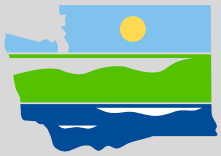

DEPARTMENT OF
ECOLOGY
State of Washington

Final Cost-Benefit and Least Burdensome Alternative Analysis

Chapter 173-441 WAC
Reporting of Emission of Greenhouse Gases

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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

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Final Cost-Benefit and Least Burdensome Alternative Analysis

Chapter 173-441 WAC
Reporting of Emission of Greenhouse Gases

Prepared by

Kasia Patora

for the

Air Quality Program
Washington State Department of Ecology
Olympia, Washington

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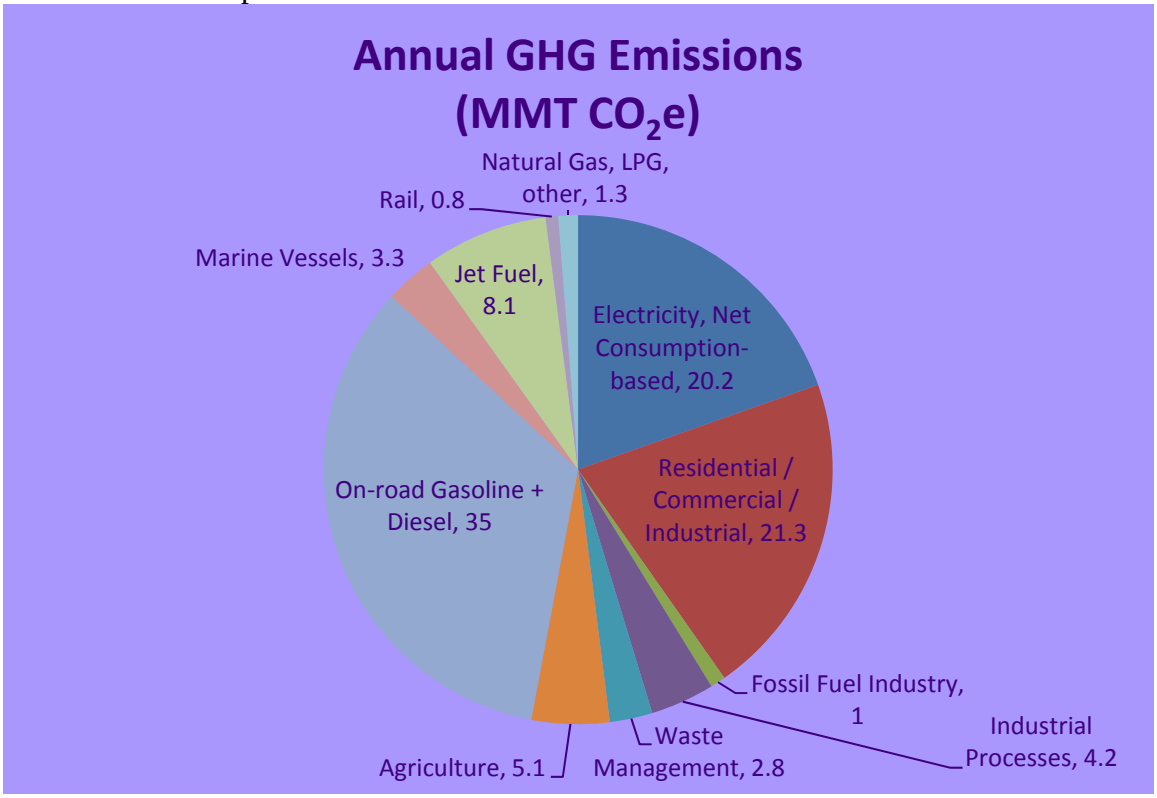
Executive Summary

The Washington State Department of Ecology (Ecology) is adopting a rule (Chapter 173-441 WAC) to require reporting of greenhouse gas (GHG) emissions from certain sources in the state. Ecology estimated that in 2010, Washington state GHG emissions will be 103 million metric tons carbon dioxide equivalent (MT CO_2e), based on energy and fuel use.[1] The chart below summarizes the expected contributions of emissions sources in 2010.



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. These emissions are expected to be covered under fuel supplier reporting.

Ecology has analyzed the ranges of quantifiable cost and benefit impacts, as well as likely qualitative impacts. Based on its analysis, Ecology has determined the likely benefits of the rule exceed the likely costs, accounting for both quantified and qualitative impacts.

[1] Washington State Department of Ecology and Washington State Department of Community, Trade and Economic Development (2008). Leading the Way on Climate Change: A Challenge of Our Time, Interim Report. Chapter 2, "Leading the Way: A Comprehensive Approach to Reducing Greenhouse Gases in Washington State." Table 1.

Ecology compared the rule to the federal GHG reporting rule (baseline).

Costs and Benefits of Ecology's Rule	
Annualized Costs millions of $/year	**Benefits**
• Reporting costs: $1.0 – $2.7 • Non-reporter costs: $0.0 – $0.1 • Fees: $0.4	• 2.7 million MT/year additional reported emissions • Creation of a comprehensive emissions database. • Broader coverage of 194 more facilities, including 18 facilities triggered by biomass. • Inclusion of 64 transportation fuel suppliers. Improved information for regulatory and industry planning. • Improved information for prospective participation in emissions trading. • Focus on a Washington-specific emissions composition. • Public confidence in business and government transparency. • Improved information for efficient consumer purchasing and investment. • Broader scope for mandated future emissions reductions. • Operations information for possible cost savings and efficiency.

This is a 15 percent increase over total facility emissions reporting Ecology expects in the state under the federal rule (32 million metric tons). It also includes transportation emissions, which represent Washington's largest source of emissions and are not included at the state level in the federal program.

Ecology has reported benefits in metric tons of carbon-dioxide equivalent emissions (instead of estimating dollar-based benefits). This is because of the uncertainty associated with the estimation of dollar-valued endpoints. While Ecology believes the additional knowledge acquired through GHG reporting will contribute significantly to future policymaking and GHG emissions reductions mandated by law, Ecology could not develop sufficiently likely dollar-values related to units of reported emissions to estimate the benefits of the rule in dollars.

Chapter 1: Background and Scope

The Washington State Department of Ecology (Ecology) is adopting a rule to require reporting of greenhouse gas (GHG) emissions from certain sources in the state.

The Administrative Procedure Act (Chapter 34.05 RCW) requires that, before adopting a significant legislative rule, Ecology must, "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." [RCW 34.05.328(1)(c)]

For the adopted rule, *Chapter 173-441 WAC, Reporting of Emissions of Greenhouse Gases*, this means Ecology must estimate the impacts of the rule on individuals, businesses and the public. Impacts are determined by comparing the expected regulatory environment without the rule to the regulatory environment with the rule in place. Ecology performed this analysis in comparison to the existing federal reporting rule (the baseline).

This document provides the public with an overview of the methods Ecology used to perform this analysis, and the likely impacts found.

Background

Washington State has taken several steps to begin responding to climate change. Executive Order 07-02, issued by Governor Chris Gregoire in February 2007, set statewide GHG emissions reduction goals over the next several decades, as one of the methods for addressing climate change.[2] The 2007 state Legislature passed Chapter 80.80 RCW setting:

- Statutory requirements for statewide reductions in GHG emissions.
- A GHG emissions performance standard for baseload electric power generation.

Engrossed Second Substitute House Bill (ESSHB) 2815 (codified primarily in chapters 70.235 RCW and 70.94 RCW), passed by the 2008 Legislature as part of the Governor's Climate Change Framework, included more actions to reduce GHG emissions, and to build a clean energy economy. One element of this legislation was a requirement for large vehicle fleet operators and large stationary sources of GHG emissions to begin reporting emissions in 2010. The legislation directed Ecology to adopt rules to develop and implement a reporting system for those emitters required to report. It also required Ecology to participate in the design of a market-based emissions trading system, in cooperation with the Western Climate Initiative (WCI).

During the rulemaking authorized by ESSHB 2815, Substitute Senate Bill (SSB) 6373 (Chapter 146, Laws of 2010; codified in chapters 70.235 RCW and 70.94 RCW, Greenhouse Gas Emissions) readdressed GHG reporting requirements in the state, changing applicability

[2] State of Washington, Office of the Governor (2007). Executive Order 07-02, Washington Climate Change Challenge.

and statutory requirements. Ecology then ceased the rulemaking process in the proposal stage, and began the rulemaking process that culminated in the adopted rule.

Ecology's Rule

As directed by statute, Ecology developed a rule to require reporting of GHG emissions from certain facilities and fuel suppliers in the state. The rule:

- Applies to sources of GHG emissions in Washington State including sector-specific facilities and suppliers of transportation fuel.
- Requires emissions reporting for sources with direct emissions greater than or equal to a threshold of 10,000 metric tons of CO_2e GHG emissions per year. The applicability and threshold were set by the authorizing statute.
- Begins reporting with 2012 emissions (reported in 2013). This is the latest date allowed by statute.
- Sets an annual reporting deadline of March 31 for reporting emissions for the previous year, for reporters also reporting to the Environmental Protection Agency (EPA).
- Sets an annual reporting deadline of October 31 for reporting emissions for the previous year, for reporters not reporting to EPA as well.
- Requires reporting of six Kyoto-listed GHGs, as well as other fluorinated gases included in EPA's reporting program.
- Maximizes consistency with EPA's reporting program except where in conflict with SSB 6373.
- Provides aggregation and confidentiality provisions for fuel suppliers' proprietary information reported through DOL.
- Requires reporting of biomass emissions. These are included in the threshold, but are reported separately from other emissions. This requirement was set in statute.
- Requires reporting only of direct emissions.
- Requires reporting only at the facility level.
- Sets reporter fees based on their share of the operating costs of the GHG emissions regulatory program.
- Requires retention of supporting records for 3 years.
- Allows agency review of emissions reports.
- Minimizes the impact of changing federal rules by allowing reporters to petition Ecology to use updated EPA quantification methodologies.
- Includes an option for voluntary reporting.

Ecology developed this rule based on statutory requirements, internal expertise, and the input of stakeholders.

Federal (EPA) Reporting Rule

In 2009, the Environmental Protection Agency (EPA) adopted a federal GHG reporting rule.[3] Remaining subparts of the rule were finalized in 2010. Ecology analyzed the state rule as compared to the baseline scenario in which some reporters would only report to EPA, while others would not report at all, under the federal rule.

The federal GHG reporting rule:

- Applies to a specific list of sectors, and to all stationary combustion sources that have a total maximum rated heat input capacity of the stationary fuel combustion units at the facility of at least 30 mmBtu/hr.
- Applies only to stationary operations emissions, vehicle manufacturers, and fuel or process gas suppliers.
- Has a reporting threshold of 25,000 metric tons of carbon dioxide equivalent emissions.
- Requires report submission by March 31 of each year starting in 2011.
- Emissions reporting starting with 2010 emissions, or the first year of facility operation.
- Requires reporting of six Kyoto-listed GHGs, as well as other fluorinated gases.
- Requires supplier reporting of more fuel types than Ecology's rule, including transportation, stationary, liquid, solid, gas, and other forms.
- Requires reporting by suppliers of high global-warming potential gas suppliers.
- Requires reporting by vehicle engine manufacturers.
- Excludes biomass emissions from the threshold, but requires separate reporting of biomass emissions once the reporting threshold is exceeded.
- Includes some phasing-in of requirements through 2015 emissions.
- Allows EPA review of emissions reports.
- Requires records retention for three years.

Analytical Format and Scope

Ecology analyzed the impacts of the rule in the following sections:

[3] Federal Register Docket ID No. EPA-HQ-OAR-2008-0508

- **Chapter 2: The Baseline and Changes**. This chapter explains the baseline concept to which Ecology's rule was compared in Ecology's analysis, as well as how rule impacts were analyzed.
- **Chapter 3: Costs of Reporting.** Ecology analyzed costs of the rule's reporting requirements for facilities and fuel suppliers relative to the federal GHG reporting rule.
- **Chapter 4: Benefits of Reporting**. Ecology analyzed benefits of the rule's reporting requirements for facilities and fuel suppliers relative to the federal GHG reporting rule.
- **Chapter 5: Conclusions.** Ecology summarized its results and included comments on the analysis.
- **Chapter 6: Least Burdensome Alternative Analysis.** Ecology determined that the rule places the least burden possible on those required to comply with it, while fulfilling the goals and objectives of the authorizing legislation.

Chapter 2: The Baseline and Changes

Ecology analyzed the impacts of the rule relative to the baseline regulatory scenario of the federal GHG reporting rule. This chapter describes the baseline context, and complexities that arose for Ecology's rule in particular, as well as what changes were analyzed, and how they are included in this analysis.

Baseline

The baseline for Ecology's analysis of a newly adopted rule is the regulatory context in the absence of that rule. This includes relevant federal and other jurisdictional rules that would govern the behavior of regulated emitters if Ecology did not adopt the rule.

In the case of this GHG reporting rule, Ecology determined the most likely baseline for future behavior was the existing federal GHG reporting rule, as recently finalized. State law requires Ecology to adjust its requirements to minimize duplicative reporting requirements if Ecology finds the federal program will satisfy state needs.

Changes under Ecology's Rule

The GHG reporting rule Ecology is adopting differs from the federal reporting rule in the following ways, many of which are explicitly dictated by statute. State law requires that the rule be in line with the federal rule to the extent possible, to reduce the costs of complying with duplicated requirements.

- Reporting by suppliers of transportation fuels is different under the rule.
- Lower reporting threshold of 10,000 MT (metric tons of CO_2e emissions) per year. Washington's threshold is fixed and applied to total emissions where the federal threshold is variable by sector. These requirements are explicitly dictated by statute.
- Includes biomass emissions in the threshold. Biomass emissions must be reported separately for all source categories. This requirement is explicitly dictated by statute.
- Ecology's program begins reporting with 2012 emissions in 2013. This is the latest start date allowed by statute. The federal program begins for most sources with 2010 emissions reported in 2011 and all sources by 2011 emissions reported in 2012.
- Later submission deadline of October 31 of each year, for reporters not also reporting under the federal rule. This is the latest allowed by the authorizing statute.
- Program fees to support the administrative cost of the program.
- Does not include upstream reporting by suppliers of other types of fuel or greenhouse gases, or engine manufacturers.

Chapter 3: Costs of Reporting

Ecology analyzed the costs of the rule relative to the EPA's (federal) GHG reporting rule. This chapter describes qualitative and quantified measures of estimated costs. As the impacts of each requirement under the rule may overlap in terms of quantifiable changes in behavior, this chapter first describes costs of rule requirements qualitatively, and then discusses estimated overall quantifiable impacts.

Ecology is not required to analyze those aspects of the rule that are explicitly dictated by statute. Some elements of Ecology's rule, however, although dictated broadly by statute, were not separable from other aspects of the rule over which Ecology had discretion, such as:

- Emissions quantification methods and options
- Reporting protocols
- Deferred reporting
- Timing.

In such cases, the statutory language was included in the analysis.

In this chapter, Ecology includes in its analysis the statutory requirement that emitters of at least 10,000 metric tons of CO_2e emissions of GHG must report.

Costs of Lower Threshold

Ecology's rule requires reporting above a lower threshold than the federal rule. The rule requires reporting of emissions if they are over 10,000 MT, while the federal rule carries a threshold of 25,000 MT. Ecology based this broader scope on the requirements of the authorizing laws (Chapters 70.94 and 70.235 RCW). Ecology expects that broader applicability will increase the number of facilities and fuel suppliers that incur compliance costs, compared to the federal rule.

Ecology presents its estimation of the combined effects of the lower threshold and other changes later in this chapter.

Costs of Including Separate Biomass Emissions

Ecology's rule requires facilities and fuel suppliers to separately report biomass emissions (as the federal rule does), but also includes them in the threshold determination. This aspect of the rule will work with the lower threshold to generate costs for the regulated community.

Quantified Costs of Ecology's Rule

Ecology estimated the quantifiable costs of the rule by determining expected reporters, and estimating the range of compliance costs for each industry.

Federal Reporting Rule Coverage

Ecology expects the federal reporting rule to capture emissions from the largest industrial emitters. The EPA's Regulatory Impact Analysis for the federal reporting rule expects 30 thousand facilities in the United States will need to assess whether they must report, and about 13 thousand of these will likely meet the threshold to report.

Ecology developed an estimate of the number of Washington State emitters impacted by the federal reporting rule, based on reported fuel consumption and business output. Through that estimate, Ecology developed list of 74 facilities that likely emit over the federal threshold of 25,000 metric tons per year, from industrial processes covered by the federal rule. Based on the relative proportions of likely reporters to non-reporters at the national level,[4] Ecology assumed 100 businesses in Washington would only need to determine whether they are reporters. This number is likely an overestimate, based on Ecology's knowledge of the industries reporting under the federal rule, and those industries in Washington State. However, Ecology chose this estimate based on the proportion of reporters to non-reporters in the United States as a whole, as reported by the EPA.

Coverage under Ecology's Rule

Ecology expects coverage under the rule to include several manufacturing, commercial, and utility operations, including those reporting under the federal reporting rule. The lower reporting threshold under the rule is expected to include more reporters. This is because of the lower threshold itself, and also to an additional extent because of inclusion of biomass emissions in the threshold determination. These requirements are both dictated by statute.

Based on the energy intensity of different production activities, and employment size of firms as a proxy for operation size, Ecology estimated that about 267 facilities or fuel suppliers (a subset of 12 are also fuel suppliers) operating in the state are likely to be required to report under the rule, 18 of these facilities are likely to be triggered by biomass emissions.[5] DOL estimates that 64 out of a possible 125 suppliers with the appropriate licenses will exceed Washington's threshold.

Ecology expects that some remaining businesses in the state, in manufacturing, utility, and commerce industries will need to determine their reporting status, but will not need to report. Ecology estimated there are about 3 thousand remaining manufacturing, commercial, utility facilities, and fuel suppliers, in industries relevant to the rule.[6]

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[4] Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report. http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf

[5] Washington State Employment Security Department. Workforce Explorer. http://www.workforceexplorer.com/cgi/dataanalysis/?PAGEID=94&SUBID=149, Nicholas Institute for Environmental Policy Solutions (2007). Size Thresholds for GHG Regulation: Who Would be Affected by a 10,000 ton CO2 Emission Rule, and Energy Information Administration (2002). Manufacturing Energy Consumption Survey. Table 6.4 Manufacturing fuel consumption by Manufacturing Industry and Employment Size.

[6] Washington State Employment Security Department, Workforce Explorer. http://www.workforceexplorer.com/

Difference in Coverage

Overall, based on the additional facilities and sectors described above, Ecology expects the rule to cover about 331 facilities and fuel reporters, including:

- 175 facilities under 25,000 MT CO_2e expected to report only under the rule.
- 18 biomass emitters expected to report only under the rule.
- 74 facilities expected to report under both the rule, and under the federal reporting rule.
- 64 transportation fuel suppliers.

Cost Estimation – Reporters

Ecology developed a list of likely reporters under the rule. For each of these operations, Ecology developed an estimated facility compliance cost by industry and biomass compliance cost. Ecology estimated a range of compliance costs, tied to labor and capital cost assumptions developed by the EPA for its Regulatory Impact Analysis for the federal rule.[7]

The rule allows those reporters also reporting under the federal rule to submit emissions reports to the EPA. The EPA then provides reports to Ecology. Based on this, Ecology assumed the 74 likely reporters also reporting to EPA will experience minimal or no additional reporting costs under the rule. Ecology therefore estimated costs for the remaining likely 175 reporters and 18 biomass-triggered reporters, who only report under the state rule.

The low end of the costs range was based on the scenario that only labor costs were necessary for compliance, and emissions could be estimated based on existing or easily accessed records. Ecology's rule allows for various emissions calculations, and Ecology expects actual compliance costs to be near the low end of the range, as businesses are likely to minimize costs where possible.

Reporter costs used by Ecology were industry-specific where available, and tied to the cost estimation assumptions the EPA used to analyze the federal rule. Utilities expected to report under the rule were assigned estimated costs of stationary combustion from this same analysis. See Appendix A for a break-down of compliance costs.

Ecology applied a similar effort-based methodology in estimating compliance costs for fuel suppliers. As fuel supplier reporting is based on existing reporting of transportation

[7] Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report.
http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf

fuel tax to DOL, Ecology estimated the cost of the additional reporting efforts likely required to complete reporting based on existing data.

Based on its analysis of operation-level compliance costs, Ecology estimated that about 257 facilities emitting between 10,000 and 25,000 MT CO2e and fuel suppliers are expected to incur total annualized reporting costs of approximately **$966 thousand – $2.7 million**. This is the overall range of possible annualized compliance costs, looking at extreme high and low costs across all, and all possible compliance options including unlikely high-cost options.

Cost Estimation – Non-Reporters

Based on the industries impacted in Ecology's cost analysis for reporters, Ecology assumed a remaining 3,000 facilities in the state[8] would need to determine what action to take in compliance with the rule, but would not need to report. These are facilities involved in the same set of industries likely impacted by the rule.

Ecology followed the EPA's assumptions on the labor required to determine whether to report. [9] Results based on these EPA estimates were used as the high end of the cost range, as they assume the most conservative (i.e., high) cost scenario possible. Ecology also calculated this cost based on only the subset of labor required to determine reporting status based on existing fuel and input records, or transportation tax reports to DOL. The range of costs for non-reporters was determined to be $150 to $500 per non-reporter.

Ecology assumed the determination of whether to report would be one-time, unless significant changes to existing processes were made. Ecology annualized this range of non-reporter costs to be $13 to $44 dollars per year. Summed across all non-reporting facilities fuel suppliers determining whether to report, this is an annualized compliance cost of **$39 thousand – $132 thousand**.

See the Appendix A for a break-down of compliance costs.

Ecology also noted that some likely non-reporters would be able to determine whether to report during a brief phone call with a member of Ecology staff, so the quantified range of annualized costs presented above may be an overestimate.

[8] Washington State Employment Security Department. Workforce Explorer. http://www.workforceexplorer.com/cgi/dataanalysis/?PAGEID=94&SUBID=149, Nicholas Institute for Environmental Policy Solutions (2007). Size Thresholds for GHG Regulation: Who Would be Affected by a 10,000 ton CO2 Emission Rule, and Energy Information Administration (2002). Manufacturing Energy Consumption Survey. Table 6.4 Manufacturing fuel consumption by Manufacturing Industry and Employment Size.

[9] Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report. http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf

Reporting Fees

The authorizing statute allows Ecology to charge appropriate fees to reporters, based on the expected costs of the program. Ecology estimated the future workload of the reporting program, based on the rule.

Ecology determined which tasks it expects to perform under the rule, and the workload associated with those tasks. The tasks include:

- Rule updates, program administration, program tracking, and fiscal operations.
- Data management.
- Technical support.
- Compliance and enforcement.
- Management and oversight.
- Data verification.
- Administrative support in billing and correspondence.

Ecology estimated the workload associated with each task, and the total compensation estimate for each position involved. Total compensation included:

- Salaries
- Benefits
- Goods
- Travel
- Indirect costs.

Ecology estimated that overall program costs will be about $408 thousand per year for administering the reporting rule. This cost represents Ecology's current best estimate, and could change depending on the actual workload associated with running the GHG emissions reporting program.

To allocate reporter fees across likely reporters, Ecology followed the language in the rule. Ecology broke the budget down into 75 percent of fees paid by facility reporters, and 25 percent paid by fuel suppliers. Within these two categories, fees would be determined by division of the budget for the reporter category (facilities or fuel suppliers) by the number of reporters in that category. Overall:

- Facilities will likely pay an approximate fee of $1,150 per year.
- Fuel suppliers will likely pay an approximate fee of $1,590 per year.

These are estimated values, based on the expected annual costs of the program at the time of this publication. If the realized composition of reporters and non-reporters differs from Ecology's assumptions, actual fees may differ.

Ecology summed the estimated reporting fees to determine total expected annual reporting costs to of **$408 thousand**.

Chapter 4: Benefits of Reporting

In this chapter, Ecology analyzed the benefits of the adopted rule relative to the federal reporting rule at the time of this publication. This chapter describes qualitative and quantified measures of estimated benefits. As the impacts of each requirement under the rule may overlap in terms of quantifiable changes in behavior, this chapter first describes benefits of rule requirements qualitatively, and then discusses estimated quantifiable impacts of the rule as a whole.

Compliance with Legislative Mandate

Ecology is required to establish a GHG reporting protocol by the state Legislature. While Substitute Senate Bill 6373[10] creates the program, Ecology has discretion on the scope and content of program requirements. It is not possible to separate the costs and benefits of Ecology's rule from the creation of the program, and the inherent costs and benefits associated with any such program.

In its analysis of the costs of the rule, relative to the federal rule, Ecology did not attempt to separate out the costs of creating the GHG reporting program from the costs of those elements of Ecology's rule over which Ecology had discretion. Similarly, in discussion of benefits, Ecology did not differentiate between the benefits of such a program existing and the benefits of each component of Ecology's rule.

Lower Threshold – Coverage

Federal Reporting Rule Coverage

Ecology expects the federal reporting rule to capture emissions from the largest industrial emitters. The EPA's Regulatory Impact Analysis for the federal reporting rule expects 30 thousand facilities in the United States will need to assess whether they must report, and about 13 thousand of these will likely meet the threshold to report.

Ecology developed an estimate of the number of Washington State emitters impacted by the federal reporting rule, based on reported fuel consumption and business output. Through this estimate, Ecology developed a list of 74 facilities that likely emit over the federal threshold of 25,000 metric tons per year, from industrial processes covered by the federal rule. Based on the relative proportions of likely reporters to non-reporters at the national level,[11] Ecology assumed 100 businesses in Washington would only need to determine whether they are reporters. This number is likely an overestimate, based on Ecology's knowledge of the industries reporting under the federal rule, and those industries in Washington State. However, Ecology chose this estimate based on the proportion of reporters to non-reporters in the United States as a whole, as reported by the EPA.

[10] Adopted 2010 Legislative Session, and codified primarily in chapters 70.235 RCW and 70.94 RCW.
[11] Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report. http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf

Coverage under Ecology's Rule

Ecology expects coverage under the state rule to include several manufacturing, commercial, and utility operations, including those reporting under the federal reporting rule. The lower reporting threshold in Ecology's rule is expected to include more reporters, largely because of the lower threshold itself, but also to an additional extent because of inclusion of biomass emissions in the threshold determination.

Based on the energy intensity of different production activities, and employment size of firms as a proxy for operation size, Ecology estimated that about 267 facilities and 64 fuel suppliers in the state are likely to be required to report under the rule.[12] Ecology expects that some remaining businesses in the state, in manufacturing, utility, and commerce fields will need to determine their reporting status, but will not need to report. Ecology estimated there are about 3 thousand remaining manufacturing, commercial, utility facilities, and fuel suppliers, in industries relevant to the rule.[13]

Also among the 267 estimated facility reporters are 18 facilities required to report biomass separately under the rule, above the threshold.

Difference in Coverage

Overall, based on the additional facilities and sectors described above, Ecology expects the rule to cover about 331 facilities and fuel suppliers, including among them:

- 175 facilities under 25,000 MT CO_2e expected to report only under Ecology's rule.
- 18 biomass emitters expected to report only under Ecology's rule.
- 74 facilities expected to report under both Ecology's rule, and under the federal reporting rule.
- 64 transportation fuel suppliers.

Mandatory Reporting at the State Level -- Public

Ecology expects mandatory reporting at the state level to generate benefits to the public, in addition to those created by the federal reporting rule. In particular, these benefits are associated with other long-term requirements and goals put forward by the Governor and Legislature. In Executive Order 07-02, the Governor put forth goals for emissions reductions. In ESSHB 2815, the Legislature set these as requirements for GHG emissions reductions at

[12] Washington State Employment Security Department. Workforce Explorer. http://www.workforceexplorer.com/cgi/dataanalysis/?PAGEID=94&SUBID=149, Nicholas Institute for Environmental Policy Solutions (2007). Size Thresholds for GHG Regulation: Who Would be Affected by a 10,000 ton CO2 Emission Rule, and Energy Information Administration (2002). Manufacturing Energy Consumption Survey. Table 6.4 Manufacturing fuel consumption by Manufacturing Industry and Employment Size.
[13] Washington State Employment Security Department, Workforce Explorer. http://www.workforceexplorer.com/

the state level, and for tracking of progress toward those goals. Within the context of these specific Washington State-oriented goals, Ecology expects several benefits to arise from reporting of Washington State emissions, in addition to information expected to be reported at the national level, especially for transportation fuel suppliers.

Ecology also expects the information gathered under the rule to benefit the public, as it can be used to understand business and government actions and consumer behavior. Ecology believes these information-based benefits apply to information on reporters and non-reporters. While Ecology's rule will directly gather emissions information on reporters exceeding GHG emissions thresholds, the status of a non-reporter also provides the public and the non-reporter with information about the maximum level of emissions it generates.

Creation of a comprehensive database

Ecology's rule requires reporting of GHG emissions in excess of a lower threshold than under the federal rule. This more-comprehensive collection of data also addresses biomass emissions as part of the threshold determination, thereby including further reporters that are not triggered under the federal definition of emissions that are used to determine reporting status. Washington's emissions composition differs significantly from the nation as a whole, and Ecology believes the rule will benefit businesses and the public through planning and policy that is more appropriate for the state's economy and emissions composition.

Ecology believes that inclusion of these emissions, and those required under the federal reporting rule, provides significant additional information for planning and implementation of future emissions reduction goals. By gaining a better understanding of Washington-specific emissions, reductions in emissions can be achieved more efficiently and with a greater degree of equity across the local economy than would occur based solely on information collected by the federal reporting scheme. Ecology believes this additional information will contribute to better policy decisions implementing the required GHG emissions reductions under law.

Trading Scheme Participation

In the future, Washington State GHG emitters may participate in an emissions credit trading scheme. Inclusion of those emitters covered by the rule, in excess of the scope of federal reporting requirements, will likely allow businesses more flexibility in emissions market participation. Businesses with documented early emissions reductions may be able to use them as early action credits to market GHG emissions allocations.

Focus on Washington Emissions Composition

Ecology expects the public to benefit from an understanding of Washington-specific emissions, and their sources, with special focus on those industries and types of emitters that are more prevalent in the state. The reports will contain enough detail to also increase our understanding of how emissions relate to different processes and help us determine emission intensities that can lead to various reduction strategies. This can reflect in consumer decision making, and more informed purchasing and planning.

Public Confidence and Government Transparency

With a comprehensive, state-level reporting rule in place, emissions estimates for Washington State are likely to hold more public confidence. This is probable not only for the emissions numbers themselves, but for any future regulatory actions taken to reduce GHG emissions. Increased public confidence in the quality and the scope of reported numbers increases the likelihood the public will more fully understand the specific emissions reduction actions, why they are taken, and how they affect the local economy.

Credibility, Consumer Behavior, and Investment

While GHG emissions reporting may not produce a complete mapping of all emissions involved in consumer products, Ecology expects the incremental information it provides to consumers to benefit consumers by allowing them to make more efficient consumption choices relative to their preferences, including preferences for carbon impact.

As well as providing emissions information to consumers a mandatory reporting scheme for Washington gives more credibility to local emissions estimates. This reduces uncertainty for consumers that include emissions information in their purchasing decisions. The combination of increased knowledge about GHG emissions from reporters operating in the local economy, and increased confidence in the scope and accuracy of that information will benefit consumers' ability to behave in line with their full set of preferences.

The GHG emissions information may also benefit investors' ability to make financial decisions based on expected benefits and risks to GHG emitters, depending on emissions levels and other firm attributes.

Mandatory Reporting at the State Level – Industry and Investors

While Ecology expects the rule to generate compliance costs for the regulated community, Ecology also believes the rule will allow covered GHG emitters to benefit from the additional information generated by a mandatory state-level reporting requirement.

Emissions Reductions

Ecology expects the broader scope of the rule – relative to federal reporting requirements – may benefit some members of the regulated community, in the event of future mandatory reductions in GHG emissions. In particular, those reporters required to report under the federal and state rules may have their costs mitigated under the rule. This is because mandatory in-state emissions reductions could be spread across a wider set of reporters, than would be possible with the more limited emissions information gathered by the federal program.

Emissions reports will contain enough detail to also increase our understanding of how emissions relate to different processes and help us determine emission intensities that can lead to various reduction strategies.

In addition, the broader scope of the rule in its inclusion of biomass emissions in the threshold determination may allow reporters more flexibility in future emissions reductions, if reductions become mandatory and biomass is included in total emissions in future regulations.

Trading Scheme Participation

In the future, Washington State GHG emitters or reporters may participate in an emissions credit trading scheme. Inclusion of those emitters covered by the rule, in excess of the scope of federal reporting requirements, will likely allow businesses more flexibility in emissions market participation. Businesses with documented early emissions reductions may be able to use them as early action credits in market GHG emissions allocations.

Potential Cost Savings

Members of the regulated community – just reporters, and emitters as a whole – may discover potential cost savings in their operations by performing GHG emissions calculations on aspects of non-process emissions. This will likely occur with reporters and non-reporters emitting between 10,000 and 25,000 MT per year.

In addition to the analysis of industrial operations and emissions required by the federal reporting rule, regulated emitters may discover efficiencies to be gained in how their business is performed, fueled, transported, or designed, as they examine GHG emissions coming from multiple aspects of production or service provision.

Ecology also expects businesses to benefit either by reducing costs by changing their practices, or to benefit through public relations or investment from review and verification that current practices are highly efficient.

Credibility in emissions reductions

Another aspect of each of the expected benefits of Ecology's rule described above is the reduction in uncertainty provided by credible emissions estimates, in terms of official agency review and the broader scope of emissions covered by Ecology's rule. GHG emissions reported by firms may be used in emissions reductions planning, trading scheme participation, public relations, or cost-saving operations adjustments. They may also be used by outside non-covered businesses to provide better service, increase profitability, or improve control technology, added credibility increases the certainty with which businesses can make decisions and use information. Ecology expects the rule to reduce uncertainty regarding actual emissions by estimating a broader scope of emissions, and being inclusive of reporters not covered by the federal reporting rule.

Greater understanding of distribution and structure of GHG emissions in WA

Ecology expects the public, regulatory agencies, and business to benefit from a greater knowledge specifically of the local economy and its relationship to GHG emissions. For all three points of view – public, policy, and business – the rule offers opportunity for Washington-specific improvements and efficiencies in:

- Emissions reductions and trading
- Policy planning and creation
- Public relations
- Consumer purchasing
- Investment behavior.

Ecology expects Ecology's rule to increase transparent, credible information in all of these interactions between the public, policy, and businesses – opening the possibility for benefits accruing to one or more of these groups, and benefiting Washington as a whole.

Benefits of Including Biomass

Ecology's rule requires emissions operations to report biomass emissions. Ecology believes this will capture a greater proportion of actual emissions, relative to the federal reporting rule. Ecology determined that about 18 additional facilities would trigger the reporting threshold and report biomass emissions under the rule.

Overall Increase in Emissions Reported

Ecology estimated the additional emissions reported under the rule, relative to the federal rule. This involved determining new reporters, changes in types of reporting, and estimates of emissions likely to be reported for some of these likely reporters. Ecology combined the regulatory impacts of each of the subsections above, and determined overall changes in reporting behavior for each reporter, relative to federal reporting requirements.

Ecology first determined which facilities fuel suppliers would likely be reporting under the state rule. This included reporters only under the rule, reporters under both state rule and the federal rule.

For these reporters, Ecology determined the approximate degree of reporting under the rule – whether due to specific inclusion in the rule, the lower reporting threshold, or addition of biomass emissions sources. For those reporters under the state and the federal rules currently in place, Ecology subtracted the emissions that would be reported under both scenarios, leaving primarily emissions for reporters emitting between 10,000 and 25,000 MT CO_2e in a year, as well as biomass emissions.

Ecology estimated Ecology's rule will result in the additional reporting of:

- Reporters only under Ecology's rule (emitting 10,000 to 25,000 metric tons of CO_2e GHG emissions) approximate emissions totaling over 2.7 million metric tons. This is an approximate 15 percent increase in reported emissions from the state, as compared to the baseline.

Chapter 5: Conclusion and Comments

The Washington State Department of Ecology is proposing a rule to require reporting of GHG emissions from certain sources in the state.

The Administrative Procedure Act (Chapter 34.05 RCW) requires that, before adopting a significant legislative rule, Ecology must, "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." [RCW 34.05.328(1)(c)]

For Ecology's rule, *Chapter 173-441 WAC – Reporting of Emission of Greenhouse Gases*, this means Ecology must estimate the impacts of the rule on individuals, businesses and the public. Impacts are determined by comparing the expected regulatory environment in the absence of Ecology's rule, to the way GHG emissions reporting will occur under Ecology's rule.

Ecology analyzed the impacts of the rule relative to only the federal reporting rule.

Ecology has analyzed the ranges of quantifiable cost and benefit impacts, as well as numerous likely qualitative impacts, relative to the baseline. Based on its analysis, Ecology has determined the likely benefits of the rule exceed the likely costs, accounting for both quantified and qualitative impacts.

Costs and Benefits of Ecology's Rule	
Annualized Costs millions of $/year	**Benefits**
• Reporting costs: $1.0 – $2.7 • Non-reporter costs: $0.0 – $0.1 • Fees: $0.4	• 2.7 million MT/year additional reported emissions • Creation of a comprehensive emissions database. • Broader coverage of 194 more facilities, including 18 facilities triggered by biomass. • Inclusion of 64 transportation fuel suppliers. Improved information for regulatory and industry planning. • Improved information for prospective participation in emissions trading. • Focus on a Washington-specific emissions composition. • Public confidence in business and government transparency. • Improved information for efficient consumer purchasing and investment. • Broader scope for mandated future emissions reductions. • Operations information for possible cost savings and efficiency.

Chapter 6: Least Burdensome Alternative Analysis

Introduction

RCW 34.05.328(1)(e) requires Ecology to "determine, 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."

Determination

Based on research and analysis required by RCW 34.05.328(1)(e) the Department of Ecology determines:

> *There is sufficient evidence the rule is the least burdensome version of the rule for those who are required to comply, given the goals and objectives of the law, for Ecology to propose the rule.*

This rulemaking was required by Chapter 14, Laws of 2008 – Substitute Senate Bill 6373, Adopted 2008 Legislative Session, and codified primarily in chapters 70.235 RCW and 70.94 RCW. These authorizing statutes require Ecology to adopt rules under RCW 70.94.151 to establish monitoring and reporting of greenhouse gases. Ecology's understanding of the requirements and intent of SSB 6373 constrained Ecology's range of choices in determining the content of the rule.

During the development of this rule, Ecology considered alternative versions of the rule, whenever possible, to ensure Ecology's rule is the least burdensome alternative to achieve the general goals and specific objectives of the statute. Alternative rule language that did not meet the general goals and specific objectives of the statute being implemented – whether less burdensome than Ecology's rule content, or not – could not be included in Ecology's rule.

Alternative Rule Content Considered

This section discusses alternative rule content that Ecology considered during rulemaking, and why it was not included in Ecology's rule language. Each subsection also includes the rule language that was included in Ecology's rule – *shown in italics.*

Requirement for a Greenhouse Gas (GHG) Monitoring Plan

The purpose of a greenhouse gas monitoring plan is to ensure that emissions calculations and other information that is required to be reported under the rule are transparent, accurate, and independently verifiable. The monitoring plan would include systems of internal audit, quality assurance, and quality control for the reporting program and the data reported. If Ecology's rule were to require a monitoring plan, the reporter would

have to provide the plan upon request by Ecology. As part of its record keeping requirements, the EPA rule requires a reporter to provide, upon request, a written monitoring plan.

Alternative rule language considered:

- Require all reporters to prepare and maintain a GHG monitoring plan that ensures that emissions calculations and other information that is required to be reported under this rule are transparent, accurate, and independently verifiable.
- *Remove requirements for a GHG monitoring plan for suppliers and voluntary reporters.*

Ecology considered requiring all reporters to prepare and maintain a GHG inventory management plan. After further review of reporting and record keeping requirements, Ecology determined that the requirement to prepare and maintain an inventory management plan created undue burden for suppliers and voluntary reporters and removed this requirement from Ecology's rule language. The document retention and record keeping requirements within Ecology's rule require the reporter to maintain sufficient records to allow Ecology to review and verify reported emissions without the requirement for the reporter to prepare a separate inventory management plan. Removal of this requirement allows Ecology to reduce the prospective burden on reporters while achieving the general goals and specific objectives of the statute.

Ecology's rule does require facilities that are required to report to Washington to maintain a GHG monitoring plan. This is identical to EPA requirements and was done to maintain consistence between the two programs as prescribed by statute. The costs of this plan should be minimal and the same plan can be used for EPA and Ecology reporting.

Different Reporting Fees

The authorizing statute directs Ecology to establish and collect reporting fees to compensate for the costs of administering the reporting program. Similar to fee schedules for other Air Quality Program rules, Ecology considered methods for allocating the fees among reporters in the most fair manner.

Alternative rule language considered:

- Allocate fees evenly among all reporters
- Allocate fees based on quantity of emissions
- *Allocate fees evenly among each reporter type (facility or supplier) and base the fee ratio between the two groups on a workload analysis that projects the resource requirements for administering the reporting program and the projected number of reporters in each type. Prepare a budget for administering the reporting program based on the workload analysis.*

In determining fee distribution across reporters, Ecology considered allocating fees based on emissions and the complexity of the reporting and associated agency verification.

However, verification will be a major component of the agency's costs. Ecology will rely on EPA verification for large sources which will result in higher costs to Ecology for small reporters than large reporters. Instead, Ecology chose to allocate fees evenly across all reporters of a common type (by facility or supplier), dividing program costs by the number of reporters. This was done to avoid placing increased burden on smaller reporters. A ratio of 75% of costs charged to facilities and 25% to suppliers was established to account for the greater number of facility reporters and projected differences in agency workload.

Quantification Methods

The authorizing statute requires reporting from a source or combination of sources that emit at least ten thousand metric tons of direct GHG's each year. Once the threshold is triggered, direct and indirect emissions must be reported for stationary sources and fuel supplies. Standardized protocols are necessary to provide a framework for reporters, consistency throughout the program, and ensure that reported emissions are comparable from reporter to reporter and over time.

Alternative rule language considered:

- Base protocols on EPA methods, but make substantial modifications to EPA methods or add emissions sources to fit state specific needs.
- *Follow EPA methods as closely as possible with only minor changes to be consistent with SSB 6373. Do not require reporting from additional source categories. Provide a method for facilities to petition Ecology to use newer EPA methods when the old methods are updated instead of having to wait on rule revisions.*

Ecology considered adding emission sources, such as fugitive losses of high global warming potential greenhouse gases from cooling devices, not covered in EPA's rule to make a more robust inventory. The agency also considered more substantial modifications of EPA's protocols for existing source categories. These changes ranged from various tier restrictions within EPA's protocols, to different monitoring or reporting requirements. Other states, including Western Climate Initiative protocols, utilize such an approach. Instead, Ecology chose to maximize consistency with EPA as much as possible, with only minor modifications to account for statutory differences. A petitioning process was also included to give reporters a tool to minimize time delays between EPA rule changes and state rule changes. Ecology remains committed to tracking developments in EPA's rules and updating state regulations as quickly as possible to maintain consistency. Ecology updated WAC 173-441 to adopt changes to 40 C.F.R. Part 98 made since the proposed rule making (CR-102) draft rule was published.

Each of these developments served to reduce burden on the regulated community, while retaining the goal of accurate emissions quantification and consistency indicated by the authorizing statute. That is, more burdensome options for emissions quantification were

rejected as the sole required method, but collectively created the least burdensome regulatory option possible.

Report Deadline

The authorizing statute requires that Ecology establish an annual reporting schedule that considers the time needed for a reporter to gather the information needed and to verify the emissions being reported, with reports being submitted by October 31 of each year. However, the authorizing statute does not prevent Ecology from establishing an earlier reporting deadline for some or all reporters.

Alternative rule language considered:

- Reporting deadline of March 31 for all reporters.
- *Reporting deadline of October 31 for all reporters reporting only to Ecology. Deadline identical to EPA deadline for reporters subject to the federal rule as well.*

Ecology considered a reporting deadline for non-EPA reporters to correspond to other or existing GHG reporting deadlines. EPA's rule has a March 31 reporting deadline; WCI's Essential Requirements of Mandatory Reporting has a reporting deadline of April 1. The Climate Registry's voluntary reporting program has a report deadline of June 30. To reduce burden imposed on reporters by time constraints, data availability, and multiple reporting schemes, Ecology extended the reporting deadline for non-EPA reporters to October 31, the latest date allowable by statute. This allows reporters maximum flexibility in determining the timeline for constructing reports while achieving the general goals and specific objectives of the statute.

Phasing

The authorizing statute directs Ecology to begin reporting with 2009 emissions reported by October 31, 2010. The statute also gives the agency the authority to phase the start of reporting until 2012 emissions reported in 2013.

Alternative rule language considered:

- Begin reporting requirements with 2009 emissions reported in 2010.
- Begin reporting requirements for facilities > 25,000 MT CO_2e with 2009 emissions reported in 2010 and all other reporters with 2010 emissions reported in 2011.
- Begin reporting requirements for EPA reporters on the date that they begin reporting to EPA and all other facilities by either 2011 or 2012.
- *Begin reporting requirements for all facilities and suppliers with 2012 emissions reported in 2013.*

Ecology chose to phase the start of mandatory reporting to the maximum amount allowed by statute. The agency chose this approach because it would give reporters

time to adapt to reporting, avoid requiring reports for periods with unfinalized rules at the state or federal level, and allow time for the development of a quality electronic reporting tool. Ecology anticipates that this not only saves reporters three years of potential reporting costs, but also greatly reduces the costs for reporters to begin reporting when they enter the program.

Requirement to report after emissions fall below the reporting threshold

The authorizing statute directs Ecology to develop and implement a system for monitoring and reporting emissions of greenhouse gases as required under RCW 70.94.151 and to track the progress toward meeting the emission reductions established in RCW 70.235.020. Ecology believes it is essential to have consistent reporting from year to year from reporters meeting the applicable reporting threshold(s) in order to develop an accurate and reliable emissions inventory over time. A provision in Ecology's rule to require reporters to continue to report emissions when those emissions vary above and below the reporting threshold regularly ensures the development of a reliable and accurate record of emissions over time. This approach avoids having a reporter fall in and out of the reporting program from year to year.

Alternative rule language considered:

- If a reporter's emissions change such that they fall below the reporting threshold, the reporter must continue to report until the emissions are below the reporting threshold for a minimum of five consecutive years.
- *Adopted tiered methods to end reporting requirements when there is a change in operations resulting in the permanent reduction of direct emissions below the reporting threshold or when the emissions source permanently stops operations based on EPA methods, only changing the tier thresholds to account for Washington's lower reporting threshold.*

Ecology determined that consistency in reporting over time, and reporting requirements that compensate for temporary reductions in emissions that drop emissions levels below reporting thresholds were necessary in Ecology's rule to maintain a consistently accurate emissions inventory from regulated sources. To address this, Ecology considered requiring reporters to continue to report emissions for a minimum of five consecutive years when those emissions change such that they fall below the reporting threshold. If the reported emissions have remained below the reporting threshold for five consecutive years, the reporter does not need to report again until emissions meet the reporting threshold again. However, the intent of this restriction is not to extend reporting when a source changes operations and can predictably expect a permanent reduction in GHG emissions. Ecology recognizes that this may place an undue burden on reporters that have permanently reduced emissions due to a change in operations or when the emissions source permanently ceases operations. To address this concern, Ecology added options based on EPA's rule to Ecology's rule language that would allow a reporter to petition Ecology to end reporting requirements after three years if the reporter can demonstrate that emissions reductions remain below five thousand MT CO_2e or immediately if all emissions permanently cease.

Reporting tool

Ecology realizes that a robust reporting tool with built in calculation tools and data sharing with other agencies can reduce reporter costs. Investing agency resources in developing a tool correctly the first time instead of developing a basic interim tool will also save reporters money.

Alternative rule language considered:

- For facilities:
  - Develop a tool unique to Ecology and Washington reporting.
  - *Work with EPA to adapt their tool to Washington reporting and allow reporters to enter data once to meet the requirements of both programs.*
- For suppliers:
  - Require reporters to report all information using an Ecology-designed tool.
  - *Require reporters to report basic information using an Ecology designed tool and obtain the rest directly from DOL.*
- For both facilities and suppliers:
  - Require reporters to submit reports on paper until an electronic tool is available.
  - Require reporters to submit reports using a temporary electronic tool until the permanent tool is ready.
  - *Delay reporting until a fully functional permanent tool is ready.*

Ecology phased the start of reporting partially to avoid requiring reporters to submit reports on paper or by a partially functional temporary electronic form. This would require reporters to adapt to two different systems in a short period of time. Also neither method would provide the reporter with built in technical assistance.

For facilities, Ecology decided to work with EPA to achieve the goal of a single, robust report with built in technical support that would allow a reporter to enter data once and meet the requirements of both programs. This saves reporters time and money both on initial submissions as well as report updates and modifications while reducing the possibility of generating conflicting reports.

Ecology decided to only require suppliers to report contact information and aggregate emissions directly to Ecology. Detail information needed for verification will be obtained from DOL. This meets the legal requirement to report, reduces duplicative data entry, and protects confidential business information (CBI) that could result in a competitive disadvantage to the reporter if made public.

Supplier Confidential Business Information

For suppliers the quantity of fuel supplied could be used by competitors to gain knowledge of their process. Emissions totals by fuel type can easily be back calculated to generate gallons of fuel by type. This could result in a competitive disadvantage to the reporter if made public.

Alternative rule language considered:

- Quantity of fuel and emissions based on fuel type are public information.
- *Only aggregate emissions are public, fuel quantities and fuel type specific emissions remain confidential.*

Ecology chose to obtain detailed supplier information, including fuel quantities and emissions by fuel type from DOL. Language in SSB 6373 protects the confidentiality of information obtained from DOL. This significantly reduces the ability of competitors to gain inside knowledge of a reporter's processes and avoids competitive disadvantages to firms inside and outside the state of Washington.

References

California Air Resources Board, Mandatory Reporting of Greenhouse Gas Emissions, Section 95125 (h)(2) adopted on December 8, 2008 and codified in the California Code of Regulations at 17 CCR § 95125(h)(2).

Energy Information Administration (2002). Manufacturing Energy Consumption Survey. Table 6.4 Manufacturing fuel consumption by Manufacturing Industry and Employment Size.

Substitute Senate Bill 6373. Chapters 70.235 RCW and 70.94 RCW.

Environmental Protection Agency (2008). Climate Leaders Greenhouse Gas Inventory Protocol Core Module Guidance – Direct Emissions from Mobile Combustion Sources – May 2008, & http://www.epa.gov/stateply/documents/resources/mobilesource_guidance.pdf

Environmental Protection Agency (2009). Mandatory Greenhouse Gas Reporting Rule – November 8, 2010 & http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

Environmental Protection Agency (2009). 2009 U.S. Greenhouse Gas Inventory Report – Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007 & http://www.epa.gov/climatechange/emissions/usinventoryreport.html

Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report. http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf

Federal Register (2009). 40 CFR Part 98. Environmental Protection Agency federal GHG reporting rule.

Intergovernmental Panel on Climate Change (2006). 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2 Energy Chapter 2 Stationary Combustion & http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

Intergovernmental Panel on Climate Change (2006). 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2 Energy Chapter 3 Mobile Combustion & http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

International Standard, Greenhouse Gases (2006). Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals, ISO 14064-1:2006(E), First Edition 2006-03-01.

International Standard, Greenhouse Gases (2006). Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emissions reductions or removal enhancements, ISO 14064-2:2006(E), First Edition 2006-03-01.

International Standard, Greenhouse Gases (2007). Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition, ISO 14065:2007(E), First Edition 2007-04-14.

Nicholas Institute for Environmental Policy Solutions (2007). Size Thresholds for GHG Regulation: Who Would be Affected by a 10,000 ton CO2 Emission Rule.

State of Washington, Office of the Governor (2007). Executive Order 07-02, Washington Climate Change Challenge.

The Climate Registry (2008). General Reporting Protocol, Version 1.1, May 2008 & http://www.theclimateregistry.org/resources/protocols/general-reporting-protocol.php

The Climate Registry (2008). General Verification Protocol, Version 1.0, May 2008 & http://www.theclimateregistry.org/resources/verification/general-verification-protocol.php

The Climate Registry (2008). Local Government Protocol, Version 1.0 September 2008 & http://www.theclimateregistry.org/resources/protocols/local-government-operations-protocol.php

United States Code of Federal Regulations Protection of the Environment, Protection of Stratospheric Ozone 40 CFR 82.152 http://law.justia.com/us/cfr/title40/40-17.0.1.1.2.6.1.2.html

Washington State Department of Ecology (2009). Significant Sources of Greenhouse Gas Emissions in Washington. http://www.ecy.wa.gov/climatechange/docs/20090520_GHGsources.pdf

Washington State Department of Ecology and Washington State Department of Community, Trade and Economic Development (2008). Leading the Way on Climate Change: A Challenge of Our Time, Interim Report. Chapter 2, "Leading the Way: A Comprehensive Approach to Reducing Greenhouse Gases in Washington State." Table 1.

The Western Climate Initiative (2009). Draft Essential Requirements of Mandatory Reporting, General Provisions, January 6, 2009.

Appendix A: Compliance Cost Calculations

Ecology estimated compliance costs under Ecology's rule, for stationary and supplier emitters based on several inputs:

- Labor and capital requirements consistent with assumptions in EPA's Regulatory Impact Analysis of the federal reporting rule, under both highly conservative and mostly likely behavior scenarios.[14]
- Updated estimates of the cost of employment from the US Bureau of Labor Statistics.[15]
- 7 percent discount rate consistent with EPA standards, as well as industry-specific discount rates where available.[16]
- 20-year analytical time frame for annualizing costs.
- High-end estimates based on unlikely monitoring and technological emissions estimation.
- Low-end estimates based on calculations using existing or easily-acquired business data.
- Non-reporter costs based on calculations using existing or easily-acquired business data, as consistent with EPA analysis of the federal reporting rule.[17]
- Assumption of no economies of scale in reporting across size, emissions, or multiple reporting activities.

Reporter Costs

For industry-specific estimates of the labor and capital required to report GHG emissions, at the conservative technology-based and monitoring-based level, Ecology used estimated labor hours and capital costs as assumed in EPA's Regulatory Impact Analysis of the currently federal GHG reporting rule.

The most likely scenario costs for industry-based emissions from facilities and fuel suppliers were based on only managerial, some technical, clerical, and legal labor, with minor capital costs, if any. Ecology believes that covered entities will seek to minimize costs efficiently, and so considers these low-end estimates to be possible for some reporters. Ecology used this most likely scenario as one end of the costs range. Ecology estimated the extreme upper end of compliance costs using the highly unlikely compliance scenario requiring monitoring and capital equipment.

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[14] Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report. http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf

[15] US Bureau of Labor Statistics (2008). May 2008 National Occupational Employment and Wage Estimates: United States, and US Bureau of Labor Statistics. Wages and salaries as percentage of total compensation, database query. 2004 – 2009.

[16] Hoovers business database query for returns to invested capital by industry category. www.hoovers.com

[17] Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report. http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf

Ecology used occupational wage estimates, and percentages of total compensation and costs of employment from the US Bureau of Labor Statistics, to calculate per-hour costs for various legal, technical, clerical, and managerial positions. Ecology multiplied these hourly costs by their respective labor time costs to develop total labor costs for reporters by industry.

Table A-1 summarizes the cost of employment estimates by job category.

Table A-1: Employment Costs			
Term used in analysis	**Median Hourly**	**Mean Hourly**	**Expected Cost of Employment / hour)**
Administrative	$15.71	$16.66	$23.72
Clerical	$15.71	$16.66	$23.72
eng/tech	$35.57	$36.74	$50.32
environmental engineer	$38.33	$38.59	$52.86
environmental manager	$58.50	$61.90	$92.55
industrial eng/tech	$38.00	$38.24	$52.38
industrial manager	$45.45	$50.06	$74.85
Lawyer	$46.56	$52.44	$71.83
Legal	$46.56	$52.44	$71.83
legal counsel	$46.56	$52.44	$71.83
Managerial	$48.38	$53.40	$79.84
refinery eng/tech	$44.51	$43.45	$59.51
refinery manager	$57.15	$58.77	$87.87
senior manager	$55.72	$63.69	$95.23
technical (technician and engineering occupations)	Average of multiple technical occupations, below.	$29.52	$40.43
	$23.80	$25.71	
	$28.08	$28.37	
	$27.32	$27.14	
	$32.63	$31.55	

Table A-2 summarizes the annualized GHG reporting costs estimated for twelve industries.

Table A-2: Annualized Facility GHG Reporting Costs, per Operation			
NAICS Group	**Industry group or Sub-industry**	**Low**	**High**
221	Wastewater Treatment	$4,591	$4,970
221	Utilities	$2,500	$56,040
562	Landfills	$3,107	$3,790
311	Food Manufacturing/Processing	$10,413	$11,476
321	Wood Product Manufacturing	$375	$637
322	Paper Manufacturing	$5,813	$9,866
324	Petroleum and Coal Products Manufacturing	$3,579	$3,759
325	Chemical Manufacturing	$5,969	$21,093

327	Nonmetallic Mineral Product Manufacturing	$4,835	$33,182
331	Primary Metals Manufacturing	$25,520	$31,501
334	Computer and Electronics Manufacturing	$30,943	$30,943
336	Transportation Equipment Manufacturing	$20,663	$21,320

For entities not covered by a comparable set of assumptions in the industries listed in Table A-2, Ecology developed conservative estimates of cost based on existing data. Entities that Ecology determined were likely facility or fuel supplier reporters, but were not listed in Table A-2, included commercial operations, military, and corrections facilities.

Ecology calculated present-value total costs, based on flows of costs over a 20-year timeframe. It then annualized them using both a 7 percent discount rate (consistent with EPA, and the nearest to current historical risk-free investment rates), and industry-specific returns to capital. Overall, there was no significant difference between annualized costs across the two discount rates. Ecology used the 7 percent rate in its final analysis, as industry-specific rates were not available or appropriate for all types of entities in the full Cost-Benefit Analysis.

Table A-3 summarizes the annualized total GHG reporting costs for all expected reporters under Ecology's rule.

Table A-3: Annualized Total GHG Reporting Cost, per Operation		
Industry group or Sub-industry	**Low**	**High**
Chemical Manufacturing	$7,626	$22,750
Commercial	$6,627	$6,627
Computer and Electronics Manufacturing	$32,599	$32,599
Food Manufacturing/Processing	$12,070	$13,132
Marine vessel, Aircraft, or Rail equipment	$1,657	$1,657
Nonmetallic Mineral Product Manufacturing	$6,492	$34,838
Paper Manufacturing	$7,470	$7,470
Petroleum and Coal Products Manufacturing	$5,236	$5,416
Primary Metals Manufacturing	$27,177	$33,157
Transportation Equipment Manufacturing	$22,320	$22,977
Utilities	$4,157	$57,697
Wood Product Manufacturing	$2,032	$2,293

Costs for fuel suppliers, based on expected reporting effort necessary were conservatively assumed to be the minimum labor-based reporting costs across other affected industries. This cost was annualized to $375 per year.

Ecology expects Ecology's rule to cover about 267 facility and 64fuel supplier sources, including:

- 175 facilities under 25,000 MT CO_2e expected to report only under Ecology's rule.
- 18 biomass emitters expected to report only under Ecology's rule.

- 74 facilities expected to report under both Ecology's rule, and under the federal reporting rule.
- 64 fuel suppliers.

Ecology summed the expected costs applied to each expected reporter to develop the costs used in this analysis.

Non-Reporter Costs

Ecology followed otherwise identical methods for non-reporters of facility and supplier emissions, as it did for expected reporters. Compliance costs of investigating whether to report, however, differed for non-reporters. Ecology used labor and capital use estimates consistent with assumptions in EPA's analysis of the federal reporting rule.

As with reporters, Ecology used the EPA's estimates of labor time and capital required to determine non-reporting status as the high end of the cost range. As Ecology has allowed in Ecology's rule for non-reporters to use simplified emissions estimation methods that allow entities to calculate emissions based on existing or easily acquired business data. Based on this, Ecology estimated a low-end cost based on EPA's method using labor time and capital required,[18] but limited calculation only to added labor time, without data acquisition. This generated an estimated non-reporter cost of $150 – $500, or annualized costs of $13 to $44 per year.

[18] Environmental Protection Agency (2009). Regulatory Impact Analysis for the Mandatory Reporting of Greenhouse Gas Emissions Rule (GHG Reporting), Final Report. http://www.epa.gov/climatechange/emissions/downloads/GHG_RIA.pdf