to apply, but we believe it allows the equipment to be subject to regulation based on the application that is most appropriate.

One commenter requested to revise the GWP threshold effective date for "other types of air conditioning equipment" to January 1, 2026, from January 1, 2028, to align with EPA's proposed Technology Transitions Rule.

Response to comment B-9-4

RCW 70A.60.20(2) outlines the Washington State Building Code Council (SBCC) code requirements to place GWP thresholds on this equipment as follows:

> (2) The department may adopt rules that establish a maximum global warming potential of 750 for substitutes used in new stationary air conditioning. Rules adopted under this subsection may not take effect prior to:
>
> (a) January 1, 2023, for dehumidifiers and room air conditioners;
>
> (b)(i) January 1, 2025, for other types of stationary air conditioning equipment, but only if before January 1, 2023, the state building code council adopts the following safety standards into the state building code as these standards existed as of January 1, 2022:
>
> (A) American society of heating, refrigerating, and air-conditioning engineers standard 15;
>
> (B) American society of heating, refrigerating, and air-conditioning engineers standard 15.2;
>
> (C) American society of heating, refrigerating, and air-conditioning engineers standard 34; and
>
> (D) Underwriters laboratories standard UL 60335-2-40 edition 4;

Under the statute, a GWP threshold for "other types of stationary air conditioning equipment" cannot take effect sooner than 24 months following the SBCC's adoption of the necessary code updates. At the time of Ecology's rule proposal, the SBCC had not adopted Edition 4 of UL 60335-2-40 because it was not yet published when the SBCC last voted to adopt updated codes in November 2022. The SBCC conducts these votes based on what is published at the time of the vote, and this process typically happens every three years. The SBCC has voted to adopt Edition 3 of this code. While Edition 3 is adequate to address many new technologies, the statutory direction in RCW 70A.60.020(2)(b)(i)(D) has constrained our ability to make this effective date any sooner than 24 months after Edition 4 of the standard is adopted by the SBCC.

We have been informed that the SBCC is expected to take up a supplemental vote to adopt Edition 4 in November 2023. If this happens, the effective date of the GWP threshold can be January 1, 2026. We revised the effective date in the rule to January 1, 2026, provided that Edition 4 is adopted as expected. The rule also provides that if the SBCC vote does not happen by the end of 2024, the effective date will be 24 months following adoption of Edition 4.

One commenter recommended that the rule address uses of heat pumps in applications other than air conditioning, such as hot water heaters, clothes dryers, and pool and spa heat pumps.

Response to comment B-9-5

Ecology agrees that reducing emissions from such new and emerging uses of heat pump technology could be an important part of the decarbonization effort and that restrictions on the refrigerants used in those applications would be appropriate. However, the statute authorized Ecology to adopt a rule applying GWP thresholds for new stationary refrigeration and air conditioning applications, including heat pumps used to provide air conditioning. It did not authorize us to adopt maximum GWP thresholds for heat pump water heaters used for the purpose of the potable domestic hot water end use or clothes driers. We will be ready to amend the rule to incorporate other end uses should new legislation authorize us to do so.

One commenter requested later effective dates for the GWP thresholds because higher pressures are needed for refrigerants with a GWP of less than 150 and higher pressures lead to decreased energy efficiency.

Response to comment B-12-1

Ecology has reviewed available resources throughout this rulemaking to determine the availability of technology in accordance with RCW 70A.60.020(6):

> (a) Prior to adopting final rules to implement restrictions under subsection (2) or (3) of this section, the department must review the availability and affordability of:
>
> (i) Equipment that meets applicable global warming potential requirements;
>
> (ii) Refrigerants that meet applicable global warming potential requirements; and
>
> (iii) Appropriate training to utilize equipment that meets applicable global warming potential requirements.
>
> (b) After the review required under (a) of this subsection, the department is encouraged to consider delaying the effective date of restrictions under this section in the event that the department determines that significant training or compliant equipment or refrigerant availability and affordability limitations are expected to occur.

Ecology presents documentation of our research into these availabilities in the list of citations. Based on this research, we determined there is [adequate/sufficient] availability and affordability of equipment and refrigerants that meet the rule's GWP requirements and of resources to support appropriate training to utilize compliant equipment.

One commenter asserted that restrictions of specific HFCs in the previous rule already address the use of high-GWP refrigerants in nonessential consumer products. This commenter also recommended minor corrections to exemptions in WAC 173-443-050, Table 1.

Response to comment O-3-2

Ecology recognizes that GWP thresholds for nonessential consumer products may be unnecessary in light of the specific HFC prohibitions in WAC 173-443-040, Table 1; however, the 2021 law specifically applies GWP thresholds to these products. See Section 5 of E2SHB 1050 (now codified as RCW 70A.60.080). We incorporated them into the rule to clarify their relation to the rule's other requirements.

We revised exemptions for these products in WAC 173-443-050(1), Table 1 to combine the first two lines into one as requested.

One commenter expressed concern that the rule prevents or restricts the ability of an equipment owner to maintain their existing systems.

Response to comment O-5-7

Ecology has considered available technology and allowed for the ability of an equipment owner to maintain, repair, and replace components of existing refrigeration and air conditioning systems under the definition of "new air conditioning equipment" and "new refrigeration equipment" in WAC 173-443-030. These definitions allow for system repairs to be done on existing equipment as follows:

> "New air conditioning equipment" means any air conditioning equipment or system manufactured for an end-use listed in WAC 173-443-040, Table 3, that is first installed using new components, used components, or a combination of new and used components, and that is one of the following:
>
> … (d) A system in an existing facility with more than one condenser or more than one evaporator that is modified such that the system undergoes cumulative replacement of 75 percent or more of its indoor evaporator units (by number) and 100 percent of its air source or water source condensing unit.
>
> "New refrigeration equipment" means 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:
>
> … (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 or more of its evaporators (by number) and 100 percent of its compressor racks, condensers, and connected evaporator loads.

Therefore, an air conditioning system must undergo cumulative replacement of 75% of the evaporator units and 100% of the condensing units before it would be categorized as "new." Similarly, a refrigeration system must undergo cumulative replacement of 75 percent of its evaporators and 100 percent of its compressor racks, condensers, and connected evaporator loads before it would be categorized as a "new" refrigeration system.

In addition, there is a variance process outlined in WAC 173-443-095 for which an owner/operator can apply. The variances address situations of impossibility, force majeure, and economic hardship.

Three commenters requested clarification on the labeling requirements for field-erected equipment. One of these commenters expressed concern that some equipment components are on the borderline of the 50-pound threshold.

Response to comments B-3-17, O-5-13, and O-5-15

The terms “date of manufacture” and “manufacturer” are defined as follows:

"Date of manufacture" is defined in the rule as:

(a) For air conditioning and refrigeration equipment, the date displayed on the manufacturer's equipment label indicating the equipment's date of manufacture;

(b) For refrigeration and air conditioning equipment built up and completed on-site (field erected), the date that the refrigerant circuit was completed and initially filled with refrigerant; or

(c) For foam products imported into the state from outside the United States, the date the foam was originally manufactured, or the date of import if the original manufacture date is not known.

"Manufacturer" is defined in the statute:

“Manufacturer” includes any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses HFCs or is an importer or domestic distributor of such a product (RCW 70A.60.010).

Therefore, for field erected systems, the “person, firm, association, partnership, corporation, governmental entity, organization, or joint venture” that completes the refrigerant circuit and initially fills the equipment with refrigerant is the manufacturer. As such, the equipment installer is responsible for applying the required label to the equipment when it is installed onsite. The label must disclose the type of refrigerant added, the GWP of that refrigerant, and the date the circuit was completed and filled. It is the responsibility of the equipment installer to attach the label with the required information when the installer completes the manufacture of the equipment.

Ecology added language to the definition of “manufacturer” in WAC 173-443-030 to clarify that labeling of field-charged or field-erected equipment installed onsite is the responsibility of the equipment installer.

The selection of equipment i a business decision made by the business owner. Being subject to the refrigerant management program may be a factor by which a business makes equipment purchase decisions. Equipment that could be “borderline,” depending on which type of refrigerant will be used, should be considered carefully when making that decision. Ecology will be able to provide technical assistance when requested to help owners determine whether a “borderline” system would be subject to the program.

One commenter expressed concern that the Preliminary Regulatory Analyses does not adequately address the additional stocking and inventory costs that will impact wholesalers and distributors.

Response to comment O-5-14

The statute directs Ecology to establish a refrigerant management program that includes an annual reporting requirement for refrigerant wholesalers, distributors, and reclaimers. See RCW 70A.60.030(7)(d). Accordingly, the rule directs these entities to report refrigerants by type. Our Preliminary Regulatory Analyses assumed existing wholesaler stock taking practices would generate inventory lists that are sufficiently separable and detailed to support reporting by refrigerant type, since this is required to comply with the baseline under the AIM Act. We have added clarification to the Final Regulatory Analyses reiterating that the AIM Act is part of the baseline, and the rule would not impose additional costs over and above this baseline requirement.

One commenter recommended Ecology take a proactive approach to monitoring and scientific study of HFOs and TFA pollution and consider limiting non-essential uses of PFAS refrigerant.

Response to comment O-6-3

PFAS are not in the purview of this rulemaking or its authorizing statute; however, Ecology is aware of the quickly evolving information concerning PFAS. Ecology's HFC program staff are communicating with the PFAS Implementation Workgroup, a workgroup that includes programs across Ecology and program staff at the Washington Department of Health. The objective of the workgroup is to evaluate and determine potential health and environmental impacts of PFAS and possible next steps to reduce PFAS contamination, including when such contamination is caused by the use of synthetic refrigerants.

GWP – variances

Commenters: Carissa Linnane (O-2-3), Tammy Hetrick (O-4-3)

Summary: Two commenters requested additions to the variance for economic hardship

One commenter recommended adding exemptions for economic hardship specifically related to the higher supply costs for smaller entities.

Response to comment O-2-3

The rule offers a variance for economic hardship as follows:

> WAC 173-443-095
>
> (1) An applicant may apply to ecology for a variance from the prohibitions of WAC 173-443-040, Table 2 or Table 3. Ecology may grant a variance if it determines that the request meets the conditions identified in subsection (2) of this section and the applicant has complied with subsection (3) of this section.
>
> (2) Types of variances.

… (c) Economic hardship. Ecology may grant a variance if the applicant demonstrates that the requested exemption will not increase the overall risk to human health or the environment and all of the following apply:

(i) The applicant owns or operates a retail food facility or a small business, as defined in WAC 173-443-030;

(ii) Compliance with the applicable prohibitions would result in closure of the entire retail food facility or small business, or a large portion thereof, or a substantial loss of revenue from the retail food facility or small business; and

(iii) The applicant has made a good faith effort to anticipate, address, and mitigate any potential noncompliance.

This "economic hardship" variance is available specifically for retail food facilities and for any facility that is a "small business," as defined in the Regulatory Fairness Act.

One commenter requested an industry-wide variance based on the supply of refrigerants.

Response to comment O-4-3

WAC 173-443-095 also provides variances in circumstances of "impossibility" and "force majeure" that would potentially address this concern. An "impossibility" variance is available specifically to address potential supply challenges. This variance is available when a compliant refrigerant "is not currently or potentially available" and the applicant can demonstrate they "made a good faith effort to anticipate, address, and mitigate any potential noncompliance." A "force majeure" variance is available specifically to address sudden and unforeseeable events that are beyond the control of regulated parties—such as wars, natural disasters, and pandemics.

Applications for these variances will be addressed on a case-by-case basis. If the case presented is an industry wide force majeure event and Ecology receives a large number of requests from that industry, Ecology will address that issue at that time.

Request for extension

Commenters: Karen Coulter (A-4-2) and Peter Godlewski (O-7-1)

Summary: Two commenters requested an extension of the public comment period.

Response to comments A-4-2 and O-7-1:

Ecology extended the end of the public comment period from August 31, 2023, to September 10, 2023.

RMP - fees

Commenters: Matt Harris (A-1-7), Ted Atwood (B-3-11), Janna Loeppky (B-13-2), Keilly Witman (B-14-10)

Summary: Four commenters requested changes or clarifications on implementation fees under the Refrigerant Management Program. Some commenters made more than one comment under this topic.

Three commenters asked for clarification for whether the initial and annual implementation fees are charged for each facility or for each piece of regulated equipment in a facility.

Response to comments A-1-7, B-14-10, and B-13-2

There is one annual implementation fee per facility regardless of whether the facility has a regulated refrigeration system or a regulated air conditioning system, or both. Likewise, there is one initial implementation fee per facility; however, only facilities with a refrigeration or air conditioning system with a refrigerant charge of 1,500 or more pounds must pay the one-time initial implementation fee.

For facilities with multiple regulated systems, the amount of the annual implementation fee is based on the refrigeration system or air conditioning system with the largest refrigerant charge size. For facilities with a refrigeration or air conditioning system with a full refrigerant charge of 1,500 or more pounds, the annual implementation fee is $370, and the one-time initial implementation fee is $170. For facilities with a refrigeration or air conditioning system with a full refrigerant charge of 200 to 1,499 pounds, the annual implementation fee is $170 and there is no one-time initial implementation fee. There are no fees of any kind for facilities with refrigerated or air conditioning systems having a full refrigerant charge of less than 200 pounds.

We added clarifying language in WAC 173-443-135 to specify that a facility with a regulated refrigeration system and a regulated air conditioning system pays a single initial and a single annual implementation fee for the facility.

One commenter requested that Ecology add language to clarify that there are no fees for facilities with equipment having less than 200 pounds of refrigerant**.**

Additional response to comment B-3-11

Ecology added language in the rule text to reflect that there are no fees for facilities with refrigeration or air conditioning systems having a refrigerant charge size of 50 to 199 pounds.

One commenter also requested that the rule define the term “facility.”

Additional response to comment B-13-2

The proposed rule included a definition of “facility” as follows:

“Facility” means any property, plant, building structure, stationary source, stationary equipment or grouping of stationary equipment or stationary sources located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right-of-way, and under common operational control, that includes one or more refrigeration systems subject to this chapter. Operators of military installations may classify such installations as more than a single facility based on distinct and independent functional groupings within contiguous military properties.

We did not make any changes to this definition in the final rule.

One commenter requested that the name of the “annual implementation fee” be changed to “annual reporting fee.”

Additional response to comment B-14-10

Ecology used the term "annual implementation fee" because the statute authorizes Ecology to charge fees to cover all costs of administering and enforcing the entire Refrigerant Management Program on an ongoing basis. We prefer the term "annual implementation fee" because the program encompasses more than annual reporting, and the annual fee supports Ecology's implementation of the entire program.

RMP - general

Commenters: Peter Godlewski (O-10-8)

Summary: One commenter noted that the rule does not identify a mechanism to demonstrate de minimis emissions rather than a de minimis refrigerant charging capacity (of less than 50 pounds) as allowed in the statute.

Response to comment O-10-8

RCW 70A.60.030 states:

(1) The department (Ecology) shall establish a refrigerant management program designed to reduce emissions of refrigerants, including regulated substances and their substitutes, from activities or equipment responsible for significant volumes of such emissions. The program must include, at minimum, larger stationary refrigeration systems and larger commercial air conditioning systems.

(2)(a) The department shall exempt refrigeration and air conditioning equipment operations associated with de minimis emissions or with a de minimis charging capacity of less than 50 pounds in a single system from registration, reporting, and leak detection requirements established in this section. The department shall exempt from the requirements established in this section equipment that uses refrigerants with a global warming potential of less than 150 and that are not class I or class II substances.

The statute directs Ecology to exempt equipment that the Legislature considers to have a de minimis impact. The rule implements this statutory direction by exempting equipment that has a full charge of less than 50 pounds.

We interpret the language of RCW 70A.60.030(2)(a) as specifying that the "de minimis" exemption can be applied on the basis of either (1) actual emissions associated with operation of the equipment, "or" (2) the volume of refrigerant contained in the equipment. Because the volume of refrigerant has a direct correlation to the equipment's potential emissions, we also interpret this language as establishing a statutory presumption that equipment with a full charge of less than 50 pounds will have "de minimis emissions."

RMP – leak inspections

Commenters: Ted Atwood (B-3-14), (B-3-15), Janna Loeppky (B-13-3), Christopher Douglass (O-6-8), Peter Godlewski (O-10-6), John Wallace (OTH-1-6)

Summary: Five commenters made recommendations or asked for clarification on leak inspections. Some commenters made more than one comment under this topic.

One commenter recommended adding text that monthly leak inspections are not required for air conditioning systems that have automatic leak detection equipment installed.

Response to comment B-3-14

The proposed rule specified in WAC 173-443-145(1)(a)(i) that for refrigeration or air conditioning systems, monthly leak inspections are required unless the system has automatic leak detection installed and is functioning correctly on the system. We revised this section of the rule to specify that automatic leak detection must be installed and functioning correctly on the "full" system in order to be exempt from monthly inspection requirements. This means that for any parts of the refrigerant circuit that do not have automatic leak detection, a monthly inspection must be conducted on those parts of the circuit. Ecology believes that the recommended additional text is not necessary in light of this clarification.

One commenter asked if an independent leak inspection conducted on a system because additional refrigerant was added, or oil residue was found, can count as the required leak inspection under WAC 173-443-145.

Response to comment B-3-15

Ecology expects that inspections following the addition of refrigerant as described would be conducted in the same manner as a regular leak inspection performed in accordance with WAC 173-445-145(1)(a)(i), -145(3)(b)(i), or -145(4)(b)(i). Accordingly, a leak inspection performed for one required purpose may satisfy the requirement to perform a leak inspection for another purpose. The intent of WAC 173-443-145(1)(a)(iii) and (iv) is to clarify that additional leak inspections may be required to address specific circumstances, outside of the timing for the required regular inspections (i.e., monthly, quarterly, annually).

One commenter asked to add an end-date for inspections on systems that do not operate year-round and for the rule to address "standby" systems. This commenter also recommended adding additional clarifications in the proposed rule review guidebook on what constitutes a small, medium, large system, and a system that is not operated year-round.

Response to comment B-13-3

Ecology appreciates the recommendations for the Proposed Rule Language Review Informational Guidebook, and we will consider them when we revise the guidebook to support the final rule.

Ecology expects that any equipment, including standby equipment, that is kept charged with refrigerant must follow the leak inspection frequency that is outlined in the rule for equipment, based on the size category, in WAC 173-443-145(1) through (4). If the equipment is emptied of refrigerant and is only re-charged when the need arises, then it would fall under the category "refrigeration and air conditioning systems not operated year-round" in WAC 173-443-145(5). We have added a new subsection (7) to specify that the requirements of WAC 173-443-145 apply to systems in standby status.

One commenter commended Ecology's effort for requiring automatic leak detection equipment on large refrigeration systems.

Response to comment O-6-8

Ecology based the requirements for automatic leak detection on those adopted by California's Air Resources Board. We appreciate your support for this requirement.

One commenter recommended that the rule allow for additional leak detection methods.

Response to comment O-10-6

Ecology added language to WAC 173-443-145 to indicate that when a certified technician is conducting a leak inspection, the method of inspection may be as determined appropriate by that technician.

One commenter asked to clarify if automatic leak detection (ALD) equipment is required for comfort or process cooling and to add clarification for how rooftop air conditioning systems can avoid monthly leak inspections when ALD is not practical for rooftop applications.

Response to comment OTH-1-6

Automatic leak detection equipment is only required under WAC 173-443-145(2) for "refrigeration systems" with 1,500 or more pounds of refrigerant. It is not required for any "air conditioning systems." It is also not required for refrigeration systems unless a single refrigerant circuit contains 1,500 or more pounds of refrigerant and the refrigerant circuit is located entirely inside an enclosed structure, or the major components, including compressor, evaporator, condenser, or any other component of the refrigeration system, is located inside an enclosed building or structure.

There is no alternative pathway to avoid the requirement to perform regular leak inspections other than having automatic leak detection equipment installed and operating correctly on the system. Ecology agrees that "direct detection" automatic leak detection systems are not practical for rooftop applications or other outdoor equipment, so the requirement to install automatic leak detection systems only applies to sections of equipment located indoors. See WAC 173-443-145(2)(i)(A)–(B).

Installation and operation of an indirect type of automatic leak detection system in accordance with WAC 173-443-145(2)(c) may allow an owner to avoid regular leak inspections as long as the automatic leak detection equipment is "installed and functioning correctly," as outlined in WAC 173-443-145(1)(a)(i), -145(3)(b)(i), and -145(4)(b)(i), which apply to both refrigeration and air conditioning systems.

RMP – leak rate thresholds

Commenters: Keilly Witman (B-14-8), Brandon Houskeeper (O-1-4), Christopher Douglass (O-6-6), Peter Godlewski (O-10-3)

Summary: Four commenters requested changes or clarification on leak rate thresholds. Some commenters made more than one comment under this topic.

One commenter requested clarification on notifications of a leak rate threshold exceedance.

Response to comment B-14-8

Owners or operators must notify Ecology every time the leak rate threshold is exceeded. Ecology clarified text in WAC 173-443-155(3) that this notification must occur after "each" exceedance of the leak rate threshold.

Annual reporting requirements begin the year after the calendar year in which the facility is registered in the Refrigerant Management Program. This reporting requirement is separate from the required notifications for an exceedance of the leak-rate threshold.

Two commenters expressed concern that the 16% leak rate threshold for retail food refrigeration is too low and that the program should start with large equipment for end-uses having the highest potential for emissions.

Response to comments O-1-4 and O-10-3

The statute instructs Ecology to reduce hydrofluorocarbon emissions by establishing a program to reduce leaks and encourage refrigerant recovery from large refrigeration and air conditioning systems. The statute specifically directs Ecology's rules to create a program that is more stringent than federal requirements:

> RCW 70A.60.030(7):
>
> The department must adopt rules that: … (f) Apply leak rates and other regulatory thresholds that achieve greater emission reductions than the federal regulations adopted by the United States environmental protection agency, and that reflect levels of achievable superior performance established for the GreenChill voluntary program implemented by the United States environmental protection agency.

Ecology carried out this statutory direction by implementing leak rates that are lower than the federal regulations. The direction to apply more stringent leak rates is not directed at any particular type of equipment or end-use.

The statute also specifically directs Ecology to adopt leak rates that reflect levels of "achievable superior performance" that have been established under EPA's GreenChill program. GreenChill has demonstrated that leak rates averaging 15% are achievable for retail refrigeration. In addition, data presented by CARB's Technical Support Document for HFCs High Global Warming Potential Emission Inventory demonstrate actual measured leak rates at or below those rates chosen by Ecology for our refrigerant management program.

Ecology is confident that the leak rate thresholds in the rule "reflect levels of achievable superior performance," and meet the direction in the statute to "achieve greater emission reductions than the federal regulations."

One commenter also expressed concern that the timeline to retire or retrofit a leaking system is not feasible due to cost and potential length of time such a project can take.

Additional response to comment O-1-4

Ecology understands that the processes for repair and maintenance can be challenging, but we believe that our rule allows for issues such as these to be addressed adequately. For the purposes of leak repair and/or retrofit and retirement plans, there are several mechanisms available within the rule, including extended leak repair timeframes of 45 or 120 days within WAC 173-443-165 that apply depending on the situation.

There are also exemptions provided in WAC 173-443-235 for which anyone can apply on the basis of impossibility, economic hardship, or force majeure. If the criteria for an

exemption are met, Ecology has discretion to grant an extension to the time periods set forth in WAC 173-443-165.

One commenter commended the leak rate thresholds and requested that Ecology consider revising the thresholds, especially for industrial process refrigerant, at a later date.

Response to comment O-6-6

The statute requires Ecology to apply leak rates and other regulatory thresholds that achieve greater emission reductions that the federal regulations adopted by EPA and that reflect levels of achievable superior performance established for the GreenChill voluntary program. See RCW 70A.60.030(7)(f).

Consistent with this requirement to achieve greater emissions reductions than the federal program, we have chosen to set the leak rate for industrial process refrigeration at 24%. This represents a 20% reduction from the leak rate of 30% adopted by EPA on November 18, 2016. Ecology will have the opportunity to reevaluate all of the leak rate thresholds at the time of our five-year review of the RMP required under the statute.

RMP – leak repair

Commenters: Karen Coulter (A-6-3), Ted Atwood (B-3-19), (B-3-20), (B-3-21), Bryan Mirick (B-8-4), Keilly Witman (B-14-4), (B-14-9), Peter Godlewski (O-10-5), John Wallace (OTH-1-7)

Summary: Six commenters made recommendations or requested changes to the leak repair requirements:

One commenter requested additional time for federal facilities to make repairs under the refrigerant management program.

Response to comment A-6-3

Ecology understands the processes for repair and maintenance can be challenging, but we believe the rule allows for these issues to be adequately addressed. For the purposes of leak repair and/or retrofit and retirement plans, there are several mechanisms available within the rule, including extended leak repair timeframes of 45 or 120 days in WAC 173-443-165 depending on the situation.

Additionally, the rule provides exemptions in WAC 173-443-235, for which anyone can apply on the basis of impossibility, economic hardship, or force majeure. If the criteria for an exemption are met, Ecology has discretion to grant an extension to the time periods set forth in WAC 173-443-165. And finally, under WAC 173-443-165(8), mothballing the equipment for at least 60 days would pause the requirement until the equipment is restarted, although we understand this is not always possible.

One commenter questioned why documentation is needed from a certified technician that additional time is needed for a repair.

Response to comment B-3-19

The rule provides an extension of the time period to repair a leak, from 14 days to 45 days, if the parts necessary to complete the required repair are unavailable within 14 days of leak detection. In order to justify such an extension, the owner must demonstrate not only that certain parts are “unavailable” but also that such parts are “necessary” to

complete the required repair. Accordingly, the rule requires that a certified technician provide documentation as to which parts are needed for the repair. However, the rule does not assume that the technician is responsible for buying the parts and instead requires documentation from the manufacturer regarding their availability. By requiring a technician's confirmation of necessity, the rule ensures that if a business owner buys parts directly, they know which parts are needed to repair the system and thus whether they are eligible for an extension if unavailable.

One commenter also recommended changes to the initial and follow up verification test requirements.

Response to comment B-3-20

The rule requires that all identified leaks are repaired. If a verification test is not performed because it is expected to fail, then it is considered an "unsuccessful verification test" within the meaning of WAC 173-443-165(7). Under WAC 173-443-165(7)(b), facilities may make multiple repair attempts in the allowable repair timeline, which includes two iterations of the 14-, 45-, or 90-day periods until the repair is successful. If a leak cannot be repaired within the allotted amount of time, then a retrofit or retirement plan must be developed and implemented in accordance with WAC 173-443-175.

One commenter asked for clarification on the leak repair timeframes.

Response to comment B-3-21

The second timeframe referenced in the comment, set forth in WAC 173-443-165(7)(a), refers to a subsequent repair window that applies if the initial repair attempt was unsuccessful. This subsequent repair window lasts for the same number of days originally allowed for the repair under WAC 173-443-165(2)–(4). Accordingly, if the applicable repair timeframe is 14 days under WAC 173-443-165(2) and the repair attempt(s) was not successful in that 14 days, then an additional 14 days is allowed to make a successful repair before a retrofit or retirement plan is required. Similarly, if the timeframe is 45 days because one of the conditions in WAC 173-443-165(3) is met and the repair attempt(s) was not successful in that 45 days, then an additional 45 days is allowed to make a successful repair before a retrofit or retirement plan is required. The same is true for 120 days. If 120 days is allowed under WAC 173-443-165(4) and the repair attempt(s) was not successful in that 120 days, then an additional 120 days is allowed to make a successful repair before a retrofit or retirement plan is required.

Ecology added new subsections (i) – (iii) under WAC 173-443-165(7)(a) to clarify these requirements.

One commenter requested changes to the certified technician requirements pertaining to semiconductor manufacturing.

Response to comment B-8-4

The statute authorizes Ecology to adopt rules establishing service practices for stationary appliances, including refrigeration and air conditioning systems. RCW 70A.60.030(8)(a) specifically provides that Ecology's rules may require systems to be serviced by technicians who are certified under EPA's standards. Under EPA's rules, the technicians

who service these types of equipment are required by 40 C.F.R Part 82, Subpart F to hold certifications. EPA's standards for technician certification are set forth in 40 C.F.R 82.161.

The rule incorporates this technician certification requirement in WAC 173-443-205(1) and applies it to the servicing of all refrigeration and air conditioning equipment with a full charge of 50 pounds or more. Because this certification is already required under federal law for a significant number of refrigerants, most service technicians should already have these certifications. In particular, service technicians should already be certified under EPA's standards if they are "maintaining, servicing, or repairing appliances containing class I, class II or non-exempt substitute refrigerants."

One commenter asserted that the rule proposal informational guidebook states that a retrofit must result in the use of a low-GWP refrigerant while the rule does not specify this same requirement.

Response to comment B-14-4

Thank you for your comments on the informational guidebook. The rule defines "retrofit" as converting an appliance from one refrigerant to another refrigerant.

To be clear, retrofitting does not take the place of the rule's leak repair requirements. If a leak is not repaired prior to or during a retrofit, then a successful leak repair is still required under WAC 173-443-165. If a refrigeration or air conditioning system cannot be successfully repaired, it will require a retrofit or replacement per WAC 173-443-165(7)(b).

Additionally, Ecology removed the proposed rule's requirement for retrofit equipment to meet the applicable GWP threshold by the same date as new equipment. The effective date for retrofit equipment is now January 1, 2029. To support this change, we also removed all references to "retrofit" equipment from the definitions of "new refrigeration equipment" and "new air conditioning equipment."

One commenter expressed concern about the requirement that equipment must be offline for 60 days to be considered "mothballed."

Response to comment B-14-9

While a piece of equipment is evacuated and/or requires evacuation to be repaired, that is not automatically considered "mothballed." If a part that is needed to complete a leak repair is unavailable, there is the 45-day allowance, which is followed by a second time frame of the same length in the event that the initial repair attempt fails. This results in a 90-day allowance. If even more time is needed due to the unavailability of necessary parts, the owner/operator has the option of applying for an exemption based on "impossibility" under WAC 173-443-235(2)(a).

One commenter asserted that the 14-day leak repair timeframe appears arbitrary and does not reflect a realistic timeframe.

Response to comment O-10-5

The 14-day leak repair timeframe in Ecology's rule is consistent with CARB's Refrigerant Management Program. In order to provide flexibility based on the circumstances, Ecology's rule provides an additional 14-, 45-, or 90-day leak repair time-

period if the initial repair period is not adequate to successfully complete the repair. The rule also provides exemptions and other options for owners and operators in the event that additional time is needed. As a result, Ecology is confident that the 14-day initial leak repair requirement is appropriate.

One commenter requested clarification if the 14-day leak repair requirement only applies when the leak rate threshold is exceeded. This commenter recommended more inclusive language for the 45- and 120-day allowances.

Comment OTH-1-7

Response to comment OTH-1-7

The leak repair timeframes apply to all refrigeration and air conditioning systems under WAC 173-443-165(1).

The requirement to repair a refrigerant leak within a specific number of days of detection applies to "all detected refrigerant leaks," not only to equipment that is leaking above the applicable threshold established in WAC 173-443-155. The rule requires the successful repair of all identified leaks no matter what the leak rate threshold is for that piece of equipment.

The role of the leak rate thresholds set forth in WAC 173-443-155 is to establish the point at which a leak is so substantial that it warrants additional reporting requirements.

RMP – recordkeeping and reporting

Commenters: Joe Cook (A-5-1), Richie Kaur (B-9-8), Janna Loeppky (B-13-4), Keilly Witman (B-14-5) and Peter Godlewski (O-10-7)

Summary: Four commenters made comments or recommendations for record-keeping and reporting requirements.

One commenter asserted that the proposed rule review guidebook is not clear if these requirements apply to all sizes of systems or only those with 50 or more pounds of refrigerant.

Response to comment A-5-1

Ecology has noted the request for clarification; however, this comment applies to the Proposed Rule Language Review Informational Guidebook, publication 23-02-080. This guidebook was provided as a supplement to help readers understand the rule proposal. It states that "in the event that any provision of this guidebook conflicts with the provision of Chapter 70A.60 RCW, or the rule language, the statute and rule language are controlling." We acknowledge that this section may have created some confusion. The provisions in the final rule are the requirements that must be followed.

To clarify, the refrigerant management program applies only to owners or operators of facilities that have refrigeration or air conditioning systems with a full charge of 50 or more pounds of a refrigerant with a GWP over 150. The refrigerant management program does not apply to facilities that only have a refrigeration or air conditioning system with less than 50 pounds of a refrigerant. Specifically, the purpose and applicability section for the RMP, WAC 173-443-105(2), states that the RMP requirements apply to facilities that have a refrigeration or air conditioning system with a full charge of 50 or more pounds of

refrigerant. This specific language is also in the recordkeeping requirements, WAC 173-443-195(1).

One commenter recommended to add requirements that high-GWP refrigerants reclaimed in Washington but sent out of state be reported to Ecology.

Response to comment B-9-8

Reporting requirements under WAC 173-443-215(2)(a) apply to refrigerant reclaimers. Additionally, WAC 173-443-215(2)(d)(ii) requires that the annual report submitted by refrigerant reclaimers must include the total statewide aggregated weight in pounds of refrigerant that was received for reclamation or destruction, and the total aggregated amount of refrigerant that was shipped out of Washington for reclamation or destruction. We believe this language adequately addresses reporting requirements for refrigerants reclaimed in Washington or those sent out of state for reclamation.

One commenter recommended changes to the Proposed Rule Language Informational Guidebook to clarify that recordkeeping applies to all sizes of systems and reporting only applies to systems with 200 or more pounds of refrigerant.

Response to comment B-13-4

Ecology has noted the request for clarification; however, this comment applies to the Proposed Rule Language Review Informational Guidebook, publication 23-02-080. This guidebook was provided as a supplement to help readers understand the proposal. The guidebook states "in the event that any provision of this guidebook conflicts with the provision of Chapter 70A.60 RCW or the proposed rule language, the statute and proposed rule language are controlling." The guidebook will be updated and revised to accompany the final rule and we will take this comment into consideration when making these updates.

The requirement to keep records applies to all size equipment that is subject to the refrigerant management program, which is all refrigeration and air conditioning equipment with a full charge of 50 pounds or more. It is only annual reporting that does not apply to small equipment with a full charge of 50 to 199 pounds of refrigerant. The rule states the following, in WAC 173-443-195:

> (1) Beginning January 1, 2024, the owner or operator of a facility that has a refrigeration or air conditioning system with a full charge greater than or equal to 50 pounds of a refrigerant with a GWP of 150 or more must maintain the following records for a minimum of five years.

Therefore, all owners or operators of systems that meet those conditions will be required to start recordkeeping in accordance with WAC 173-443-195 on January 1, 2024.

One commenter requested that the rule include a requirement for technicians to provide the owner with the necessary repair paperwork within 5 days following the repair.

Response to comment B-14-5

We believe that a requirement for technicians to provide this information directly to the owner/operators within 5 days would be more appropriate for inclusion in individual contracts between such technicians and their clients, rather than in Ecology's rule. The

responsibility to gather this information is more appropriately assigned between the owner/operator and the technicians based on their work contracts.

One commenter recommended a recordkeeping and reporting timeline of three years to match that proposed by EPA.

Response to comment O-10-7

The statute specifically requires that Ecology's rules "establish recordkeeping and reporting requirements that are consistent with programs implemented by the federal environmental protection agency or in other states" whenever practicable. See RCW 70A.60.020(7)(g). The recordkeeping requirements of five years is consistent with CARB's rule for stationary refrigeration and air conditioning equipment. We believe that keeping five years of records is not impracticable and also provides benefit for equipment owners for the purposes of tracking equipment performance.

RMP – start date

Commenters: Keilly Witman (B-14-11)

Summary: One commenter expressed concern that the start date for the refrigerant management program does not allow adequate time to prepare internal policies and procedures.

Response to comment B-14-11

Ecology believes the start date of January 1, 2024, is appropriate to meet the objectives of the statute to reduce emissions of hydrofluorocarbons and Washington's overall climate goals. Owners and operators of facilities with regulated systems have been on notice of the basic requirements of the RMP—including its potential start date of January 1, 2024—since RCW 70A.60.030 was enacted in 2021. At a minimum, such owners and operators could have started preparing internal policies and procedures based on the content of the proposed rule, which was published in July 2023. We did not make any substantial changes to the RMP requirements in the final rule.

Additionally, the RMP registration requirements are phased in based on a system's refrigerant charge size. Only the largest systems, with a full charge of 1,500 pounds or more, will be required to register in 2024.

RMP – technical concerns

Commenters: Ted Atwood (B-3-2), (B-3-6), (B-3-12), (B-3-16) and (B-3-18), Keilly Witman (B-14-6), Bryan Mirick (B-8-3), Christopher Douglass (O-6-7), and Andre Mayer (O-8-1)

Summary: RMP - technical concerns

Five commenters made technical recommendations or requested changes to the Refrigerant Management Program requirements. Some commenters made more than one comment under this topic.

One commenter requested clarification for when vessels, vehicles, and portable vehicle mounted equipment must be in the state to be subject to the rule.

Response to comment B-3-2

Transportation refrigeration is not within the scope of this rulemaking. Therefore, those vessels or ships would not be subject to the requirements of this rule regardless of whether they are located in the state. For portable trailer mounted rental chillers, it would depend on their placement and use.

First, we must consider if the portable vehicle mounted equipment meets the definition of "stationary," as the rule applies to stationary equipment.

> "Stationary" is defined as:
>
> (a) Installed in a building, structure, or facility;
>
> (b) Attached to a foundation, or if not attached, will reside at the same location for more than twelve consecutive months; or
>
> (c) Located intermittently at the same facility for at least two consecutive years and operates at that facility a total of at least ninety days each year.

If the equipment meets this definition, Ecology will regulate it based on whether it is used year-round or on a seasonal basis. The definition indicates that even if it's on wheels, is it considered stationary under those specific boundaries.

The timing of the inspections required under WAC 173-443-145 depends on whether the equipment is running on a year-round or seasonal basis. For equipment brought in to be run in lieu of a permanent piece of equipment that would be running constantly, the size of the equipment will dictate frequency. If the equipment is brought in to be used seasonally, the requirements would be those for seasonal equipment inspected 30 days after startup and quarterly thereafter.

One commenter requested clarification on how to determine if a facility with multiple buildings is regulated as a single facility.

Response to comment B-3-6

WAC 173-443-030 defines facility as follows:

> "Facility" means any property, plant, building structure, stationary source, stationary equipment or grouping of stationary equipment or stationary sources located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right of way, and under common operational control, that includes one or more refrigeration systems subject to this chapter. Operators of military installations may classify such installations as more than a single facility based on distinct and independent functional groupings within contiguous military properties.

As long as multiple buildings are "located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right of way, and under common operational control," they would be considered one facility, and would be required to register as a single facility, and then would need to list all of the equipment located at that facility. Registration of that facility will require all information listed in WAC 173-443-115 (6) including all facility information and all information required for each piece of refrigeration and/or air conditioning equipment located at that facility.

One commenter requested clarification on the system install date.

Response to comment B-3-12

Ecology considers the equipment "installed" when the equipment refrigerant circuit has been completed and charged with refrigerant. This is reflected in the rule's definition of "date of manufacture."

One commenter requested that registration requirements include the operational status of the equipment.

Response to comment B-3-16

Ecology added a new subsection in WAC 173-443-115 to require reporting of the operational status of equipment. The available reporting categories include: operated year-round, mothballed, stand-by or emergency, replaced, or retired.

One commenter requested clarification on registration and other requirements once a system has been retrofitted.

Response to comment B-3-18

Ecology added a new subsection in WAC 173-443-115 to require reporting of the operational status of the equipment. The available reporting categories include: operated year-round, mothballed, stand-by or emergency, replaced, or retired.

The Leak rate that applies to a particular piece of equipment under WAC 173-443-155 will not be reset after a retrofit of that equipment is performed and there will not be a new asset ID created. The reason is to ensure that Ecology is able to view and track the equipment through its entire history. If a system is retrofit and that does not result in a successful repair of the leaking equipment, retirement will be required under WAC 173-443-165(7)(b). Retrofitting is not to be done in lieu of leak repair.

One commenter requested that the leak inspections start later than January 1, 2024, for systems with more than 50 pounds and less than 200 pounds of refrigerant.

Response to comment B-8-3

Ecology intended for the proposed rule to specify that leak inspections start later for systems with less than 1,500 pounds of refrigerant. We corrected the section on leak inspections to start January 1, 2026, for refrigeration or air conditioning systems with a refrigerant charge size of 200 to 1,499 pounds and January 1, 2028, for refrigeration or air conditioning systems with a refrigerant charge size of 50 to 199 pounds. We did not change the leak inspection start date for refrigeration or air conditioning systems with a refrigerant charge size of 1,500 or more pounds. Additionally, we revised the terminology to clarify that leak inspections must begin by those dates rather than be completed by those dates.

Please note that the leak repair and recordkeeping requirements begin on January 1, 2024, for all sizes of refrigeration and air conditioning systems that are subject to the RMP.

One commenter asked if cumulative replacement applies over a specific amount of time.

Response to comment B-14-6

The cumulative replacement timeframe is the lifetime of the equipment.

One commenter recommended revisions to the leak inspection methods.

Response to comment O-6-7

The rule specifies that leak inspections must be performed using a calibrated leak inspection device or bubble test. Oil residue discovery is one circumstance that triggers the requirement to conduct a full system leak inspection outside of the regular inspection intervals.

One commenter asked for clarification on leak inspections start dates in the Proposed Rule Language Informational Guidebook and the proposed rule.

Response to comment O-8-1

Recordkeeping requirements in the rule state the following:

> WAC 173-443-195(1)
>
> Beginning January 1, 2024, the owner or operator of a facility that has a refrigeration or air conditioning system with a full charge greater than or equal to 50 pounds of a high-GWP refrigerant must maintain the following records for a minimum of five years.

The Proposed Rule Language Informational Guidebook on page 18 states that "Beginning January 1, 2024, all owner/operators of all sized systems must maintain, at a minimum, the following records for a minimum of five years." We recognize this statement in the guidebook is imprecise and could be interpreted as imposing recordkeeping requirements on small systems that are not otherwise subject to the RMP. However, it is accurate when read in the context of systems that are subject to the RMP. The requirements of the RMP apply to all refrigeration or air conditioning equipment with 50 or more pounds of a refrigerant with a GWP of 150 or more.

Ecology appreciates the request for additional clarification, and we will take that request into consideration when we update the guidebook to support the final adopted rule.

RMP – terminology

Commenters: Keilly Witman (B-14-2) and (B-14-3)

Summary: One commenter made two recommendations or requests for clarification on terminology.

One comment requested clarification on the use of the terms "system," "appliance," and "circuit" and to clarify "individual circuit" because they asserted that some equipment may have more than one circuit.

Response to comment B-14-2

Ecology revised the definitions of "refrigeration equipment" or "refrigeration system" and "air conditioning equipment" or "air conditioning system" in WAC 173-443-030 to incorporate the international mechanical code description of a system for added clarification that a system is a single refrigerant circuit. In addition, Ecology added the terms "air conditioning appliance" and "refrigeration appliance" to those same definitions

to clarify that the terms "appliance" "equipment" and "system" are considered the same for the purposes of air conditioning or refrigeration.

One comment requested clarification on the meaning of "beginning operations."

Response to comment B-14-3

Ecology revised text in WAC 173-443-115(5) to clarify that the requirement to register is triggered when the "refrigeration or air conditioning system" begins operating at the facility and not when the facility begins operating.

RMP – leak rate calculations

Commenters: Ted Atwood (B-3-3), Keilly Witman (B-14-7) and Peter Godlewski (O-10-4)

Summary: Three commenters made recommendations or requested clarification on leak rate calculations.

One commenter requested clarification on leak inspections and leak verifications and whether the leak rate calculation may start at zero after a successful verification test.

Response to comment B-3-3

A full leak inspection is required following a leak repair. Therefore, leak repair verification will be equivalent to a regular leak inspection. The difference is that a leak repair verification is carried out after a leak has been repaired.

Returning a leak rate to zero would no longer be a rolling 12- month calculation, so Ecology expects the leak rate to be calculated based on the 365 days leading up to the day of the calculation. To clarify, the leak rate is not the sole consideration for compliance determination.

Ecology added text in WAC 173-443-195 to clarify that information regarding leak rate calculations is required in recordkeeping. We also added the equation to the definition of "leak rate calculation" in WAC 173-443-030.

One commenter requested clarification for when a leak rate calculation must be performed.

Response to comment B-14-7

WAC 173-443-155(1) requires that the leak rate is calculated with each required leak inspection and every time refrigerant is added. There will be times when refrigerant is also added when the inspection is conducted and other times when it will not. When refrigerant is not added, the owner or operator would conduct the calculation using a value of zero for the amount of refrigerant added at the time of the inspection.

One commenter requested an additional leak rate calculation method and recommended adding exemptions to the leak rate calculation requirement. This commenter also noted discrepancies between the rule and the Proposed Rule Language Informational Guidebook.

Response to comment O-10-4

Ecology used the 12-month rolling average method for calculating the leak rate to track leak rates statewide.

The annualizing method is a predictive tool that will reflect a prediction over the upcoming year based on the amount of refrigerant added. While Ecology agrees that this is a good tool for facilities to use to indicate issues before they become a problem, we do not believe this is a good indication of the current performance of the equipment.

Thank you for your comments regarding the guidebook. The guidebook is intended to aid readers in their review of the proposed rule language. The guidebook states "in the event that any provision of this guidebook conflicts with the provision of Chapter 70A.60 RCW or the proposed rule language, the statute and proposed rule language are controlling." We will update the guidebook to support the final rule language upon adoption.

Appendices

Appendix A. List of Citations