



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

# **Revised Small Business Economic Impact Statement**

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**Chapter 173-442 WAC  
Clean Air Rule**

**Chapter 173-441 WAC  
Reporting of Emissions 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](http://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, Union Gap 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

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# **Revised Small Business Economic Impact Statement**

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## **Chapter 173-442 WAC Clean Air Rule**

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

Prepared by

Kasia Patora  
Rules & Accountability Section  
WA Department of Ecology

Shon Kraley, PhD  
Rules & Accountability Section  
WA Department of Ecology

Supporting work by:

Carrie Sessions, Rules & Accountability Section, WA Department of Ecology

Neil Caudill, Air Quality Program, WA Department of Ecology

Bill Drumheller, Air Quality Program, WA Department of Ecology

for the

Air Quality Program  
Washington State Department of Ecology  
Olympia, Washington

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# Executive Summary

Based on research and analysis required by the Regulatory Fairness Act (RFA) – RCW 19.85.070 – the Washington State Department of Ecology (Ecology) has determined that the adopted rule, the Clean Air Rule (Chapter 173-442 WAC) and corresponding amendments to the Reporting of Emissions of Greenhouse Gases rule (Chapter 173-441 WAC) are not likely to impose disproportionate costs of compliance on small businesses.

The RFA directs Ecology to determine if there are likely to be disproportionate compliance costs, and if legal and feasible, to reduce this disproportionate impact.

The rule creates a program that limits and reduces greenhouse gas (GHG) emissions from certain large emission contributors, referred to as covered parties, and allows various compliance options to meet those limitations. It also includes reporting and verification of compliance.

The Clean Air Rule (CAR) establishes GHG emissions standards for:

- Stationary sources
- Petroleum product producers and/or importers
- Natural gas distributors operating in Washington State

At the highest ownership or control level, the rule is not likely to impose compliance costs on small businesses, defined by the RFA as having 50 or fewer employees. This means that we are unable to make the comparison of per-employee compliance costs at small versus large businesses required by the RFA. It also means that the rule inherently is not likely to impose disproportionate compliance costs on small businesses.

The range of employment at the highest level of ownership available for fuel importers likely covered by the rule is between 51-200 (only range available for parent entity) and 845,000 (importer also covered as a stationary source and producer).

Depending on the compliance methods chosen and the degree to which compliance costs are passed through to energy and fuel customers, the rule could result in job losses of:

- If 50 percent of compliance costs to energy and fuels are passed through:
  - 30 to 430 jobs in 2020 (0.001 to 0.1 percent of baseline)  
increasing annually to
  - 200 to 3,270 jobs in 2035 (0.004 to 0.071 percent of baseline).
- If 100 percent of compliance costs to energy and fuels are passed through:
  - 180 to 730 jobs in 2020 (0.001 to 0.017 percent of baseline)  
increasing annually to
  - 280 to 4580 jobs in 2035 (0.006 to 0.1 percent of baseline).

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# Chapter 1: Background and Introduction

## 1.1 Introduction

Based on research and analysis required by the Regulatory Fairness Act (RFA) – RCW 19.85.070 – the Washington State Department of Ecology (Ecology) has determined that the rule, the Clean Air Rule (Chapter 173-442 WAC) and corresponding amendments to the Reporting of Emissions of Greenhouse Gases rule (Chapter 173-441 WAC) are not likely to impose disproportionate compliance costs on small businesses. Small businesses are refined by the RFA as any business entity, including sole proprietorship, corporation, partnership, or other legal entity, that is owned and operated independently from all other businesses, and that has 50 or fewer employees.

The RFA directs Ecology to determine if there is likely to be disproportionate compliance cost burden, and if legal and feasible, to reduce this disproportionate impact.

The Revised Small Business Economic Impact Statement (SBEIS) is intended to be read with the associate Final Cost-Benefit and Least-Burdensome Alternative Analyses (Ecology publication no.16-02-015), which contains more in-depth discussion of the rule and compliance costs.

## 1.2 Summary of the adopted rule

The rule creates a program that limits and reduces greenhouse gas (GHG) emissions from certain large emission contributors, referred to as covered parties, and allows various compliance options to meet those limitations. It also includes reporting and verification of compliance.

The Clean Air Rule (CAR) establishes GHG emissions standards for:

- Stationary sources
- Petroleum product producers and/or importers
- Natural gas distributors operating in Washington State

The threshold that determines whether a party must comply with this rule changes over time. For 2017, if a party's average carbon-dioxide equivalent emissions for the last 3 years are 100,000 metric tons (MT) or higher, they are considered a covered party, and have a compliance obligation under this rule. The covered party will need to limit and reduce GHG emissions over time, through 2035. They must afterward maintain the reduction achieved in 2035. The threshold for determining for coverage under the rule drops 5,000 MT every three years through 2035, increasing the number of covered parties over time.

Covered parties with compliance obligations under the rule must report compliance after every three-year compliance period, and have their compliance verified by a third party. They have various options for compliance, including:

- Reducing their own GHG emissions.
- Acquiring emissions reduction units from another covered party that has reduced GHG emissions in excess of what is required of them.
- Acquiring or generating emissions reduction units from approved GHG reduction projects in Washington State.
- Generating emission reduction units from approved GHG reduction programs in Washington, such as acquiring renewable energy credits (RECs).
- Acquiring emissions reduction units from non-regulated parties that voluntarily participate.
- Purchasing allowances from established multi-sector carbon markets in order to generate ERUs as approved by Ecology.

## 1.3 Reasons for the rule

The reason for this rule is to reduce GHG emissions to protect human health and the environment. GHG emissions as a result of human activities have increased to unprecedented levels, warming the climate.<sup>1,2</sup> Washington has experienced long-term climate change impacts consistent with those expected from climate change.<sup>3</sup> Washington faces serious economic and environmental disruption from the effects of these long-term changes. For instance:

- An increase in pollution-related illness and death due to poor air quality.
- Declining water supply for drinking, agriculture, wildlife, and recreation.
- An increase in tree die-off and forest mortality because of increasing wildfires, insect outbreaks, and tree diseases.
- The loss of coastal lands because of sea level rise.
- An increase in ocean temperature and ocean acidification.
- An increase in disease and mortality in freshwater fish (salmon, steelhead, and trout), because of warmer water temperatures in the summer and more fluctuation of water levels (river flooding and an increase of water flow in winter while summer flows decrease).
- Heat stress to field crops and tree fruit will be more prevalent because of an increase in temperatures and a decline in irrigation water.

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<sup>1</sup> IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

<sup>2</sup> *Massachusetts, et al., Petitioners v. Environmental Protection Agency, et al.* (2007). 549 [U.S.](#) 497, 127 S. Ct. 1438, 167 L. Ed. 2d 248.

<sup>3</sup> Snover, A.K, G.S. Mauger, L.C. Whitely Binder, M. Krosby, and I. Tohver. 2013. Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision Makers. State of Knowledge Report prepared for the Washington State Department of Ecology. Climate Impacts Group, University of Washington, Seattle.

Compliance actions to reduce GHG emissions, such as producing cleaner energy and increasing energy efficiency, have the dual benefit of reducing other types of air pollution.

In 2008, Washington's Legislature required the specific statewide GHG emission reductions (RCW 70.235.020) below:

- By 2020, reduce overall emissions of greenhouse gases in the state to 1990 levels
- By 2035, reduce overall emissions of greenhouse gases in the state to 25 percent below 1990 levels
- By 2050, reduce overall emissions of greenhouse gases in the state to 50 percent below 1990 levels or 70 percent below the state's expected emissions that year.

Consistent with the Legislature's intent to reduce GHG emissions, Ecology is using its existing authority under the State Clean Air Act (Chapter 70.94 RCW) to adopt a rule that limits GHG emissions.

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# Chapter 2: Analysis of Compliance Costs for Washington Businesses

## 2.1 Introduction

Ecology analyzed the impacts of the adopted rule relative to business as usual (BAU), within the context of all existing requirements (federal and state laws and rules). This BAU context reflects the most likely regulatory circumstances that parties would face if the rule was not adopted. It is discussed in Section 2.2, below.

## 2.2 Business as usual

BAU for our analyses generally consists of existing rules and laws, and their specific requirements. For economic analyses, BAU also includes the implementation of those regulations, including any guidelines and policies that result in behavior changes and real impacts. This is what allows us to make a consistent comparison between conditions that exist with or without the new rule (Chapter 173-442 WAC) and amendments to the existing GHG reporting rule (Chapter 173-441WAC).

For this rulemaking, BAU includes:

- No existing GHG cap and reduction program at the state level.
- The existing GHG reporting rule (Chapter 173-441 WAC), which covers a subset of the parties covered by the rule, and requires annual reporting and payment of fees.
- The federal and Washington State Clean Air Acts.
- Existing federal and state regulations, including those covering GHG reporting at the federal level, as well as those establishing energy policy.
- Existing federal and state permitting requirements and processes.

While they might otherwise have been considered part of BAU, the rule explicitly exempts compliance with Washington's Emissions Performance Standard (Chapter 80.80 RCW) requirements from being considered part of BAU. The state's carbon dioxide mitigation standard and commute trip reduction programs are also excluded.

The rule also considers future compliance with state implementation of the federal Clean Power Plan (CPP) as compliance with rule requirements. However, since the state has not yet completed rulemaking determining the specific requirements of the CPP, and since the CPP is currently being held in a stay by the Supreme Court, we exclude its requirements from the BAU in this analysis.

## 2.3 Rule requirements

### 2.3.1 Clean Air Rule coverage

The rule establishes standards for limiting and reducing GHG emissions for:

- Certain stationary sources
- Petroleum product producers or importers
- Natural gas distributors in Washington State

### 2.3.2 Thresholds for compliance obligation under the rule

#### 2.3.2.1 Existing emitters

If their covered GHG emissions are at least 100,000 metric tons (MT) per year, in carbon dioxide-equivalent units (CO<sub>2</sub>e), most parties with covered GHG emissions must comply with the rule starting in 2017, with the exception of EITEs and petroleum product importers who must comply starting in 2020. Emissions used for threshold comparisons are determined using a three-year rolling average of their actual emissions beginning in 2012.

#### 2.3.2.2 New emitters

Parties with covered GHG emissions must comply with the rule starting in their first year of operation, if they exceed the following thresholds:<sup>4</sup>

- 100,000 MT per year in years 2017 through 2019
- 95,000 MT per year in years 2020 through 2022
- 90,000 MT per year in years 2023 through 2025
- 85,000 MT per year in years 2026 through 2028
- 80,000 MT per year in years 2029 through 2031
- 75,000 MT per year in years 2032 through 2034
- 70,000 MT per year in 2035 and thereafter

Emissions are compared to thresholds using a three-year rolling average of annual total covered GHG emissions.

### 2.3.3 Clean Air Rule requirements

The rule establishes the following new requirements (not required elsewhere in existing laws or rules):

- GHG emissions standards and reductions over time
- Compliance reporting
- Verification of compliance
- Development of an emissions reduction registry and reserve

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<sup>4</sup> Emissions in the first year of operation may be based on emissions data or an engineering analysis.

### 2.3.4 Clean Air Rule compliance

Covered parties with compliance obligations may comply with the rule by reducing emissions in any of the following ways.

- **On-site emissions reductions:** This can include the following types of reductions
  - **Reductions of their own emissions:** Reduction of a covered party's own emissions below the emissions level set in the covered party's reduction pathway.
  - **Others' emissions reductions:** A covered party may acquire emissions reduction units from another covered party that has reduced GHG emissions in excess of what is required of them. Reductions can also come from those voluntarily participating in the program.
- **Emissions reduction projects:** Emissions reductions using projects, activities, or programs recognized by Ecology as capable of generating emission reduction units under the rule. Emission reductions from projects can come from ownership of a project or from greenhouse gas credits available in markets for environmental commodities.
- **Market emissions reductions** A covered party may purchase allowances derived from emission market trading programs in other jurisdictions when Ecology determines:
  - The allowances are issued by an approved multi-sector GHG emission reduction program,
  - The covered party is allowed to purchase allowances within that program, and
  - The allowances are derived from methodologies congruent with Chapter 173-441 WAC.
- **Emissions reduction programs:** Emission reduction programs can come from several state-run programs, including acquiring renewable energy credits (RECs), i.e., existing energy credits generated by power producers using in-state renewable energy production.

### 2.3.5 Corresponding amendments

Ecology is also adopting amendments to Chapter 173-441 WAC (Reporting of Emissions of Greenhouse Gases). These amendments correspond to and facilitate requirements and compliance set by the new rule. They include, but are not limited to, the reallocation of fees:

- Prior to these amendments, the GHG emissions reporting rule (Chapter 173-441 WAC) required 75 percent of the reporting program's budget be paid for through facility reporter fees and 25 percent to be paid for through transportation fuel supplier reporter fees.
- The amended rule reallocates fees based on full payment by covered facilities (as covered in section 120 of the rule), and sets a zero fee for transportation fuel suppliers (covered in section 130). It also removes the obligation for voluntary reporters to pay the fee.

## 2.4 Likely compliance costs of the rule

In the associated Final Cost-Benefit Analysis, we estimated the likely costs associated with the rule, as compared to BAU. Likely 20-year present value (if quantified) costs to covered parties include the following:

### Average costs of permanent reductions

Table 1: 20-Year Present Value Costs of 1 2/3 Percent Annual Emissions Reduction

20-Year Present Value Costs of 1 2/3 Percent Annual Emissions Reduction			
ON SITE (including purchases from other covered parties)		MARKET	
Low	\$2,701,481,367	Low	\$1,524,969,786
High	\$6,753,703,419	High	\$1,626,288,909
PROJECT		RECs	
Low	\$732,801,746	Low	\$401,543,314
High	\$1,282,403,055	High	\$1,337,692,682

*Note: See Section 3.2.3.3 for ranges of costs for specific covered party types.*

### Average cost of reductions going toward the reserve

Table 2: 20-Year Present Value Costs of 1/30 Percent Reserve Emissions Reduction

20-Year Present Value Costs of 1/30 Percent Reserve Emissions Reduction			
ON SITE (including purchases from other covered parties)		MARKET	
Low	\$60,422,166	Low	\$34,107,945
High	\$151,055,415	High	\$36,374,080
PROJECT		RECs	
Low	\$16,390,070	Low	\$8,981,042
High	\$28,682,622	High	\$29,919,247

*Note: See Section 3.2.3.3 for ranges of costs for specific covered party types and options for compliance.*

## Additional costs

- 20-year present value reporting costs of approximately \$384,000.
- 20-year present value verification costs of between approximately \$33 million and \$34 million.
- 20-year present value costs of increased reporting fees of between approximately \$2 million and \$3 million.

## 2.5 Potential lost sales or revenue

Depending on the methods used by covered parties to reduce GHG emissions, the rule may result in reduced sales for some covered parties, or other areas of the state economy. Energy efficiency projects, for example, would reduce GHG emissions by reducing energy consumption. This would reduce sales (quantities) for energy producers, but could also result in changes to energy prices (e.g., passing on regulatory costs to customers). Similarly, transportation-related methods would reduce GHG emissions by reducing fuel consumption. This would also reduce sales (quantities) for fuel suppliers, but could also result in changes to fuel prices. Reductions in fuels from one source could also be counterbalanced by increases in fuels from another source, to meet market demand.

As a result of possible shifts such as these in demand and production, Ecology also expects prices to change. Depending on the relative elasticities (responsiveness of the quantity of a good supplied or demanded, relative to changes in price) of covered parties' supply and demand, overall revenues may increase or decrease as a result of these changes in demand and production. See Appendix A of the Final Cost-Benefit and Least Burdensome Alternative Analyses for more information.

Ecology did not assume a specific mix of compliance methods that would be used by covered parties, combining on-site (internal or purchased from other covered or voluntary parties), project or program-based, or market acquisition-based GHG emissions reduction methods. We therefore could not quantify the degree to which sales quantities would be impacted. From the analysis performed on secondary and macroeconomic impacts of the rule,<sup>5</sup> however, we note that the gross state output may be impacted (depending on compliance method and the degree to which energy costs are passed on to consumers) by:

- Reductions in state gross domestic product (allowing for 50 percent pass-through of compliance costs to energy and fuels) of:
  - \$2.6 million to \$48.8 million in 2020 (0.001 to 0.01 percent of baseline) through
  - \$30.5 million to \$560 million in 2035 (0.005 to 0.084 percent of baseline).
- Reductions in state gross domestic product (allowing for 100 percent pass-through of compliance costs to energy and fuels) of:
  - \$4.8 million to \$79.9 million in 2020 (0.001 to 0.017 percent of baseline) through
  - \$47.1 million to \$775.7 million in 2035 (0.007 to 0.117 percent of baseline).

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<sup>5</sup> Regional Economic Models, Inc. (2016). Macroeconomic Impacts of the Clean Air Rule (Chapter 173-442) Costs on the Washington State Economy. Prepared for the Washington State Office of Financial Management.

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# Chapter 3: Quantification of Cost Ratios

## 3.1 Introduction

For this analysis, Ecology must estimate and compare the compliance costs per employee at small versus large covered parties (the largest ten percent). In this chapter, we describe the affected covered parties' employment. Employment numbers are taken at the highest ownership level, to better reflect ability to incorporate compliance costs in business-wide decision making.

At the highest ownership or control level, the rule is not likely to impose compliance costs on small businesses, defined by the RFA as having 50 or fewer employees. This means that we are unable to make the comparison of per-employee compliance costs at small versus large businesses required by the RFA. It also means that the rule inherently is not likely to impose disproportionate compliance costs on small businesses.

This information is based on our best knowledge of likely covered parties at the time of this publication. While we are relatively certain of the facilities and fuel suppliers affected by the rulemaking, there is more uncertainty about the likely fuel importers that would be covered. Section 3.2 discusses this in greater depth.

## 3.2 Affected businesses

Ecology determined which businesses would likely be required to comply with the rule and associated rule changes. For the rule, these covered parties include stationary sources, petroleum fuel producers and importers, and natural gas distributors, and for associated rule changes to the reporting fee distribution, they also include transportation fuel suppliers.

Parties are generally affected as follows:

- Covered parties incur costs under the rule and associated fee changes.
- Transportation fuel suppliers are affected by associated changes to fees, and for these parties, fees are likely to decrease. These parties do not incur increased costs under the adopted rule.<sup>6</sup>

Covered parties likely to incur costs under the rule are in a variety of industries (see Chapter 6 for NAICS codes), including but not limited to some energy producers, fuel importers, fuel producers, chemical and metals manufacturers, pulp and paper manufacturers, food producers, natural gas distributors, and waste facilities.

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<sup>6</sup> Note that some covered parties may be covered as both transportation fuel suppliers and petroleum product producers or importers, and would experience the net fee impact of fee increases as producers or importers and fee decreases as transportation fuel suppliers. This is due to a change in the definition of facility to include fuel producers and importers.

The range of employment at the highest level of ownership available for parties covered by the rule, excluding importers, is between 160 (parent company employment information unavailable) and 845,000.<sup>7</sup>

The range of employment at the highest level of ownership available for fuel importers likely covered by the rule is between 51-200 (only range available for parent entity) and 845,000 (importer also covered as a stationary source and producer).<sup>8</sup>

### **3.3 Cost-to-employee ratios**

The adopted rule and associated rule amendments do not impose compliance costs on small businesses. The RFA does not require Ecology to include elements in the rule that reduce disproportionate compliance cost burden.

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<sup>7</sup> Covered party websites, third-party databases such as D&B and Manta, annual reports, WA Employment Security Department records.

<sup>8</sup> Ibid.

## **Chapter 4: Actions Taken to Reduce Disproportionate Compliance Costs for Small Businesses**

Ecology determined the rule is not likely to impose disproportionate compliance costs on small businesses, because it does not create compliance costs for identifiable small businesses (see Chapter 3). The RFA, therefore, does not require Ecology to mitigate disproportionate impact.

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# Chapter 5: Involvement of Small Businesses and Local Government in the Development of the Rule

Ecology involved small businesses or their representatives in the development of the rule, as well as local governments. Ecology held five webinars during the development of the rule. Their attendees/participants included multiple representatives of local governments and small businesses (directly or as part of associations), as well as legislators representing the local and business interests of their constituencies.

Below is a list of attendees of these webinars, as well as participants in smaller meetings held with Ecology or the Washington State Governor's Office.

Parties represented or representing at Ecology webinars and forums:

- Access Institute of Research
- AEQUUS Corp.
- AGC of WA
- Agrium US Inc.
- Alcantar & Kahl
- Alcoa
- Ameresco
- American Carbon Registry
- American Fuel & Petrochemical Manufacturers
- American Lung Association
- Arbaugh & Associates, Inc.
- Ardargh Glass Inc
- Argus Media
- Ash Grove Cement
- Assoc. WA Business
- ATI
- Avista Corp
- Barr Engineering Co.
- Benton Clean Air Agency
- Benton PUD
- BHAS
- BlueGreen Alliance
- BNSF Railway
- Boeing
- Boise Cascade Wood Products, LLC
- Boise Paper
- Bonneville Power Administration
- BP
- Bridgewater Group Inc.
- Canadian Consulate General
- Capitol Strategies
- Carney Badley Spellman, PS
- Cascade Government Affairs
- Cascade Natural Gas Corporation, a Div. of MDU Resources Group
- Cascadia Law Group PLLC
- CH2M
- Chelan County PUD
- Chevron Corporation
- City of Everett
- City of Spokane
- City of Walla Walla
- Clark Public Utilities
- Clean Energy
- Climate Action Reserve
- Climate Change for Families
- Climate Solutions
- Coalition for Renewable Natural Gas, Inc.
- Communico
- Community Transit
- ConAgra Foods
- Concrete Nor'West
- Cowlitz County Public Works
- Cowlitz PUD
- Coyne, Jesernig, LLC
- Cyan Strategies
- Dave Bradley
- Davis Wright Tremaine LLP
- Davison Van Cleve PC
- Del Monte Foods Inc.
- Department of Commerce
- Department of Corrections
- Department of Ecology
- Diane L. Dick
- Washington State Department of Natural Resources
- EES Consulting
- Emerald Kalama Chemical, LLC
- Energy Northwest
- Energy Strategies LLC
- Environmental Energy
- Environmental Entrepreneurs
- Enwave Seattle
- ERA Environmental Management Solutions
- ERM
- Evergreen Carbon
- ExxonMobil
- Fairchild AFB
- Federal Government (Air Force)
- Flint Hills Resources, LP
- Fluor Corporation
- Forterra
- Friends of Toppenish Creek
- Frito Lay
- Georgia-Pacific
- GHG Management Institute
- Go Green Tri-Cities
- Gordon Thomas Honeywell Governmental Affairs

- Government of British Columbia
- Grant County Economic Development Council
- Grant County PUD
- Grant County Solid Waste
- Graymont
- Grays Harbor Energy
- Grays Harbor PUD
- Hammerschlag & Co. LLC
- Hampton Affiliates
- HDR Engineering
- House of Representatives
- House Republican Caucus
- ICIS
- Intalco Aluminum Corporation
- Interfor
- Invenergy LLC
- James Lester Adcock
- Janicki Bioenergy
- JR Simplot Company
- Julia Robinson
- Kaiser Aluminum
- King County
- King County Solid Waste
- Kinross
- KUOW News Radio
- Lamb Weston
- LCSC
- League of Women Voters
- Linde
- Linear Technology
- Local2020
- LWVWA
- MFSA
- Naval Base Kitsap Bangor
- NAVFAC Northwest
- NCASI
- NextEra Energy
- Nippon Paper Industries
- Noble Americas Gas & Power
- Northwest Clean Air Agency
- Northwest Food Processors Assn
- Northwest Gas Association
- Northwest Pulp & Paper Assn.
- NRDC
- Nucor Steel Seattle, Inc.
- NW Energy Coalition
- NW Natural
- NW Power and Conservation Council/WA Dept. of Commerce, Energy Office
- NW Seaport Alliance
- NWFPA
- OFM
- ONRC- SEFS U of W
- ORCAA
- Oregon DEQ
- Pacific Power
- PacifiCorp
- Parametrix
- Perkins Coie
- Phillips 66
- PIRA Energy Group
- Plug In America
- Ponderay Newsprint Co
- Port of Seattle
- PPRC
- PT AirWatchers
- Puget Sound Clean Air Agency
- Puget Sound Energy
- Puget Sound Regional Council
- Rainier Veneer, Inc.
- Ramboll Environ
- ravel
- RE Sources for Sustainable Communities
- REC Silicon
- REG
- Renewable Northwest
- Rep. Derek Kilmer
- Republic Services
- RNG Coalition
- Ross Strategic
- Rowley Properties, Inc.
- s2 sustainability consultants
- Saltchuk
- Schwabe, Williamson & Wyatt
- Schweitzer engineering laboratories
- SCS Engineers
- Seattle Aquarium
- Seattle City Light
- Seattle Public Utilities
- SEH America, Inc.
- SEI-US
- SGL Automotive Carbon Fibers
- Shell
- Shuttle Express
- Sierra Club
- Sightline
- Snohomish County
- Snohomish County Public Works
- Snohomish PUD
- Sonoco
- Sound Transit
- Southshore Environmental, Inc.
- Southwest Clean Air Agency
- Spectrum Glass
- Spokane Audubon Society
- Spokane Regional Clean Air Agency
- Spring Environmental, Inc.
- Ste. Michelle Wine Estates
- Stockholm Environment Institute
- Stoel Rives
- Strategies 360
- SWCAA
- Tacoma Power
- Terre-Source LLC
- Tesoro
- The Climate Trust
- The Evergreen State College
- The News Tribune
- The Northwest Seaport Alliance
- The TSB Group
- Thompson Consulting Group
- Tidewater Barge Lines
- TransAlta
- TransCanada
- Transportation Choices
- Trinity Consultants
- True North Public Affairs
- Tyson Foods, Inc.
- U.S. Department of Energy
- Union of Concerned Scientists
- United Steelworkers Local 338
- University of Washington
- Valero
- Van Ness Feldman, LLP
- Vitol Inc.
- WA Food Industry Assn.
- WA Oil Marketers Assn.
- WA PUD Association
- WaferTech, LLC
- Washington Environmental Council
- Washington Oil Marketers Association
- Washington State House of Representatives
- Washington State House Republican Caucus
- Washington State Legislature
- Washington State Senate

- Washington State Senate Committee Services
- Washington State University
- Washington Trucking Associations
- Waste Connections
- Waterside Energy
- WCV
- Western Pneumatic Tube Co. LLC
- Western Power Trading Forum
- Western States Petroleum Association
- Western Washington University
- WestRock
- Weyerhaeuser
- WFPA
- William H. Wilson, P.E. - Engineering Consulting
- Williams
- Williams, Northwest Pipeline LLC
- WSU Energy Program
- WSU Extension
- WY
- Yakima Regional Clean Air Agency

Individual or Group Stakeholder Meetings (some including the Office of the Governor) with:

- Alaska Airlines
- Alcoa
- Alliance (Labor, Health, environmental advocates, social equality advocates)
- Ashgrove Cement
- Asian Pacific Islander Coalition
- Association of Washington Business (AWB)
- Avista
- Boeing
- BNSF Railway
- British Petroleum
- California Air Resources Board
- Clark PUD
- Clean Tech Alliance
- Climate Solutions
- Community to Community
- Coyne, Jesernig, LLC
- Duwamish River Cleanup Coalition / TAG
- Friends of Toppenish Creek
- Front & Centered
- Got Green?
- Grays Harbor Energy Center
- Green Diamond
- House Representative Richard DeBolt
- Industrial Customer of Northwest Utilities (ICNU)
- Kaiser Aluminum
- King County Council
- Klickitat PUD
- Latino Community Fund
- NextGen
- Northwest Energy Coalition
- Northwest Pulp and Paper Association
- Nucor Steel Seattle, Inc.
- OneAmerica
- PacifiCorp
- Phillips 66
- Public Generating Pool
- Puget Sound Energy
- Puget Sound Sage
- Republic
- Renewable NW
- Renewable Products Marketing Group
- Shell
- Sierra Club
- Snohomish PUD
- Stockholm Environment Institute
- Stoel Rives, LLP
- Tacoma Power
- Tesoro
- TransAlta
- Tulalip Tribes
- Union of Concerned Scientists
- U.S. Oil & Refining Co.
- Valero Energy
- Washington Can!
- Washington Environmental Council
- Washington Physicians for Social Responsibility
- Washington PUD Association
- Western States Petroleum Association
- Weyerhaeuser

Ecology also briefed the directors of the seven local Clean Air Agencies on the rule, during a meeting of the Washington Air Quality Manager Group.

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## Chapter 6: The SIC Codes of Industries Regulated by the Rule

The SIC (Standard Industry Classification) system has long been replaced by the North American Industry Classification System (NAICS). The rule applies to the following NAICS for stationary sources and fuel suppliers. The covered NAICS for fuel importers is more difficult to encompass, as fuel importers may be independent, but may also be part of businesses or other entities that perform other primary functions. This broadens the list of possibly affected NAICS to at least the set of 4-digit NAICS codes, and their underlying 5+ digit codes, below.

Table 3: Likely Affected Business NAICS Codes

2111	3241	3274	3344	4247	4841
2211	3253	3311	3364	4451	4862
3114	3272	3313	4246	4471	5622
3221	3273	3314	4247	4543	6113

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## Chapter 7: Impacts on Jobs

Under contract with the Washington State Office of Financial Management, Regional Economic Models, Inc. estimated impacts to employment, resulting from the direct costs estimated in the Cost-Benefit Analysis.<sup>9</sup> Because this analysis estimated a range of direct costs for each type of compliance method, the REMI analysis estimated ranges of indirect impacts for each method as well, and did so for two scenarios:

1. 50 percent of energy costs are passed on to energy consumers.
2. 100 percent of energy costs are passed on to energy consumers.<sup>10</sup>

### Estimated impacts assuming 50 percent of energy costs are passed on

The REMI results for 50-percent energy cost pass-through are presented in the tables below, and overall ranges (across all compliance methods) can be summarized as:

- Job losses of:
  - 30 to 430 jobs in 2020 (0.001 to 0.1 percent of baseline) increasing annually to
  - 200 to 3,270 jobs in 2035 (0.004 to 0.071 percent of baseline).

Table 4: Impact to Employment, 50 Percent Energy Cost Pass-Through

Employment (Jobs)	2017	2020	2025	2030	2035
On Site Low	<10	-170	-640	-1020	-1320
On Site High	<10	-430	-1600	-2530	-3270
Project Low	<10	-50	-170	-280	-360
Project High	<10	-80	-310	-480	-630
Market Low	<10	-100	-360	-570	-740
Market High	<10	-100	-390	-610	-790
Project (REC) Low	<10	-30	-100	-150	-200
Project (REC) High	<10	-80	-320	-500	-650

<sup>9</sup> Regional Economic Models, Inc. (2016). Macroeconomic Impacts of the Clean Air Rule (Chapter 173-442) Costs on the Washington State Economy. Prepared for the Washington State Office of Financial Management.

<sup>10</sup> The REMI analysis also includes a scenario in which no energy costs are passed on to consumers, but we have not included it in this analysis, as it is for informational purposes, and it not likely to reflect reality in highly inelastic markets such as energy and fuels.

Table 5: Percentage Impact to Baseline Employment, 50 Percent Energy Cost Pass-Through

<b>Employment (Percent Change from Baseline Forecast)</b>	<b>2017</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
On Site Low	0.000%	-0.004%	-0.015%	-0.023%	-0.029%
On Site High	0.000%	-0.010%	-0.037%	-0.058%	-0.071%
Project Low	0.000%	-0.001%	-0.004%	-0.006%	-0.008%
Project High	0.000%	-0.002%	-0.007%	-0.011%	-0.014%
Market Low	0.000%	-0.002%	-0.008%	-0.013%	-0.016%
Market High	0.000%	-0.002%	-0.009%	-0.014%	-0.017%
Project (REC) Low	0.000%	-0.001%	-0.002%	-0.003%	-0.004%
Project (REC) High	0.000%	-0.002%	-0.007%	-0.011%	-0.014%

## Estimated impacts assuming 100 percent of energy costs are passed on

The REMI results for 100-percent energy cost pass-through are presented in the tables below, and overall ranges (across all compliance methods) can be summarized as:

- Job losses of:
  - 180 to 730 jobs in 2020 (0.001 to 0.017 percent of baseline) increasing annually to
  - 280 to 4580 jobs in 2035 (0.006 to 0.1 percent of baseline).

Table 6: Impact to Employment, 100 Percent Energy Cost Pass-Through

<b>Employment (Jobs)</b>	<b>2017</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
On Site Low	<10	-290	-980	-1480	-1860
On Site High	10	-730	-2440	-3670	-4580
Project Low	<10	-80	-270	-400	-510
Project High	<10	-140	-470	-710	-880
Market Low	<10	-170	-560	-840	-1050
Market High	<10	-180	-590	-900	-1120
Project (REC) Low	<10	-40	-150	-220	-280
Project (REC) High	<10	-150	-490	-740	-920

Table 7: Percentage Impact to Baseline Employment, 100 Percent Energy Cost Pass-Through

<b>Employment (% Change from Baseline Forecast)</b>	<b>2017</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
On Site Low	0.000%	-0.007%	-0.023%	-0.034%	-0.041%
On Site High	0.000%	-0.017%	-0.056%	-0.083%	-0.100%
Project Low	0.000%	-0.002%	-0.006%	-0.009%	-0.011%
Project High	0.000%	-0.003%	-0.011%	-0.016%	-0.019%
Market Low	0.000%	-0.004%	-0.013%	-0.019%	-0.023%
Market High	0.000%	-0.004%	-0.014%	-0.020%	-0.024%
Project (REC) Low	0.000%	-0.001%	-0.003%	-0.005%	-0.006%
Project (REC) High	0.000%	-0.003%	-0.011%	-0.017%	-0.020%

Ecology previously estimated lower job losses, and possible job gains in its Small Business Economic Impact Statement, based on different assumptions regarding transfers to other industries, as well as using the Washington State Office of Financial Management’s 2007 Washington Input-Output Model.<sup>11</sup> For consistency across final economic documents, as well as based on updated assumptions regarding additional possible transfers to out of state parties, Ecology chose to revise the SBEIS using the REMI analysis results.

In addition, we previously reported an average annual equivalent loss of full-time employee positions.<sup>12</sup> Based on comments we received, we agree that a year-based set of estimated employment impacts illustrates the impact at given points in time better than an average. This is because direct costs imposed by the adopted rule increase over time (as compliance obligations increase over time).

<sup>11</sup> WA Office of Financial Management (2007). Washington State Input-Output Model. <http://www.ofm.wa.gov/economy/io/2007/default.asp>

<sup>12</sup> Our previous reported average is consistent with average impacts across years in a scenario with zero pass-through of compliance costs to energy and fuels.

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