



Final Regulatory Analyses:

Including the:

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

Chapter 173-446 WAC

Ozone Depleting Substances Offsets

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For the

Climate Pollution Reduction Program

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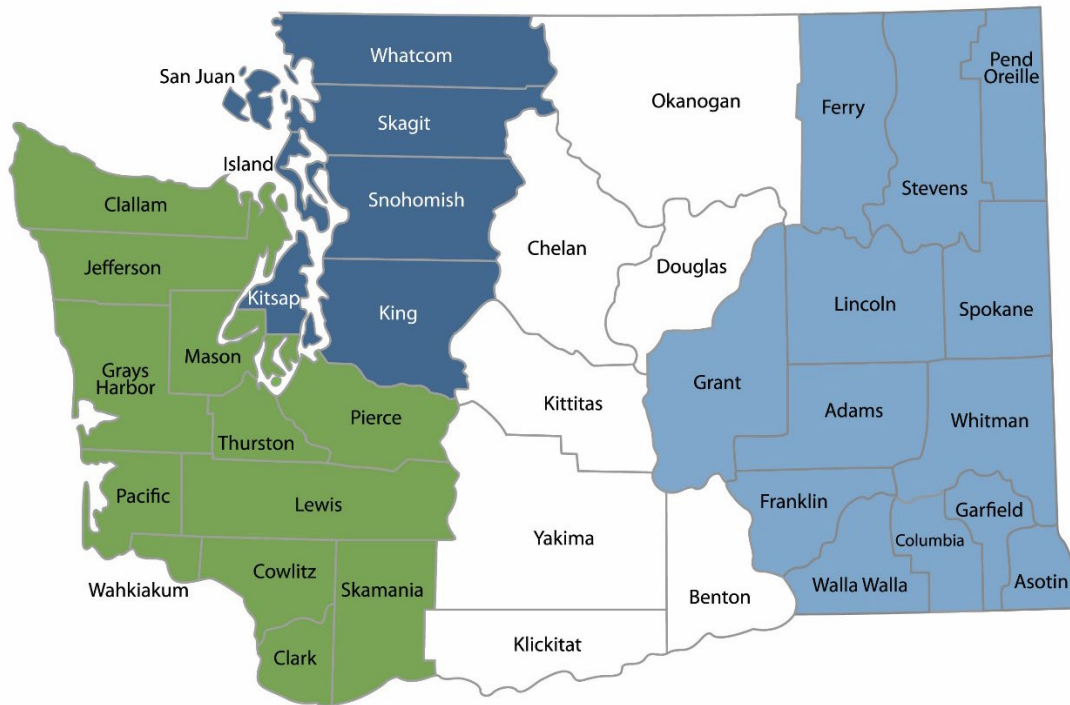
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Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region
360-407-6300

Northwest Region
206-594-0000

Central Region
509-575-2490

Eastern Region
509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	P.O. Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	P.O. 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
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*Chapter 173-446 WAC, Ozone Depleting
Substances Offsets*

Climate Pollution Reduction Program
Washington State Department of Ecology

Olympia, WA

July 2025 | Publication 25-14-053



DEPARTMENT OF
ECOLOGY
State of Washington

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Abbreviations and Acronyms

ACR	American Carbon Registry
AR4	Intergovernmental Panel on Climate Change's Assessment Report 4
AR5	Intergovernmental Panel on Climate Change's Assessment Report 5
CARB	California Air Resources Board
CBA	Cost Benefit Analysis
CCA	Climate Commitment Act (Washington State)
CFC	Chlorofluorocarbon
CO ₂ e	Carbon Dioxide Equivalent
HFC	Hydrofluorocarbon
HCFC	Hydrochlorofluorocarbon
EPA	Environmental Protection Agency (US)
GWP	Global Warming Potential
ODS	Ozone Depleting Substances
RCW	Revised Code of Washington
WAC	Washington Administrative Code

Executive Summary

In 2021, the Washington Legislature passed the Climate Commitment Act (CCA), which establishes a comprehensive, market-based program to reduce carbon pollution and achieve the greenhouse gas limits set in state law. While over 90 percent of a regulated entity's greenhouse gas emissions must be covered by purchased allowances, a mechanism in the CCA allows entities to cover up to 8 percent of their emissions by buying offset credits.

One currently approved protocol for generating offset credits from the destruction of Ozone Depleting Substances (ODS) is: The California Air Resources Board, Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014.

- The rule will modify the above approved protocol and rename it: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0, and adopt it into the Washington Administrative Code (WAC).
- The protocol changes, described below, expand the sources available for ODS offset credit generation and update the estimated global warming potential of ODS material.
- An additional amendment to the WAC restricts the reasons an issued ODS offset credit might be invalidated.

Costs:

We estimate no significant costs to either regulated entities or offset project developers.

Benefits:

The revised protocol adoption will expand opportunities for ODS offset credit generation. This adds options for offset credit developers and entities that might purchase those credits. This facilitates efforts to limit ozone destruction and global heating.

We estimate the benefits of the rule outweigh the costs.

Chapter 1: Background and Introduction

1.1 Introduction

This report presents the determinations made by the Washington State Department of Ecology as required under Chapter 34.05 RCW, for the ODS Offsets rule (Chapter 173-446 WAC; the “rule”). This includes the:

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

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

The APA also requires Ecology to “determine, after considering alternative versions of the rule...that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives” of the governing and authorizing statutes. Chapter 6 of this document describes that determination.

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

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

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

1.1.1 Background

In 2021, the Washington Legislature passed the Climate Commitment Act (CCA), which establishes a comprehensive, market-based program to reduce carbon pollution and achieve the greenhouse gas limits set in state law. Entities that emit over 25,000 metric tons of carbon dioxide equivalent (CO₂e) must purchase allowances or, to a limited extent, offset credits to cover their emissions. Each allowance or offset credit represents one metric ton of CO₂e. Over time the number of allowances and offset credits will be reduced.

The [Department of Ecology's website](#) has a more detailed description of the program.²

The program started January 1, 2023, and the first emissions allowance auction was held February 28 of the same year.

While over 90 percent of a regulated entity's emissions must be covered by allowances, a mechanism in the CCA allows covered or opt-in entities, including covered businesses, to account for a portion of their emissions by buying offset credits. An offset is a reduction in greenhouse gas emissions conducted elsewhere, expressed in CO₂e. An offset project is created by another party for which credits may be issued by the Department of Ecology. These credits can then be sold to participants in the Cap-and-Invest program or traded with general market participants.

One approved protocol for generating offset credits is: The California Air Resources Board, Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014. The currently approved protocol contains a list of substances used as refrigerants, foam blowing agents and propellants, all of which are no longer being manufactured. The listed substances are a class of compounds known as chlorinated fluorocarbons (CFCs) and they have estimated 100-year global warming potentials (GWP) ranging from nearly 5,000 to almost 15,000 times that of carbon dioxide.

Entities covered by the Cap-and-Invest program must obtain allowances or offset credits equal to their greenhouse gas emissions and submit them to Ecology according to a four-year compliance schedule.

In the first compliance period, January 2023 through December 2026, regulated emitters can purchase offset credits to cover 5 percent of their compliance obligations. An additional 3 percent of their compliance obligation can be covered by offset credits purchased from projects on federally recognized Tribal lands.

These percentages are reduced to 4 percent and 2 percent, respectively, during the six remaining compliance periods covering the years 2027 to 2049.

The first compliance deadline was November 1, 2024. At that time, regulated entities were required to submit compliance instruments covering 30 percent of their 2023 emissions. Of the submitted instruments on that date, 0.13 percent of the total were ODS offset credits that were not on Tribal lands.³ The ODS credits submitted represented 26,280 metric tons of CO₂e, 8.5 percent of the offset credits issued by Ecology up to that date.

² <https://ecology.wa.gov/Air-Climate/Climate-Commitment-Act>

³ [Report on first compliance period](#), <https://ecology.wa.gov/air-climate/climate-commitment-act/cap-and-invest/auctions-and-market/compliance>

Ecology's latest update of offset credits issued (June 2025), shows a total issuance of 531,177 offset credits, all for the destruction of ODS.⁴ Ecology to date has not issued offset credits under the protocols for U.S. forestry, urban forestry, or livestock projects.

Washington State's Initiative 2117 and the 2024 Election

Initiative 2117, which would have repealed the CCA, qualified for the ballot on January 16, 2024. The initiative failed in the November 2024 election, but for most of 2024 there was uncertainty regarding the future of the CCA, including whether credits for offset projects would be of any value post-election.

No offset credits were issued in this period of market uncertainty, and the disruption makes estimating future issuances more difficult.

California, whose ODS offset protocol is currently adopted under WAC 173-446-505(3)(c), has issued over the past 6 years an average of 1.3 million credits per year under its ODS protocol.⁵ California's Cap-and-Trade program was first authorized in 2006 and underwent modifications in 2017. In 2024, the number of state-owned allowances offered at auction was approximately 125 million.⁶ By contrast, Ecology auctioned 22.1 million of its issued allowances the same year.⁷

1.1.2 Expected Carbon Prices

In preparation for Washington's Cap-and-Invest program, Vivid Economics was hired to conduct modeling of anticipated prices for carbon allowances. One scenario that was acknowledged but not explicitly modeled was where Washington linked its carbon markets with California's and Quebec's. Their report was published in September of 2022.⁸

On November 2, 2023, Ecology announced its intention to link its carbon market with California and Quebec's.⁹ In March of 2024 a joint statement was issued by representatives of the three governments expressing interest in a shared market. Though linkage is not guaranteed, we

⁴ [Ecology Offset Credit Issuance Table](https://apps.ecology.wa.gov/publications/documents/2314026.pdf), <https://apps.ecology.wa.gov/publications/documents/2314026.pdf>

⁵ Ecology calculations from CA's issuance data, [CA Offset Issuance data](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fww2.arb.ca.gov%2Fsites%2Fdefault%2Ffiles%2F2022-07%2Fnc-arboc_issuance.xlsx&wdOrigin=BROWSELINK), https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fww2.arb.ca.gov%2Fsites%2Fdefault%2Ffiles%2F2022-07%2Fnc-arboc_issuance.xlsx&wdOrigin=BROWSELINK

⁶ [Cap-and-Trade Program: Allowance Distribution Factsheet | California Air Resources Board](https://ww2.arb.ca.gov/resources/documents/cap-and-trade-program-allowance-distribution-factsheet), <https://ww2.arb.ca.gov/resources/documents/cap-and-trade-program-allowance-distribution-factsheet>

⁷ [Auctions & market - Washington State Department of Ecology](https://ecology.wa.gov/air-climate/climate-commitment-act/cap-and-invest/auctions-and-market#upcomingresources), <https://ecology.wa.gov/air-climate/climate-commitment-act/cap-and-invest/auctions-and-market#upcomingresources>

⁸ [Climate Act economic model](https://apps.ecology.wa.gov/publications/documents/2202038.pdf), <https://apps.ecology.wa.gov/publications/documents/2202038.pdf>

⁹ [linkage announcement](https://ecology.wa.gov/blog/november-2023/stronger-together-the-promise-of-connecting-north-america-s-clean-energy-leaders), <https://ecology.wa.gov/blog/november-2023/stronger-together-the-promise-of-connecting-north-america-s-clean-energy-leaders>

assume here, given that all parties have expressed the same intent, that the three markets will be linked.¹⁰

The larger markets of Quebec and California draw greater coverage from the financial press, including projections of future prices.

In Vivid Economics' assessment of Washington's Cap-and-Invest program under linkage, the authors expected Washington's allowance prices to be driven by those larger markets.¹¹

Estimates of future allowance prices are highly variable. Writing in February 2024, Bloomberg New Energy Finance wrote:

"California's carbon price is expected to average around \$42 per metric ton in 2024 and \$46 per ton in 2025... That's up from \$34 per ton in 2023, supported by financial intermediaries. It could reach as high as \$93 per ton by the end of the decade..."¹²

For the November 20, 2024 auction, the settlement price for current California allowances was \$31.91. Those fell to \$25.87 in the May 2025 auction.¹³

Washington's December 2024 auction settlement price for current allowances was \$40.26, in the June 2025 auction, it reached \$58.51 per metric ton of CO₂e.^{14,15}

As will be discussed below, the willingness of developers to begin offset projects will depend on the price of carbon allowances and offsets in the marketplace. Given the uncertainty as to what the prices will be, estimating the impact of the amendments and protocol changes is also uncertain.

1.2 Reasons for the rule amendments

As stated in Ecology's announcement for this rulemaking:

"The purpose of this rulemaking is to broaden the scope of offset protocols available in the cap-and-invest program. This rulemaking will increase the diversity of offset projects available to cap-and-invest market participants, broadening the scope of potential greenhouse gas reductions in our state."¹⁶

¹⁰ [Mar 20 - linkage joint statement - Washington State Department of Ecology](https://ecology.wa.gov/about-us/who-we-are/news/2024/mar-20-shared-carbon-market), <https://ecology.wa.gov/about-us/who-we-are/news/2024/mar-20-shared-carbon-market>

¹¹ [Climate Act economic model](https://apps.ecology.wa.gov/publications/documents/2202038.pdf), <https://apps.ecology.wa.gov/publications/documents/2202038.pdf>

¹² [Global Carbon Market Outlook 2024 | BloombergNEF](https://about.bnef.com/blog/global-carbon-market-outlook-2024/), <https://about.bnef.com/blog/global-carbon-market-outlook-2024/>

¹³ [CA Auction Results](https://ww2.arb.ca.gov/sites/default/files/2024-11/nc-nov_2024_summary_results_report.pdf), https://ww2.arb.ca.gov/sites/default/files/2024-11/nc-nov_2024_summary_results_report.pdf

¹⁴ [Washington Cap-and-Invest Program Auction #8 December 2024 Summary Report](https://apps.ecology.wa.gov/publications/documents/2414063.pdf), <https://apps.ecology.wa.gov/publications/documents/2414063.pdf>

¹⁵ [Washington Cap-and-Invest Program Auction #10 June 2025 Summary Report](https://apps.ecology.wa.gov/publications/documents/2514037.pdf), <https://apps.ecology.wa.gov/publications/documents/2514037.pdf>

¹⁶ [Rulemaking Announcement filing](https://ecology.wa.gov/getattachment/6ea427d3-ecdc-4045-a741-8b2018bb312f/WSR-23-19-027.pdf), <https://ecology.wa.gov/getattachment/6ea427d3-ecdc-4045-a741-8b2018bb312f/WSR-23-19-027.pdf>

1.3 Summary of the rule amendments

The rule amendments will:

Amend WAC 173-446-505 to adopt by reference: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0. All new ODS offset projects with a commencement date after the rule adoption date will be required to use this protocol.

Restrict reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. (WAC 173-446-580(3))

The new protocol (Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0) adopted by reference will:

Add destruction of refrigerant HCFC-22 as a potential source of offset credits.

Add medical aerosols and solvents as a potential source of offset credits.

Add material sourced from the federal government or agencies as a potential source of offset credits.

Update the assigned global warming potential values for eligible gases from those specified in the Intergovernmental Panel on Climate Change's Assessment Report Four to those in Assessment Report Five.

1.4 Document organization

The chapters of this document are organized as follows:

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

Chapter 2: Baseline and Rule Amendments

2.1 Introduction

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

2.2 Baseline

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

For this rulemaking, the baseline includes:

- Chapter 70A.65 RCW Greenhouse Gas Emissions-Cap and Invest Program

- Chapter 173-446 WAC, Climate Commitment Act Program Rule

- The California Air Resources Board, Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014, as adopted and modified by WAC 173-446-505(3)(c)(i).

2.3 The rule amendments

The rule amendments:

- Amend WAC 173-446-505 to adopt by reference: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0. All new ODS offset projects with a commencement date after the rule adoption date will be required to use this protocol.

- Restrict reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. (WAC 173-446-580(3))

The new protocol (Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0) adopted by reference:

- Adds destruction of refrigerant HCFC-22 as a potential source of offset credits.

- Adds medical aerosols and solvents as a potential source of offset credits.

- Adds material sourced from the federal government or agencies as a potential source of offset credits.

- Updates the assigned global warming potential values for eligible gases.

2.3.1 Amend WAC 173-446-505 to adopt by reference: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0. All new ODS offset projects with a commencement date after the rule adoption date will be required to use this protocol.

Baseline

Chapter 173-446 WAC currently adopts California’s Air Resources Board’s (CARB) protocol for the destruction of ODS: “Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014”.

The amendment

Ecology will adopt a new protocol, named “Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0,” which is based on the California protocol with modifications (as discussed below in sections 2.3.3 through 2.3.6). All new ODS offset projects with a commencement date after the rule adoption date must use Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0.

Expected impact

The four substantive changes to the protocol will be considered as separate amendments below. The act of adoption of the new protocol will have neither significant costs nor benefits compared to the baseline aside from the changes within the protocol.

2.3.2 Restrict reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. (WAC 173-446-580(3))

Baseline

WAC 173-446-580(3)(b) lists potential reasons for invalidating an issued offset credit. It reads:

(b) The offset project activity(ies) or implementation of the offset project was not in accordance with all local, regional, state, and national environmental and health and safety laws and regulations that apply in the jurisdiction in which the offset project is located and that directly apply to the offset project, including as specified in the applicable compliance offset protocol during the reporting period for which the ecology offset credit was issued.¹⁷

To date, Ecology has issued ODS offset credits for six projects and has thus far initiated no actions pertaining to their validity.¹⁸

The amendment

¹⁷ [WAC 173-446-580](https://app.leg.wa.gov/WAC/default.aspx?cite=173-446-580); <https://app.leg.wa.gov/WAC/default.aspx?cite=173-446-580>

¹⁸ Communications with Ecology’s Climate Pollution Reduction Program, January 2025.

The amendment restricts reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. It adds the following, qualifying restriction, to WAC 173-446-580(3)(b).

- (i) For offset projects using the ozone depleting substances (ODS) protocol non-compliance events that do not directly impact ODS handling, destruction, and emissions from ODS processing will not be considered grounds for an initial determination of invalidation.

Expected impact

The amendment clarifies and restricts the reason an ODS offset credit might be invalidated, which would make it of no value. By restricting potential invalidation reasons to those directly impacting the gases involved, project developers face a more certain regulatory environment. We expect this to make them more willing to engage in developing offset projects for ODS.

The restriction of the ability to invalidate offset credits to reasons directly pertaining to ODS handling weakens Ecology's regulatory authority to some degree. However, the reduction in authority does not limit Ecology's ability to invalidate credits for reasons affecting their legitimacy.

2.3.3 Add destruction of refrigerant HCFC-22 as a potential source of offset credits

Baseline

The currently adopted protocol is titled "California Air Resource's Board Ozone Depleting Substances Projects Protocol, November 14, 2014". The protocol contains six refrigerants, the recovery and destruction of which can generate offset credits. They are all "CFCs" and are as follows: CFC-11, CFC-12, CFC-13, CFC-113, CFC-114, CFC-115. The 100-year global warming potential relative to CO₂ of these gases range from 4,750 to 14,400 in the currently adopted California protocol.

The change in protocol

The newly adopted protocol adds destruction of the refrigerant hydrochlorofluorocarbon-22 (HCFC-22), also known as R-22, or by the brand name Freon, as a potential source of offset credits. Within the new protocol, the global warming potential assigned to it is 1,789, its cumulative 10 emission factor is 72 percent, and its substitute emissions factor is 389. The substitute emissions factor is the expected GWP of the refrigerant that would replace HCFC-22. The 10-year emissions factor is the expected percentage of the material to leak from equipment into the atmosphere over the next 10 years.

In response to a public comment on the draft rule, HCFC-22 produced as an input to any manufacturing process was made ineligible as a source of offset credits.

Expected impact

Of the 6.6 million pounds of ODS refrigerants reclaimed in 2022, 5.7 million (86 percent) were HCFC-22.¹⁹ The relatively large amount of HCFC-22 as a fraction of total ODS refrigerants reclaimed suggests considerable opportunity for the generation of offset credits. However, this is complicated by the relatively strong market for its reuse. At current prices for carbon allowances and offset credits, it is unclear how much, if any, HCFC-22 will be diverted for destruction versus reuse. Should forecasted higher prices for compliance instruments (carbon allowances and offsets) materialize, HCFC-22 could become a significant source of ODS offset credits.

The ineligibility for offset credits of HCFC-22 produced as feedstock for manufacturing processes is expected to prevent the production of HCFC-22 for the purpose of obtaining offset credits.

2.3.4 Add medical aerosols and solvents as a potential source of offset credits.

Baseline

CARB's protocol, Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014, allows ODS to be sourced from only the following:

- (1) Refrigerants from industrial, commercial or residential equipment, systems, and appliances or stockpiles;
- (2) ODS blowing agents extracted and concentrated from appliance foams;
- (3) Intact foam sourced from building insulation.

Ecology understands some medical aerosols and solvents contain ODS but are currently unsellable. This material, though not large in amount, resides in stockpiles and warehouses. Overtime, the ODS in this material will leak out into the atmosphere.

The change in protocol

In the newly adopted protocol, ODS that were marketed as medical aerosols and solvents can be used as a potential source of offset credits. They must be in unused condition.

Expected impact

¹⁹ EPA data, https://www.epa.gov/system/files/documents/2024-09/section-608-quantity-reclaimed-2000-2023_website-download_9-26-2024.xlsx

Combined with sourcing from federal facilities, we expect this amendment to generate additional offset credits. We currently lack information as to the amount of material in this specific category, but when combined with material from federal facilities and agencies, one offset program developer reported an anticipated 50,000 to 70,000 additional credits per year might be generated.²⁰ In addition to expanding the availability of offset credits, the destruction of these gases will prevent damage to the ozone layer, which is showing signs of repair following the coordinated international efforts embodied in the Montreal Protocol.²¹

2.3.5 Add material sourced from the federal government or agencies as a potential source of offset credits.

Baseline

CARB's protocol, Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014, allows ODS to be sourced from only the following:

- (1) Refrigerants from industrial, commercial or residential equipment, systems, and appliances or stockpiles;
- (2) ODS blowing agents extracted and concentrated from appliance foams;
- (3) Intact foam sourced from building insulation.

Ecology understands ODS material currently recovered from federal facilities is currently being sold into the reuse market. There had been an expectation that the federal government would facilitate destruction of this material, but this has not happened.²²

The protocol change

The newly adopted protocol allows material sourced from the federal government or agencies as a source of offset credits.

Expected impact

Adding this source of ODS gases to the protocol should expand the number of offset credits created and ODS destroyed.

There is currently little information about the amount of material in this specific category, but when combined with material from unused medical aerosols and solvents, one offset program developer reported an anticipated 50,000 to 70,000 additional credits per year might be

²⁰ ECY communication with Tradewater, Inc., 12/18/24

²¹ [UN Montreal Protocol](https://ozone.unep.org/treaties/montreal-protocol), <https://ozone.unep.org/treaties/montreal-protocol>

²² Communications with Ecology's Climate Pollution Reduction Program, January 2025.

generated.²³ In addition to expanding the availability of offset credits, the destruction of these gases will prevent marginal damage to the ozone layer, which is showing signs of repair following the coordinated international efforts embodied in the Montreal Protocol.²⁴

Informed by input provided by the ODS working group, Ecology determined that:

“Federal facilities and auctions represent a potentially significant supply of ODS which, unless destroyed, will eventually leak out into the atmosphere. Sourcing ODS from federal sources, as opposed to sourcing from private businesses or state or local government does not impact the integrity of the offset credits generated.”²⁵

2.3.6 Update the assigned global warming potential values for eligible gases

Baseline

CARB’s protocol, Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014, assigns global warming potential (GWP) values to the gases eligible for offset credits. Those values come from the Intergovernmental Panel on Climate Changes Assessment Report 4 (AR-4), published in 2007. The assigned 100-year global warming potential for the CFCs in the currently adopted protocol are:

Table 1: Current Global Warming Potential (GWP) Values

ODS Gas	100-year GWP
CFC-11	4,750
CFC-12	10,900
CFC-13	14,400
CFC-113	6,130
CFC-114	10,000
CFC-115	7,370

The protocol change

The newly adopted protocol updates the assigned global warming potential values for previously eligible gases.

²³ ECY communication with Tradewater, Inc., 12/18/24

²⁴ [UN Montreal Protocol](https://ozone.unep.org/treaties/montreal-protocol), <https://ozone.unep.org/treaties/montreal-protocol>

²⁵ [ODS workgroup rpt.](#),

https://www.ezview.wa.gov/Portals/_1962/Documents/OzoneDepleting/ODS%20Considered%20Revisions%20-%20Sept.%202024.pdf

Whereas the CARB protocol values are from the Intergovernmental Panel on Climate Change’s 2011 Assessment Report 4 (AR4), Ecology’s protocol values are from Assessment Report 5 (AR5), published in 2014.

The AR4 values will still be applied to offset projects that commenced before the adoption of this rule.

The new values and the relative change are indicated in the table below.

Table 2: Changes In GWP values

ODS	Change	Updated value (AR5)	Current value (AR4)
CFC-11	-90	4,660	4,750
CFC-12	-700	10,200	10,900
CFC-13	-500	13,900	14,400
CFC-113	-310	5,820	6,130
CFC-114	-1,410	8,590	10,000
CFC-115	300	7,670	7,370

Expected impact

The average result is the reduction of GWP values by around five percent. For this set of gases, the same amount of work collecting, transporting and destroying the gases will yield slightly fewer offset credits. The annual variation in the value of those credits, however, is likely to be greater. For example, the price change in California’s offset credits from early November 2025 until early January 2026 was more than 10 percent.²⁶

The ODS protocol technical working group, formed by Ecology to inform this rulemaking states the following impacts:

“Switching to AR5 makes the protocol more up-to-date, more conservative, and also aligns with Ecology’s adopted [hydrofluorocarbon (HFC)] rule (WAC 173-443-030) which uses AR5 values except where substances are otherwise covered by WAC 173-441... AR5 values have now been

²⁶ Based on daily price information from Nodal Exchange, comparing Nov 7, 2024 prices to 1/02/25 prices.

adopted by all voluntary offset registries with relevant comparable protocols: [American Carbon Registry (ACR)], the Climate Action Reserve, and Verra.”²⁷

By using the more widely adopted values, Ecology and offset developers join a broader consensus as to the value of ODS destruction. This may impart greater confidence in the value of the issued credits.

²⁷ [ODS workgroup report,](https://www.ezview.wa.gov/Portals/_1962/Documents/OzoneDepleting/ODS%20Considered%20Revisions%20-%20Sept.%202024.pdf)

https://www.ezview.wa.gov/Portals/_1962/Documents/OzoneDepleting/ODS%20Considered%20Revisions%20-%20Sept.%202024.pdf

Chapter 3: Likely Costs of the Rule Amendments

3.1 Introduction

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

3.2 Cost analysis

The rule amendments will:

Amend WAC 173-446-505 to adopt by reference: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0. All new ODS offset projects with a commencement date after the rule adoption date will be required to use this protocol.

Restrict reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. (WAC 173-446-580(3))

The new protocol (Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0) adopted by reference will:

Add destruction of refrigerant HCFC-22 as a potential source of offset credits.

Add medical aerosols and solvents as a potential source of offset credits.

Add material sourced from the federal government or agencies as a potential source of offset credits.

Update the assigned global warming potential values for eligible gases.

3.2.1 Amend WAC 173-446-505 to adopt by reference: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0. All new ODS offset projects with a commencement date after the rule adoption date will be required to use this protocol.

The new protocol is similar to the previously adopted one (California Air Resources Board, Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014.)

The material changes are noted in the summary directly above. These changes are considered in the sections 3.2.3 - 3.2.6 below.

We do not estimate the adoption itself to impose any significant cost on regulated entities. Offset developers will need a one to two hour orientation regarding the changes and their implications.

3.2.2 Restrict reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. (WAC 173-446-580(3))

This amendment restricts reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. It adds a qualifying paragraph to this section of the WAC, as described above in Section 2.3.2.

We do not expect this amendment to add any significant cost, as it amounts to a small reduction in the stringency of the current rule.

3.2.3 Add destruction of refrigerant HCFC-22 as a potential source of offset credits

This protocol change adds a potential source of offset credits. Within the broader Cap-and-Invest program, it constitutes another potential means for regulated entities to meet their compliance obligations. We do not estimate it to add costs for regulated entities. For offset project developers who might receive credits, this potential source of additional material will only be accessed if they perceive it to be profitable. For developers, the change will add no costs that aren't expected to be more than recovered through ODS offset credits received.

3.2.4 Add medical aerosols and solvents as a potential source of offset credits

Like 3.2.3, this protocol change adds a potential source of offset credits. Within the broader Cap-and-Invest program, it constitutes another potential means for regulated entities to meet their compliance obligations. We do not estimate it to add costs for regulated entities. Project developers will utilize the newly available material only if it appears profitable.

3.2.5 Add material sourced from the federal government or agencies as a potential source of offset credits.

Like 3.2.3 and 3.2.4, this protocol change adds a potential source of offset credits. Within the broader Cap-and-Invest program, it constitutes another potential means for regulated entities to meet their compliance obligations. We do not estimate it to add costs for regulated entities. Project developers will only use the newly available source of material if it appears profitable.

3.2.6 Updates the assigned global warming potential values for eligible gases

The changes in 100-year GWP values for eligible gases from AR4 to AR5 values brings an average reduction of five percent to those values. For project developers, the reduced value of the CFC projects may cause fewer to be developed relative to baseline. For projects

commenced before the adoption of this rule, the older AR4 values of the California protocol still apply.

This is unlikely to have a significant impact on the price of compliance instruments that entities must purchase. A more significant factor will be the price of those credits in the market for compliance instruments. Of compliance instruments in Washington, roughly 95 percent must be emissions allowances. Project developers will also be more affected by the fluctuating market prices than by the one-time reduction in credit issuances.

Under the current GWP values for ODS, California has generated 1.3 million ODS offset credits per year.²⁸ Given Washington's recent market disruption due to Initiative 2117 (Section 1.1.1), we use California's data and scale by our smaller economy. By this estimate, Washington might expect to generate around 0.3 million ODS offset credits annually.²⁹ By comparison, Ecology has sold 22.1 million allowances at auctions over the past year.³⁰

We expect the declining number of available compliance instruments and the proposed linkage with California and Quebec, if it occurs, to move compliance instrument prices far more significantly than this roughly 5 percent reduction in GWP values in the ODS offset protocol.

As noted in Section 1.1.2, volatility is expected, with one price projection for compliance instruments for California expecting them to double by the decade's end.³¹ Since offset credit price volatility will most likely subsume this one-time adjustment in GWP values, we do not estimate a cost from this change.

3.2.7 Environmental justice costs

The rule amendments and our analysis of costs and benefits were informed by a preliminary assessment of impacts on communities, including vulnerable populations.³² An Environmental Justice Working Group was formed and that group advised the rule development process.

Though not a cost due to the new rule, one concern raised by the group was that barriers to access such as cumbersome paperwork to develop an ODS project create issues of equity. Due to differences in capacity and resources to develop ODS projects and receive credits or funding related to the project, there may be priorities for an organization beyond ODS projects that would stymie their application.³³

²⁸ Ecology calculations from CA's issuance data, [CA Offset Issuance data](#),

²⁹ Using CA's economy at 4.82 the size of Washington's

³⁰ [Auctions & market - Washington State Department of Ecology](#), <https://ecology.wa.gov/air-climate/climate-commitment-act/cap-and-invest/auctions-and-market#upcomingresources>

³¹ [Global Carbon Market Outlook 2024 | BloombergNEF](#), <https://about.bnef.com/blog/global-carbon-market-outlook-2024/>

³² See Chapter 6 for discussion of alternative rule content suggested during rule development, that was not included in the rule. Any input received from overburdened communities and vulnerable populations will be documented in the Environmental Justice Assessment developed over the course of outreach and this rulemaking and will be included in the rule file.

³³ [09.25.2024-EJWG-ODS-notes.pdf](#),

https://www.ezview.wa.gov/Portals/_1962/Documents/EnvironmentalJustice/09.25.2024-EJWG-Meeting1-ODSrevsFeedback.pdf

Additionally, one concern assessed by Ecology relate to the potential minimal emissions increase through the transportation of ODS to the specialized facilities outside of Washington state. Ecology addresses the emissions from transportation of ODS by subtracting the offset credits given to the offset project developers.

Chapter 4: Likely Benefits of the Rule Amendments

4.1 Introduction

We analyzed the likely benefits associated with the rule amendments, as compared to the baseline. The rule amendments and the baseline are discussed in detail in Chapter 2 of this document. The benefits discussed below apply to projects developed using the new protocol adopted under the rule.

4.2 Benefits analysis

The rule amendments:

Amend WAC 173-446-505 to adopt by reference: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0. All new ODS offset projects with a commencement date after the rule adoption date will be required to use this protocol.

Restrict reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. (WAC 173-446-580(3))

The new protocol (Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0) adopted by reference:

Adds destruction of refrigerant HCFC-22 as a potential source of offset credits.

Adds medical aerosols and solvents as a potential source of offset credits.

Adds material sourced from the federal government or agencies as a potential source of offset credits.

Updates the assigned global warming potential values for eligible gases.

4.2.1 Amend WAC 173-446-505 to adopt by reference: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0. All new ODS offset projects with a commencement date after the rule adoption date will be required to use this protocol.

The new protocol being adopted is similar to the previously adopted one. The material changes are noted in the summary in section 3.2. These changes are considered in the sections 4.2.3 - 4.2.6 below.

Ecology's protocol, which will be adopted by the rule, brings greater administrative simplicity and clarity relative to the baseline. Instead of referencing CARB's: Compliance Offset Protocol Ozone Depleting Substances, November 14, 2014, the amended rule adopts: Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0.

The modified and retitled version will be brought under Ecology's editorial control and be referenced in the WAC. The newly adopted protocol, in turn, refers to Washington State's WAC where equivalent language has been borrowed from California's regulations, instead of referencing the California regulations.

This will make it easier for offset project developers to navigate the Protocol and its associated regulations in the WAC.

4.2.2 Restrict reasons for offset credit invalidation to events that directly impact ODS handling, destruction and emissions. (WAC 173-446-580(3))

This amendment brings regulatory clarity, along with restricting the reasons an ODS offset credit might be invalidated. By restricting potential invalidation reasons to those directly impacting the gases involved, project developers face a more certain regulatory environment. This should make them slightly more willing to engage in developing projects for ODS. We did not attempt a quantitative estimate of this anticipated effect.

4.2.3 Add destruction of refrigerant HCFC-22 as a potential source of offset credits

Currently this does not appear to be a major source of ODS offset credit expansion, but with market changes in the price of refrigerant for reuse and/or increases in carbon prices, additional offsets could be generated.

Of the 6.6 million pounds of ODS refrigerants reclaimed in 2022, 5.7 million (86 percent) were HCFC-22.³⁴ The relatively large amount of HCFC-22 as a fraction of total ODS refrigerants reclaimed suggests considerable opportunity for the generation of offset credits. This is complicated by the relatively strong market for its reuse, however.

Despite the large amount HCFC-22 being reclaimed, estimating how much might be diverted for destruction due to the rule requires some speculation.

California's offset credits as of December 17, 2024, were trading near \$31, with each credit representing a metric ton of CO₂e.³⁵

Ecology contacted two offset project developers, who informed Ecology that offset credit prices over \$45 per credit in one instance, and \$75-\$85 per credit in another, would be needed to incentivize them to destroy this refrigerant to generate credits.³⁶

³⁴ EPA data, https://www.epa.gov/system/files/documents/2024-09/section-608-quantity-reclaimed-2000-2023_website-download_9-26-2024.xlsx

³⁵ Incubex, EoD Environmental Futures Prices (12/17/24) (12/31 contract)

³⁶ Personal communications with Tradewater and A-Gas, 12/24.

If future prices go higher, the amendments could enable an expansion of offset credits and the destruction of larger amounts of ODS. As noted earlier in Section 1.1.2, Washington has announced plans to link its carbon market with California and Quebec. At least one analyst forecast is projecting allowance prices in California's market to reach over \$90 per metric ton by decade's end. At that price, HCFC-22 may become a more significant source of offset credits, allowing greater destruction of this ODS.

Destruction of ODS helps preserve the ozone layer in addition to reducing greenhouse gas emissions. As noted in Ecology's EJA: "The erosion of the ozone layer has both health and environmental consequences. The increase in UV radiation will potentially increase the rate of skin cancer and cataracts if people do not protect their skin and eyes from the sun."³⁷

4.2.4 Add medical aerosols and solvents as a potential source of offset credits.

We expect this additional source of ODS will result in more credits being generated for the destruction of the gases included in the new protocol. This will expand the available supply of compliance instruments for regulated entities to consider when deciding how to meet their greenhouse gas emissions obligations.

Contact with an ODS technical working group member whose organization develops ODS offset projects stated that this provision, combined with the federal sourcing provision, might result in 50,000 to 70,000 additional ODS offset credits per year.³⁸

In addition to the small expansion in available compliance instruments this would represent, the gases would be kept from impacting the earth's ozone layer. According to the UN, it has experienced recovery as the production of ODS have been phased out:

"The Antarctic ozone hole is expected to close by the 2060s, while other regions will return to pre-1980s values even earlier.

"Every year, an estimated two million people are saved from skin cancer and there are broader benefits too, as many of the ozone-depleting gases also drive-up global temperatures."³⁹

According to the US Environmental Protection Agency (EPA), "continued declines in ODS emissions are expected to result in a near complete recovery of the ozone layer near the middle of the 21st century."⁴⁰

³⁷ Ecology's EJA

³⁸ Email from representative of Tradewater, Inc., 12/18/24.

³⁹ [UN article](https://www.unep.org/news-and-stories/story/rebuilding-ozone-layer-how-world-came-together-ultimate-repair-job), <https://www.unep.org/news-and-stories/story/rebuilding-ozone-layer-how-world-came-together-ultimate-repair-job>

⁴⁰ [Current State of the Ozone Layer | US EPA](https://www.epa.gov/ozone-layer-protection/current-state-ozone-layer), <https://www.epa.gov/ozone-layer-protection/current-state-ozone-layer>

4.2.5 Add material sourced from the federal government or agencies as a potential source of offset credits.

We expect this additional source of ODS will result in more credits being generated for the destruction of the gases included in the new protocol. This will expand the available supply of compliance instruments for regulated entities to consider when deciding how to meet their greenhouse gas emissions obligations.

Quoting from the technical working group that worked on developing this proposal:

“Federal facilities and auctions represent a potentially significant supply of ODS which, unless destroyed, will eventually leak out into the atmosphere. Sourcing ODS from federal sources, as opposed to sourcing from private businesses or state or local government does not impact the integrity of the offset credits generated.”⁴¹

Contact with a working group member whose organization develops ODS offset projects suggests that this provision, combined the solvent and medical aerosol source, would result in 50,000 to 70,000 additional credits per year.⁴²

Considering the estimate of Washington’s credit generation for ODS from Section 3.2.6, 50,000 credits per year would represent a roughly 15 percent increase in the rate ODS offset credits are developed.

In addition to the small expansion in available compliance instruments this would represent, the gases would be kept from impacting the earth’s ozone layer. According to the UN it has experienced recovery as the production of ODS have been phased out:

“The Antarctic ozone hole is expected to close by the 2060s, while other regions will return to pre-1980s values even earlier.

“Every year, an estimated two million people are saved from skin cancer and there are broader benefits too, as many of the ozone-depleting gases also drive up global temperatures.”⁴³

According to the US EPA, “continued declines in ODS emissions are expected to result in a near complete recovery of the ozone layer near the middle of the 21st century.”⁴⁴

⁴¹ [Considered Revisions, 9/24,](#)

https://www.ezview.wa.gov/Portals/_1962/Documents/OzoneDepleting/ODS%20Considered%20Revisions%20-%20Sept.%202024.pdf

⁴² Email from representative of Tradewater, Inc., 12/18/24.

⁴³ [Rebuilding the ozone layer: how the world came together for the ultimate repair job,](#)

<https://www.unep.org/news-and-stories/story/rebuilding-ozone-layer-how-world-came-together-ultimate-repair-job>

⁴⁴ [Current State of the Ozone Layer | US EPA,](#) <https://www.epa.gov/ozone-layer-protection/current-state-ozone-layer>

4.2.6 Update the assigned global warming potential values for eligible gases

This amendment has the benefit of increased methodological rigor of the updated AR5 values instead of the AR4 values. It also brings the benefit of using values used by other protocols with which project developers might already be familiar

These values are the same as those used by voluntary carbon offset registries such as the ACR.

According to the technical working group formed by Ecology to advise this rulemaking:

“AR5 values have now been adopted by all voluntary offset registries with relevant comparable protocols: ACR, the Climate Action Reserve, and Verra.”⁴⁵

By using the more widely adopted values, Ecology and offset developers will join a broader consensus as to the value of ODS destruction. This may impart greater confidence in the value of the issued credits.

4.2.7 Environmental justice benefits

The rule amendments are informed by our Environmental Justice Assessment.⁴⁶

In our assessment we found:

“The proposed rulemaking will be effective statewide and provide benefits to Washington residents through the continued reduction of greenhouse gas emissions.

“Reducing the impacts of climate change by establishing thorough ODS protocols will specifically benefit vulnerable populations because they are more likely to experience climate impacts and less likely able to prevent harms from climate impacts.

“Ecology works to increase accessibility in the development of offset projects, while balancing the methodological rigor to ensure offset projects effectively reduce greenhouse emissions.”⁴⁷

⁴⁵ [Considered ODS revisions, 9/24,](https://www.ezview.wa.gov/Portals/_1962/Documents/OzoneDepleting/ODS%20Considered%20Revisions%20-%20Sept.%202024.pdf)

https://www.ezview.wa.gov/Portals/_1962/Documents/OzoneDepleting/ODS%20Considered%20Revisions%20-%20Sept.%202024.pdf

⁴⁶ See Chapter 6 for discussion of alternative rule content suggested during rule development, that was not included in the rule. Input received is documented in the Environmental Justice Assessment for this rulemaking and included in the rule file.

⁴⁷ Ecology’s Environmental Justice Assessment.

Chapter 5: Cost-Benefit Comparison and Conclusions

5.1 Summary of costs and benefits of the rule amendments

Costs:

The newly adopted protocol (Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0) updates GWP values for included ODS to the values used in AR5 from AR4. This reduces on average the GWP values of ODS by roughly five percent, relative to the current protocol. While equivalent projects will receive marginally fewer credits, we expect offset credit price fluctuation unrelated to the amendments to eclipse this impact on offset generation.

We estimate no significant costs to the amendments.

Benefits:

Relative to baseline, the new protocol adoption expands opportunities for ODS offset credit generation. This adds options for offset developers and entities that might purchase them, facilitating efforts to limit ozone destruction and global heating. This is accomplished through expanding source materials for ODS offset projects by allowing ODS sourcing from federal facilities and unused medical aerosols and solvents. Additionally, HCFC-22, a prevalent ODS refrigerant, would be allowed as a source for generating ODS offset credits. Furthermore, the amendments limit reasons for potential offset credit invalidation to events directly impacting the handling of ODS material.

5.2 Conclusion

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

Chapter 6: Least-Burdensome Alternative Analysis

6.1 Introduction

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

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

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

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

6.2 Goals and objectives of the authorizing statute

The authorizing statute for this rule is Chapter 70A.65 RCW, Greenhouse Gas Emissions-Cap and Invest Program. Among its goals and objectives are “... to ensure that greenhouse gas emissions are reduced by covered entities ... consistent with the limits established in RCW [70A.45.020](#).” To this end, “... the department must implement a cap on greenhouse gas emissions from covered entities... and track, verify, and enforce compliance through the use of compliance

instruments.”⁴⁸ Offset credits are one compliance instrument that regulated entities may use to meet a portion of their emissions obligations under the Cap-and-Invest program.

In issuing offset credits and in establishing offset protocols, the authorizing legislation stresses methodological rigor, stating that offset projects must “Result in greenhouse gas reductions or removals that:

- (i) Are real, permanent, quantifiable, verifiable, and enforceable;
- (ii) Are in addition to greenhouse gas emission reductions or removals otherwise required by law and other greenhouse gas emission reductions or removals that would otherwise occur;”⁴⁹

The alternatives considered below in some instances made the quantification, verifiability and enforceability more difficult or less transparent. In the case of destroying ODS sourced from Canada, it’s not clear the reduction would be in addition to those already occurring.

6.3 Alternatives considered and why they were excluded

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

- Updating cumulative emissions rates for refrigerant CFCs
- Updating cumulative emissions rates, substitute emissions factors, and eligible species of ODS foams
- Allowing crediting for HCFC-123
- Allowing credit generation from HFCs sourced from Washington
- Revising Point of Origin Requirements
- Allowing credit generation from the destruction of halons
- Allowing credit generation from contaminated and mixed HFCs (sourced outside of Washington state)
- Allowing destruction of ODS outside the United States
- Allowing destruction of ODS sourced from Canada

6.3.1 Updating cumulative emissions rates for refrigerant CFCs

We considered updating cumulative emissions rates for refrigerant CFCs, however, the use of existing cumulative emissions rates remains reasonable, despite updated values no longer being available in the Vintaging Model. However, Ecology will seek an alternative source to update these values in the future and consider use of leak rates for CFC that reflect a “business as usual” scenario of stockpiling of these gases, rather than continued use in increasingly out of

⁴⁸ [RCW 70A.65.060](https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.060), <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.060>

⁴⁹ [RCW 70A.65.170](https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.170), <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65.170>

date equipment. Ecology does not currently believe that updating these rates during this rulemaking would as effectively achieve greenhouse gas reductions or removals that are real, permanent, and verifiable.

6.3.2 Updating cumulative emissions rates, substitute emissions factors, and eligible species of ODS foams

We considered updating cumulative emissions rates, substitute emissions factors, and eligible species of ODS foams. Foam destruction is allowable in the existing protocol; however, foam destruction projects have remained financially infeasible in the market due to the lower density and lower crediting of ODS within foams, compared with refrigerants. Ecology acknowledges that this is an area for further research in a future rulemaking process. This alternative would not as effectively achieve greenhouse gas reductions or removals that are real, permanent, and verifiable.

6.3.3 Allowing crediting for HCFC-123

We considered allowing crediting for HCFC-123. However, import of HCFC-123 in the US will not be fully phased out until 2030. In addition, the Global Warming Potential of HCFC-123 is comparatively quite low (77 per AR4, compared with 1,810 for HCFC-22), so it is unlikely to present a financially feasible destruction opportunity. This alternative would not as effectively achieve greenhouse gas reductions or removals that are real, permanent, and verifiable.

6.3.4 Allowing credit generation from HFCs sourced from Washington

We considered allowing credit generation from HFCs (hydrofluorocarbons) sourced from Washington. However, Ecology cannot currently ensure that all HFC destruction credited in the program comes from HFCs sourced from equipment in Washington, where HFCs are phased out, rather than from out-of-state equipment, where new HFCs may not have been phased out. Without a process in place to ensure that all credited HFCs are sourced from equipment covered by Washington's HFC regulations, HFCs could be extracted from out-of-state equipment and stockpiled in Washington and then destroyed to generate offset credits. Because HFCs are not phased out for out-of-state equipment, Ecology cannot adequately ensure that this destruction of HFCs will not result in out-of-state production of new HFCs, thus not as effectively resulting in offset credits that are real, permanent and additional.

6.3.5 Revising Point of Origin Requirements

We considered revising Point of Origin requirements during this rulemaking. The stockpile definition within the Point of Origin procedure in the Ecology Compliance Offset Protocol Ozone Depleting Substances Projects, version 1.0 reflects the effective date of the Cap-and-Invest

program regulation. Point of Origin requirements are highly technical and impact both project development processes and project verification processes. In the scope of this rulemaking, revisions to the Point of Origin requirements that would provide benefits to the program that outweighed the additional burden placed on developers, registries, and verifiers to change their procedures were not identified. Therefore, these revisions would be more burdensome to covered parties.

6.3.6 Allowing credit generation from the destruction of halons

We considered allowing credit generation from the destruction of halons, a substance primarily used as a fire extinguishing agent. However, it would be more burdensome to covered parties to do so. Although halons are phased out of production, they remain necessary in many applications including aviation and will continue to be needed for the foreseeable future. There are not currently viable substitutions for halons, unlike with HFCs and CFCs, therefore incentivizing their destruction could be detrimental to these industries.

6.3.7 Allowing credit generation from contaminated and mixed HFCs

We considered allowing credit generation from contaminated and mixed HFCs sourced outside of Washington state. However, working group members identified several sources of ambiguity in this considered revision, such as the definition of “mixed” and “contaminated” and suggested that the threshold at which a substance may be considered contaminated will vary by substance and change over time as technology improves. Working group members also agreed that, because HFCs are being phased down, but not fully phased out of production, this could result in malfeasance where a developer intentionally contaminates or mixes HFCs to become viable for destruction. This alternative would not as effectively achieve greenhouse gas reductions or removals that are real, permanent, and verifiable.

6.3.8 Allowing destruction of ODS outside the United States

We considered allowing destruction of ODS at facilities outside the United States. However, this would present the risk of facilitating aggregation at facilities with weaker environmental safeguards and should not be pursued at this time. This alternative would not as effectively achieve greenhouse gas reductions or removals that are real, permanent, and verifiable.

6.3.9 Allowing destruction of ODS sourced from Canada

We considered allowing the destruction of ODS sourced from Canada. However, given existing programs in Canada, such as the Refrigerant Canada Management program, ODS sourced from Canada could not be clearly considered additional. This alternative would not as effectively achieve greenhouse gas reductions or removals that are in addition to those that would otherwise occur.

6.4 Conclusion

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

Chapter 7: Regulatory Fairness Act Compliance

We analyzed the compliance costs of the rule amendments in Chapter 3 of this document.

We determined that entities required to submit compliance instruments in the form of allowances and/or offset credits, are unlikely to incur additional costs from the amendments. This results from the amendments being unlikely to affect the prices of the allowances and/or credits they must purchase for compliance. We expect those prices will be driven by broader market forces.

Based on this analysis, Ecology is exempt from performing additional analyses under the Regulatory Fairness Act as it does not affect small businesses, RCW 19.85.020(4).

References

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Appendix A: Administrative Procedure Act (RCW 34.05.328) Determinations

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

See Chapter 6.

- B. RCW 34.05.328(1)(b) –**

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

See chapters 1 and 2.

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

Ecology considered additional and alternatives to the rulemaking, separated into two categories: opportunities for further research to consider in a future rulemaking process and considered revisions that are not proposed at this time.

Opportunities for Further Research to Consider in a Future Rulemaking Process:

1. Updates to cumulative emissions rates for refrigerant CFCs
2. Updates to cumulative emissions rates, eligible species of ODS foams, and foam handling procedures
3. Allow credit generation from HFCs sourced in Washington
4. Allow credit generation from HCFC-123
5. Revise Point of Origin requirements

Considered Revisions That Are Not Proposed at This Time:

1. Allow credit generation from halons
2. Allow credit generation from HFCs – included mixed and contaminated HFCs
3. Destruction of ODS sourced from Canada
4. Destruction of ODS at facilities outside the United States

Consequences for not adopting the rule include the continuance of outdated and less rigorous standards for methodology regarding the provision of offset credits for ODS destruction. Additionally, not adopting the rule would create the burden of potentially ambiguous rule language on the scope of regulatory non-compliance and contribute to barriers to project development. For additional detail on the considered alternatives to rulemaking, please see [Considered revisions to Ecology's adopted ODS Protocol](#).

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

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

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

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

See Chapters 1 – 5.

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

Please see Chapter 6.

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

This rule would not require covered parties to violate existing federal and state laws.

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

This rule would not impose more stringent performance requirements on private entities than on public entities. The ODS offset rule changes apply to both private and public entities.

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

No

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

- ☐ (i) A state statute explicitly allows Ecology to differ from federal standards.
- ☐ (ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated in Chapter 6.

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

To coordinate the rule with other ODS offset programs, Ecology is consulting with the California Air Resources Board. The Climate Pollution Reduction Program is engaging in interagency coordination with the HFC Regulation Implementation Unit. There are no additional federal, state, or local laws that are applicable to the ODS rule change.

