



DEPARTMENT OF
ECOLOGY
State of Washington

Preliminary Cost-Benefit and Least-Burdensome Alternative Analyses

*Chapter 173-441 WAC
Reporting of Emissions of Greenhouse Gases*

October 2014
Publication no. 14-02-019

Publication and Contact Information

This report is available on the Department of Ecology's website at <https://fortress.wa.gov/ecy/publications/SummaryPages/1402019.html>

For more information contact:

Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600

Phone: 360-407-6800

Washington State Department of Ecology – www.ecy.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Yakima 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

To ask about the availability of this document in a format for the visually impaired, call the Air Quality Program at 360-407-6800. Persons with hearing loss can call 700 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Preliminary Cost-Benefit and Least-Burdensome Alternative Analyses

Chapter 173-441 WAC Reporting of Emissions of Greenhouse Gases

By
Kasia Patora

for

Air Quality Program
Washington State Department of Ecology
Olympia, WA

Table of Contents

EXECUTIVE SUMMARY	III
CHAPTER 1: BACKGROUND AND INTRODUCTION	1
1.1 INTRODUCTION	1
1.2 DESCRIPTION OF THE PROPOSED RULE AMENDMENTS	1
1.3 REASONS FOR THE PROPOSED RULE AMENDMENTS	1
1.4 DOCUMENT ORGANIZATION	2
CHAPTER 2: BASELINE AND THE PROPOSED RULE AMENDMENTS	3
2.1 INTRODUCTION	3
2.2 BASELINE	3
2.2.1 FEDERAL RULE	3
2.2.2 STATE LAWS AND RULES	3
2.3 PROPOSED RULE AMENDMENTS	4
2.3.1 REVISING GWPs	4
2.3.2 UPDATING CALCULATION AND MONITORING METHODS	5
2.3.3 STREAMLINING REPORTING REQUIREMENTS	6
2.3.4 CORRECTING ERRORS AND IMPROVING READABILITY	6
CHAPTER 3: LIKELY COSTS OF THE PROPOSED RULE AMENDMENTS	7
3.1 INTRODUCTION	7
3.2 COSTS OF REVISIONS OF THE EXISTING GWPs, FOR EXAMPLE, INCREASING THE GWP FOR METHANE FROM 21 TO 25	7
3.2.1 IDENTIFICATION OF CHANGES POSSIBLY IMPACTING REPORTERS	7
3.2.2 PROCESS FOR IDENTIFYING FACILITIES PROSPECTIVELY BROUGHT INTO ADDITIONAL REPORTING	8
3.2.3 RESULTS	8
3.3 COSTS OF ADDITION OF GWPs FOR 103 NEW CHEMICALS	8
3.3.1 IDENTIFICATION OF CHANGES POSSIBLY IMPACTING REPORTERS	9
3.3.2 PROCESS FOR IDENTIFYING FACILITIES PROSPECTIVELY BROUGHT INTO ADDITIONAL REPORTING	9
3.3.3 RESULTS	9
3.4 COSTS OF REVISING NOTIFICATION DEADLINES FROM MARCH 31 ST TO THE EXISTING REPORT SUBMISSION DUE DATE	9
3.5 COSTS OF ALLOWING DELAYED USE OF GWPs FROM NEWLY ADDED CHEMICALS	10
3.6 SUMMARY OF LIKELY COSTS OF THE PROPOSED RULE AMENDMENTS	10
CHAPTER 4: LIKELY BENEFITS OF THE PROPOSED RULE AMENDMENTS	11
4.1 INTRODUCTION	11
4.2 BENEFITS OF REVISIONS OF THE EXISTING GWPs, FOR EXAMPLE, INCREASING THE GWP FOR METHANE FROM 21 TO 25	11
4.3 BENEFITS OF ADDITION OF GWPs FOR 103 NEW CHEMICALS	11

4.4 BENEFITS OF REVISING NOTIFICATION DEADLINES FROM MARCH 31ST TO THE EXISTING REPORT SUBMISSION DUE DATE	11
4.5 BENEFITS OF ALLOWING DELAYED USE OF GWPs FROM NEWLY ADDED CHEMICALS	12
4.6 SUMMARY OF THE LIKELY BENEFITS OF THE PROPOSED RULE AMENDMENTS	12
<u>CHAPTER 5: COST-BENEFIT COMPARISON AND CONCLUSIONS</u>	13
5.1 SUMMARY OF THE COSTS AND BENEFITS OF THE PROPOSED RULE AMENDMENTS	13
5.1.1 ZERO COSTS	13
5.1.2 QUALITATIVE POSITIVE BENEFITS	13
5.2 CONCLUSION	13
<u>CHAPTER 6: LEAST-BURDENSOME ALTERNATIVE ANALYSIS</u>	14
6.1 INTRODUCTION	14
6.2 GOALS AND OBJECTIVES OF AUTHORIZING STATUTES	14
6.2.1 CHAPTER 70.235 RCW	14
6.2.2 CHAPTER 70.94 RCW	15
6.3 ALTERNATIVES CONSIDERED AND WHY THEY WERE NOT INCLUDED	16
6.4 CONCLUSION	16

Executive Summary

This report presents economic analyses performed by the Washington State Department of Ecology (“Ecology”) to estimate the costs and benefits of the **proposed changes to the existing Reporting of Emissions of Greenhouse Gases rule (chapter 173-441 WAC)**. *These analyses – the Cost-Benefit Analysis (CBA) and Least-Burdensome Alternative Analysis (LBA) – are based on the best available information at the time of publication. Ecology welcomes and encourages public comments that could improve the accuracy and precision of the analyses in this document.*

The proposed rule amendments make the rule consistent with the US Environmental Protection Agency’s (the EPA’s) greenhouse gas reporting program, as required by RCW 70.94.151. They do this by:

- Revising the global warming potentials (GWPs) in WAC 173-441-040.
- Updating calculation and monitoring methods.
- Streamlining reporting requirements.
- Correcting minor errors and improving readability.

Ecology is required by statute to periodically update the rule to maintain consistency with the EPA’s Greenhouse Gas Reporting Program which has been amended multiple times since chapter 173-441 WAC was adopted in 2010.

Costs:

From the methodologies and results (in Chapter 3), we determined that the proposed rule amendments were not likely to result in current or future costs. This is because no facility would likely become a reporter to Washington because of the proposed rule amendments. The proposed amendments are consistent with existing rules and laws, therefore the incremental costs of the differences between the state and federal reporting programs are part of the baseline.

Benefits:

From the qualitative discussion and results (in Chapter 4), we determined that the proposed rule amendments were likely to result in two forms of real cost-savings, through:

- Delayed notification of ceasing reporting (up to 0.8 percent).
- Delayed use of GWPs for newly added chemicals (to Table A-1 of the rule).

Both of these cost-savings come in the form of delays that save value in real (inflation and opportunity cost-adjusted) terms.

CBA Conclusion:

We conclude, based on positive benefits and zero estimated costs, that the benefits of the proposed rule amendments are greater than the costs.

LBA Conclusion:

After considering alternatives to the proposed rule’s contents, as well as the goals and objectives of the authorizing statutes, Ecology determined that the proposed rule represents the least-burdensome alternative of possible rule contents meeting these goals and objectives.

Chapter 1: Background and Introduction

1.1 Introduction

This report presents the economic analyses performed by the Washington State Department of Ecology (“Ecology”) to estimate the costs and benefits of the proposed revisions to the Reporting of Emissions of Greenhouse Gases rule (chapter 173-441 WAC). These analyses – the Cost-Benefit Analysis (CBA) and Least-Burdensome Alternative Analysis (LBA) – are based on the best available information at the time of publication. Ecology welcomes and encourages public comments that could improve the accuracy and precision of the analyses in this document.

The Washington Administrative Procedure Act (APA; RCW 34.05.328) 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 through 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.

1.2 Description of the proposed rule amendments

The proposed rule amendments make the rule consistent with the US Environmental Protection Agency’s (the EPA’s) Greenhouse Gas Reporting Program, as required by RCW 70.94.151. They do this by:

- Revising the global warming potentials (GWPs) in WAC 173-441-040.
- Updating calculation and monitoring methods.
- Streamlining reporting requirements.
- Correcting minor errors and improving readability.

The proposed rule amendments do not change existing requirements for:

- Transportation fuel suppliers.
- Facility:
 - Reporting thresholds.
 - Confidential business information.
 - Fees.

1.3 Reasons for the proposed rule amendments

Ecology is required by statute to periodically update the rule to maintain consistency with the EPA’s Greenhouse Gas Reporting Program which has been amended multiple times since chapter 173-441 WAC was adopted in 2010. Keeping Ecology’s rules current with the EPA’s rules increases efficiency by maximizing data uniformity at the state and federal level, utilizing the most up-to-date

calculation methods based on national standards, and enabling Washington reporters to continue using the EPA's online electronic reporting tool.

1.4 Document organization

The remainder of this document is organized in the following chapters.

- Baseline and the proposed rule amendments ([Chapter 2](#)): Description and comparison of the baseline (what would occur in the absence of the proposed rule amendments) and the proposed changes to rule requirements.
- Likely costs of the proposed rule amendments ([Chapter 3](#)): Analysis of the types and sizes of costs we expect impacted entities to incur as a result of the proposed rule amendments.
- Likely benefits of the proposed rule amendments ([Chapter 4](#)): Analysis of the types and size of benefits we expect to result from the proposed rule amendments.
- Cost-benefit comparison and conclusions ([Chapter 5](#)): Discussion of the complete implications of the CBA, and comments on the results.
- Least-Burdensome Alternative Analysis ([Chapter 6](#)): Analysis of considered alternatives to the contents of the proposed rule amendments.

Chapter 2: Baseline and the Proposed Rule Amendments

2.1 Introduction

We analyzed the impacts of the rule relative to the baseline of the existing state rule and federal GHG reporting rule. This chapter describes the baseline context, as well as what changes were analyzed, and how they are included in this analysis.

2.2 Baseline

The baseline for our analysis generally consists of existing rules and laws, and their requirements. For economic analyses, the baseline also includes the implementation of those regulations, including any guidelines and policies that result in behavior and real impacts. This is what allows us to make a consistent comparison between the state of the world with or without the proposed rule amendments. For this rulemaking, we discuss the baseline below, including:

- Federal rules
- State laws and rules

2.2.1 Federal rule

In response to the fiscal-year 2008 [Consolidated Appropriations Act \(PDF\)](#) (613 pp, 1.5MB, [About PDF](#)) (H.R. 2764; Public Law 110-161), the EPA issued the Mandatory Reporting of Greenhouse Gases Rule (74 CFR 56260) which requires reporting of greenhouse gas (GHG) data and other relevant information from large sources and suppliers in the United States. The purpose of the rule is to collect accurate and timely GHG data to inform future policy decisions. In general, the rule is referred to as 40 CFR Part 98. Implementation of Part 98 is referred to as the Greenhouse Gas Reporting Program (GHGRP).

Suppliers of certain products that would result in GHG emissions if released, combusted or oxidized; direct emitting source categories; and facilities that inject CO₂ underground for geologic sequestration or any purpose other than geologic sequestration, are covered in Part 98. Facilities that emit 25,000 metric tons or more per year of GHGs are required to submit annual reports to the EPA. Part 98 was published in the *Federal Register* (www.regulations.gov) on October 30, 2009 under Docket ID No. EPA-HQ-OAR-2008-0508-2278.

Categories subject to Part 98 began reporting their yearly emissions with the 2010 reporting year. 2010 emissions were first reported to the EPA via the electronic greenhouse gas reporting tool (e-GGRT) in September 2011. Additional sources began reporting yearly emissions in September 2012, bringing the total to 41 source categories reporting.

2.2.2 State laws and rules

State laws and rules that are part of the baseline include:

- The existing rule language in chapter 173-441 WAC. The existing rule contains reporting requirements, reporting thresholds, and Global Warming Potentials (GWPs) for certain chemicals in emissions.

- The rule requires reporting of emissions from:
 - Facilities emitting over 10,000 metric tons of GHG emissions per year.
 - Suppliers of fuel for transportation – including liquid motor vehicle fuel, special fuel, or aircraft fuel – filing periodic tax reports to the Washington State Department of Licensing (DOL), and emitting over 10,000 metric tons of GHG emissions per year.
- The rule does not directly cover emissions from personal vehicles, which are a large part of on-road gasoline and diesel emissions.
- For comparison to the proposed rule amendments, particular elements of the baseline include:
 - GWPs for 72 GHGs or grouped GHG-types.
 - Directives for report content, by industry.
 - A March 31st due date for annual reports for entities reporting to the EPA, and an October 31st due date for entities not reporting to the EPA.

The specific baseline requirements (e.g., GWP values or types) in these categories, to which the proposed rule amendments are compared, are discussed in detail in section 3.2 of this document.

- Authorizing statutes for the proposed rule amendments:
 - Chapter 70.235 RCW, Limiting Greenhouse Gas Emissions. This statute sets out a general reporting structure and timing, with specifics to be determined in rule making. It also sets emissions reduction goals for state agencies, and directs Ecology to develop programs and calculators for reporting and aggregate emissions calculation.
 - Chapter 70.94 RCW, Washington Clean Air Act. This statute declares a need to protect the air quality of the state, and sets out many of the implementations and processes of achieving this. RCW 70.94.151 requires Ecology to maintain consistency between its reporting program and the federal GHG reporting program (GHGRP; see section 2.2.1).

2.3 Proposed rule amendments

The proposed rule amendments are intended to maintain consistency with the federal the EPA Greenhouse Gas Reporting Program, as required by RCW 70.94.151. Types of amendments include:

- Revising the Global Warming Potentials (GWPs) in WAC 173-441-040.
- Updating calculation and monitoring methods.
- Streamlining reporting requirements.
- Correcting minor errors and improving readability.

These proposed amendments are discussed in detail below.

2.3.1 Revising GWPs

The proposed rule amendments update the list of GHGs regulated by the rule, as well as update GWPs to match those currently used by the EPA. Ecology is required by law (see Section 2.2.2 of this document) to match the EPA's GHG reporting requirements, so we determined this change was required by law and was part of the baseline.

There are, however, extra costs if a facility previously exempt from reporting is now required to report due to the proposed rule changes. This would also apply if the facility reports to the EPA but not to Washington because minor elements of the existing state GHG reporting program are more stringent than the federal program (e.g., minor additional reporting or recordkeeping elements).

Therefore, we needed to determine that no new entities would be required to report as a result of the proposed rule amendments. This is because the requirement to report is part of the baseline (required by the federal program and therefore not a cost or benefit of the proposed rule amendments). The proposed rule amendments would be responsible for the incremental costs and benefits of the minor differences between the state and federal reporting and recordkeeping requirements, for any entity newly required to report because of proposed changes to GWPs. New costs would also be associated with facilities reporting for the first time to either program based on the proposed changes.

We identified two categories of GWP changes or additions that could possibly result in additional entities being required to report to Washington. Note, again, that these GWPs are required by state law to be consistent with the federal GWPs, and are therefore part of the baseline for this analysis.

- Revision of GWPs for existing GHGs, for example, increasing the GWP for methane from 21 to 25.
- Addition of GWPs for 103 new chemicals (in Table A-1 of the rule).

In this analysis, we estimated costs and benefits of these changes requiring additional reporting and recordkeeping behaviors for any entities that would be newly required to report as a result of the proposed rule amendments. The estimated costs and benefits are discussed in Chapters 3 and 4.

2.3.2 Updating calculation and monitoring methods

The proposed rule amendments update calculation and monitoring methods to be consistent with the EPA GHG reporting program. They are not changes that would require entities that do not currently report to begin reporting, and are otherwise consistent with the baseline, and required to be so by statute. We therefore did not estimate costs and benefits likely to result from these proposed rule amendments.

The EPA finalized a new rule on September 26, 2014 that changes how data will be reported using the EPA's online reporting tool. Ecology will remain consistent with the EPA by using the same method. Due to differences in public disclosure laws and verification procedures, different data elements are reported to Washington than the EPA. Ecology is modifying the new the EPA protocols to retain that intentional difference but still avoid duplicative reporting. Unlike the EPA, Ecology is not requiring facilities to resubmit old reports or to retain records for longer periods of time, which will avoid cost increases. Overall, the information that is reported and when it is reported will remain the same, but Ecology will adopt the EPA's changes on how the report is submitted. We therefore did not estimate costs and benefits likely to result from these proposed rule amendments.

RCW 70.94.151 directs Ecology to maintain consistency with the EPA, but allows Ecology to deviate from the EPA's program when necessary to preserve unique elements of Washington's program. The electrical transmission and distribution equipment use source category has a unique facility definition in the EPA's rule that includes the entire network of equipment owned or operated by an organization in the United States. This definition must be altered because Washington's program only includes emissions in Washington. Ecology is including multiple methods to help these facilities prorate their Washington emissions based on their EPA reports. Reporters are free to select the method they prefer. Ecology worked with the affected facilities to develop these methods and the new rule language is consistent with methods currently in use for Washington reporting. We therefore did not estimate costs and benefits likely to result from these proposed rule amendments.

2.3.3 Streamlining reporting requirements

The proposed rule amendments include multiple elements intended to streamline reporting requirements. They are changes that are consistent with the EPA GHG reporting rule, as well as changes that facilitate electronic reporting and document submittal (also required by existing statute, chapter 65.24 RCW), and are therefore part of the baseline. As a result, we did not estimate costs and benefits likely to result from these proposed rule amendments.

Two elements of the proposed rule amendments intended to streamline reporting requirements do, however, change existing requirements from the baseline:

- Revising the deadline for notification of cessation of reporting, from March 31st to “the report submission due date, specified in WAC 173-441-050(2).”
- Allowing delayed use of the GWPs from chemicals newly added to the list of chemicals regulated by the rule (Table A-1 of the rule).

In this analysis, we estimated costs and benefits of these changes, as discussed in Chapters 3 and 4.

2.3.4 Correcting errors and improving readability

The proposed rule amendments contain multiple corrections of errors or readability improvements. These include changes to wording to match the EPA GHG reporting rule, as well as corrections of errors and typos that do not change actual requirements of the rule. In the case of error-corrections, the existing rule language was not such that it could be read and adhered to as written, so the proposed rule amendments do not change rule requirements by correcting errors. We therefore did not estimate costs and benefits likely to result from these proposed rule amendments.

Chapter 3: Likely Costs of the Proposed Rule Amendments

3.1 Introduction

We estimated the likely costs associated with the proposed rule amendments, as compared to the baseline (both described in Chapter 2 of this document). As the proposed rule amendments are generally separable in their impacts on affected entities, we discuss each proposed rule amendment separately in the sections below, including:

- Revision of the existing GWPs, for example, increasing the GWP for methane from 21 to 25.
- Addition of GWPs for 103 new chemicals (in Table A-1 of the rule).
- Revising notification deadlines from March 31st to the existing report submission due date.
- Allowing delayed use of GWPs for newly added chemicals.

3.2 Costs of revisions of the existing GWPs, for example, increasing the GWP for methane from 21 to 25

The proposed rule amendments update the list of GHGs regulated by the rule, and update GWPs, to match those currently used by the EPA. Ecology is required by law (see Section 2.2.2 of this document) to match the EPA's GHG reporting program, so we determined this change was required by law and was part of the baseline.

There are, however, extra costs if a facility previously exempt from reporting is now required to report due to the proposed rule changes. This would also apply if the facility reports to the EPA but not to Washington because minor elements of the existing state GHG reporting program are more stringent than the federal program (e.g., minor additional reporting or recordkeeping elements). Therefore, we needed to determine that no new reporters would arise as a result of the proposed rule amendments. This is because the requirement to report is part of the baseline (required by the federal program and therefore not a cost or benefit of the proposed rule amendments). The proposed rule amendments would be responsible for any incremental costs and benefits of the minor differences between the state and federal reporting and recordkeeping requirements, for any entity newly required to report because of proposed changes to GWPs. New costs would also be associated with facilities reporting for the first time to either program based on the proposed changes.

3.2.1 Identification of changes possibly impacting reporters

The majority of GWP changes are to fluorinated GHGs which are only used by a small number of source categories. Those source categories are already well represented in the Washington GHG reporting program and include a small number of facilities. Many of the GWPs for these gases are proposed to decrease, which may offset the increases in some cases. We do not anticipate additional entities being required to report because of the proposed GWP changes for fluorinated GHGs. That leaves three gases that are widely emitted in Washington that need analysis: carbon dioxide, nitrous oxide, and methane. The GWP for carbon dioxide is, by definition, unchanged at 1 and the GWP for nitrous oxide is proposed to decrease from 310 to 298, so no new reporters are possible due to those changes.

We identified a GWP change that could possibly result in additional entities being required to report: the revision of the GWP for methane from 21 to 25. Note, again, that this value is required by state law to be consistent with the federal GWP for methane, and is therefore part of the baseline for this analysis. We did, however, employ the following process to identify whether any entities are likely to be required to begin reporting, but currently are not required to report to Washington. This would most likely occur in the municipal landfill source category since emissions from that industry are dominated by methane. Due to an exception in the EPA's reporting threshold, most of those facilities are already required to report to the EPA. Any such entities would likely incur incremental reporting and recordkeeping costs for the minor differences between the state and federal reporting programs.

3.2.2 Process for identifying facilities prospectively brought into additional reporting

We began with the list of existing reporters to the federal program, identifying the entities that are required to report to the EPA, but are not required to report to Washington. Of these entities, we identified those reporting GHG emissions because of (at least in part) methane emissions. That set of facilities included two landfills. (Note that three landfills were on the list of federal reporters, and one of those three landfills already reports to Washington.)

3.2.3 Results

For the two identified landfills that currently report to the EPA but not to Washington, reporting at least in part because of methane emissions, we determined that the revision of the methane GWP from 21 to 25 was not likely to result in either landfill becoming required to report to Washington.

We also determined that both of the identified landfills are closed, and therefore were not likely to have increased methane emissions in the future. These facilities, therefore, are not likely to experience additional costs currently or in the future, as a result of the proposed rule amendments. Our cost estimate for the proposed rule amendments' revision of the methane GWP from 21 to 25 is zero cost.

Ecology included a provision in the proposed rule that will make the GWP changes effective 1 year later for applicability purposes than for facilities already reporting their emissions. This should minimize the cost increase for facilities required to report for the first time in the unlikely event that such a case exists.

3.3 Costs of addition of GWPs for 103 new chemicals

The proposed rule amendments update the list of GHGs regulated by the rule, and update GWPs to match those currently used by the EPA. Ecology is required by law (see section 2.2.2 of this document) to match the EPA's GHG reporting requirements, so we determined this change was required by law and was part of the baseline.

There are, however, extra costs if a facility previously exempt from reporting is now required to report due to the proposed rule changes. Therefore, we needed to determine that no new reporters would arise as a result of the proposed rule amendments. New costs would be associated with facilities reporting for the first time to either program based on the proposed changes.

3.3.1 Identification of changes possibly impacting reporters

We identified GWP additions that could possibly result in additional entities being required to report: the addition of the GWPs for 103 new chemicals. Note, again, that these are required by state law to be consistent with the federal GWPs, and are therefore part of the baseline for this analysis. We did, however, employ the following process to identify whether any entities would be likely to be required to begin reporting, but currently are not required to report to Ecology.

3.3.2 Process for identifying facilities prospectively brought into additional reporting

All of the new proposed GHGs are exclusive to the electronics manufacturing sector. There are a limited number of facilities in the electronics manufacturing sector in Washington and these facilities are currently reporting their emissions to Ecology. We contacted the largest and most complex facility in this sector to determine if they use any of the new GHGs. The facility confirmed that they do not use any of the 103 new GHGs, which makes it unlikely that less complicated facilities would use the new GHGs. Therefore, it is highly unlikely that any new reporters would be added to Washington's program due to the addition of these GHGs.

3.3.3 Results

The two electronics manufacturers already reporting to Washington, while emitting chemicals in the overall group of fluorinated chemicals added or with the revised GWPs under the proposed rule amendments, do not emit the fluorinated chemicals added under the proposed rule amendments. Additionally, many of the existing GWPs revised would decrease. There are a limited number of facilities in this sector in Washington, so we do not anticipate additional facilities would be required to begin reporting to Ecology due to this change. We therefore estimate zero cost for these electronics facilities as a result of the proposed rule amendments.

Ecology included a provision in the proposed rule that will make the new GHGs effective 1 year later than the GWP changes for existing gases. This should minimize the cost increase for facilities required to report the new gases for the first time in the unlikely event that such a case exists.

We expect that in the future, similar facilities are likely to emit the same or similar chemical mixtures as existing facilities. As no existing facility is likely to incur additional costs as a result of the proposed rule amendments adding new GHGs, we determined that future facilities were similarly unlikely to incur additional costs.

3.4 Costs of revising notification deadlines from March 31st to the existing report submission due date

For organizational consistency, we included all four changes for which we estimated costs or benefits resulting from the proposed rule amendments in both chapters 3 and 4. Extending the deadline for notification under the proposed rule amendments does not generate costs for existing or future facilities, nor does it change emissions behavior, and so does not impact the public or environment.

3.5 Costs of allowing delayed use of GWPs from newly added chemicals

For organizational consistency, we included all four changes for which we estimated costs or benefits resulting from the proposed rule amendments in both chapters 3 and 4. Delaying required reporting of emissions from chemicals newly added to the rule under the proposed rule amendments does not generate costs for existing or future facilities, nor does it change emissions behavior, and so does not impact the public or environment. For discussion of benefits, see section 4.5 of this document.

3.6 Summary of likely costs of the proposed rule amendments

From the methodologies and results above, we determined that the proposed rule amendments were not likely to result in current or future costs. This is because no facility would likely become a new reporter to Washington because of the proposed rule amendments. None would therefore incur the incremental costs of the differences between the state and federal reporting programs.

Chapter 4: Likely Benefits of the Proposed Rule Amendments

4.1 Introduction

We estimated the likely benefits associated with the proposed rule amendments, as compared to the baseline (both described in Chapter 2 of this document). As the proposed rule amendments are generally separable in their impacts on affected entities, we discuss each proposed rule amendment separately in the sections below, including:

- Revision of the existing GWPs, for example, increasing the GWP for methane from 21 to 25.
- Addition of GWPs for 103 new chemicals (in Table A-1 of the rule).
- Revising notification deadlines from March 31st to the existing report submission due date.
- Allowing delayed use of GWPs from newly added chemicals.

4.2 Benefits of revisions of the existing GWPs, for example, increasing the GWP for methane from 21 to 25

For organizational consistency, we included all four changes for which we estimated costs or benefits resulting from the proposed rule amendments in both chapters 3 and 4. As discussed in section 3.2 of this document, we determined that the proposed rule amendment to the GWP for methane is not likely to result in behavioral changes (in reporting or emissions). Note that the GWP change itself is part of the baseline as discussed in section 2.3 of this document. There are therefore no benefits likely to result from the proposed rule amendments' revision to the methane GWP.

4.3 Benefits of addition of GWPs for 103 new chemicals

For organizational consistency, we included all four changes for which we estimated costs or benefits resulting from the proposed rule amendments in both chapters 3 and 4. As discussed in section 3.3 of this document, we determined that the proposed rule amendments to listed chemicals and GWPs are not likely to result in behavioral changes (in reporting or emissions). Note that the additions and GWP revisions themselves are part of the baseline as discussed in section 2.3 of this document. There are therefore no benefits likely to result from the proposed rule amendments' addition and revision of GWPs.

4.4 Benefits of revising notification deadlines from March 31st to the existing report submission due date

The proposed rule amendments revise the deadline for annual GHG report submission from explicitly March 31st, to the "report submission due date, specified in WAC 173-441-050(2)". The portion of the rule referenced defines reporting deadlines for entities reporting to the EPA (March 31st), and for entities reporting to Washington only (October 31st). We expect, therefore, that the proposed rule amendments will allow some entities to delay notifications to the October reporting deadline. While this does not change *what* notification is provided, or the effort and documentation necessary for it, the delay of seven months is less-stringent, and potentially allows the costs of notification to be delayed in real terms. We typically use a risk-free discount rate to identify value

differences across time, and that rate is currently 1.32 percent annually.¹ Based on this rate, if an entity delayed any costs by 7 months, they would save 0.8 percent of those costs. For simplicity, and since we do not expect the proposed rule amendments to generate costs (see Chapter 3), we did not multiply out this cost-savings for estimates of notification costs, and instead chose to discuss the benefit mostly qualitatively, with the 0.8-percent savings remaining illustrative.

4.5 Benefits of allowing delayed use of GWPs from newly added chemicals

The proposed rule amendments allow for delayed use of the proposed GWPs for chemicals newly added to the regulated list (Table A-1 of the rule). In particular, for these chemicals, it allows entities to choose whether to use the existing or the proposed GWP in reporting 2013 emissions. This allows entities to defer the costs of changing reporting calculations to include the new GWPs, or gathering any additional data or documentation necessary, for up to one reporting period. For simplicity, and since we do not expect the proposed rule amendments to generate costs (see Chapter 3), we did not quantitatively estimate this potential cost-savings for some entities, and instead chose to discuss the benefit qualitatively.

4.6 Summary of the likely benefits of the proposed rule amendments

From the qualitative discussion and results above, we determined that the proposed rule amendments were likely to result in two forms of real cost-savings, through:

- Delayed notification of ceasing reporting (up to 0.8 percent).
- Delayed use of GWPs for newly added chemicals (to Table A-1 of the rule).

Both of these cost-savings come in the form of delays that save value in real (inflation and opportunity cost-adjusted) terms.

¹ Present values are calculated using the average risk-free, inflation-adjusted rate of return on I Bonds (US Treasury, 2014). The full range represents additional flow rates for a new air stripper of 50 – 500 gallons per minute. All dollar values are updated to 2014-dollars using the Consumer Price Index (US Bureau of Labor Statistics, 2014).

Chapter 5: Cost-Benefit Comparison and Conclusions

5.1 Summary of the costs and benefits of the proposed rule amendments

5.1.1 Zero costs

From the methodologies and results in Chapter 3, we determined that the proposed rule amendments were not likely to result in current or future costs. This is because no facility would likely become a new reporter to Washington because of the proposed rule amendments, and none would therefore incur the incremental costs of the differences between the state and federal reporting programs.

5.1.2 Qualitative positive benefits

From the qualitative discussion and results in Chapter 4, we determined that the proposed rule amendments were likely to result in two forms of real cost-savings, through:

- Delayed notification of ceasing reporting (up to 0.8 percent).
- Delayed use of GWPs for newly added chemicals (to Table A-1 of the rule).

Both of these cost-savings come in the form of delays that save value in real (inflation and opportunity cost-adjusted) terms.

5.2 Conclusion

We conclude, based on positive qualitative benefits and zero estimated costs, that the benefits of the proposed rule amendments are greater than the costs.

Chapter 6: Least-Burdensome Alternative Analysis

6.1 Introduction

RCW 34.05328(1)(e) requires Ecology to “...[d]etermine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection.” The referenced subsections are:

- (a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements.
- (b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule.
- (c) Provide notification in the notice of proposed rule making 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.

In other words, Ecology is required to determine that the contents of the rule are the least burdensome set of requirements that still achieve the goals and objectives of the authorizing statute(s).

Ecology assessed alternatives to elements of the proposed rule, and determined whether they met the goals and objectives of the authorizing statutes. Of those that would meet these goals and objectives, Ecology determined whether those chosen for the proposed rule were the least burdensome.

6.2 Goals and objectives of authorizing statutes

6.2.1 Chapter 70.235 RCW

Goals and objectives of the statute include:

- Washington should continue its leadership on climate change policy by creating accountability for achieving the emission reductions established in RCW [70.235.020](#), participating in the design of a regional multisector market-based system to help achieve those emission reductions, assessing other market strategies to reduce emissions of greenhouse gases, and ensuring the state has a well trained workforce for our clean energy future.
- It is the intent of the legislature that the state will:
 - Limit and reduce emissions of greenhouse gas consistent with the emission reductions established in RCW [70.235.020](#).
 - Minimize the potential to export pollution, jobs, and economic opportunities.

- Reduce emissions at the lowest cost to Washington's economy, consumers, and businesses.
- The department shall take the following actions:
 - Develop and implement a system for monitoring and reporting emissions of greenhouse gases as required under RCW [70.94.151](#).
 - Track progress toward meeting the emission reductions established in this subsection, including the results from policies currently in effect that have been previously adopted by the state and policies adopted in the future, and report on that progress.

6.2.2 Chapter 70.94 RCW

Goals and objectives of the statute include:

- RCW 70.94.151 requires Ecology to maintain consistency between its reporting program and the federal GHG reporting program.
- The declarations of goals and purpose for the Washington Clean Air Act (RCW 70.94.011; author's bolding):

It is declared to be the public policy to **preserve, protect, and enhance the air quality for current and future generations**. Air is an essential resource that must be protected from harmful levels of pollution. Improving air quality is a matter of statewide concern and is in the public interest. **It is the intent of this chapter to secure and maintain levels of air quality that protect human health and safety, including the most sensitive members of the population, to comply with the requirements of the federal clean air act, to prevent injury to plant, animal life, and property, to foster the comfort and convenience of Washington's inhabitants, to promote the economic and social development of the state, and to facilitate the enjoyment of the natural attractions of the state.**

It is further the intent of this chapter to **protect the public welfare, to preserve visibility, to protect scenic, aesthetic, historic, and cultural values, and to prevent air pollution problems that interfere with the enjoyment of life, property, or natural attractions.**

The legislature recognizes that air pollution control projects may affect other environmental media. In selecting air pollution control strategies state and local agencies shall support those strategies that **lessen the negative environmental impact** of the project on all environmental media, including air, water, and land.

The legislature further recognizes that **energy efficiency and energy conservation can help to reduce air pollution** and shall therefore be considered when making decisions on air pollution control strategies and projects.

It is the policy of the state that the **costs of protecting the air resource** and operating state and local air pollution control programs **shall be 25 shared as equitably as possible among all sources whose emissions cause air pollution.**

It is also declared as public policy that regional air pollution control programs are to be encouraged and supported to the extent practicable as essential instruments for the securing and maintenance of appropriate levels of air quality.

To these ends **it is the purpose of this chapter to safeguard the public interest through an intensive, progressive, and coordinated statewide program of air pollution prevention and control**, to provide for an appropriate distribution of responsibilities, and to encourage coordination and cooperation between the state, regional, and local units of government, to improve cooperation between state and federal government, public and private organizations, and the concerned individual, as well as to provide for the use of all known, available, and reasonable methods to reduce, prevent, and control air pollution.

The legislature recognizes that the problems and effects of air pollution cross political boundaries, are frequently regional or inter-jurisdictional in nature, and are dependent upon the existence of human activity in areas having common topography and weather conditions conducive to the buildup of air contaminants. In addition, the legislature recognizes that air pollution levels are aggravated and compounded by increased population, and its consequences. These changes often result in increasingly serious problems for the public and the environment.

The legislature further recognizes that air emissions from thousands of small individual sources are major contributors to air pollution in many regions of the state. As the population of a region grows, small sources may contribute an increasing proportion of that region's total air emissions. It is declared to be the policy of the state to achieve significant reductions in emissions from those small sources whose aggregate emissions constitute a significant contribution to air pollution in a particular region.

6.3 Alternatives considered and why they were not included

As part of this rulemaking, up through this rule proposal, Ecology considered alternatives to the rule content being proposed. These include:

- The existing rule content.
- Alternative content other than the existing rule content.

Both of these alternatives (even accounting for how broad the second alternative is) would fail to meet the requirements of the APA regarding the Least-Burdensome Alternative Analysis, twofold:

- Would not meet the requirement of RCW 70.94.151 to be consistent with the EPA GHG reporting rule.
- Would be more burdensome, creating inconsistent methods, requirements, and timing across different types of reporters, and across the federal and state reports.

6.4 Conclusion

After considering alternatives to the proposed rule's contents, as well as the goals and objectives of the authorizing statutes, Ecology determined that the proposed rule represents the least-burdensome alternative of possible rule contents meeting these goals and objectives.