



Using less. Doing more.

Washington State Clean Air Rule

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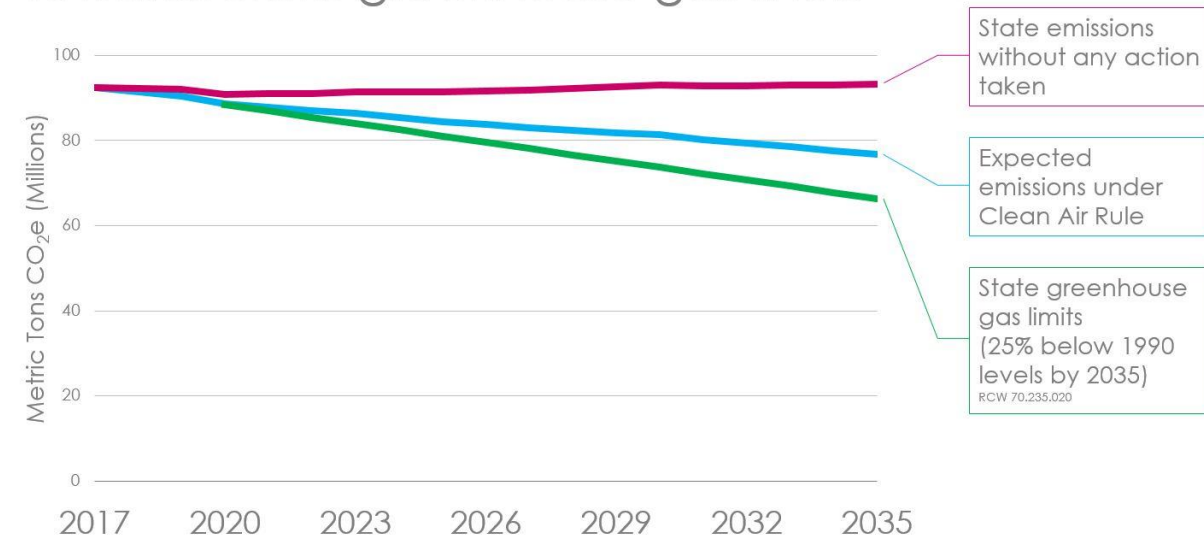
Overview of Clean Air Rule

- Innovative rule to help meet legislative GHG emission reductions
 - Broader than federal Clean Power Plan
 - Will eventually cover ~68% of total state emissions
- Compliance obligation based on emissions of individual facilities
 - Obligation based on three-year rolling average emissions
 - Compliance obligation for highest emitters starts in 2017
- Requires annual reductions that can be met through:
 - Direct emission reductions at facility
 - Programs and projects designed to reduce emissions in WA
 - GHG emission markets external to State of Washington

Washington State Overview

- Currently has legislated carbon goal
 - Return to 1990 level by 2020
 - 25% below 1990 level by 2035
 - 50% below 1990 level by 2050
- Also have RPS and EERS
 - RPS: 15% new renewable by 2020
 - EERS: All cost effective conservation, targets range from 0.4% to 1.5% annually

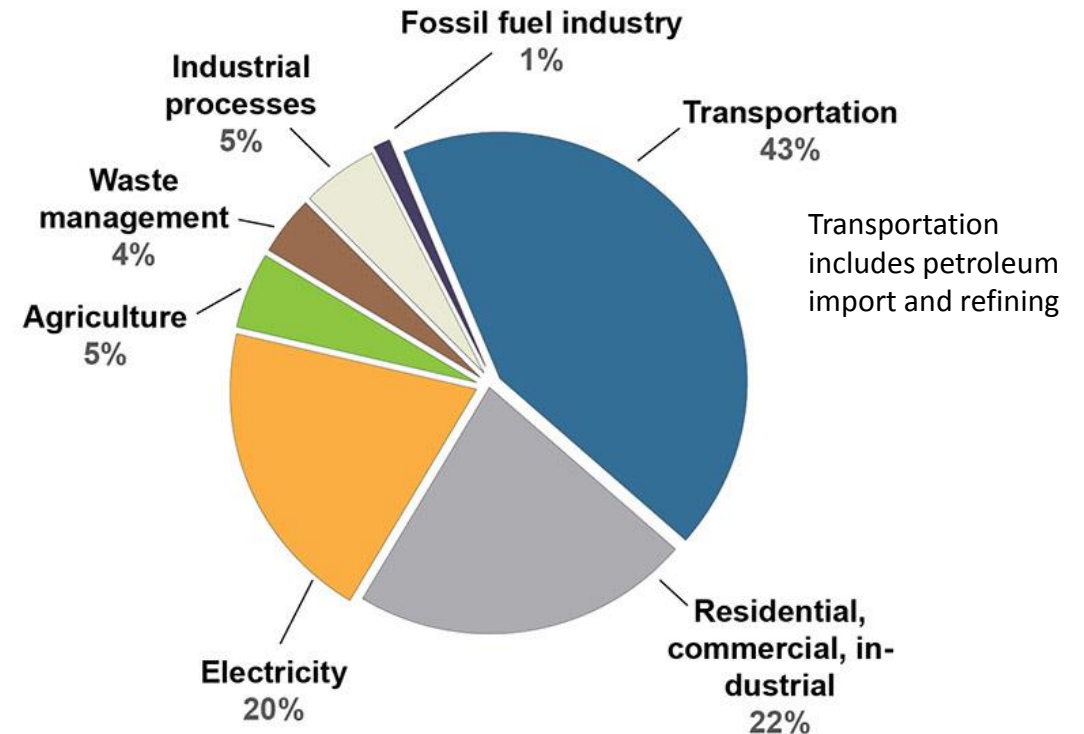
Clean Air Rule makes progress towards state greenhouse gas limits



Affected Facilities and Washington Emissions Profile

- Cap will affect large industrial and energy producers
 - Natural gas distributors
 - Petroleum product producers, i.e. refineries, and importers
 - Metal, cement, pulp and paper and glass manufacturers
 - Power plants
 - Waste facilities
- Other entities can voluntarily participate to earn allowances

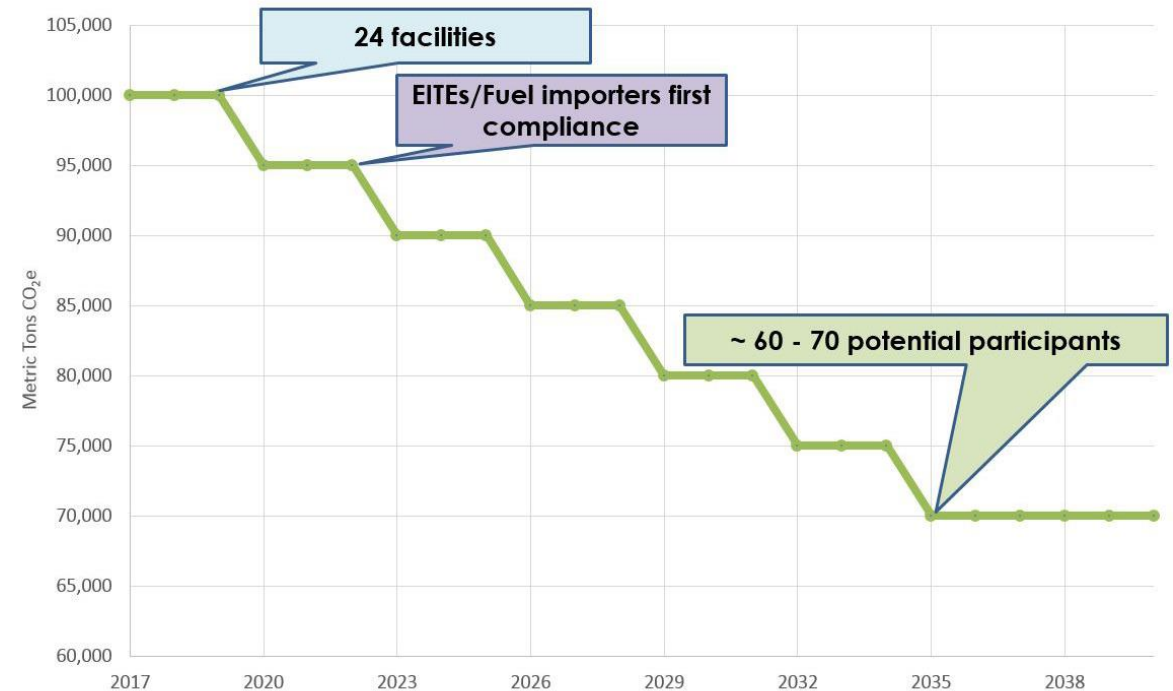
SOURCES OF GREENHOUSE GASES IN WASHINGTON



based on greenhouse gases emissions 2013

Threshold of Compliance Obligation

- Initial compliance obligation threshold of 100k MT/year starting in 2017
 - Decreases to 70k MT by 2035
- Compliance based on 3-year average emission, with threshold dropping 5k MT each period
 - First period 2017-2019
 - More companies are picked up with each drop
 - Up to \$10,000 fine for each MT shortage



Compliance Obligation Timing for Selected Companies

- 2017
 - Avista Corp (nat gas)
 - BP (refineries)
 - Phillips (refineries)
 - Puget Sound Energy (power)
 - Shell (refineries)
 - U.S. Oil & Refining (refineries)
 - Various landfills
- 2020
 - Alcoa
 - Boise Paper
 - Georgia-Pacific Consumer Products
 - Kaiser Aluminum
 - Nucor Steel
- 2020 or later based on threshold
 - C/N Ethanol Marketing Corp
 - ExxonMobil
 - Fred Meyer Stores
 - Pettit Oil Co
 - Suncor
- 2029
 - US Army Joint Base Lewis-McChord
 - University of Washington, Seattle
- 2035
 - Boeing

Emission Reduction Methodology

- All emissions included under cap
 - CO₂, N₂O, CH₄, HFCs, PFCs, SF₆, NF₃
- Eligible companies must reduce emissions by an average of 1.7% per year from their baseline through 2035
 - Level attained in 2035 must be maintained
 - ~31% total reduction for facilities starting in 2017
- Companies will be benchmarked against their peers, with better performers receiving lower reduction requirements
 - Higher-than-average emissions (>75 percentile): 1.8 - 2.7% per yr
 - Lower-than-average emissions (<25 percentile): 0.7 - 1.6% per yr

Compliance Methodology

- Compliance through Emission Reduction Units (ERUs)
 - 1 MT CO₂e reduction = 1 ERU
 - ERUs can be banked for 10 years
 - Can be held or sold, FIFO
- Must retire sufficient ERUs to meet reduction goal
 - ERUs will be tracked on a registry
- Allowances from other GHG programs can be purchased and converted into ERUs, but their compliance eligibility declines over time
 - 2017-19: 100%
 - 2020-22: 100%
 - 2023-35: 50%
 - 2026-28: 25%
 - 2029-31: 15%
 - 2032-34: 10%
 - 2035+ : 5%

Generating an ERU

- Three methods to produce an ERU
 - Direct reductions at facility
 - Reductions through projects, programs, or activities
 - Must be incremental to existing EE / RE programs
 - GHG emission markets external to State of Washington
- ERUs must be tracked and retired for compliance
 - Can only be used in one program; no double counting
- Power plants under Clean Power Plan (CPP) are assumed to comply if they are meeting CPP obligations

Qualified Programmatic Reductions

- Programmatic reductions must be

- Real, specific, identifiable, and quantifiable
- Permanent
- Enforceable
- Verifiable
- Incremental to existing statutes and regulations

- Sectors include

- Transportation
- CHP
- Energy
- Livestock and agricultural
- Waste and wastewater
- Industrial sector
- Certain EFSEC* recognized emission reductions
- Ecology approved emissions reductions

A Few Program Examples (EE opportunities)

- Energy

- Combined Heat and Power installations
- EE in excess of EERS targets
- In-state generated RECs in excess of RPS targets
- ERUs calculated based on verified savings and 800 lbs/MWh
 - 2.25 MWh = 1 ERU

- Industrial

- SF₆ replacement, reclaimed HFC refrigerant,
- Conversion of high-bleed pneumatic controllers

- Transportation

- Improved efficiency of vehicle fleets
- Truck stop electrification
- Commuter / mass transit programs

Cost Benefit Analysis

- Depends on how compliance is met
 - On site reductions are most expensive
 - \$23 - 57/MT CO₂e
 - ~\$10 - \$25 / MWh cost
 - RECs are cheapest
 - \$3 - 11/MT CO₂e
 - ~\$1.50 - \$5 / REC
- Midpoint of benefits exceeds even highest cost estimates
 - Avg. SCC at 2.5% discount rate
 - \$64 (2015) - \$90 (2036) / MT CO₂e

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.

- 20-year present value avoided social cost of carbon impacts of approximately \$10 billion (at a 2.5-percent discount rate comparable to cost calculations; the full range is \$2 – 18.6 billion, depending on discount rate and focus on severe impacts). This quantified value excludes impacts to elements of:
 - Health
 - Agriculture
 - Oceans
 - Forests
 - Ecosystems
 - Productivity
 - Water availability
 - Flooding
 - Transportation
 - Energy supply
 - Catastrophic and tipping point impacts
 - Inter- and intra-regional conflict

Comparison to Other Programs

	Washington's Clean Air Rule (2016)	Regional Greenhouse Gas Initiative (2009)	California's Cap-and-Trade Program (2013)
Scope	<ul style="list-style-type: none"> Multi-sector ~70 facilities Eventually covers ~68% of total state emissions Cap includes: CO₂, N₂O, CH₄, HFCs, PFCs, SF₆, NF₃ 	<ul style="list-style-type: none"> Power plants over 25 MW 163 facilities Participating states: CT, DE, MA, MD, ME, NH, NY, RI, VT Cap includes: CO₂ 	<ul style="list-style-type: none"> Multi-sector ~450 facilities Participating states: CA and Quebec Cap includes: CO₂, N₂O, CH₄, HFCs, PFCs, SF₆, NF₃ and other fluorinated GHG
Allowance Distribution	<ul style="list-style-type: none"> ERUs must be generated through eligible compliance methods 	<ul style="list-style-type: none"> Distributed to states Allocated and auctioned within states 	<ul style="list-style-type: none"> Distributed to compliance entities for free Allocated and auctioned
Reduction Requirements	<ul style="list-style-type: none"> Average of 1.7% annual reduction per covered facility 	<ul style="list-style-type: none"> Cap falls 2.5% per year through 2020 Post-2020 design currently under review 	<ul style="list-style-type: none"> Cap declines about 2% annually from 2012-2014 and 3% annually from 2015 to 2020
Funding Scale and Uses	<ul style="list-style-type: none"> No centralized funding as it is not a cap and trade program 	<ul style="list-style-type: none"> Roughly \$1.5 billion generated cumulatively since 2008 Funding goes back to state for use in EE and RPS 	<ul style="list-style-type: none"> 1st yr auctions generated over \$525 million in revenue Funds further GHG reduction goals in CA <ul style="list-style-type: none"> 25% to benefit disadvantaged communities
Timing	<ul style="list-style-type: none"> 3-year compliance periods beginning 2017-2019 	<ul style="list-style-type: none"> 3-year compliance periods beginning 2009-2011 	<ul style="list-style-type: none"> 3-yr compliance periods, following 2-yr 1st compliance period 2013-2014

Resources

- [Press Release](#)
- [Website with Program Info](#)
- [Docket](#)
- [Clean Air Rule Text](#)
- [Cost Benefit Analysis](#)
- [Affected Companies](#)