Wilson, Sam (ECY)

From: ArviaMorris <morris358@zipcon.com>
Sent: Thursday, July 21, 2016 8:37 AM
To: ECY RE AQComments
Subject: Request to make the Clean Air Rule in alignment with Climate Science

To whom it may concern. Below is a request to make the proposed Clean Air Rule stronger for a more rapid reduction in Washington Greenhouse Gas.

Thank you for considering my view.

Arvia Morris
4535 Thackeray Place NE
Seattle WA. 98105

When Washington Gov. Jay Inslee in 2015 ordered the state Department of Ecology to draft a rule limiting greenhouse gas emissions, he set a precedent. For the first time, a state government moved to cut climate pollution on the authority of existing environmental legislation.

The groundwork for the rule was the state Clean Air Act, which mandates state government to "(p)reserve, protect and enhance the air quality for current and future generations." On this basis, Ecology has drafted a rule that is in a public comment phase ending this week.

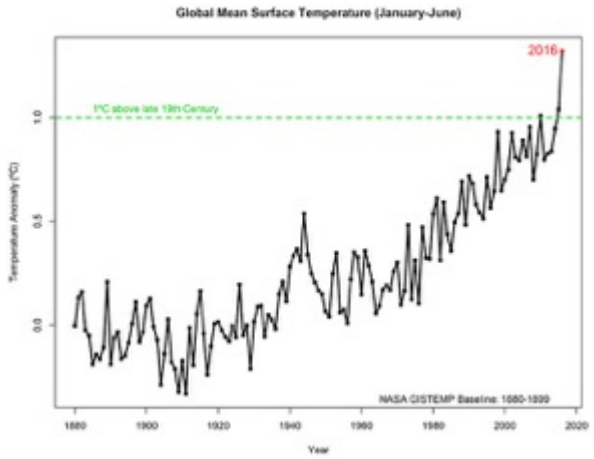
Pollution reductions called for under the rule fall substantially far short of what it would take to actually meet the Clean Air Act mandate. The rule calls for annual 1.7% emissions cuts from large polluters. It would eventually cover two-thirds of state greenhouse gas (ghg) emissions. Thus the overall yearly pollution reduction is more like 1%. That assumes that offsets, which polluters can purchase to meet 100% of their obligations, will actually all generate the real emissions reductions that are claimed. Many are skeptical, and loopholes in the draft rule actually allow one unit of carbon reduction to count for two units in some circumstances.

The actual scientific requirement is closer to an 8% annual ghg cut, and this curve is rapidly growing steeper. By next year it will be around 9%. These numbers are based on the target for recovery of climate stability, returning atmospheric carbon dioxide concentrations to 350 parts per million by 2100. 350ppm is where the atmosphere stops trapping solar heat, the basis of global warming. The longer that CO2 levels are higher than 350ppm – they are now above 400ppm – the more heat the planet will absorb, and the more probable that feedbacks will push global warming beyond human control – feedbacks including loss of natural carbon sinks such as Arctic permafrost.

This is based on science done by leading climatologist James Hansen and his team for a series of lawsuits promoted by Our Children's Trust. Youth lawsuits are being brought against a number of state governments, the federal government and other national governments. They argue, along the same lines as the theory under which Gov. Inslee ordered the climate rulemaking, that existing constitutional and statutory obligations to protect natural resources are sufficient grounds regulate carbon and other ghgs.

In one of the cases, eight youth have won a court order requiring Washington state to limit climate pollution. King County Superior Court Judge Hollis Hill said the state must issue a rule by the end of the year. Though the state opted to appeal the order, it nonetheless is the legal requirement under which the state is now operating.

The state claims it might need more time. But truly, there is no more time for delay. NASA just reported that the first six months of the year were the hottest on record, 1.3°C warmer than the late 19th century. That is perilously close to the 1.5°C target set by the recent Paris climate summit to avert the worst consequences of climate disruption. Even more alarming is the fact this is 0.3°C above any temperature high previously recorded – a phenomenal spike indicating the planet may be moving into a new climate state.



This chart from NASA illustrates the dramatic 2016 temperature spike. Never before this year had temperates gone 1 degree Celsius above the late 19th century level. The first six months of this year, temperatures averaged 1.3 degrees Celsius, an 0.3 degree spike above anything before.

NASA also reported that Arctic sea ice was at record lows five of the year's first six months. During winter, Arctic sea icepack typically peaks at 40% of its early 1980s extent. That drives growing heat. Ice sends 90% of solar heat back to space, while blue water absorbs 90%. Global warming is already feeding global warming in the Arctic, with a worldwide impact.

If ever the climate crisis was upon us, it is upon us now. Yet the world continues to operate as if it was business as usual – As if minor course corrections can possibly avert a collision with the physical realities of an increasingly disrupted climate. No, they can't. This is why Ecology's draft climate rule is not an adequate response to the Clean Air Act mandate. It is not a climate crisis rule. It is a business-as-usual rule.

A fundamental problem is a contradiction in the rulemaking process itself. When Gov. Inslee ordered the rulemaking, it was done not only on the basis of the Clean Air Act, but also a 2008 law that set ghg limits for the state: 1990 levels by 2020; 25% below 1990 levels by 2035, and 50% below 1990 levels by 2050. There is wide agreement that these limits are too low, including from Ecology. In a December 2014 update required by law, the department said (on page 18):

"Washington State's existing statutory limits should be adjusted to better reflect the current science. The limits need to be more aggressive in order for Washington to do its part to address climate risks and to align our limits with other jurisdictions that are taking responsibility to address these risks. . . Ecology concludes that Washington's existing statutory statewide reductions limits under RCW 70.235.020, especially limits for 2035 and 2050, need to be updated through changes to the statute."

Critically, Judge Hill also found those limits inadequate to meet Clean Air Act requirements. In a November ruling she said, ". . . the emission standards currently adopted by Ecology do not fulfill the mandate to '(p)reserve, protect and enhance the air quality for current and future generations.'"

Ecology is required under law to submit updates in the limits to the Legislature. In its 2014 report the department recommended waiting until after the Paris summit. In her most recent ruling in April the Judge ordered Ecology to fulfill this legal mandate. That is also part of the ruling that has been appealed. At a July 14 public hearing on the rule in Olympia an Ecology representative said the department is exploring an update and hopes to make recommendations by the end of the year. Everyone understands the 2008 limits are inadequate.

Thus, it is clear that to base the rulemaking on both the Clean Air Act and the 2008 limits sets up a contradiction. If Ecology holds within the 2008 limits, it cannot meet the legal requirements of the Clean Air Act to protect the atmosphere for present and future generations. It's either one or the other.

To say the rule proposed by Ecology even meets the 2008 standard would be a misnomer. In fact, parallel to its coverage of polluters, the rule would only hit around two-thirds of the 2035 target. The remaining emissions reductions would have to come from currently uncovered sectors.

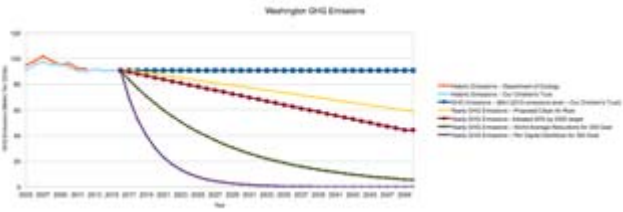


Chart from Our Children's Trust shows how far short the current proposed Washington state climate rule falls compared to the scientific necessities for climate stabilization. The green line second from the bottom depicts the stabilization pathway. The red line shows what meeting the state's 2008 carbon limits would accomplish. The proposed rule does not even reach the 2008 limits, only around two-thirds of them, reflecting its limited coverage of state emissions.

One reason state officials give for holding the rulemaking within the 2008 limits, making them a ceiling rather than a floor, is because they believe it provides more solid footing to fight off inevitable industry lawsuits than basing the process on the Clean Air Act alone. They would rather win a 1% annual pollution reduction than lose with a requirement closer to scientific necessities. But just how solid a groundwork the 2008 law actually provides is open to question. In 2015 State Sen. Doug Ericksen, the oil industry's best friend in Olympia, asked the state attorney general his opinion on what the law actually required.

The AG responded that it places no requirement on the Legislature. "There is no language in the statute requiring the legislature to create a program to achieve greenhouse gas emission reductions." Neither does it provide a legal ground to sue the state if it does not meet the limits. The law "does not expressly create a cause of action for obtaining a court order requiring that the greenhouse gas emission reductions identified in that statute be enforced." Nor can anyone collect damages for failure to reach the limits. "There is no language in RCW 70.235.020 that expressly creates a cause of action for damages against the state for a failure to achieve the greenhouse gas emission reductions identified in that statute."

Certainly any lawsuit brought by the oil industry and other interests will cite that AG opinion to undermine the legal authority of the 2008 law in the rulemaking. They will argue the law is essentially toothless, and have a basis on which to make that case. The Clean Air Act authority is far more solid, and really meeting its mandate would require much more than the business as usual rule now proposed by Ecology.

These are legal points, and they are important. But beyond the legal, technical and bureaucratic framework in which this rule is conceived, another force is at play. It was evident in the July 14 Ecology hearing when person after person placed the issue in the overriding moral context. Around 24 people had been fasting the three days before, mostly parents and grandparents, to ask for a rule worthy of our children. I was one of them. I concluded my testimony with this:

“The ultimate test of any climate policy is what happens on this planet. What will the world look like in 44 years when my 19-year-old daughter is my age? I fear it will be a nightmare world in which civilization is breaking down. The longer we delay acting in proportion to the crisis, the more likely this catastrophic future becomes.

“I implore you, as people I know are aware of these facts, and as concerned about them as I am, to listen to your heart and enact a rule to save our children’s generation. It is up to us to act now in proportion to the crisis we face.”

Once again, I make that call to Ecology, and the governor. This is no longer a business-as-usual world. We need a climate crisis rule for a climate crisis world. Please give us one.

Wilson, Sam (ECY)

From: nancy-ben <nancy-ben@comcast.net>
Sent: Tuesday, July 19, 2016 10:22 PM
To: ECY RE AQComments
Subject: Comment on Dept. of Ecology's Clean Air Rule

The latest data from Mauna Loa indicate that carbon dioxide in the atmosphere reached 406.8 parts per million as of July 5th, up from 402.8 one year earlier. We have increased the level of carbon dioxide by 45 percent above the pre-industrial level. We are adding carbon dioxide at an increasing rate. We now know that we have been underestimating our emissions of methane. The IPCC has more and more emphatically warned us that these emissions must be dramatically reduced to preclude even more grave catastrophes than our emissions to date have already set in motion.

Politicians and a majority of people recognize that we need to reduce greenhouse gas emissions. Our pledges to do so have been overwhelmed by our addiction to fossil fuel.

It is imperative that the Department of Ecology proceed to promptly implement clean air standards. I am dismayed, however, that the latest draft rules provide for such weak measures. Starting by requiring fewer than a couple dozen firms to reduce emissions and asking them to reduce emissions by such a small measure falls far short of what is needed. I urge you to ensure the Clean Air Rule uses the latest climate science as the basis for the carbon reduction requirements for the big climate polluters in our state. Currently the rule relies on outdated science from 2008. The rule must reflect current science. I am pleased that the draft rule covers natural gas electricity plants especially as some of our utilities are planning for even more natural gas plants. However, when regulations for electricity are shifted from the state-based Clean Air Rule to the federally-based Clean Power Plan, Ecology must ensure the reductions requirements are at least as strong as the Clean Air Rule and based on current science. All across the state, citizens are clamoring for a transition off of dirty fossil fuels to the abundant clean energy alternatives. This Clean Air Rule must ensure climate polluters are making meaningful reductions as we pave the way for clean energy.

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July 19, 2016

Stu Clark
Air Quality Manager
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P.O. Box 47600
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Mr. Clark,

Thank you for the opportunity to comment on your document.

Since you are Responsible Official for The Determination of Non Significance for the Clean Act Rule, I ask you to review the purpose and intent of the Clean Air Act and the State Environmental Policy Act that are attached as well as recent Science on what is needed for climate stability as you assess on whether an DNS is adequate for this proposed rule. It seems to me it is not, since the proposed rule falls so short of Best Available Science.

We now have much greater information on the severe dangers of continuing greenhouse gas emissions and climate change impacts occurring faster than anticipated. We live in a post Paris Climate Agreement world that started nations to move to reduce impacts. Our science tells us we must be more aggressive in reducing greenhouse gas emissions or may reach a point where it is too late to act. Leading US Climate Scientist James Hansen states we need to reduce our greenhouse gas emissions 8% each year if we start right now. The amount we need to reduce goes up each year we fail to act. Note: delay increases the cost of climate stabilization to all citizens and industries in Washington State.

While it is positive that Ecology is proposing to reduce emissions to 1.7% per year that is 21% of what Dr. Hansen's studies show is needed to stabilize climate to prevent climate catastrophes. We are in a situation on air and emissions similar to what people in Flint, Michigan are experiencing in drinking water. When at a level of survival, a 25% reduction in lead in the case of Flint's waters or in Greenhouse Gas Emissions in the case of our air is definitely inadequate. Twenty-five percent or even fifty percent of survival level does not get you to survival.

Science shows there would be significant impacts to all aspects of human health, lives and all elements to the environment from Greenhouse Gas Emissions. When Ecology rule falls so short of GHG emission limits that best available science shows are needed, how can the Department claim: "Ecology does not have any information that would suggest there will be significant adverse environmental impacts as a result of the proposed rule." It seems that any rule with

inadequate limitations to prevent significant impacts would require a Determination of Significance, and EIS. I hope you will reconsider.

Thank you very much,

Bob Zeigler

Bob Zeigler

Attachment 1

Leading US Climate Scientist James Hansen on Ecology's Clear Air Rule

"Emission reductions of only 1.7 percent per year are not much different than business as usual," Dr. James Hansen. Director of the Climate Science, Awareness and Solutions program at Columbia University, said. "They would leave young people with an intolerable burden to somehow suck enormous quantities of CO2 from the air if they are to avoid a climate system running out of control. The state should live up its obligations to young people, reducing emissions 8 percent per year, which is what the science indicates is needed to stabilize climate."

Hansen Science Summary

- The critical goal is to bring down the level of carbon dioxide, the major greenhouse gas, to 350 parts per million by 2100. 350ppm is where planetary energy balance is restored – The planet is no longer taking in more solar energy than it is sending back to space. (The level has now reached 400 ppm, spiking recently over 407ppm, and in fact grew at a record pace in 2015.) Staying above 350ppm much longer than 2100 risks radical climate feedbacks.
- Achieving 350ppm x 2100 requires immediate and large carbon pollution reductions. If the world had started in 2013, an annual rate of 6% would have been needed. If we wait until 2020, the figure grows to 15%. In 2016, the figure is probably around 10%. Besides pollution reductions, 100 billion tonnes of carbon must be soaked from the atmosphere into plants and soil.
- The threshold for dangerous climate warming is sometimes given as 2° Celsius, or the more ambitious 1.5° C limit set at the recent Paris climate summit. The 350ppm pathway would hold total warming to the peak seen since the last ice age, just a little over 1°C, with a temporary spike this century around 1.2°C. Hansen asserts we should aim at the lower temperature target to reduce the odds for dangerous feedbacks. Warming of recent months puts us in this range, underscoring the urgent necessity for rapid carbon reductions.

For complete Science Study see:
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081648

State Environmental Policy Act

RCW 43.21C.010

Purposes.

The purposes of this chapter are: **(1) To declare a state policy which will encourage productive and enjoyable harmony between humankind and the environment; (2) to promote efforts which will prevent or eliminate damage to the environment and biosphere; (3) and [to] stimulate the health and welfare of human beings; and (4) to enrich the understanding of the ecological systems and natural resources important to the state and nation.**

RCW 43.21C.020

Legislative recognitions—Declaration—Responsibility.

(1) The legislature, recognizing that a human being depends on biological and physical surroundings for food, shelter, and other needs, and for cultural enrichment as well; and recognizing further the profound impact of a human being's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource utilization and exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of human beings, declares that it is the continuing policy of the state of Washington, in cooperation with federal and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to: (a) Foster and promote the general welfare; (b) create and maintain conditions under which human beings and nature can exist in productive harmony; and (c) fulfill the social, economic, and other requirements of present and future generations of Washington citizens.

(2) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the state of Washington and all agencies of the state to use all practicable means, consistent with other essential considerations of state policy, to improve and coordinate plans, functions, programs, and resources to the end that the **state and its citizens may:**

(a) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(b) Assure for all people of Washington safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

(c) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(d) Preserve important historic, cultural, and natural aspects of our national heritage;

(e) Maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(f) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(g) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(3) The legislature recognizes that each person has a fundamental and inalienable right to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Guidelines for state agencies, local governments—Statements—Reports—Advice—Information.

The legislature authorizes and directs that, to the fullest extent possible: (1) The policies, regulations, and laws of the state of Washington shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all branches of government of this state, including state agencies, municipal and public corporations, and counties shall:

(a) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on the environment;

(b) Identify and develop methods and procedures, in consultation with the department of ecology and the ecological commission, which will insure that presently unquantified environmental amenities and values will be given appropriate consideration in decision making along with economic and technical considerations;

(c) Include in every recommendation or report on proposals for legislation and other major actions significantly affecting the quality of the environment, a detailed statement by the responsible official on:

(i) the environmental impact of the proposed action;

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented;

(iii) alternatives to the proposed action;

(iv) the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented;

(d) Prior to making any detailed statement, the responsible official shall consult with and obtain the comments of any public agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate federal, province, state, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the governor, the department of ecology, the ecological commission, and the public, and shall accompany the proposal through the existing agency review processes;

(e) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(f) Recognize the worldwide and long-range character of environmental problems and, where consistent with state policy, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of the world environment;

(g) Make available to the federal government, other states, provinces of Canada, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(h) Initiate and utilize ecological information in the planning and development of natural resource-oriented projects.

RCW 43.21C.031

Significant impacts.

(1) An environmental impact statement (the detailed statement required by RCW 43.21C.030(2)(c)) shall be prepared on proposals for legislation and other major actions having a probable significant, adverse environmental impact. The environmental impact statement may be combined with the recommendation or report on the proposal or issued as a separate document. The substantive decisions or recommendations shall be clearly identifiable in the combined document. Actions categorically exempt under RCW 43.21C.110(1)(a) and43.21C.450 do not require environmental review or the preparation of an environmental impact statement under this chapter.

Clean Air Act

RCW 70.94.011

Declaration of public policies and purpose.

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

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

Because of the extent of the air pollution problem the legislature finds it necessary to return areas with poor air quality to levels adequate to protect health and the environment as expeditiously as possible but no later than December 31, 1995. Further, it is the intent of this chapter to prevent any areas of the state with acceptable air quality from reaching air contaminant levels that are not protective of human health and the environment.

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

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

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

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

To these ends it is the purpose of this chapter to safeguard the public interest through an intensive, progressive, and coordinated statewide program of air pollution prevention and control, to provide for an appropriate distribution of responsibilities, and to encourage coordination and cooperation between the state, regional, and local units

of government, to improve cooperation between state and federal government, public and private organizations, and the concerned individual, as well as to provide for the use of all known, available, and reasonable methods to reduce, prevent, and control air pollution.

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

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

It is the intent of the legislature that air pollution goals be incorporated in the missions and actions of state agencies.

[1991 c 199 § 102; 1973 1st ex.s. c 193 § 1; 1969 ex.s. c 168 § 1; 1967 c 238 § 1.]

NOTES:

Finding—1991 c 199: "The legislature finds that ambient air pollution is the most serious environmental threat in Washington state. Air pollution causes significant harm to human health; damages the environment, including trees, crops, and animals; causes deterioration of equipment and materials; contributes to water pollution; and degrades the quality of life.

Over three million residents of Washington state live where air pollution levels are considered unhealthful. Of all toxic chemicals released into the environment more than half enter our breathing air. Citizens of Washington state spend hundreds of millions of dollars annually to offset health, environmental, and material damage caused by air pollution. The legislature considers such air pollution levels, costs, and damages to be unacceptable.

It is the intent of this act that the implementation of programs and regulations to control air pollution shall be the primary responsibility of the department of ecology and local air pollution control authorities." [1991 c 199 § 101.]

Alternative fuel and solar powered vehicles—1991 c 199: "The department of ecology shall contract with Western Washington University for the biennium ending June 30, 1993, for research and development of alternative fuel and solar powered vehicles. A report on the progress of such research shall be presented to the standing

Wilson, Sam (ECY)

From: Bourtai Hargrove <bourtai31@gmail.com>
Sent: Sunday, July 10, 2016 3:40 PM
To: ECY RE AQComments
Subject: Comment on Ecology's Clean Air Rule

July 10, 2016

Bourtai Hargrove

9822 Dempsey Ln. S.W.

Olympia, WA 98512

Mr. Sam Wilson

Department of Ecology

P.O. Box 47600

Olympia, WA 98504-7600

Re: Comment on Ecology's Clean Air Rule

Dear Mr. Wilson and Ecology staff:

My overriding concern, and the overriding concern of everyone crafting or reviewing Ecology's Clean Air Rule must be the long-term effect of the rule on the crucial international efforts to hold global warming below 1.5 or 2 degrees Celsius, the threshold beyond which looms civilization-threatening climate disruption. In April, cumulative CO2 levels reached 407.42 parts per million as recorded at the Mauna Loa Observatory in Hawaii, a level not seen on earth since the Miocene epoch, 10 to 15 million years ago. And Co2 emissions continue to rise with frightening speed. We are on a trajectory to warm 4 to 6 degrees Celsius beyond pre-industrial levels by the end of the century. **We do not know if humans can survive a 6 degree**

C climate. For years, Jim Hansen, the world's foremost climate scientist, has warned the we have a narrow window of opportunity to drastically reduce our use of fossil fuels and halt anthropogenic climate change before dangerous tipping points and feed-back loops take it beyond human control. Our time for action is running out.

Climate disruption is already scorching India, where the temperature reached 123.8 F in April, killing hundreds and destroying crops in at least 13 states. Climate disruption fueled the massive Alberta wildfire that forced 90,000 people to evacuate their homes and is now spreading into Saskatchewan. In Africa 36 million people are on the verge of famine, due to climate-change escalated drought, and in Australia 93 percent of the Great Barrier Reef has suffered heat-related coral bleaching and death. Climate disruption is accelerating the sixth great extinction of life on earth, an extinction which if it continues at the present rate, will eliminate half the plants and animals on our planet by the end of the century. We are facing the greatest threat to survival humans have ever faced. **"Because CO2 stays in the atmosphere for over a century, the only thing that matters in limiting temperature is cumulative emissions, the total concentration of greenhouse gases we dump into the atmosphere"** warns Kevin Anderson, climate advisor to the British government and former director of the Tyndall Energy Program. What would it take, Anderson asks, to target 2 degrees C realistically? "No carbon tax is going to do that. We won't get there through innovation or new technology, even if we spend a trillion a year for the next few years. The only conceivable way to produce that level of reductions," says Anderson," is a full-scale, all-hands-on deck mobilization, what William James called 'the moral equivalent of war.'"

The 1% reduction in CO2e emissions proposed by Ecology's draft Clean Air Rule is essentially useless. Climate Scientists conclude that CO2e reduction must be at least 8% per year if we have any hope of avoiding climate tipping points that will push climate change beyond human control. We are in planetary emergency - a race against time. Gradualism is no longer possible, compromise is no longer possible. We must transcend political considerations. Each year that we delay will make the necessary reductions steeper, more expensive, and more traumatic. It is astounding that Ecology, under the cover of a Superior Court Order, cannot set a scientifically sound goal for carbon pollution reduction. The feeble goal of 1% reduction per year, signals that Ecology has already admitted defeat.

I write this comment as a grandmother, deeply concerned that we are condemning my grandchildren and your grandchildren to life in a hellish world of unprecedented storms, heat waves, water shortages, crop failures, resource wars, climate refugees and a loosening of the bonds that hold civilization together. In its final rule, Ecology must strive for an 8% annual reduction in CO2e emissions for Washington State. Let the suicidal climate deniers fight to defeat it if they can. At least you will have set a scientifically based goal, a goal which, if

adopted throughout the country and the world, could halt or reverse global warming. ***That is the least you can do.***

Then begin work on a more ambitious rule, a rule that will also reduce vehicle emissions by 8% a year. Transportation still produces nearly half of Washington's carbon emissions. Our fight has just begun. We must begin with **BOLD** initiatives, **BOLD** regulations, and **BOLD** demands. Nothing less will save us.

With hope for a livable climate for our children and grandchildren.

_____

Bourtai Hargrove

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Wilson, Sam (ECY)

From: Brian L. Gunn <gunnbl@comcast.net>
Sent: Friday, July 22, 2016 11:12 PM
To: ECY RE AQComments
Subject: Clean Air Rule

I attended the hearing in Olympia on July 14, but I was not called on to speak before I had to leave.

The Clean Air Rule proposed by Ecology doesn't do nearly enough to combat climate change. The rule should follow the best science and lay out a path to achieving 9 to 10 percent reductions in greenhouse gases, not the paltry 1.7 percent proposed.

At the hearing there were a couple dozen people who had fasted three days to make it clear how urgent it is for Ecology to make a strong rule that protects the future of the children of Washington State and the world.

At the hearing there were nearly a hundred citizens who waited for their chance to testify to the need for Ecology to put forward a clean power plan that leaves dirty, polluting fossil fuels, including natural gas, in the ground.

At the hearing there were even more people who came to stand in solidarity with those who fasted and testified, who want to see our government stand up to the powerful industries that profit off continued extraction and burning of coal and oil.

But outside the hearing there were millions of regular citizens who live very much like I do. We own cars, drive thousands of miles a year on gasoline, heat our homes by burning gas, power our computers and lights with electricity from coal-fired power plants and buy food and other products produced far away and shipped across continents and oceans to our doors.

The Clean Air Rule as proposed does not challenge those millions of Washingtonians with any sense of urgency to make changes in their lifestlyes to reduce their carbon footprint. Instead it tacitly gives them permission to remain complacent, to delay buying a more fuel-efficient car, to avoid the hassle of researching, financing and installing solar panels on their roofs, and to keep buying packaged, processed foods instead of making the trip to a farmers' market for fresh, local produce.

The Clean Air Rule put forward by Ecology says to the millions of regular working folks that making a token gesture such as swapping a few light bulbs is enough, when all the best science says such steps won't prevent or even mitigate the worst effects of climate change such as sea level rise, ocean acidification, and devastating storms, droughts and wildfires.

As a final example of business-as-usual, the Clean Air Rule as put forward protects 'trade-exposed' industries. Read about the Trans-Pacific Partnership; we're all of us trade-exposed these days. Coddling industry and failing to galvanize citizen participation is foolhardy. Ecology should strive to do better.

Brian Gunn
gunnbl@comcast.net

Wilson, Sam (ECY)

From: bruce baker <archimed115@yahoo.com>
Sent: Friday, July 22, 2016 3:24 PM
To: ECY RE AQComments
Subject: Public Comment on Ecology's WOEFULLY INADEQUATE Clean Air Rule proposal

To: Sam Wilson
Washington Department of Ecology
Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600
Email: AQComments@ecy.wa.gov

Ten years from now, how will you face your children and grandchildren, and tell them you destroyed their futures, because you were afraid of Big Oil?

Don't be afraid, there are many more industries that will support you in a Clean Air Rule that will actually stop the Climate disasters that are coming. Look at these businesses that have realized the mortal dangers we're all facing:

http://www.ceres.org/investor-network

"In 2003, Ceres launched the Investor Network on Climate Risk (INCR), growing from 10 institutional investors managing $600 billion, to over 100 members managing more than $11 trillion in collective assets today. INCR has an impressive record of leadership and accomplishments on climate and sustainability.

In 2012, Ceres and INCR brought together 450 financial leaders representing tens of trillions in assets at the United Nations for the fifth Investor Summit on Climate Risk & Energy Solutions. Participants issued anInvestor Action Plan calling for greater private investment in low-carbon technologies and tougher scrutiny of climate risks across investment porfolios"

TIME IS RUNNING OUT FOR US ALL!!

Extreme weather, diseases, fisheries stock crashes, extinctions, food web crashes, starvation. PEOPLE ARE GOING TO DIE, MILLIONS OF PEOPLE! Some might be people you know and love! The Clean Air Plan being proposed is TOO LITTLE AND TOO LATE to stop literal Climargeddon, AND it will NOT protect you from lawsuits and attacks from Big Oil and their minions. It means you LOSE both ways! YOU will be BLAMED when our Fisheries and Agriculture crash, and wildfires destroy properties and KILL people and livestock!

You need to reduce Carbon Emissions at least 8 percent per year for our children's generation to even have a fighting chance, and you must do it FAST, with NO EXCEPTIONS AND NO EXCUSES for anyone.

TIME

Time waits for nobody
We all must plan our hopes together
Or we'll have no more future at all
Time waits for nobody

We might as well be deaf and dumb and blind I know that sounds unkind But it seems to me we've not listened to Or spoken about it at all The fact that time is running out for us all

Time waits for nobody
Time waits for no-one
We've got to build this world together
Or we'll have no more future at all
Because time - it waits for nobody

You don't need me to tell you what's gone wrong (gone wrong gone wrong) You know what's going on But it seems to me we've not cared enough Or confided in each other at all (confided in each other at all) It seems that we've all got our backs against the wall

(Time) Time waits for nobody
(Time) waits for no-one
We've got to trust in one another
Or there'll be no more future at all
(Time)

Yeah - Time waits for nobody
No no - Time don't wait for no-one
Let's learn to be friends with one another Or there'll be no more future at all

Time (time) time (time) waits for nobody waits for nobody Time time time time waits for nobody at all

Time waits for nobody - yeah
Time don't wait - waits for no-one
Let us free this world for ever
And build a brand new future for us all

Time waits for nobody nobody nobody
For no-one

Freddie Mercury

https://m.youtube.com/watch?v=jPkEc5SrY9c

Wilson, Sam (ECY)

From: Carolyn Treadway <carolyn@planetcare.us>
Sent: Sunday, July 17, 2016 5:19 PM
To: ECY RE AQComments
Subject: Message for Department of Ecology on Proposed Clean Air Rule

The Clean Air Rule as proposed is completely inadequate!!! Carbon Pollution must be reduced by AT LEAST eight percent to prevent catastrophic climate change. 1.7 percent is no way enough.

What we are facing is the end of the world as we know it, for the current species on Earth—our only home. We don't want to think about this, so we don't. It's too scary, too heartbreaking. We MUST gather courage to keep looking and take immediate bold action based on what we can clearly see. The heart that breaks wide open can encompass the whole world.

As you redo and improve this draft Clean Air Rule, take courage, break your hearts open, and ACT NOW to take steps that will actually help to preserve our precious planet. Washington state CAN lead the way.

If you need guidance, ask the youth of Plant for the Planet. They are very dedicated and well informed and can guide you. So can the Native peoples, who have long known how to live in harmony with the earth. Hundreds of Native people from numerous tribes are arriving Olympia on July 30 for the Canoe Journey Paddle to Nisqually. Their elders can advise you how to live in harmony with Earth, so that future generations can survive.

Your heartfelt, authentic, and wise leadership IS possible, and is needed NOW. Do not let lack of political will get in the way. Our future is at stake.

Thank you.

Carolyn Treadway
cwt2014@panetcare.us

Wilson, Sam (ECY)

From: cate andrews <cathrynannandrews@gmail.com>
Sent: Friday, July 22, 2016 10:54 AM
To: ECY RE AQComments
Subject: Fwd: Comment on Clean Air Rule

We have a EA - 18G Growler jet that flies touch and go (FCLP) landings in an agricultural, populated area in central Whidbey Island. The pollution (both noise and ecological) is beyond comprehension. I have spent four years trying to educate the public through the venue COER (citizensofebeysreserve.com). This must be either stopped or moved to a less ecologically delicate environment.

I learned that one hour of Growler flight burns 1300 gallons of jet fuel, emitting 12.5 Metric Tons CO2. That is equal to 30,000 car miles driven! Last time I saw the Growlers training there were 4 in the air. I gleaned from the web that in 2013 training happened 3 hours a day, five days a week. That's 60 flight hours a week. Doing the math, that would equal 800 metric tons a week. That's 40,000 metric tons a year. And that's just from the training flights. In addition they do stationary run-ups of the planes at Ault field I believe daily to keep them in good shape. That might double the Metric Tons of CO2 emitted just by the Growlers at NASWI bringing it close to the threshold of an industry required to report to you. We also have Fairchild and McChord Air Force bases in WA which surely takes the total over 100,000 Metric Tons a Year

from military aircraft.

Now let's add the carbon pollution from manufacturing the Growlers and other jets and then consider that our elected officials have proudly announced that we have passed a budget including 35 more Growlers.

Contemplate that for a moment. Surely the military in our state accounts for well over the 100,000 Metric Tons of CO2 pollution BUT THEY ARE NO WHERE ON YOUR LIST OF MAJOR CARBON POLLUTERS. The Pentagon may think that this discussion is off the table, but please give this your attention.

My request is that you at least comply with the Paris accords and mandate an accounting of the carbon and other climate disrupting gas pollution in Washington State as part of our honest commitment to complying with Clean Air Rules. You don't have to question our military intervention across the world. You don't have to disparage those who serve with a sense of honor and nobility. You don't have to criticize the policies of war. You simply have to require that all military bases in Washington State deliver their accurate accounting of their carbon emissions per annum and if it exceeds targets require them to submit a plan for bringing their emissions back to a 1990 level without sacrificing national defense. None of us has any idea what that accounting will show or how our very intelligent and creative leaders will find to secure the peace with a lower carbon footprint.

This must be made public information, and I ask you to do so. The military is an industry,like others, and must be held accountable for toxic emissions about 100,000 metric tons.

,

Cate Andrews
Coupevile, WA
360-678-9823

Wilson, Sam (ECY)

From: Cynthia Linet <cynthialinet@gmail.com>
Sent: Thursday, July 14, 2016 2:42 PM
To: ECY RE AQComments; Alec Connon
Subject: My comments for the July 14th hearing

Here are my comments for the hearing this evening:

My name is Cynthia Linet. I am an artist, political activist, and former attorney and I am here to tell you that we, the people, are very frightened. I don't have to tell you that climate change is real, do I? The science is in.

Climate change is the existential threat of our time. Existential, do you know what that means? We are all going to die if we don't turn things around very soon.

We are already seeing the ravages of climate change. And those in the poor south, who have done nothing to bring about these changes are being most effected. Droughts, floods, and mass migrations due to wars brought about by scarce resources (60 million migrants last year alone) continue to wreck havoc on vulnerable people.

Even here in our own country, we have seen the effects. Massive flooding, from Louisiana to New Jersey, forest fires that burn unabated with fire fighters helpless to contain them, and heat waves that kill in record numbers. The costs of these events have been put in the billions. But you know all this, don't you?

Our kids won a great victory in the courts. You were supposed to promulgate rules that would protect our children's constitutional right to clean air. The rule you have proposed however, does not begin to satisfy the court's decision. Your rule would only decrease emission by 1% a year when 8% is needed.

Do you think that you will get out of this by dying before the privileged north is severely effected? Well maybe, but what about your children, and their children? Do you not think that they will suffer in times to come. If we don't stop now, they will.

And how will you explain your positions to your children when they ask you what you did to stop the effects of climate change?

I really don't like to fast, but I cannot sit idly by and not take this drastic of measures, to get your attention. If this doesn't work, what then? I shudder to think.

I urge you to get on the right side of history and do the right thing. Make rules like your lives depend upon them, because they do.

Thank you

Wilson, Sam (ECY)

From: dlm <macmullen74@frontier.com>
Sent: Monday, July 11, 2016 9:24 AM
To: ECY RE AQComments
Subject: Comment on Ecology Carbon Action

Dear Mr. Wilson,

It is beyond me that Ecology is thinking of enacting expensive rulings on a trace amount, 400ppm, of a benign substance, carbon dioxide, not given the scrutiny given to a new drug. I would think Ecology would chew on this bone to the extreme before acting. I would think Ecology would put the science to numerous tests and allow the subject to be vigorously debated in the open, requiring findings to be displayed where it can be viewed reviewed and debated. How can Ecology stand by a group of "scientists" who refuse to debate their computer models that are dubious at best?

As for the expense of Ecology's rulings, laying taxes on perceived "polluters" that have no choice but to trickle down the taxes on everyone including the poorest among us unconscionable. My advice to Ecology is to take this subject to the Legislature and tell them to make the decisions on it. It is up to the people to decide through representative government not by directed mandates. This way, we have a recourse at the ballot box.

Sincerely,
Dana MacMullen
1809 East Fox Hill St.
Mount Vernon, WA 98273

July 22, 2016

Mr. Sam Wilson
Air Quality Program
Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Re: Written Comments on Proposed Clean Air Rule (Chapter 173-442 WAC)

Dear Mr. Wilson:

Thank you for the opportunity to comment on the proposed Clean Air Rule.

I would also like to thank the Air Quality Program and the Rules and Accountability Section for all their hard work, intellectual energy and long hours that obviously went into preparing the CR-102 package. The proposed rule and supporting documents are well written and clearly describe the proposed requirements and potential impacts. I particularly enjoyed reading the preliminary cost benefit analysis/least burdensome alternatives analysis. These materials are all the more impressive given Ecology's ambitious rule schedule.

My comments on the proposed rule are attached to this letter. My main points:

- Ecology should adopt a final Clean Air Rule in 2016. This rule is a significant and positive step forward. It provides a solid foundation for action that will help break the current logjam on the climate issue. It is clear that Ecology had to make many difficult choices when preparing the proposed rule. I believe that Ecology has developed environmentally sound and pragmatic responses to the vast majority of technical, policy and implementation questions associated with this rulemaking.
- Implementing the new rule will be a huge challenge. Ecology needs to work with the Governor's office to ensure that adequate resources are made available to support rule implementation.
- The Clean Air Rule is a significant step forward, but it should not be viewed as the last or only step. The emissions reductions required under the new rule will be an important part of the State's efforts to combat climate change. It is also clear that additional reductions will be needed if the State plans to make a fair share contribution to global efforts to prevent serious climate-related impacts.
- The proposed emission reduction rate is an improvement over the status quo, but I believe it will need to be strengthened in the future. I have several suggestions on the factors that Ecology should consider when evaluating future updates.
- Ecology should establish a clearly defined framework for reviewing and, as appropriate, periodically updating the Clean Air Rule based on new scientific information, statutory changes and implementation experience. To support the review process, Ecology should also use a broad set of performance measures when evaluating the state's progress on reducing emissions.

Thank you again for the opportunity to comment on this important rule. If you have questions on my comments, I can be reached by email (bradleydave2015@gmail.com) or phone (360-359-5692).

Sincerely,

Dave Bradley

Attachments

Summary of Comments on Clean Air Rule Proposal

Background

In May 2016, the Department of Ecology republished two proposed rules for public review and comment: (1) a new rule "Clean Air Rule" (Chapter 173-442 WAC); and (2) amendments to an existing rule "Reporting of Emissions of Greenhouse Gases (Chapter 173-441 WAC). Ecology also published several updated support documents that evaluate the environmental and economic impacts of the proposed rules.

General Comments on Clean Air Rule Proposal

I have reviewed the proposed rule and supporting documents. My general observations include:

- The Clean Air Rule provides a sound framework for reducing greenhouse gas (GHG) emissions in Washington. It is an important and positive step forward. It is clear that Ecology had to make many difficult rule choices. In general, I believe that Ecology has developed environmentally sound and pragmatic responses to the majority of the technical, policy and implementation questions associated with this rulemaking.

- Implementing the new rule will be a huge challenge. I encourage Ecology to work with the Governor's office to ensure that adequate resources are made available to support rule implementation.

- The Clean Air Rule is a significant step forward, but it should not be viewed as the last or only step. The GHG emissions reductions required under the new rule will be an important part of the State's efforts to combat climate change. It is also clear that additional reductions will be needed if the State plans to make a fair share contribution to global efforts to prevent serious climate-related impacts.

- The proposed GHG emission reduction rate is an important first step, but will need to be strengthened in the future. I have several suggestions for factors that Ecology should consider when evaluating future updates to the GHG emission reduction rate.

- Ecology should establish a clearly defined framework for reviewing and, as appropriate, periodically updating the Clean Air Rule based on new scientific information, statutory changes and implementation experience. To support the review process, Ecology should also establish a broad set of performance measures to use when evaluating the state's progress on reducing GHG emissions.

Points Related to the Rule Process, the Proposed Rule and Rule Implementation

1. I would like to thank Ecology and the Governor for initiating this rulemaking process.

2. Ecology's rule process was well designed and has been implemented in a very effective manner. The rulemaking team should be applauded for all of their hard work, intellectual energy and long hours.

3. The Clean Air Rule provides a sound framework for reducing GHG emissions in Washington. It is an important and positive step forward. It is clear that Ecology had to make many difficult rule choices. In general, I believe that Ecology has developed environmentally sound and pragmatic responses to the majority of the technical, policy and implementation questions associated with this rulemaking.

Points Related to Specific Rule Issues

4. I support Ecology's proposal to apply the rule to GHG emissions from (1) natural gas distributors who distribute fuels in Washington and (2) petroleum fuel producers and importers.

5. I support Ecology's proposal to exempt several types of emissions from rule requirements. I believe that the proposed exemptions will not significantly reduce the effectiveness of the state's efforts to reduce GHG emissions.

6. The proposed regulatory threshold is a reasonable starting point, but available information suggests that Ecology could have selected a lower threshold without significantly increasing regulatory burdens.

7. The proposed GHG emission reduction rate is an important first step, but I believe it will need to be strengthened in the future.

8. The Clean Air Rule is a significant step forward, but it should not be viewed as the last or only step. Consequently, I support Ecology's decision to periodically review the rule.

Points Related to Rule Review and Evaluation

9. Ecology should use multiple performance metrics to evaluate the effectiveness of the Clean Air Rule. Given current scientific information, it is important that Ecology consider cumulative GHG emissions.

Points to Consider During Future Updates to the Clean Air Rule

10. Ecology should establish a clear and predictable framework for evaluating future updates to the initial GHG emission reduction rate.

11. Updated GHG emission reduction rates should be consistent with current scientific information on the emission reductions needed to prevent serious climate impacts.

12. Updated GHG emission reduction rates should be consistent with emission reduction targets established by the Washington Legislature, the United States, and other leading state programs.

13. Updated GHG emission reduction rates should reflect policies that are consistent with other Ecology risk management choices.

14. Ecology's should consider the likely net benefits of future amendments to the Clean Air Rule.

Organization of Comments

I have organized my comments under the issue areas summarized above. Each section includes:

- Comment. This subsection simply repeats the main points listed above.
- Background. This subsection summarizes the information that led to each comment. It represents a combination of background information and rationale.
- Recommended Actions to Address the Comment. This subsection identifies specific actions that Ecology could take to address the various comments.

Kudos on Decision to Prepare Clean Air Rule

"Some people want it to happen, some wish it could happen, others make it happen."

Michael Jordan (Chicago Bulls)

Comment #1

- I would like to thank Ecology and the Governor for initiating this rule making process.

Background

Ecology and the Governor's Office are to be strongly commended for their decision to develop and propose the Clean Air Rule using existing statutory authorities. Over the last decade, actions to reduce greenhouse gas (GHG) emissions in Washington have suffered from legislative gridlock. This has delayed efforts to establish the emission reduction requirements needed for Washington to proportionately reduce our share of global emissions.

The past delays are understandable from a broad political standpoint[1], but mystifying from a pragmatic environmental standpoint. As Ecology's rulemaking materials indicate, climate change is one of the most (if not the most) pressing environmental problem currently facing state, national and world leaders. Delaying the actions needed to reduce GHG emissions will only increase the overall costs and technical challenges associated with adapting to and minimizing global temperature increases.[2]

The International Panel on Climate Change (IPCC) discussed the implications of delayed actions in their most recent climate assessment report:

> *Delaying additional mitigation to 2030 will substantially increase the challenges associated with limiting warming over the 21st century to below 2 degrees C relative to pre-industrial levels. It will require substantially higher rates of emissions reductions from 2030 to 2050; a much more rapid scale up of low carbon energy over this period; a larger reliance on CDR in the long term; and higher transitional and long-term economic impacts.* ***(IPCC, 2014, p. 24)***

Since the beginning of 2016, there have been several new studies and reports that highlight the need for immediate action:

- Recording-Setting Global Temperatures. The National Oceanic and Atmospheric Administration

[1] Elected officials have offered a wide range of opinions on climate change. This is illustrated by the positions taken by the major presidential candidates. Bernie Sanders has said that "…[c]limate change is real, caused by human activity and already devastating our nation and planet…" and has called it the biggest threat to the national security of the United States. Hillary Clinton has said "…I won't let anyone take us backward, deny our economy the benefits of harnessing a clean energy future, or force our children to endure the catastrophe that would result from unchecked climate change…" On the other hand, Donald Trump has said "I don't believe in climate change" and tweeted that "…[t]he concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive…"

[2] The Climate Legislative and Executive Workgroup (CLEW) reached similar conclusions. They found that "…[a]ction will be needed on multiple fronts, both to ensure that the limits are met and to fairly allocate the responsibility for action. Action needs to start soon to allow the time needed for more gradual changes. Washington must reduce carbon emissions in the most cost-effective way possible, and the longer we wait, the more expensive the carbon reductions necessary to reach a safe level will be. Thus it is in the economic interest of Washingtonians to act now..."(CLEW, 2014, p.12)

(NOAA, 2016) reported that, as of May 2016, 13 of the 15 highest monthly temperature departures (from the average 20th century temperature) have all occurred since February 2015. NASA scientists recently announced that global temperatures in 2016 were much higher than the first half of 2015 (Fountain, 2016a).

- Atmospheric Carbon Dioxide Levels. NOAA reported that average annual carbon dioxide levels measured at the Mauna Loa observatory exceeded 400 ppm for the first time in 2015.

- Relationship Between Global Temperatures and CO2 Levels. Tan et al. (2016) recently reported that global temperatures may be more sensitive to atmospheric carbon dioxide levels than previously assumed by climate scientists. The scientific team used satellite photos to evaluate cloud impacts and estimated that the Equilibrium Climate Sensitivity (ECS)[3] falls between 5.0 and 5.3. This is higher than the ECS range (2.0 – 4.6) used by the IPCC to estimate temperature increases in the fifth climate assessment report released in 2014. This has important implications for future emission reductions and estimates on the social cost of carbon.

- Sea Level Rise. Hansen et al. (2016) examined past climatic conditions, recent observations and modeling results. They predict that the melting of the Antarctic and Greenland ice sheets will contribute to greater sea level increases than estimated by the IPCC in the most recent climate assessment report (IPCC, 2014).

- Climate Adaption Costs. The United Nations Environmental Program (UNEP, 2016) estimated that the annual cost of adapting to a warming world for developing countries could reach $280 billion to $500 billion by 2050. They found that countries and multilateral institutions have increased adaptation aid, which totaled $22.5 billion in 2014, but adaptation costs are already two or three times higher than that.

- Climate Impacts on European Rainfall. Scientists used sophisticated new computer models to conclude that human-caused global warming caused small changes in westerly flows in southern England (Schaller et al. 2016). These alterations helped create the conditions for the extreme rainfall and subsequent flooding in that region during the winter of 2013/2014.

There is also cause for optimism. There have been several recent announcements that point to the emerging opportunities for making significant progress on reducing GHG emissions:

- Public Opinion Poll. Gallup surveyed over 1000 individuals in early March and found that 64% of the people surveyed are worried a great deal or a fair amount about global warming (Saad and Jones, 2016). This is significantly higher than the number of people (55%) expressing this view in March 2015. Nearly 6 in 10 people (59%) believe said that effects had already begun and 65% of those surveyed say temperature increases are primarily attributable to human activities.

- Prices for Solar and Wind Power. The International Renewable Energy Agency (IRENA, 2016) reported that average costs for electricity generated by solar and wind technologies could decrease by between 26 and 59% by 2025.

- Carbon Sequestration. Scientists reported positive results in sequestering CO_2 using a new technique at a test site in Iceland (Fountain, 2016b). The new approach involves dissolving the gas with water

[3] Equilibrium Climate Sensitivity is defined as the estimated global mean surface temperature associated with a doubling of atmospheric carbon dioxide levels.

and pumping the resulting mixture down into basalt formations. These formations are rich in calcium, magnesium and iron. CO_2 reacts with these minerals to form calcite.

- Example of Successful International Treaty. Researchers reported that the seasonal ozone hole over Antarctica is getting smaller (Solomon et al. 2016). Although the improvement is small, it is an indication that the Montreal treaty is working. It also provides hope that the Paris Climate Agreement can be a vehicle for successfully mitigating the most serious impacts of global climate change.

Recommended Actions to Address Comment #1

- Ecology should complete the rulemaking process and adopt the final Clean Air Rule within the timeframes mandated by the Washington Administrative Procedures Act.

- Ecology and the Governor should take steps to ensure that Ecology has the resources to successfully implement the new rule.

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Kudos on Ecology Rulemaking Effort

"Nothing in this world that is worth having comes easy"

Dr. Kelso ("Scrubs" TV show character)

Comment #2

- Ecology's rule process was well designed and has been implemented in a very effective manner. The rulemaking team should be applauded for all of their hard work, intellectual energy and long hours.

Background

Ecology's rulemaking process was well designed and has been implemented in a very open and effective manner. Ecology's rulemaking materials indicate that the Department has gone to great lengths to identify concerns associated with various aspects of the rule. Reading through the proposed rule and accompanying materials, it is apparent that Ecology listened and took those concerns into account when drafting the proposed rule. In my opinion, this was largely done without undermining the overall goals and objectives of the rulemaking process.

The webinars and scoping meetings were a very effective way to keep interested parties informed on rule developments and provide opportunities for early feedback. I also found that the whiteboard videos were very helpful in that they provided useful information on certain aspects of the proposed rule.

The proposed rule and support documents are well written, clear and understandable. I particularly enjoyed reading the Preliminary Cost-Benefit and Least Burdensome Alternatives Analysis (Ecology 2016c). The revised tables were especially useful in helping me to understand the implications of various rulemaking choices.

Finally, the rulemaking team should be applauded for all the hard work, intellectual energy and long hours that went into developing the proposed rule. I greatly appreciate the willingness of Camille St. Onge, Neil Caudill, Kasia Patora and Sam Wilson to answer questions on emission baselines and reduction trajectories.

Recommended Actions to Address Comment #2

- Ecology should complete the rulemaking process and adopt the final Clean Air Rule within the timeframes mandated by the Washington Administrative Procedures Act.

- Members of the Ecology Rule Team should take much-deserved vacations. Rulemaking processes are arduous undertakings even under the best of circumstances and the Clean Air Rule has a much higher degree of difficulty than the vast majority of Ecology rules.

- Ecology should continue to use webinars to inform interested parties on rule developments and provide opportunities for questions and answers. The Clean Air Rule webinars were extremely helpful in terms of (1) understanding Ecology's proposal and (2) being able to hear the concerns and opinions from a range of other interested parties.

- Ecology should continue to use "whiteboard" videos or similar approaches to explain key issues underlying proposed rules and/or other important Ecology actions.

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Solid Foundation for Reducing Greenhouse Gases (GHG)

"You can't always get what you want, but if you try sometimes, you might just find, you get what you need."

The Rolling Stones

Comment #3

- The Clean Air Rule provides a sound framework for reducing GHG emissions in Washington. It is an important and positive step forward. It is clear that Ecology had to make many difficult rule choices. In general, I believe that Ecology has developed environmentally sound and pragmatic responses to the vast majority of technical, policy and implementation questions associated with this rulemaking.

Background

The Clean Air Rule will provide a solid foundation for reducing GHG emissions. When preparing the proposed rule, Ecology had to make many difficult choices. Many of the key issues are listed in Chapter 6 of the preliminary economic analyses (Ecology 2016c) and Appendix A attached Ecology's SEPA non-project review form (Ecology, 2016d). My comments on several of those issues are listed below and expanded upon in later sections.

- Emissions from Natural Gas Distributors and Petroleum Producers. I support Ecology's proposal to apply the rule to GHG emissions from (1) natural gas distributors distributing fuels in Washington and (2) petroleum fuel producers and importers (See Comment #4 below).

- Emissions Excluded from Coverage. I support Ecology's proposal to exempt several types of emissions from rule requirements. I believe that the proposed exemptions will not significantly reduce the effectiveness of the state's efforts to reduce GHG emissions. Ecology can revisit these exemptions after it has gained experience implementing the new rule (See Comment #5 below).

- Regulatory Threshold. The proposed regulatory threshold is a reasonable starting point, but available information suggests that Ecology could have selected a lower threshold without significantly increasing regulatory and administrative burdens. (See Comment #6 below).

- GHG Emission Reduction Rate. Ecology proposed that covered parties must annually reduce their GHG emissions by 1.67% of their baseline GHG emissions. The proposed rate is an important first step, but I believe it will need to be strengthened in the future (See Comment #7 below)

- Periodic Review. Ecology proposed that "…[e]cology will periodically review the program established by this chapter…". I strongly support this proposal, but believe that Ecology should provide more details on the nature of these reviews in WAC 173-442-320 and program guidance (See Comment #8 below).

Recommended Actions to Address Comment #3

- Ecology should complete the rulemaking process and adopt the final Clean Air Rule within the timeframes mandated by the Washington Administrative Procedures Act.

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Natural Gas Distributors & Petroleum Product Producers and Importers

"That's where the money is."

Willie Sutton (when asked why he robbed banks)

Comment #4

- I support Ecology's proposal to apply the rule to GHG emissions from (1) natural gas distributors who distribute fuels in Washington and (2) petroleum fuel producers and importers.

Background

Ecology proposed to apply the rule to GHG emissions from (1) natural gas distributors distributing fuels in Washington that are reported to Ecology under Chapter 173-441 WAC and (2) petroleum fuel producers that are reported to Ecology under Chapter 173-441 WAC. I believe there is a strong rationale for Ecology's proposal:

- The state would not be able to achieve the statewide emission reductions specified in RCW 70.235.020 if Ecology decided to exclude GHG emissions from these sources. I agree with Ecology's conclusion that "…[e]xcluding natural gas and petroleum would dramatically reduce the scope of the GHG emissions reduction program…[and]...would severely limit the ability to achieve the goals and objectives of the authorizing statutes…" As shown in Table 1, emissions from these sources represent over 70% of GHG emissions from sources covered by the Clean Air Rule. Failure to apply the Clean Air Rule to these sources would make it mathematically impossible to achieve the statewide GHG emission reductions specified in RCW 70.235.020.

Table 1: Summary of GHG Emissions From Covered Parties (from Table 1 of Ecology (2016c)

	Baseline Emissions	% of Baseline Emissions
EITEs	4,127,060	6.6%
Direct Emitters (non EITE)	7,616,077	12.2%
Power Producers covered under CPP	4,369,193	7.0%
Natural Gas LDCs	7,134,371	11.4%
Petroleum Producers & Importers	39,159,427	62.7%
Total	**62,406,128**	**100.0%**

- Ecology's proposal is consistent with the principles in current Washington clean air laws, the CLEW and CERT reports and recent legislative proposals. The Washington Clean Air Act states that "…[i]t is the policy of the state that the costs of protecting the air resource … shall be shared as equitably as possible among all sources whose emissions cause air pollution…"[4] The Climate Legislative and Executive Workgroup (CLEW, 2014) also proposed several climate program design considerations that include "…the program should…[b]e fair in allocating responsibility to sources…" (p.14). The Climate Emission Reduction Taskforce (CERT, 2015) also recognized the importance of covering

[4] RCW 70.94.011.

major emission sources.[5] Finally, Ecology's proposal is consistent with the proposed Carbon Pollution Accountability Act proposed by Governor Inslee in December 2014.

- Ecology's proposal is consistent with reporting and regulatory programs established by EPA and other states. EPA[6] and several state[7] programs have established GHG reporting requirements that apply to GHG emissions from natural gas distributors and petroleum producers/importers. The California Cap and Trade Regulation applies to GHG emissions from petroleum refiners and suppliers of natural gas.[8]

- Greater participation in GHG reduction efforts needs to be a key feature of successful programs. Nordhaus (2013) compared global emission projections under two scenarios: (1) 100% of the world's countries and economic sectors participated in reduction efforts; and (2) 50% of the world's countries and economic sectors participated in reduction efforts. Not surprisingly, he found that less participation translated into higher overall emissions and higher regulatory costs.

- Ecology's proposal will promote greater equity and regulatory fairness. Ecology's decision to cover these emissions will also promote regulatory fairness and equity. It is unclear how Ecology could justify the fairness of a program that exempts over 50% of statewide emissions.

- The proposed rule provides several compliance options. Given the nature of their emissions, these sources face several regulatory challenges not faced by individual facilities. The proposed rule allows covered parties to use multiple mechanisms to fulfill their compliance obligations.

Recommended Actions to Address Comment #4

- Ecology should complete the rulemaking process and adopt the final Clean Air Rule within the timeframes mandated by the Washington Administrative Procedures Act. Ecology should continue to apply the rule to GHG emissions from petroleum fuel producers/importers and natural gas distributors.

[5] The CERT observed that "…[t]he greater the coverage of emission sources, the greater the confidence will be in achieving the State's emissions limit. In the State of Washington, inclusion of transportation fuels, the largest contribution to the State's emissions, is central to achieving broad coverage…." (p. 12)

[6] The EPA Greenhouse Gas Reporting Rule (40 CFR 98) applies to petroleum fuel producers/importers and natural gas distributors that emit 25,000 metric tons of GHGs or more per year.

[7] California's 2013 Mandatory Greenhouse Gas Reporting Regulation (Title 17, California Code of Regulations, Section 95100-95158) applies to petroleum fuel producers/importers and natural gas distributors. The California Air Resources Board has published a guidance document "Greenhouse Gas Reporting Guidance for Suppliers of Transportation Fuels and Natural Gas Fuels" which is available at: http://www.arb.ca.gov/cc/reporting/ghg-rep/guidance/fuel-supplier.pdf

[8] California Air Resources Board has publish guidance on the Cap-and-Trade Regulation Chapter 2 chapter 2 (Is my Company Subject to the Cap-and-Trade Regulation?) specifies that petroleum fuel producers and natural gas distributors are generally covered under the cap and trade program. Available at: http://www.arb.ca.gov/cc/capandtrade/guidance/chapter2.pdf

Greenhouse Gas (GHG) Emissions Excluded From Coverage

"Success usually comes down to choosing the pain of discipline over the ease of distraction."

James Clear (blogger)

Comment #5

- I support Ecology's proposal to exempt several types of emissions from rule requirements.

Background

Ecology also proposed to exempt several types of emissions from rule requirements. I believe that the proposed exemptions will not significantly reduce the overall effectiveness of the state's efforts to reduce GHG emissions. Ecology will always be able to revisit these exemptions once the agency has experience implementing the new rule.

- Emissions from Manure Management: Ecology proposed to exempt GHG emissions from manure management from coverage under the Clean Air Rule. While this exemption may pose a small regulatory fairness issue, I believe this exemption is appropriate because:

  - Emissions from these facilities represent a small percentage of overall GHG emissions in Washington. Based on Ecology's latest mandatory GHG emissions report (Ecology, 2016g), emissions from manure management facilities reporting under that program represent less than 1% of the total non-biogenic emissions from the sources/facilities reporting emissions for 2014. This is consistent with Ecology's summary table listing 2012 GHG emissions.[9]

  - Emission estimates from these facilities are uncertain. EPA (2015) evaluated the uncertainties associated with the 2014 emission estimates for different source categories. For manure management, EPA estimated that the 95% confidence interval[10] was -18% to 24% for methane emissions and -16% to 24% for NO2 emissions.[11]

  - Ecology's decision to exempt emissions from these facilities is consistent with several other state regulatory programs. Environmental agencies in other states have required manure management facilities to report emissions, but states with regulatory programs have not generally established emission reduction requirements for these sources. For example, neither the California Cap and Trade Program nor the Regional Greenhouse Gas Initiative apply to manure management facilities.

- GHG Emissions from Aviation and Marine Operations. Ecology proposed to exclude aviation and marine operations from the Clean Air Rule requirements. While this exemption may also pose a small regulatory fairness issue, I believe this exemption because:

  - Emissions from these facilities represent a small percentage of overall GHG emissions in Washington. Ecology concluded that "...the vast majority of emissions occur outside the state and in-state emissions represent a small percentage of statewide emissions..." (See Ecology

[9] Ecology estimated that manure management facilities emitted 1.2 MT CO2e in 2012. This represents 1.3% of total emissions estimated for 2012 (92 MMT CO2e/year).

[10] The lower bound corresponds to the 2.5th percentile; the upper bound corresponds to the 97.5th percentile.

[11] For comparison, the uncertainties associated with emissions from this category are much higher than the uncertainties associated with CO2 emissions (95% confidence limits was -2% to 5%).

2016c, p. 42). This approach appears conceptually sound, but the rationale is inconsistent with some of the information posted on the Ecology website. In particular, Ecology has published a summary table (1990 – 2012 Washington State Total Annual Greenhouse Gas Emissions) that includes estimated emissions from marine (4.1 MMT) and jet fuel and aviation (8 MMT) that represent approximately 13% of the statewide GHG emissions (92 MMT) in 2012.[12] This apparent discrepancy may be easily explained if the summary table provides information on total emissions prior to adjusting for in-state vs out-of-state.

- Emission estimates from these facilities are uncertain. EPA (2015) did not evaluate the uncertainties associated with emissions from marine and aviation operations, but the previous paragraphs indicate there is considerable uncertainty in emissions estimates.

- Ecology's decision to exempt emissions from these facilities is consistent with several other state regulatory programs. Environmental agencies in some states often report GHG emissions from marine and aviation operations, but have generally deferred to national and international authorities. Neither the California Cap and Trade Program nor the Regional Greenhouse Gas Initiative (RGGI) apply to these sources.

- TransAlta Power Plant: Ecology proposed to exempt coal-based emissions from a coal-fired baseload electric generation facility in Washington that emitted more than one million tons of GHG in any calendar year before 2008. This exemption is applicable to the Centralia power plant operated by TransAlta whose GHG emissions are already regulated under a separate agreement with the state.[13] It will be important for Ecology to continue to enforce the milestones in this agreement because the facility emitted an average (2012-2014) of 6,383,223 metric tons of CO2e/year. This corresponds to 26.4% of GHG emissions from the stationary facilities identified in Ecology's most recent GHG emissions report (Ecology, 2016g).

Recommended Actions to Address Comment #5

- Ecology should adopt the final Clean Air Rule with the proposed exemptions within the timeframes mandated by the Washington Administrative Procedures Act.

- Ecology should periodically review whether manure management facilities should be regulated under the Clean Air Rule or other authorities as they become more significant relative to the reduced emissions from other sources in Washington.

- Ecology should (1) review the LBAA summary table, (2) continue to monitor international efforts to reduce aviation GHG emissions and (3) periodically review whether GHG emissions from this source category occurring in Washington should be regulated under the Clean Air Rule or other authorities.

[12] The Washington Inventory values are higher than estimates from the International Panel on Climate Change (IPCC, 2014) and International Energy Agency (IEA, 2009) who both estimate that marine and aviation contribute a total of 3-5% of global GHG emissions. Over 70% of emissions are estimated to be associated with international travel and shipping.

[13] On April 29, 2011 Governor Christine Gregoire signed into law Senate Bill 5769 (SB 5769) (Chapter 180, Laws of 2011) affecting coal-fired energy production at the TransAlta power plant in Centralia. SB 5769 incorporates into law an earlier agreement between the plant owner and employees, environmental groups, the Governor's Office, and the local community.

Regulatory Threshold

"Le mieux est l'ennemi du bien. (The perfect is the enemy of the good.)"

Voltaire

Comment #6

- The proposed regulatory threshold is a reasonable starting point, but available information suggests that Ecology could have selected a lower threshold without significantly increasing regulatory and administrative burdens.

Background

Ecology proposed that parties emitting at least 100,000 metric tons (MT) of CO2e/year must begin to comply with the new rule in 2017. Ecology also proposed to gradually lower the regulatory threshold from 100,000 MT/year to 70,000 MT/year in year 2035. I support Ecology's proposal because:

- The vast majority of GHG emissions will be covered under the proposed rule and a separate regulatory agreement for the TransAlta facility. Based on Ecology's latest mandatory GHG emissions report (Ecology, 2016g), the Clean Air Rule will be applied to approximately 48 individual facilities required to report their GHG emissions in 2014. As shown in the Table 2, those 48 sources emitted over 65% of reported emissions. GHG emissions from the TransAlta power plant are currently regulated under a separate agreement with the state. Their emissions represent an additional 26% of the 2014 GHG emissions. Once the Clean Air Rule takes effect, Ecology will be regulating over 90% of the state's GHG emissions from the facilities subject to GHG reporting requirements.

Table 2: Summary of GHG Non-Biogenic Emissions from Stationary Facilities Covered Using Preliminary Reported Emissions Data for 2012 – 2014 (Ecology 2016g))

Facilities	#	Average Annual Non-Biogenic GHG Emissions	% Statewide Emissions (with TransAlta)	% Statewide Emissions (w/o TransAlta)
Facilities With Emissions Exceeding Thresholds	48	16,023,757	65.4%	88.8%
Facilities With Emissions Below Thresholds	89	1,881,330	7.8%	10.6%
TransAlta Power Plant	1	6,383,223	26.4%	---
Other Exempt Facilities	5	96,577	0.4%	0.5%
Total	143	24,153,215	100%	100%

- Ecology's decision to establish a regulatory threshold is consistent with other environmental programs. Regulatory thresholds are not a unique concept. Many environmental programs employ some type of threshold criterion in order to (1) focus regulatory efforts on major contributors to environmental problems and (2) minimize administrative burdens. For example, Ecology and EPA have adopted thresholds in regulations for managing hazardous waste, reporting toxic chemical releases and reducing toxic and criteria air pollutants. Other state, federal and international GHG programs have also established regulatory thresholds for reporting and emission reductions (See Table 4). Many of the current thresholds have been established for reporting GHG emissions, but agencies typically do

not apply emission control requirements to sources that are not required to comply with reporting requirements.

Table 3: Examples of Regulatory Thresholds in Other State, Federal and International GHG Programs

Regulatory Program	Brief Description of Regulatory Threshold
Ecology Greenhouse Gas Reporting Rule (Chapter 173-441 WAC)	Facilities that emit at least 10,000 MT of CO2e/year in Washington; Certain suppliers that supply products equivalent to at least 10,000 MT of CO2e/yr in Washington.
EPA Greenhouse Gas Reporting Rule (40 CFR 98)	Facilities that emit 25,000 MT or more per year of GHGs are required to submit annual reports to EPA.
EPA Clean Power Plan (CPP) Rule (40 CFR 60)	The final CPP rule does not apply to existing fossil fuel-fired electric utility steam generating unit or stationary combustion turbine with operating capacity less than 25 MW.
EPA Prevention of Significant Deterioration (PSD) Regulation	Newly constructed sources with potential to emit more than 100,000 MT CO2e/yr and modified sources with the potential to emit more than 75,000 MT CO2e/yr. [EPA rescinded this rule in August 2015 following a decision by the Supreme Court]
California's 2013 Mandatory Greenhouse Gas Reporting Regulation ((title 17, California Code of Regulations, section 95100-95158)	Facilities that emit 25,000 metric tons or more per year of GHGs are required to submit annual reports to CARB. Sources participating in California's cap and trade program that emit 10,000 to 25,000 metric tons per year may submit voluntary reports.
California Cap and Trade Regulation	California's cap and trade program generally applies to facilities in listed source categories that emit more than 25,000 MT CO2e per year.
Regional Greenhouse Gas Initiative	Cap and trade program applies to electricity generator with an operating capacity equal to or greater than 25 MWe
Carbon Pollution Accountability Act (draft)	Would have applied to sources that emit more than 25,000 metric tons of greenhouse gases per year.

- The proposed regulatory threshold will allow Ecology to focus early efforts on the most important sources of GHG emissions. Ecology will increase the chances that the new rule will be successfully implemented by focusing early efforts on the most important sources of GHG emissions. Ecology will be able to cover additional sources as the agency gains experience implementing the new rule.

- Ecology's proposal will minimize the regulatory burdens for smaller GHG emitters. Ecology (2016c) stated that "…[b]ased on known emissions below the proposed threshold, a lower threshold would be more administratively burdensome through expanding the number of covered parties while not appreciably reducing emissions…" This is illustrated in Table 4 that summarizes the relationships between regulatory thresholds, the number of covered parties and the percentage of GHG emissions from individual facilities covered under the new rule. Under the proposed rule, the proposed rule will apply to approximately 33% of individual facilities who emit 88.8% of GHG emissions.

  I believe that Ecology could have established a regulatory threshold of 40,000 MT CO2e/year without causing an unreasonable increase in the regulatory burden for covered sources. Table 4 indicates that establishing a 40,000 MT threshold would require 10 additional sources to reduce their GHG emissions sometime before 2035. Seven of these 10 facilities are currently required to have operating

permits and, consequently, some of the administrative burden arguments for smaller source would not be equally applicable to these sources.

While Ecology's proposal provides a reasonable balance between program coverage and regulatory burden, I believe that Ecology could also have found a "sweet spot" at a threshold of 40,000 MT.

Table 4: Comparison of Relationship Between Regulatory Thresholds, Number of Potentially Covered Facilities and Current GHG Emissions[14]

Regulatory Threshold	# Facilities	GHG Emissions	Incremental %	Cumulative %
> 100,000 MT	32	14,424,853	81.1%	81.1%
90,000 to 100,000	4	387,666	2.2%	83.3%
80,000 to 90,000	6	523,980	2.9%	86.2%
70,000 to 80,000	6	455,585	2.6%	88.8%
60,000 to 70,000	3	193,347	1.1%	89.9%
50,000 to 60,000	2	113,443	0.6%	90.5%
40,000 to 50,000	5	234,922	1.3%	91.9%
30,000 to 40,000	13	458,523	2.6%	94.4%
20,000 to 30,000	17	419,751	2.4%	96.8%
10,000 to 20,000	31	473,931	2.7%	99.5%
1,000 to 10,000	18	91,936	0.5%	100.0%
< 1000	8	5,003	0.0%	100.0%
Totals	**145**	**17,782,942**	**100%**	

- Developing and adopting a lower regulatory threshold would delay emission reductions and increase compliance costs. Adopting a lower regulatory threshold would be a substantive change to the proposed rule under the APA. Ecology would need to re-propose Clean Air Rule (or portions of the rule) if the agency decided to adopt a lower threshold. This would delay rule implementation for a period that could extend for a year (or more). I also do not believe the small incremental gains in coverage associated with a lower threshold are large enough to justify further delays in implementing the new rule. Ecology will have ample time to review this issue during future rule reviews because it is unlikely that these smaller sources would be phased into the program before 2030. Such a delay is not consistent with the conclusions reached by the Climate Legislative and Executive Workgroup.[15]

Recommended Actions to Address Comment #6

- Ecology should adopt the final Clean Air Rule with the proposed regulatory thresholds within the timeframes mandated by the Washington Administrative Procedures Act.

- Ecology should periodically review the final regulatory thresholds as emissions from smaller sources become larger relative to the reduced emissions from covered parties under the Clean Air Rule.

[14] Table 4 does not include GHG emissions from the TransAlta facility.

[15] The CLEW concluded that "…[a]ction needs to start soon to allow the time needed for more gradual changes. Washington must reduce carbon emissions in the most cost-effective way possible, and the longer we wait, the more expensive the carbon reductions necessary to reach a safe level will be. Thus it is in the economic interest of Washingtonians to act now..."(CLEW, 2014, p.12)

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Proposed Rate of Greenhouse Gas (GHG) Reductions

"Things are rarely as good as they seem, things are rarely as bad as they seem, reality lies somewhere in between."

John Calipari (University of Kentucky Basketball Coach)

Comment #7

- The proposed GHG emission reduction rate is an important first step, but I believe it will need to be strengthened in the future.

Background

In his book "Thinking, Fast and Slow", Daniel Kahneman describes two ways that people process information. In Kahneman's framework, System 1 is our fast, automatic, intuitive and largely unconscious mode of thinking. System 2 is our slow, deliberate, analytical and conscious mode of reasoning about the world.

My "System 1" response to Ecology's proposed rate was similar to many of the comments provided during the July 14th public hearing. Then my "System 2" mode of thinking kicked in. Once I objectively analyzed Ecology's proposal, I concluded that the proposed rate is an important first step and is a major improvement over the status quo. Consequently, I believe that Ecology should move expeditiously to adopt and implement the proposed rate. In the future, Ecology can build on the foundation established by the 2016 rule. The rationale for my "System 2" conclusions include the following:

- The proposed emission reduction rate is a major improvement over the status quo. Ecology (2015) estimated that annual CO2 emissions from covered parties will be 4.5% lower in 2035 than in between 2017 under the business as usual scenario. Under the Clean Air Rule, covered parties will be required to reduce emissions by approximately 30% during that time frame.

- The proposed emission reduction rate falls in the middle of the range of science-based emission reduction rates developed by the IPCC. The Intergovernmental Panel on Climate Change (IPCC, 2014) has prepared high and low estimates on the amount of emission reductions that will be needed by mid-century in order to prevent global temperature increases greater than 2 degrees C. As shown in Table 5 below, Ecology's proposed emission reduction rate falls between the high and low estimates when making an apples-to-apples comparison. See Comment #11 for further details on this comparison.

Table 5: Comparison of Emission Reduction Rates Using Information in Table 6.3 of the Fifth Climate Assessment Report (IPCC, 2014)

	Emission Reduction Targets	Linear Rate (%/yr)	Exponential Rate (%/yr)
Clean Air Rule	50% below 1990 levels by 2050	-1.7	-2.4
IPCC – low (37% probability of temp increases > 2 degrees)	41% below 2010 levels by 2050	-1.3	-1.7
IPCC – high (12% probability of temp increases > 2 degrees)	72% below 2010 levels by 2050	-2.2	-4.0

- The proposed rate will support efforts to achieve the current statewide emission reduction limits for 2035 that are specified in RCW 70.235.020. Under the Clean Air Rule, GHG emissions from covered parties will be @30% below their 2012-2014 emission baseline. Covered parties will have reduced their share of statewide emissions by more than 25% below their 1990 levels.

Table 6: Comparison of Estimated Annual Emissions for Covered Parties Under Regulatory Constraints

	Projected Annual Emissions		Estimated Pro-Rated Annual Emissions for **Covered Parties** Under Proposed Rule and Current Statutes	
	Washington Emitters[1]	Covered Party[2]	CAR Rule[3]	RCW 70.235.020[4]
1990	88.4	55.7		
2005	98.2	61.8		
2015	99.1	62.4		
2020	99.6	62.7	59.8	55.7
2025	100.2	63.1	54.7	
2030	102	64.2	49.6	
2035	104.9	66.1	44.4	46.4
2040	108.2	68.1	44.4	
2045	111.7	70.3	44.4	
2050	115	72.4	44.4	27.8

1. Projected annual statewide GHG emissions were obtained from Appendix D of Leidos (2013).
2. Covered party emissions are assumed to be 2/3 of statewide GHG emissions (per Ecology statements at July 14 hearing).
3. Estimated annual emissions under the proposed rule are based on Tables 1 and 2 in Ecology (2016c)
4. Estimated emission limits under RCW 70.235.020 equal the 1990 emissions for covered parties (55.7 MMT CO2e/yr) multiplied by statutory reduction requirements..

- The proposed emission reduction rate is reasonable given that Washington's GHG emissions are lower relative to emissions from many other states and economies. Washington's greenhouse gas footprint is smaller than most states[16]. While I do not believe current efficiencies should alter the overall reduction goal for Washington[17], I believe it is an appropriate consideration when selecting the "rate" at which Washington achieves that goal.

- Covered parties should be able to comply with the proposed rate using current technologies with low or negative costs. Covered parties will be required to reduce their GHG emissions by approximately 30% between 2017 and 2035. Nordhaus (2013) has estimated that global emissions can be reduced by 15% using technologies that save money (through efficiency) and an addition 15% using technologies that represent less than 0.5% of income. There are also numerous examples where

[16] The Energy Information Agency reported that Washington was the ninth-ranked state in terms of the average per capita energy-related carbon emissions (10.5 MT CO2 per person vs 16.7 MT CO2 per person for a national average). The EIA also reported that Washington was the seventh-ranked state in terms carbon intensity of the economy (193 MT of energy-related CO2 per chained 2009 million dollars of GDP vs national average of 336).

[17] RCW 70.235.020 refers to Washington doing its part to reach global stabilization goals. I cannot understand a scenario where doing our part means do less than everyone else particularly when you consider that western societies have emitted a disproportionate share of greenhouse gases presently in the atmosphere.

environmental regulations have spurred innovations that have allowed companies to achieve the necessary reductions at lower costs and/or shorter timeframes (See Ambec et al. (2011) and Hodges, H. (1997)). One example is the Federal Clean Air Act Amendments. The 1990 amendments established a new program to reduce sulfur and nitrogen emissions from large power plants. Many people involved in the 1990 reauthorization process viewed the acid rain provisions as a test run for measures that could be applied more broadly to combat climate change. The Acid Rain Program has been a huge success. According to EPA performance statistics, sulfur and nitrogen emissions fell by almost 80% between 1990 and 2014. Annual reductions averaged slightly more than 3%/year. Actual industry compliance costs have been significantly lower than industry estimates being used to lobby against the legislation and subsequent EPA rules.

- The proposed GHG emission reduction rate is steep enough to encourage innovation and cost reductions through economies of scale, but not so steep that it will encourage short-term mitigation choices that complicate actions to utilize break-through innovations in the future. Dr. Jeffery Sachs is a Columbia University economist who led the Deep Carbonization Pathways Project (SDSN/IDDRI, 2014)[18]. In an interview with the New York Times (Gillis, 2015), Dr. Sachs expressed his view that current technologies are good enough to get started on reducing global GHG emissions. He also expressed the opinion (shared by other climate experts) that current technologies are probably not good enough to finish the transition from fossil fuels to renewable energy sources that will be needed to prevent global temperature increases greater than 2 degrees C. By adopting the proposed emission reduction requirements, Ecology can help to accelerate innovation as opposed to "slip-streaming"[19] behind it.

- Developing and adopting a higher GHG emission reduction rate would delay emission reductions and increase compliance costs. At this point in the rulemaking process, adopting a higher emission reduction rate would be a substantive change to the proposed rule under the Administrative Procedures Act. Consequently, Ecology would almost certainly need to re-propose the Clean Air Rule to adopt a higher rate. This would further delay rule implementation for a period that could extend for a year (or more). The delays in emission reductions would partially counter the larger emission reductions associated with implementing a rule with a higher emission reduction rate. Implementation delays would also increase overall compliance costs (IPCC, 2014; Raupach, et al, 2011). Such a delay is also inconsistent with the CLEW conclusions.[20]

Recommended Actions to Address Comment #7

- Ecology should finalize the proposed rule and begin implementing the new measures to reduce GHG emissions by 1.67%/year.

[18] The Deep Decarbonization Pathways Project was an international effort formed to develop a detailed roadmap for a worldwide transition to clean energy.

[19] Slipstreaming is riding behind another cyclist to save energy.

[20] The CLEW concluded that "...[a]ction needs to start soon to allow the time needed for more gradual changes. Washington must reduce carbon emissions in the most cost-effective way possible, and the longer we wait, the more expensive the carbon reductions necessary to reach a safe level will be. Thus it is in the economic interest of Washingtonians to act now..."(CLEW, 2014, p.12)

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Periodic Review of the Clean Air Rule

"Perhaps the future ain't what it used to be."

Paul Krugman (Nobel Prize Economist and Author)

Comment #8

- The Clean Air Rule is a significant step forward, but it should not be viewed as the last or only step. Consequently, I strongly support Ecology's decision to periodically review the program established by the Clean Air Rule. I also urge the Department to provide greater clarity on (1) the goals and objectives for such reviews and (2) the Ecology actions that may, as appropriate, be taken to strengthen the CAR in response to review findings.

Background

Successful organizations adapt and adjust to new information and operating experience. These adjustments can occur on an ad hoc basis, but improvements generally flow more easily when organizations think ahead and establish a general review framework. This requires organizational support and mechanisms for efficiently and effectively considering new information and ideas.

Effective long-term responses to climate change will require periodic review and tightening of requirements. Consequently, I support Ecology proposal to periodically review the program established by the Clean Air Rule.

I also recommend that Ecology slightly expand WAC 173-442-320(1) in order to provide a few details on (1) the goals and objectives for such reviews, (2) the Ecology actions (if any) that might be taken in response to review findings, and (3) timing and coordination with other evaluations and reviews. The lack of clarity in paragraph (1) stands in stark contrast to the language in paragraph (2) which briefly discusses suspending, altering or repealing some or all rule requirements following a comparison with other programs.

I believe that Ecology can provide a sufficient amount of clarity with two additional sentences that would clarify (1) goals and objectives of the program review ("…ensure that covered parties continue to make emission reductions that represent a fair share contribution to achieving statewide emission reduction goals and objectives…"), (2) that Ecology may revise the rule in response to review findings and (3) the timing and coordination with other evaluations and reviews ("…coordinate the timing of the review process with the consultation and legislative report required under RCW 70.235.040…"). My suggested language:

> (1) Ecology will periodically review the program established by this chapter. As a result of this review, Ecology may suspend, alter or repeal some or all of the rule requirements if Ecology determines new or modified requirements are needed to ensure that covered parties continue to make emission reductions that represent a fair share contribution to achieving statewide GHG emission reduction goals and objectives. Ecology will coordinate the timing of this review process with the consultation and legislative report required under RCW 70.235.040.

There are several reasons to support this recommendation.

- Establishing a clearly-defined rule review process would be consistent with review procedures included in the Paris Climate Agreement. The December 2015 climate agreement requires countries

to evaluate progress meeting their emission reduction commitments and updating those commitments on a five-year review cycle.[21]

- A clearly-defined rule review process can be integrated with other required review processes. RCW 70.235.040 requires Ecology to consult with the UW Climate Impacts Group within eighteen months of each IPCC climate assessment report. Based on that consultation, Ecology is required to submit a report and recommendations to the Legislature regarding whether the GHG emissions reductions required under RCW 70.235.020 need to be updated.

- A clearly-defined rule review process will allow Ecology to establish a clear linkage between scientific reviews and regulatory actions in response to new scientific information on GHG emissions and climate change. Scientific information on climate change is constantly evolving. Otto et al. (2015) proposed an adaptive management approach that embraces scientific uncertainty in climate policy responses. In their opinion, climate policy makers could use this type of approach to learn from trial and error at low costs using an "anti-fragile"[22] approach.

- A clearly-defined review process will promote continuous improvement in a transparent and predictable manner. The world has a long way to go to minimize adverse climate impacts. The Clean Air Rule is a key part of the state's climate response, but it will need to be strengthened over time. Ecology can improve the chances that those steps will actually be taken in a timely and cost-efficient manner by establishing a clear and predictable review process.

- "Superforecasters" regularly update their forecasts. Predicting future outcomes is a key challenge associated with designing regulatory responses on climate change. Two recent books (Tetlock and Gardner (2015) and Silver (2012)) have examined features that separate good predictions from poor ones. Both authors found that good forecasting involves regular updates based on new information.

- A clearly-defined review process is consistent with other Ecology and EPA regulatory programs. Several Ecology programs have established processes to review and, as appropriate, update agency rules (See Table 8 below). Section 108(c) of the Clean Air Act states that "…[t]he Administrator shall from time to time review, and, as appropriate, modify, and reissue any [air quality] criteria or information on control techniques issued pursuant to this section. "

- A clearly-defined review process will help to address some of the public skepticism on Ecology's commitments to future review. Several people testifying at the July 14th hearing appeared to be skeptical that Ecology will consider future rule revisions based on new scientific information. While a clearly-defined process will not reduce concerns that the proposed rate is at odds with current science, a clearly-defined process/commitment may allay fears that Ecology will not consider new scientific information in the future.

[21] The agreement states that "…[e]ach Party shall communicate a nationally determined contribution every five years in accordance with decision I/CP.21 and relevant decisions by the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement and be informed by the outcomes of the global stocktake referred to in Article 14…"

[22] Learning from trial and error is an integral part of such an anti-fragile strategy. This allows for evolving knowledge to be incorporated at low costs. When referring to "anti-fragile" strategies, Otto et al. mean that such strategies can successfully deal with a wide range of uncertainties, including scientific, economic and political risks.

Recommended Actions to Address Comment #8

- Ecology should revise WAC 173-442-320 (1) to define the timing and scope of the rule review process. My suggested revisions to the proposed rule language:

> (1) Ecology will periodically review the program established by this chapter. As a result of this review, Ecology may suspend, alter or repeal some or all of the rule requirements if Ecology determines new or modified requirements are needed to ensure that covered parties continue to make emission reductions that represent a fair share contribution to achieving statewide GHG emission reduction goals and objectives. Ecology will coordinate the timing of this review process with the consultation and legislative report required under RCW 70.235.040.

Table 7: Examples of Periodic Review Provisions in Other Ecology Laws and Regulations

Agency/Program	Statute	Regulation
Ecology/Toxics Cleanup Program	RCW 70:105D 030(2)(e) requires Ecology to "…[p]ublish and periodically update minimum clean-up standards for remedial actions…"	WAC 173-340-702(11) states that "…[t]he department shall review and, as appropriate, update WAC 173-340-700 through 173-340-760 at least once every five years.
Ecology/Water Quality Program	The Federal Clean Water Act requires states to review federally-approved water quality standards every three years.	WAC 173-201A-010(3) states that "…[t]his chapter will be reviewed periodically by the department and appropriate revisions will be undertaken.
Ecology/Toxics Cleanup Program	The Federal Clean Water Act requires states to review federally-approved water quality standards every three years.	WAC 173-204-130(6) states "…[t]he department shall conduct an annual review of this chapter, and modify its provisions every three years, or as necessary.

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Performance Metrics

"All measures suck and they all suck in their own way"

Angela Duckworth

Comment #9

- Ecology should use multiple performance metrics to evaluate the effectiveness of the Clean Air Rule. Given current scientific information, it is important that Ecology consider cumulative GHG emissions when evaluating the effectiveness of the Clean Air Rule and other mitigation measures.

Background

The IPCC discussed the need for monitoring progress on climate actions and the importance of using multiple performance metrics:

> *The choice of emission metric and time horizon depends on type of application and policy context; hence, no single metric is optimal for all policy goals. All metrics have shortcomings, and choices contain value judgments, such as the climate effect considered and the weighting of effects over time (which explicitly or implicitly discounts impacts over time), the climate policy goal and the degree to which metrics incorporate economic or only physical considerations. There are significant uncertainties related to metrics, and the magnitudes of the uncertainties differ across metric type and time horizon. In general, the uncertainty increases for metrics along the cause–effect chain from emission to effects.* ***(IPCC, 2014, p.)***

Chapter 70.235 RCW (Limiting Greenhouse Gas Emissions) establishes statewide emission reduction requirements for Washington State that are measured in terms of annual GHG emissions. This measure is an important, but incomplete, performance metric for evaluating the Clean Air Rule and other steps being taken to reduce climate impacts. Ecology should also use cumulative GHG emissions to evaluate progress on reducing GHG emissions. The rationale for this recommendation includes:

- Using cumulative emissions to evaluate the Clean Air Rule is consistent with current scientific information. The IPCC (2014), the NRC (2011), Raupach et al. (2011 and 2014), Otto et al. (2015) and other climate scientists have concluded that cumulative emissions of CO2 will largely determine global mean surface warming by the late 21st and beyond. Consequently, it is an important performance metric that can inform decisions on the reductions of annual GHG emissions that will be needed to prevent global temperature increases above 2 degrees C.

- Using cumulative emissions to evaluate the Clean Air Rule facilitates consideration of both the amount of emission reductions and the timing of those reductions. Most current climate models represent complicated versions of simple stock-flow models. With these models, in-flows (GHG emissions) and outflows (absorption by oceans and other sinks) are used to estimate the accumulation of atmospheric GHG quantities (stock) and changes in global temperatures. Consideration of both stock and flows will facilitate a more robust characterization of climate challenges and solutions. For example, there may be several alternate approaches that could be used to comply with the 2050

emissions reduction limit of 50% below 1990 levels. Those alternatives could be very different when evaluated in terms of cumulative emissions.[23]

- Other environmental organizations are beginning to incorporate cumulative GHG emissions into the performance metrics used to evaluate progress on this issue. Several organizations are beginning to include cumulative GHG emissions among their performance metrics (such as the United Nations, Climate Interactive and the World Resources Institute (WRI)). The California Air Resources Board (2014) discussed cumulative or total GHG emissions and recognized that different paths to California's 2050 reduction goal could have very different climate impacts. CARB concluded that "…[t]ackling global warming requires us to reduce and minimize total emissions, not just reach stated targets…" (p. 62).

- The cumulative emissions metric will supplement current agency performance metrics that focus on annual GHG emission reduction. Ecology, Results Washington and other state agencies currently use a wide range of direct (e.g., annual GHG emissions) and indirect performance measures (e.g. building efficiency). Cumulative GHG emissions will provide an additional perspective that can help to inform future agency policy choices.

Recommended Actions to Address Comment #9

- Ecology should use a broad set of performance metrics when evaluating the Clean Air Rule.

- Ecology, the Governor's Office and other state agencies have established a wide range of performance measures. The current measures provide a solid foundation for evaluating the effectiveness of the Clean Air Rule. I recommend that Ecology add cumulative GHG emissions/emissions reductions to the current list of performance measures.

- Ecology should also consider tracking GHG emissions on a per capita[24]. This metric is easily calculated using OFM population numbers and is currently being used by several environmental organizations throughout the world. This metric would help to characterize the carbon footprint of a growing Washington population.

- I recommend that Ecology develop some type of performance measure scorecard that consolidates the various GHG-related performance measures (including Results Washington, OFM, Air Quality Program measures) in one place.[25] This consolidation would allow the public to more easily track the status and trends of emissions reductions. This in turn would facilitate more effective participation in future rule reviews and revision processes. I imagine that the Air Quality Program already prepares such a scorecard for internal audiences.

[23] This is similar to the situation where someone is filling a bathtub with water. If one is evaluating whether the tub will overflow, it is important to know both the rate of water entering the tub (inflow) and the amount of water that has already accumulated in the tub (stock).

[24] The Energy Information Administration currently tracks state energy-related carbon dioxide emissions per capita and per state GDP.

[25] I readily acknowledge I am not familiar with all parts of the Ecology website. Consequently, Ecology may already provide this type of outward-facing performance scorecard.

Future Revisions to the GHG Emission Reduction Rate

"You don't just accidently show up in the World Series."

Derek Jeter (former New York Yankee shortstop)

Comment #10

- Ecology should establish a clear, predictable and transparent framework for evaluating future updates to the initial emission reduction rate.

Background

Several people who testified at the July 14th public hearing in Olympia expressed the opinion that Ecology's proposed emission reduction rate was not steep enough. They urged Ecology to strengthen the current proposal in 2016. Many of these commenters appeared to be concerned that Ecology would not take steps in the future to review and strengthen the emission reduction rate.

I believe that Ecology should establish a clear, predictable and transparent framework for evaluating future updates to the initial GHG emission reduction rate. This would have several important benefits:

- Support for Immediate Focus on Implementation. Ecology can reinforce that the immediate top priority rule implementation by creating a clear expectation on future reviews. Based on my experience, people are much more willing to make implementation decisions if they know there are opportunities to learn and modify those decisions based on implementation experience.

- Program Efficiency. In response to a question on why he was such a great hockey player, Wayne Gretsky said "I always skate to where the puck is going to be". By establishing a framework that includes decision factors, Ecology can gradually collect information that is relevant to future decisions.

- Responsiveness. Establishing a clear framework would provide a visible and pragmatic response to public concerns.

In my opinion, the framework needs to include four main elements.

1. Clear commitment to periodically review and, as appropriate, update the Clean Air Rule. Ecology has proposed to periodically review the Clean Air Rule. As discussed in Comment #8, I recommend that Ecology provide greater clarity on the purpose and timing of such reviews.

2. Clear performance metrics for evaluating progress on reducing greenhouse gas emissions in Washington. Ecology and the Governor's Office currently have several performance measures used to evaluate progress on climate actions. As discussed in Comment #9, I recommend that Ecology also use cumulative GHG emissions as a performance metric when evaluating the Clean Air Rule.

3. Clear framing of central rulemaking questions and factors that are important in answering those questions. Ecology has done an outstanding job on this rulemaking, but I believe there is one area that could be improved in the future. I believe that Ecology could improve future deliberations on the Clean Air Rule if the supporting documents explain the issues being considered by Ecology ("the whats") and information on key factors and rationale for important changes to the Clean Air Rule ("the whys").

My comment on trying to understand the "whys" of policy choices is shaped by my rulemaking experience and the book "The Environmental Protection Agency: Asking the Wrong Questions from Nixon to Clinton" (Landy et al. 1994). One of the major premises in the book is that agencies have an important civic education responsibility:

> *"...public servants have a major educational responsibility. They cannot, and ought not try, to tell citizens what to think. But, they must make use of their considerable stature and expertise to frame questions so that public debate can be made coherent and intelligible. They must tease out the essential social and ethical issues from the welter of scientific data and legal formalisms in which those issues are enveloped. " (Landy et al. (1994), p. 3)*

I believe that Ecology did a good job of identifying issues and rule-related questions early in the current rulemaking process. These helped to frame discussions at the scoping meetings and webinars. I believe this approach was very helpful in terms of focusing people's attention on the key tactical issues that Ecology was grappling with as it designed the new rule.

Ecology did not, in my opinion, "tease out" the underlying scientific, economic and administrative dimensions to these rulemaking questions. For example, Ecology essentially asked the public "how rapidly should sources be required to reduce their GHG emissions" or "what emission reduction rate should Ecology incorporate into the Clean Air Rule?" According to Landy et al., this is the wrong type of question for government agencies to be asking. In order to promote civic education and public dialogue, they recommend that agencies frame questions in ways that capture the complexity of the issue at hand. For example, the emission reduction rate question could have been framed as follows:

> *How rapidly should Washington sources be required to reduce their GHG emissions given:*
>
> - *Current scientific estimates on the rate of emission reductions required to prevent global temperature greater than 2 degrees centigrade and the scientific uncertainties associated with those estimates.*
> - *Climate change is a global problem and Washington's emissions are a very small percentage of total global emissions.*
> - *Current cost estimates on measures to reduce GHG emissions, the costs of inaction and the uncertainties surrounding those estimates.*
> - *Ecology's current statutory authority;*
> - *Efforts by other state, federal and international agencies and organizations to reduce GHG.*

I understand that framing strategic questions and preparing additional information materials takes time that is always in short supply during rulemaking processes. On the other hand, I have found that taking the time to think about how to frame rulemaking questions can have a positive effect (both short- and long-term) on the agency's deliberative processes, public dialogue and the nature of public comments.

4. Clear criteria for evaluating whether and how to update the GHG emission reduction rate. I believe that Ecology can promote more effective discussion on thorny issues like the GHG emission reduction rate by defining (and getting feedback) on important decision factors or criteria for judging alternative proposals. Here are my suggestions on factors and criteria that Ecology might consider in the future when evaluating updates to the initial GHG emission reduction rate.

   - The emission reduction rate should be consistent with long-term climate goals.

- The emission reduction rate should be consistent with current scientific information on the emission reductions needed to prevent serious climate impacts.
- The emission reduction rate should be steep enough to produce meaningful reductions in cumulative emissions.
- The emission reduction rate should produce GHG emission reductions that represent a fair share contribution to global efforts to prevent serious climate threats.
- The emission reduction rate should be consistent with emission reduction targets established by the Washington Legislature, United States and other leading state programs.
- The emission reduction rate should be consistent with other Ecology risk management policies.
- The emission reduction rate should support and be consistent with state clean energy goals.[26, 27, 28]
- The emission reduction rate should be steep enough to spur technological innovations and cost reductions through economies of scale.
- The emission reduction rate should not be so steep that it encourages short-term mitigation choices that complicate future actions that capitalize on technological innovations.[29]

Recommended Actions to Address Comment #10

- Ecology should revised WAC 173-442-320(1) to create clear expectations for periodic rule reviews.
- Ecology should frame rule review questions that highlight the complexity of rule issues and identify the factors that Ecology considers important considerations in reaching decisions on those issues.

[26] Many researchers have observed the clean energy and GHG emission reductions are closely intertwined. A transition to clean energy sources is also a key feature of strategies to prevent global temperature increases greater than 2 degrees centigrade (See Jacobson et al. (2014) and Williams et al. (2014)). Governor Inslee and the governors from sixteen other states recently announced the "Governor's Accord for a New Energy Future". The 17 governors agreed to work together to promote the transition to cleaner energy sources.

[27] Mark Jacobson and his colleagues at Stanford University have developed a 50 state strategy to transform the United States to renewable energy (Jacobson et al., 2014). Their proposal lays out a roadmap for replacing coal, oil and natural gas with wind, water and solar energy by 2050. The Washington-specific proposal envisions a 2050 energy mix that includes hydroelectric (35.4% of energy needs), onshore wind (35%), offshore wind (13%) and solar photovoltaic (PV) plants (10.7%). Jacobson et al. estimate that implementation of the proposed roadmap would create over 63,000 40-year jobs in Washington (jobs where a person is employed for 40 consecutive years) and that these new jobs would exceed those lost in the transition from fossil fuels. They also estimate many other benefits for the state including avoided air pollution deaths, reduced mortality and illness costs, over $5,000/person in annual energy, health and climate savings and a small reduction in annual energy costs for individuals (The Stanford team estimates that a small increase in state electricity costs would be balanced by energy savings).

[28] Williams et al. (2014) developed a roadmap of the United States to transition to cleaner energy sources. They concluded that "...it is technically feasible to reduce GHG emissions 80% below 1990 levels by 2050..." (p xi).

[29] The International Energy Agency has warned that if action to reduce CO2 emissions is not taken before 2017, all the allowable [to keep global warming below 2 degrees C] would be locked in by the energy infrastructure existing at that time...(World Energy Outlook, 2012)

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Scientific Bases for Rate of Greenhouse Gas Emission Reductions

"But what if we are wrong? Thinking about the present as if it were the past."

Title of Book by Chuck Klosterman

Comment #11

- Updated GHG emission reduction rates should be consistent with current scientific information on the emission reductions needed to prevent serious climate impacts.

Background

Ecology proposed that covered parties must annually reduce their GHG emissions by 1.67% of their baseline GHG emissions. Earlier Ecology evaluations indicate that the proposed rate may produce a 50% reduction below 1990 levels by 2050 (as required by RCW 70.235.020(1)(a)(iii)). This statutory provision was adopted in 2008 and Ecology (2014) has acknowledged the need to update the statutory targets in order to reflect more recent scientific information:

> *Washington State's existing statutory limits should be adjusted to better reflect the current science. The limits need to be more aggressive in order for Washington to do its part to address climate risks and to align our limits with other jurisdictions that are taking responsibility to address these risks. Several United Nations member countries - including the United States government, several states, and local jurisdictions - are actively addressing climate change, and have adopted or pledged more stringent greenhouse gas emissions targets than Washington State.* ***(Ecology, 2014, p. vi)***

There have been many scientific studies and reports completed since 2008. Here are several examples:

- Intergovernmental Panel on Climate Change. IPCC (2014) completed its' fifth climate assessment report in 2014. Table 6.3 of Work Group III report indicates that stabilizing GHG concentrations between 430 and 480 ppm CO2e will require reductions in annual GHG emissions of -72% and -41% by 2050. Even deeper reductions will be required between 2050 and 2100. The IPCC estimated that such reductions would lower the probability of global temperature increases exceeding 2 degrees C to 12% (high end of emission reduction range) and 37% (low end of emission reduction range.
- National Research Council. (NRC, 2011) evaluated different climate stabilization targets. Although the report does not include recommendations, the review committee reached several important conclusions relevant to selecting an emission reduction rate: (1) stabilization of carbon dioxide concentrations at any selected target level would require reduction in total emissions of at least 80 percent (relative to any peak emission level); (2) carbon emission reductions of 50% do not lead to long-term stabilization of carbon dioxide (p. 63); and (3) an emission reduction rate of 3.5% per year between 2020 and 2040 is consistent with preventing average global temperature increases greater than 2 degrees C.
- Massachusetts Institute of Technology/Climate Interactive. Sternman et al. (2015) have estimated US emission reduction rates of 4% to 5%/year will be needed to prevent global temperature increases greater than 2 degrees C.
- Other International Research Teams. Several teams of international climate experts (Raupach et al, 2014; Meinshausen et al, 2011) have concluded that emission reduction rates higher than the proposed Ecology rate will be needed to prevent global temperature increases greater than 2 degrees C.
- California Air Resources Board. CARB (2014) reviewed the current scientific information and concluded that a GHG emission reduction rate of 5.2%/year will be needed from 2020 to 2050 to achieve California's climate goals (CARB, 2014).

Comparisons between Ecology's proposal and scientifically derived annual emission reduction rates are complicated by at least two factors.

- Linear vs Exponential Reduction Rates. Covered parties must reduce their emissions by a set "amount" each year (1.7% of baseline emissions). This produces a linear decline in emissions. Most of emission reduction rates in the scientific evaluations described above appear to be based on set "percentage" of annual emissions. This produces an exponential decline in overall emissions. The one exception to this approach appears to be the NRC (2011) analyses. Figure 2.6 on page 68 appears to reflect a linear reduction of 3.5%/year between 2020 and 2040.

- Baseline Years. Groups have used different baselines or starting points to calculate required reductions. As shown below, predicted reductions have been developed using at least 3 baseline years (1990, 2005 and 2010).

I have attempted to prepare an apples-to-apples comparison of annual emission reduction rates that takes into account those differences (See Table 8 below).[30] Based on this comparison, Ecology's proposal appears to fall near the lower end of the range of estimates from recent scientific reviews. This comparison highlights the need for common terminology and metrics and the importance of risk management decisions (See Comment #13 for additional discussion).

Historically, annual emissions have served as the primary metric for evaluating climate stabilization approaches. In recent years, the IPCC (2014), the NRC (2011), Raupach et al. (2011 and 2014), Otto et al. (2015) and other climate scientists have concluded that cumulative emissions of CO2 will largely determine global mean surface warming by the late 21st and beyond. The California Air Resources Board (2014) discussed cumulative or total GHG emissions and recognized that different paths to California's 2050 reduction goal could have very different climate impacts. CARB concluded that "…[t]ackling global warming requires us to reduce and minimize total emissions, not just reach stated targets…" (p. 62).

The proposed emission reduction rate will reduce in cumulative greenhouse gas emissions, but those reductions are much lower than the fair share reductions needed to stabilize GHG concentrations and global temperatures. Table ___ provides a comparison of estimated reductions in GHG emissions through 2050 for natural gas distributors under four emission reduction scenarios:

- Business as Usual (BAU). Emissions would increase by 0.75%/year.
- Proposed Clean Air Rule. Emissions are reduced by 1.67% of baseline emissions every year through 2035. Between 2035 and 2050, covered parties must take steps to maintain 2035 levels.
- PCC Higher Probability Alternative. Emissions are reduced by 2.2% of baseline emissions every year through 2050.
- 80/50 Alternative. Several states have established emission reduction goals based on reducing annual emissions in 2050 to 80% below emissions in 1990.

I estimate that Ecology's proposed emission reduction rate of 1.67%/year will reduce cumulative GHG emissions by 22% between 2017 and 2036 relative to cumulative emissions under the BAU scenario. Ecology could facilitate further reductions by (1) adopting a higher annual emission reduction rate and/or (2) extending the emission reduction requirements beyond 2035. For example, I estimate that requiring covered parties to reduce emissions by 2.2%/year through 2050 would produce a 44% reduction in cumulative emissions relative to the cumulative emissions predicted under the BAU scenario.

[30] The IPCC report and Paris Climate Treaty discuss the possibility that the 2 degree C temperature target should be lowered to 1.5 degrees C. Table 8 is based on 2 degrees C.

Table 8: Comparison of Ecology Proposed Emission Reduction Rate and Scientific Projections

	Target Baseline			Target Reductions		Required Annual Emission Reductions	
	Year	Annual Emission	Est 2017 Emission	Narrative	Target Annual Emissions	Difference (2017 - Target)	Annual Rate (Linear)	Annual Rate (Exponential)
		MMT CO2e/yr	MMT CO2e/yr		MMT CO2e/yr	MMT CO2e/yr	% baseline /yr	%/yr
Clean Air Rule Proposal	1990	88.4	99.3	50% below 1990 levels by 2050	44.2	55.1	-1.7%	-2.4%
ICPP - Low End Estimate (37% probability of temp increases > 2 degrees C)	2010	96.1	99.3	41% below 2010 levels by 2050	56.7	42.6	-1.3%	-1.7%
ICPP - High End Estimate (12% probability of temp increases > 2 degrees C)	2010	96.1	99.3	72% below 2010 levels by 2050	26.9	72.4	-2.2%	-4.0%
Natural Research Council							-3.5%	
MIT/Climate Interactive	2005	98.2	99.3	80% below 2005 levels by 2050	27.5	71.8	-2.2%	-3.9%
Raupach et al. (50% probability of temp. increases > 2 degrees C)	2010						>-3.5%	>-5%
Raupach et al. (20% probability of temp. increases > 2 degrees C)	2010						>-8%	>-14%

Table 9: Comparison of Cumulative GHG Emission Reductions (2017 – 2050) Achieved Under Alternate Policy Scenarios (MT of CO2e) for Natural Gas Distributors

	BAU	Proposed CAR	IPCC – Higher Probability	80% by 2050
Annual Emissions 2017	7,134,371	7,134,371	7,134,371	7,134,371
Annual Emissions 2036	8,161,438	4,994,061	4,309,160	3,881,098
% Change - Annual Emissions (2036 relative to BAU)	0%	-39%	-50%	-53%
Cumulative Emissions (2017 through 2036)	153,326,329	120,214,161	112,865,749	110,154,688
% Change - Cumulative Emissions (2035 relative to BAU)	0%	-22%	-26%	-28%
Annual Emissions - 2050	9,129,406	3,210,469	1,954,818	1,483,949
% Change - Annual Emissions (2050 relative to BAU)	0%	-55%	-79%	-84%
Cumulative Emissions (2017 through 2050)	275,134,008	175,862,272	112,865,749	110,154,688
% Change - Cumulative Emissions (2050 relative to BAU)	0%	-36%	-59%	-60%

Raupach et al. (2011) reviewed available information on cumulative carbon dioxide emissions and concluded that global emissions would need to be reduced by 5%/year in order to have a 50% of preventing global temperature increases greater than 2 degrees C:

> *"...Considering the climate change effects of CO_2 only, the cumulative emission quota to stay below 2 degrees of warming with 50% probability is about 1000 GtC from 1750, or 460 GtC from 2010 (because about 540 GtC has been emitted between 1750 and 2010). The corresponding quota time scale Q/Fis 50 years. Considering the climate change effects of all GHGs, quota time scales are shorter than for CO_2 only. The required global decarbonisation rate is over 5% per year in the long-term exponential-decline phase of mitigation..." **(Raupach et al., 2011, p. 2)***

Recommended Actions to Address Comment #11

- Ecology should finalize the proposed rule and begin implementing the new measures to reduce GHG emissions by 1.67%/year.

- Ecology should begin to lay the groundwork to support an evaluation of future changes to the emission reduction rate. Ecology should establish a clear process for periodically reviewing and updating the Clean Air Rule (See Comment #8 and 10). Ecology should also begin to prepare interested citizens and the regulated community to participate in that process by posting information on the IPCC report and conclusions on the Ecology website.

- Ecology should continue to work with the UW Climate Impacts Group to review the scientific foundation underlying the GHG emission reduction rate in the final Clean Air Rule. RCW 70.235.040 requires Ecology to consult with the UW Climate Impacts Group within eighteen months of each IPCC climate assessment report. Although the timing of the consultation on the 5th IPCC report did not fit with the current rulemaking, but this review/consultation will provide a solid foundation for future rule updates.

Consistency With Other Greenhouse Gas Reduction Targets & Rates

"Foolish consistency is the hobgoblin of small minds."

Winston Churchill

Comment #12

- Updated emission reduction rates should be consistent with emission reduction targets established by the Washington Legislature, United States and other leading state programs.

Background

Ecology has focused on achieving the current emission reduction requirements in RCW 70.235.020. The proposed rule is a step forward in terms of comply with the emission reduction targets for 2020, 2035 and 2050. RCW 70.235.020(1)(a)(iii) also states that Washington "…will do its part to reach global climate stabilization levels…".

In the future, Ecology should consider the emission reductions reflected in the United States "Intended Nationally Determined Contribution" (INDC) when evaluating whether Washington is do its part to reach global stabilization levels. The United States' INDC is an economy wide target to reduce net GHG emissions 26 to 28% below 2005 and 80% below 2005 levels by 2050. As shown in Table 10, the US commitment reflects much deeper reductions than the numerical statewide emission limits in RCW 70.235.020.

Table 10: Comparison of Estimated Annual Emissions for Covered Parties Under Regulatory Constraints

	Projected Annual Emissions		Estimated Annual Emissions for Covered Parties Under Different Regulatory Constraints			
	Washington Emitters[1]	Covered Party[2]	CAR Rule[3]	RCW 70.235.020[4]	United States INDC[5]	80 by 50 Scenario[6]
1990	88.4	55.7				
2005	98.2	61.8				
2015	99.1	62.4				
2020	99.6	62.7	59.8	55.7		
2025	100.2	63.1	54.7		44.5	
2030	102	64.2	49.6			
2035	104.9	66.1	44.4	46.4		
2040	108.2	68.1	44.4			
2045	111.7	70.3	44.4			
2050	115	72.4	44.4	27.8	19.6	11.1

1. Projected annual statewide GHG emissions were obtained from Appendix D of Leidos (2013).
2. Covered party emissions are assumed to equal 2/3 of statewide GHG emissions
3. Estimated annual emissions under the proposed rule are based on Tables 1 and 2 in Ecology (2016__)
4. Estimated emission limits under RCW 70.235.020 equal the 1990 emissions for covered parties (55.7 MMT CO2e/yr) multiplied by statutory reduction requirements.
5. The United States INDC is described in _____.
6. Other leading states have established a goal of reducing GHG emissions to 80% below 1990 levels by 2050.

Second, Ecology should consider emission targets and rates established by other leading states (See Table 11 below). Several states have established a goal of achieving 2050 GHG emissions that are 80% lower than GHG emissions in 1990. Table 10 indicates that sources would need to achieve much deeper emission cuts if Washington adopted a similar policy.

Table 11: Greenhouse Reduction Targets Established by Other State Programs

State	Base Year	Emission Reduction Targets From Base Year						
		2010	2012	2020	2028	2030	2035	2050
California	1990			= 1990		40%		80%
Maine	1990	= 1990						
Maryland	2006 (1990)			25%				
Massachusetts	1990			25%				80%
New York	1990					40%		80%
Oregon	1990			10%				75%
Vermont	1990		25%		50%			50%
Washington	1990			= 1990			25%	50%[31]

Recommended Actions to Address Comment #12

- Ecology should consider emission reduction requirements established by other federal, state and local agencies when evaluating future revisions to the Clean Air Rule.

[31] RCW 70.235.020(1)(a)(iii) states "[b]y 2050, the state will do its part to reach global climate stabilization levels by reducing overall emission levels to fifty percent below 1990 levels, or seventy percent below the state's expected emissions that year."

Precaution and Scientific Uncertainty and Variability

"Science has the first word on everything and the last word on nothing."

Victor Hugo

Comment #13

- Updated GHG emission reduction rates should reflect policies that are consistent with other Ecology risk management choices.

Background

The central risk management issue underlying the proposed rule is the choice of an annual GHG emission reduction rate. When evaluating future rule updates, Ecology should fully consider the scientific uncertainties surrounding the interactions between GHG emissions, GHG levels in the atmosphere and global temperature increases. These uncertainties are widely recognized (IPCC, 2014; NRC, 2011; Raupach et al. 2011; Otto et al. 2015).

Uncertainty is not unique to climate issues and the Clean Air Rule. The vast majority of state and federal environmental laws recognize that it is often necessary to take action where there is some evidence of hazard, but before that evidence has reached the point that scientists would universally regard as conclusive. Precaution in the face of uncertain risks is particularly important when dealing with irreversible risks like climate change that have long latency periods.[32]

Ecology has adopted numerous regulations to prevent future harm where the Department has had to explicitly (or implicitly) decide how do manage scientific uncertainty. The essence of those decisions is a choice on how to balance the potential for false positives (predict harm when none exists) and false negatives (predict no harm when harm exists). Ecology has typically made risk management decisions that reflect a "better safe than sorry approach" by attempting to minimize false negatives.

Ecology's decision to develop the Clean Air Rule is consistent with the long list of precautionary regulations where Ecology and other agencies have decided "when" it is necessary to act to prevent serious environmental problems. Given the broad body of scientific information on climate change, it would be inconsistent with Ecology's statutory obligations to delay publishing this rule in the hope that science will provide more definitive answers to questions related to GHG emissions and climate impacts.

Once Ecology decided it was appropriate to take action, the agency had to decide "how much" action was necessary to prevent serious environmental problems. The selection of the annual GHG emission reduction rate is one of the most (if not the most) important risk management choices in terms of "how much" action should be taken.

Ecology's proposed emission reduction rate falls in between the high and low estimates developed by the IPCC (See Table 8) and appears to fall slightly below the 50th percentile. By selecting this rate, Ecology

[32] *Moreover, some risks are especially latent: Their adverse impacts will only occur a long time (perhaps many years) after the event that set the risk in motion. For example, a highway accident typically causes fatality (if at all) within seconds or minutes after the accident; but if there are any brain tumors caused by cell phone use, it might take years after the exposure to the cell phone before the tumors become manifest. The longer the latency period between cause and effect, then the earlier (relative to the adverse outcome) measures must be taken if they are to be effective in preventing the outcome. If we wait to observe the latent outcome, it can become too late to take preventive measures.* ***(Weiner, 2002, p. 1512)***

is essentially implementing an approach that reflects a 50-50 chance of achieving the reductions that represent the state's part to reach global stabilization levels.

The risk management choice of assigning roughly equal chances of over- and under-estimating the emission reduction rate is different than other Ecology regulations where the agency has placed a higher premium on avoiding false negatives. Table 12 provides several examples of other Ecology risk management decisions. In each of these examples, Ecology has based their decisions on upper bound estimates (e.g., standards based on protecting 90-99% of people exposed to hazardous chemicals) in order to avoid underestimating "how much" action is necessary to prevent serious environmental problems.

Table 12: Examples of EPA and Ecology Risk Management Choices

Standard	Statutory Requirement	Key Policy Issue	Summary of Risk Management Choice
Lead National Ambient Air Quality Standard (NAAQS)	... Protect public health with an adequate margin of safety (CAA §109).	Acceptable levels of lead in ambient air	EPA estimated that the revised lead standard would protect about 98 to 99% of children.
Ozone National Ambient Air Quality Standard (NAAQS)	... Protect public health with an adequate margin of safety (CAA §109).	Acceptable levels of ozone in ambient air	EPA estimated that a revised O3 standard with a level of 70 ppb would protect about 98 to 99% of children in urban study areas from experiencing two or more O3 induced FEV1 decrements > 15%.
MTCA Cleanup Regulation – Cleanup Levels for Carcinogens	MTCA states that cleanup standards must be "...at least as stringent as the cleanup standards under section 121 of the federal cleanup law, 42 U.S.C. Sec. 9621, and at least as stringent as all applicable state and federal laws, including health-based standards under state and federal law..."	Protective levels of carcinogens in soils, water and air.	Risk-based cleanup levels calculated using an Reasonable Maximum Exposure (RME) scenario based on the 95th percentile of the exposed population. Cancer slope factor value is the 95th upper confidence limit.
MTCA Cleanup Regulation – Cleanup Levels for Lead	Same as above.	Protective levels of lead in soils	The lead soil cleanup standard was based on preventing blood lead levels above 15 ug/dL in >99% of children exposed to lead-contaminated soils.

Not surprisingly, increasing the level of confidence (probability of success) that policies will achieve their intended results (e.g. prevent global temperatures greater than 2 degrees C) can have a large effect on required actions. For example, Table 8 provides a simple comparison based on summary information prepared by the IPCC (2014). This example shows that increasing the level of confidence from 50-50 to 90-10 difference translates into a roughly 30% difference in the emission reduction rate (1.67 vs 2.2). Raupach et al. (2011) evaluated this issue and reached a similar (but much more informed) conclusion:

> *"...[i]ncreasing the required probability of success in meeting the temperature target has a major effect on concentration and emission goals to meet given warming targets. In broad terms, increasing the required probability of success from 50% to 80% is equivalent to lowering the temperature target by about 0.7 degrees. In terms of the available cumulative emissions to meet a warming target of 2 degrees, the same increase (50% to 80% probability of success) reduces the cumulative GHG budget by a factor of 4, from 440 to 105 GtCeqEmis (Table S1), and decreases the quota time scale from 37*

years to an impossible 9 years. The combination of a 2 degree warming target with high probability of success is now unreachable ..." ***(Raupach et al. 2011, p. 2)***

Recommended Actions to Address Comment #13

- Ecology should continue to use a precautionary approach when evaluating climate policy choices.
- Ecology should place greater emphasis on avoiding false negatives when deciding whether and how to update the GHG emission rate.
- Ecology should think probabilistically when considering whether and how to update GHG emission reduction rate.

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Likely Net Benefits

"The most powerful force in the universe is compound interest"

Albert Einstein

Comment #14

- Ecology should consider the likely net benefits of future rule amendments to the Clean Air Rule.

Background

The Administrative Procedures Act (APA) establishes requirements for agencies proposing to adopt significant legislative rules. Among other requirements, agencies must prepare a cost/benefit analysis and least burdensome alternatives analysis. I enjoyed reading the analyses prepared for the Clean Air Rule (Ecology, 2016c) and found them to be well-written and well-thought-out. I greatly appreciate the additional details on emission reductions provided in the revised document.

When adopting significant legislative rules, agencies must "…[d]etermine 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…"

Ecology (2016c) evaluated the potential costs and benefits of the proposed rule and concluded:

> *"…based on a reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the proposed rule, that the benefits of the proposed rule are likely greater than the costs."* ***(Ecology, 2016c, p. 47)***

EPA (2015b) performed a similar analysis of the compliance costs and benefits of the Clean Power Plant Rule and calculated that the rule would have a large net benefit. For example, EPA calculated net benefits in 2030 ranged from $25 to $45 billion/year. EPA concluded:

> *…"[u]pon considering these limitations and uncertainties, it remains clear that the benefits of this final rule are substantial and far outweigh the costs…"* ***(EPA, 2015, p. ES-21)***

Dr. Robert Stavins (Harvard University economist) concluded that EPA had demonstrated that the Clean Power Plan Rule was cost-effective, but wondered whether it was efficient:

> *Cost effectiveness (achieving a given target at the lowest possible aggregate cost) is one thing, but economists – and possibly some other policy wonks – may wonder if the proposal is likely to be efficient (maximizing the difference between benefits and costs). This is a much higher mountain to climb, and a particularly challenging one for a regional, national, or sub-national climate-change policy, given the global commons nature of the problem.*

Dr. Myles Allen is a highly respected climate scientist who has written extensively on a wide range of climate issues. In a recent article, he also discussed the "traditional consumption maximizing approach to climate policy":

> *Under a traditional consumption-maximizing approach to climate policy, the benefits minus the costs of climate mitigation are maximized until the marginal abatement cost (MAC) of avoiding one more tonne of emissions is equal to the social cost of carbon (SCC), or the marginal harm done by emitting that tonne…".* ***(Allen, 2016, p. 684)***

EPA (2010) discusses the concepts of economic efficiency[33] and cost-effectiveness[34] in the EPA guidelines for preparing economic analyses. EPA concluded that both concepts are useful for framing discussions and comparing regulatory options.

As Ecology is aware, the Administrative Procedures Act does not require agencies to consider whether proposed rules are economically efficient (maximize the difference between benefits and costs). The APA also doesn't prohibit such analyses and Ecology's economic guidelines identify one situation where water management laws require consideration of net benefits:

> *A maximum net benefits analysis is only required for rule making related to water resource issues where water is being allocated among potential users and uses. The analysis is conducted by an economist to ensure that water is allocated to the highest valued beneficial uses and must address total costs and benefits to the people of the State of Washington. The costs must include opportunities lost. The alternatives available for this analysis are limited by existing water management laws.*[35]

From a policy standpoint, I believe it is reasonable to expect agencies to at least consider the net benefits of proposed rules. This is particularly true for rules like the Clean Air Rule and Clean Power Plan Rule given the large difference between estimated likely benefits and estimated likely costs.

With the two rules, the large differences between costs and benefits raises a question on whether the the two rules are economically efficient and consistent with a traditional consumption-maximizing approach to climate policy. To explore this question, I estimated the net likely benefits associated with the proposed greenhouse gas emission reduction rate and two alternatives:

- Proposed Clean Air Rule with reductions equal to 1.67% of the facility's baseline emissions through 2050;
- Proposed Clean Air Rule with reductions equal to 2.2% of the facility's baseline emissions through 2050:
- Proposed Clean Air Rule with reductions equal to 3.5% of the facility's baseline emissions through 2050.

My simple analysis is based on a hypothetical facility emitting 500,000 MT CO2e/year and implementation of on-site emission reduction projects. As shown in Table 13, higher emission reduction rates produced small increases in likely net benefits. While the differences probably fall within the margins of error, they suggest that modestly steeper emission reduction rates would produce greater net

[33] Economic efficiency can be defined as the maximization of social welfare. An efficient market is one that allows society to maximize the net present value (NPV) of benefits: the difference between a stream of social benefits and social costs over time. The efficient level of production is referred to as *Pareto optimal* because there is no way to rearrange production or reallocate goods in such a way that someone is better off without making someone else worse off in the process (p. 4-1)

[34] Efficiency of a policy option differs from its cost-effectiveness. A policy is cost-effective if it meets a given goal at least cost, but cost-effectiveness does not encompass an evaluation of whether that goal has been set appropriately to maximize social welfare. All efficient policies are cost-effective, but it is not necessarily true that all cost-effective policies are efficient. A policy is considered cost-effective when marginal abatement costs are equal across all polluters. (p 4.2)

[35] http://www.ecy.wa.gov/laws-rules/economics.html

benefits.[36]

Table 13: Net Likely Benefits for 2017-2035 with Three Annual Emission Reduction Rates (Hypothetical Facility with Baseline Emissions of 500,000 MT of CO2e/yr)

Annual Emission Reduction Rate	Compliance Costs (Low)	Compliance Costs (High)	SCC Benefits	Net Likely Benefits with Low Compliance Costs	Net Likely Benefits with High Compliance Costs
1.67%	$25,993,917	$64,419,707	$97,206,011	$71,212,094	$32,786,304
2.2%	34,243,483	84,864,285	$128,055,823	$93,812,339	$43,191,538
3.5%	54,478,269	135,011,363	$203,725,173	$149,246,903	$68,713,810

Recommended Actions to Address Comment #14

- Ecology should calculate and discuss the net likely benefits of future updates to the Clean Air Rule.
- Ecology should consider revising the standard framework for preparing economic analyses to incorporate calculations and discussions of likely net benefits of rule alternatives.

[36] I am not an economist, but I expect unit compliance costs would start to increase when emission reduction rates became sufficiently large.

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Wilson, Sam (ECY)

From: David Hunt <davidjameshunt@hotmail.com>
Sent: Saturday, July 09, 2016 5:16 PM
To: ECY RE AQComments
Subject: Clean Air Rules Comments

Please include my following comments in the Clean Air Rule hearing and comment record.

FR: David Hunt
615 W. 23rd Ave.
Spokane, WA 99203
(208) 660-8498 / davidjameshunt@hotmail.com

Emailed 7/9/2016

Thank you for the opportunity to comment on the proposed Clean Air Rule. I wish to begin by saying that I respect and appreciate Governor Inslee's commitment to the citizens of the state and the environment we all share. I also appreciate both Governor Inslee's and the WA Department of Ecology's (DOE) important leadership and hard work, on all of our behalf, in securing air quality for ourselves and future generations.

Prior to Judge Hill ordering carbon pollution reductions to "preserve, protect, and enhance the air quality for the current and future generations," (quoting the state Clean Air Act), Governor Inslee rightly stated "We are the first generation to feel the sting of climate change, and we are the last generation that can do something about it." I applaud those comments and commitment.

This truly IS the opportunity for Governor Inslee to direct the DOE to take the strong actions that are much needed, but to date missing in the recently re-released Clean Air Rule.

1. Governor Inslee and Ecology could ensure the rule would survive beyond his current administration and shield it from political whims by issuing it **under the authority of the court order**, rather than simply under his own executive authority. This would help remedy an improved, re-released rule's vulnerability to revocation by a future governor under their own executive authority.

2. The Governor's / Administration's appeal of the court order seeks to cut the youth plaintiffs that filed suit, out of the process. Ruling in favor of children suing the Department of Ecology for its failure to honor their right to a stable climate, Judge Hollis Hill said, "This is an urgent situation… these kids can't wait." (April, 2016.) The Rule must show greater commitment to current and future generations and their need for a livable climate. Governor Inslee, his administration, and the DOE should have no objection to this ruling.

Because of these first two items, I recommend that Governor Inslee withdraw the appeal, and re-issue improved carbon regulations order under the authority of the court ruling.

In essence, Governor Inslee and Ecology are compelled to order reductions that actually do what the law requires. This requires quantifiable, science-based limits. The best generally accepted science requires 8% annual reductions starting now.

However, the re-drafted Rule specifies carbon emission reductions of 1.7% per year on designated large polluters. Because the rule covers at most two-thirds of the state's carbon emissions, the overall state carbon pollution reduction is closer to 1%. Obviously, this falls severely short and essentially makes the rule completely ineffective in protecting the climate for future generations.

The DOE and administration have asserted that they can go no further in pollution reductions than specified in a 2008 state law. A State Attorney General's ruling, however states that the law requires no action by anyone, meaning that it does not limit action. Upon closer examination, the current draft rule by Ecology falls short of even cutting pollution to levels specified in the 2008 law.

The current rule encourages offsets and carbon trading in systems that span North America. In reality, this allows heavy polluters to continue to operate by buying offsets. This system is inherently flawed. Similar schemes have resulted in heavy polluting facilities to continue status-quo operating in many disadvantaged communities by buying "offsets" elsewhere. This is obviously not the intent of the plaintiffs, the judge, the Clean Air Act, the Governor, or the public. Enforcing actual, measurable carbon pollution reductions by emitters in Washington state is clearly the ONLY effective means of accomplishing carbon pollution reduction.

The Rule's definition of industrial combustion of biomass as carbon neutral is overly broad. Converting carbon sinks to carbon emissions is not carbon neutral.

Finally, under the Rule, 19 major polluters won't need to start limiting their pollution until 2020 or 2023. Current science indicates that, we need to start today with reductions of 8% per year. If these major polluters are allowed to keep polluting and delay until 2020, we need will be forced to revert to 15% per year - which would be disastrous to our air quality in the near term and to our economy in the long term.

In essence, the proposed 1.7% reductions, and the proposed schedule for some polluters to come under the Rule, simply will not meet legal, scientific, or human health needs. Again, quantifiable, scientific limits achieving 8% per year reductions, starting as soon as possible, for all significant polluters is necessary to meet the legal, scientific, economic, and human health requirements critical to accomplishing the job at hand.

I appreciate the opportunity to comment on the proposed rule and I also sincerely appreciate the Governor's leadership and the departments efforts to accomplish this significant and important task.

Sincerely,
David J Hunt

Wilson, Sam (ECY)

From: Deborah Reilly <deborah@drdesignstudio.com>
Sent: Wednesday, July 13, 2016 10:22 AM
To: ECY RE AQComments
Subject: Re: Te Clean Air Rule.

Dear Gov. Inslee,

I support those 19 people who are fasting for tougher clean air regulations. We need stronger not weaker regulations on carbon. I am 64 and I will not see the worst of what "WE" created. But my children and grand children will.
You would seriously consider voting for big business over our children future and their environment?

Sincerely,

Deborah Reilly
Vashon, WA. 98070

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Wilson, Sam (ECY)

From: sherpeterd@comcast.net
Sent: Friday, July 22, 2016 4:39 PM
To: ECY RE AQComments
Subject: comment on Dept. of Ecology clean air rule

I am one of the Seattle Raging Grannies who sat chained together in rocking chairs in the pouring rain nearly two years ago to protest the Department of Ecology's lack of action on fossil fuels. My three grandchildren were five years old, two years old, and less than a year old. They're seven, four, and two years old now and I'm more worried each day about the future they and other children—of all species!—are facing. June, 2016, was the fourteenth record-setting month in a row for global record heat.

You cannot, you must not kick this can down the road any longer. Although you've improved the rule over the first draft, it is still woefully insufficient to achieve the reductions in carbon emissions that are necessary to preserve the world that humankind and other current species evolved in. You must use current and best available science to set emissions reduction goals. Unfortunately, our state legislators are not doing their job of protecting citizens of Washington state. Therefore, we are relying on YOU to make the best possible efforts to craft the strongest rules now so we can reduce use of fossil fuels and transition to clean, renewable energy sources.

I don't have many more years of life left. I want to see that transition before I die.

Sincerely,

Deejah Sherman-Peterson
10818 27th Avenue NE
Seattle, WA 98125
206-363-4604

Wilson, Sam (ECY)

From: Denis Markian Wichar <deedub@webtv.net>
Sent: Thursday, July 14, 2016 4:51 PM
To: ECY RE AQComments
Subject: Clean Air Regulations

Washington's Clean Air Rule cannot be too strict. Proponents of strict regulation strive for clean pure air. Opponents therefore obviously prefer dirty toxic air. Or what would the compromise be? SOMEWHAT dirty & toxic air? Ridiculous, of course. I support Ecology as you formulate the strictest Science-based air regulations. Current & future generations rely on you to do that. You'll be on the correct & just side of history. Thank you.

Den Mark Wichar
711 W 25 St
Vancouver WA 98660

"We learn from history
that we don't learn from history."
--- Anglican Archbishop Desmond Mpilo Tutu

Wilson, Sam (ECY)

From: Gary Piazzon <piazzon@comcast.net>
Sent: Friday, July 22, 2016 1:36 PM
To: ECY RE AQComments
Subject: Comments for the Clean Air Rule Draft

We don't seem to having any luck with your comment page. Here are our comments:

Please follow Judge Hollis's oder to base the Clean Air rule on best available science. A 1% eduction is clearly inadequate when scientists like Dr James Hansen say 6-8% is necessary. It is an inconvenient apolitical reality which we must abide by if we are to honor our responsibilities to future generations and indeed life itself.

Dianna Deseck-Piazzon
dianna_piazzon@yahoo.com
PO Box 1523
Coupeville, WA 98239
360-678-5131

Wilson, Sam (ECY)

From: Diane Jacobs <dianejacobs2@icloud.com>
Sent: Tuesday, July 19, 2016 7:10 PM
To: ECY RE AQComments
Subject: climate change

You are the last generation of policy makers who can put us on a path to climate stability. Current science indicates 8% reduction of emissions is needed immediately!!!

Please improve the rule to include:
No double counting offsets;
Real reductions are needed, limit the use of offsets; Agricultural emissions should be covered; Vehicle emissions should be covered, like the diesel exhaust affecting neighborhoods around the Port of Seattle; Utilities should be held to the stronger requirements of the Clean Air Rule instead of the federal Clean Power Plan; And by not holding hearings in Seattle the voices of front line communities were excluded.

Thank you,
diane

Wilson, Sam (ECY)

From: Ellen D Madsen <edmadsen@earthlink.net>
Sent: Friday, July 15, 2016 7:01 PM
To: ECY RE AQComments
Subject: Clean Air Rule

I attended the Clean Air Rule hearing yesterday at the Red Lion & was surprised at how many people didn't seem to understand how our democracy works.

Yes! Ecology could be presenting a much better plan for for carbon reduction. Still I think the plan presented was the best possible within their legislative constraints. The problem isn't at Ecology but at what WE THE PEOPLE are determining with our votes for public office. Our Legislature didn't pass the Carbon Bill that would have allowed Ecology to do more.

Still I appreciate everyone who showed up to let our politicians know we're not satisfied & to give support for stricter controls from Ecology.

It was also apparent that people didn't understand the essential role of carbon reduction in our state. Business--power generation--is not our major battle unlike many US & world locations. We're OK w/a lower business output because of our efficient hydro & wind facilities. Thus the discrepancy in the chart lines. Our major challenge is transportation.

Tougher action on business is good, but transportation is where we need to concentrate in WA state. Hello Seattle.

Thanks.
Ellen Madsen

Wilson, Sam (ECY)

From: Ellen Skarin <leniskarin@gmail.com>
Sent: Wednesday, July 13, 2016 7:21 PM
To: ECY RE AQComments
Subject: Clean Air/Carbon emissions reduction rules

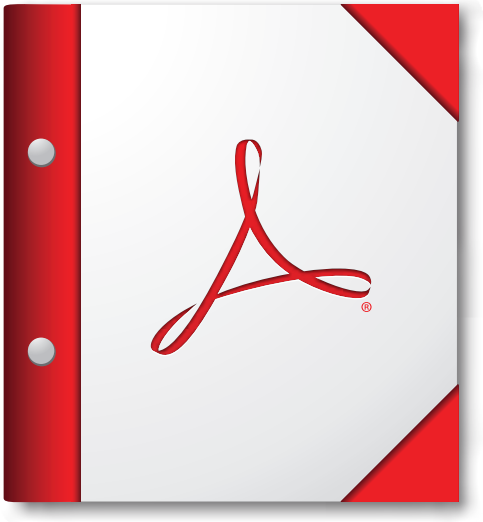
Dear Mr. Wilson and staff at Department of Ecology,

As a person of faith and a grandmother who has lived in Washington and raised a family here for 40 years, I am pleased that Washington is taking a leadership role in reducing carbon emissions. We all know the many dangers of escalating greenhouse gas emissions and I am certainly no expert on the best way to transition our economy to clean energy, but I applaud the effort made by the proposed rules.

However, I would urge you to make this rule more effective by establishing more aggressive emission reduction targets and by not allowing carbon offsets to come from sectors that are already covered by the cap. I also believe that it is possible to keep the integrity of a stronger cap by strengthening the rules that set aside pollution to allow for new growth. I am convinced that we are charged with stewardship of the environment and all of creation, and I hope you will make the strongest possible rules for reducing carbon emissions as quickly as possible.

Thank you,
Ellen Skarin
40739 Foulweather Bluff Rd NE
Hansville WA 98340

Sent from my iPad



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Wilson, Sam (ECY)

From: Grace Stahre <gstahre@gmail.com>
Sent: Saturday, July 16, 2016 4:39 PM
To: ECY RE AQComments
Subject: Please give us an effective clean air rule

concerning: Washington State Department of Ecology Clean Air Rule which should be putting a reasonable cap on green house gas emissions in WA.

There is no question that we have a responsibility to future generations to ensure their environment is viable.

We even have a court verdict saying this is so.

We are in dire straits. I look at my daughters and I know that I cannot promise them and their children a safe and secure future with the Clean Air Rule draft as it stands now. This is affecting who I am voting for on every level this fall, including the governorship.

Only one thing will change my mind.

- Meet the court mandated requirements
- Do not rely so much on offsets to meet any goals.
- Partner with environmental groups to meet and EXCEED what we need.
- Set an example for the nation. Period. We are wealthy, we can afford it, and we have run out of time.

Grace Stahre
1471 20th Ave
Seattle, WA 98122

Wilson, Sam (ECY)

From: Harriet Platts <seeker@seanet.com>
Sent: Tuesday, July 12, 2016 10:08 PM
To: ECY RE AQComments
Subject: Clean Air Rule Draft

To Those in the Dept of Ecology Receiving Comment/Input on the Clean Air Rule:

Please consider a science-based rule, the science that Dr. James Hanson is sharing in all of his work that suggest we need to be working toward CO2 reduction projections of 7-8%. PLEASE consider the science here. This 7-8% is truly the minimal starting place, otherwise, why even go to the trouble to establish a rule!

Thank you for the opportunity to speak.

Respectfully,
Harriet

Harriet Platts
Coordinator - InterPlay Life Practice Programs
seeker@seanet.com

Wilson, Sam (ECY)

From: Heidi Sommer <smmrheid@aol.com>
Sent: Friday, July 22, 2016 8:00 PM
To: ECY RE AQComments
Subject: Climate Change

Why did Governor Jay Inslee appeal the ruling of a judge who put the state on a court-ordered deadline to get that carbon cap done? That's horrible! Especially for the nation's supposedly "greenest" governor.

Wilson, Sam (ECY)

From: James Little <littlejamesw@mac.com>
Sent: Tuesday, July 12, 2016 5:37 PM
To: ECY RE AQComments
Subject: Make the WA Clean Air Rule more effective

I want to thank you for your leadership in reducing greenhouse gas emissions in our state through the executive rulemaking process. However, I ask you to make this rule more effective by establishing more aggressive emission reduction targets, by not allowing for carbon offsets to come from sectors that are already covered by the cap, and by protecting the integrity of the cap by strengthening the rules that set aside pollution to allow for new growth. We ask you and the Dept. of Ecology to complete a robust rule that helps our state to have an even cleaner energy future for our children and for their children.

Thank you.

Sincerely,

James W. Little
Seattle, WA 98105

Wilson, Sam (ECY)

From: Jan Keller <jankeller3@gmail.com>
Sent: Friday, July 22, 2016 8:57 AM
To: ECY RE AQComments
Subject: Clean Air Rule comments for the comment period

--- I tried several times to submit a comment through the website – my name is **Jennifer Keller** – but it looks like an error occurred and the comment did not arrive at https://data.wa.gov/Natural-Resources-Environment/Clean-Air-Rule-Formal-Comments-public-view/9bxh-5z8t . So I'm also sending it in email. ---

----------BEGINNING OF COMMENT----------

Thank you for this opportunity to submit a comment. My name is Jennifer Keller, I live in Bellevue, and I've been a Washington resident for more than 35 years. I'm a hiker, and I love how green and beautiful so many parts of Washington are. I want Washington to stay green and beautiful right through the lifetimes of the children alive today, and their children's lifetimes too. I feel sure that you want that too.

I want to thank you for beginning the process we're engaged in right now, of creating a Clean Air Rule that will truly serve us, the adults and children, and soon-to-arrive next generation of the people of Washington. As the Department of Ecology, it's your privilege and right to work on behalf of the beauty and stunning interconnectedness of life. You are in a position to take strong actions to protect our forests (which bring us clean water) from drought and forest fires, our farmers (who bring us good food) from parched fields, our oceans (which bring us shellfish and seafood) from acidification. You are in a position to protect our children from the climate chaos that they will face if we don't reduce our greenhouse gas (GHG) emissions fast enough and steadily enough. And the time to do it is now.

The re-drafted Rule specifies GHG emission reductions of 1.7% per year. Current science indicates that reductions of about 8% per year are needed. On top of that, the Rule only covers two-thirds of the state's carbon pollution. You, the Department of Ecology, care about balance and life, and about future generations – and so do the people of Washington. How are we going to show it if we make only tiny reductions to two-thirds of our carbon emissions, and ignore the other third? We must work to make reductions in as wide a variety of our GHG emissions as we can, at 8% per year, the rate that science tells us is necessary.

I have heard the idea put forth that somehow the Washington government is limited by the emissions goals that the legislature set in 2008. We all know those limits are completely out of date. The courts have given you tremendous support and backing to do what is necessary, and not be held back by the 2008 goals. The courts have said that not only are you allowed to create requirements that will truly protect the atmosphere, you are obligated to do so. The judge determined that the state has a "mandatory duty" to "preserve, protect and enhance the air quality for the current and future generations." In a subsequent ruling, the judge, speaking for the youths in the courtroom, said "this is an urgent situation…these kids can't wait." The time is now.

The legislature may have set emissions goals in 2008, but those now out-of-date goals don't supersede reality. They don't change physics. They don't protect the children. So there's no way they can be a ceiling that limits the Rule. They can only be a floor, a foundation on which we build a Rule that actually puts us on a path to climate recovery.

I am also concerned that the Rule encourages offsets—by whatever name you want to use, "Emission reduction projects" or another name—rather than enforcing true reductions. This invites gaming, double-counting, and made-up reductions that don't actually reduce pollution. The use of offsets should be extremely limited—the central goal must be that emitters focus on cutting their pollution. The Rule must exemplify the idea that all of us need to work as straightforwardly and directly as we can, starting right where we are, to welcome in all kinds of efficiency and renewables, as quickly as we can.

There is a line-graph on your website at http://www.ecy.wa.gov/climatechange/CAROverview.html . The graph is nice and clear, although the more steeply dropping line that would show the science-based requirements for emissions cuts (8% per year, starting now) is left out. The graph makes it very obvious that the Clean Air Rule doesn't even meet outdated goals, much less the goals that are necessary now. In relation to that graph, I have heard you, the Department

of Ecology, make some kind of statement about how “multiple strategies” are needed—implying that additional reductions should be expected to appear somehow from another process, outside the Rule. That is not acceptable to me. We all know that nothing like that is waiting in the wings. The Legislature has already stonewalled and stalled enough to make clear that overall, as a lawmaking body, they don’t care about the children. But Ecology can make a real difference in caring for our climate and our children—it’s your honor, obligation, and privilege to do so.

The Rule must show greater commitment to current and future generations and their need for a livable climate. You are the amazing people in the department that works to understand and support the amazing patterns of life wrapped up in the word “Ecology.” I urge you to strengthen the Clean Air Rule so that it really gives us clean air and a stable climate!

----------END OF COMMENT----------

Wilson, Sam (ECY)

From: Jared Howe <jaredchowe@gmail.com>
Sent: Tuesday, July 19, 2016 7:59 AM
To: ECY RE AQComments
Subject: Fix the Clean Air Rule

July 17, 2016

To whom it may concern,

My name is Jared Howe and I am one of the parents undergoing a fast in the three days leading up to the public meeting on the Department of Ecology's public meeting on their revised Clean Air Rule.

As you know, the re-drafted Rule specifies carbon emission reductions of 1.7% per year. That is insufficient. Current science indicates that reductions of 8% per year are needed to ensure a livable planet for our children.

In addition, the Rule only covers two-thirds of the state's carbon emissions. This is insufficient to achieve the reductions needed to protect current and future generations.

In short, the revised Clean Air Rule utterly fails to protect our children from the ravages of catastrophic climate change that are certain to happen if we do not follow the carbon reductions that climate scientists are telling us is needed to avoid widespread and devastating changes to our climate.

As Governor Inslee has said, "We are the first generation to feel the sting of climate change, and we are the last generation that can do something about it." If you really believe this, then please do the right thing for our children and direct the Department of Ecology to take the strong actions that are needed while we still have a chance to avert catastrophe.

The Department of Ecology has been given an order by King County Superior Court Judge Hollis Hill to follow climate science, and make a Rule that could ensure clean air and a livable climate for the children. As she wrote, "These children cannot wait."

The path to climate stability is becoming more challenging by the day. This is why we in Washington state must stand up to do our fair share for our world and our children. It is clear that the state legislature is not stepping up to leadership on climate—it is not taking action to ensure that young Washingtonians, and the generations to come, have a stable climate. It's up to you in the Department of Ecology-- please act boldly to create stronger reduction targets, based on the science.

Sincerely,

Jared Howe
4107 MLK Jr Way S
Seattle, WA 98108
jaredchowe@gmail.com

TO Ecology
FROM Jean Maust
PO Box 163
Tenino WA 98589

RE: Clean Air Rule Draft Proposal

DATE: 7-22-16

Thanks for the public comment opportunity.

This proposed rule is inadequate to meet current and future needs for curbing CO_2 emissions.

- Ecology's studies show that greater reductions are necessary than those proposed in this rule draft.
- all members of our state need to participate. This rule proposal exempts too many sectors. Climate change requires lifestyle changes from everyone.
- Ecology's carbon inventory lists gasoline as the highest emission source. Washington citizens need regulation and leadership to make lifestyle changes necessary now.

Some suggestions:

- Stop car idling - campaign to wake us up
- Offer incentives for fuel-efficient car purchases
- Mandate emissions testing statewide
- Improve public transportation
- Regulate homeowner gas-powered tool emissions

→

Not only industry must and can reduce emissions. Each person must and can. Selling pollution "rights" is not a solution. I have attached a passage from Pope Francis' Encyclical on Climate Change and Inequality because This language clearly and logically shows The problems with market-based ~~solutions~~ responses to environmental degradation.

For years I have observed Ecology's innovative proposed ideas in many programs. This rule, however, is appallingly inadequate. It shows disrespect for The people of our State, particularly The younger generation as ~~represented~~ represented by our Children's Trust. They deserve better. And so do all The species of Washington That suffer when our rules ignore and mistreat them. They are an integral part of our intricate and fragile ecosystem. Ecology can do better. Listen to scientists, children, and all of us who care deeply about The health of our home and all its inhabitants. Thank you.

tion on biodiversity, and stated principles regarding forests. Although the summit was a real step forward, and prophetic for its time, its accords have been poorly implemented, due to the lack of suitable mechanisms for oversight, periodic review and penalties in cases of non-compliance. The principles which it proclaimed still await an efficient and flexible means of practical implementation.

168. Among positive experiences in this regard, we might mention, for example, the Basel Convention on hazardous wastes, with its system of reporting, standards and controls. There is also the binding Convention on international trade in endangered species of wild fauna and flora, which includes on-site visits for verifying effective compliance. Thanks to the Vienna Convention for the protection of the ozone layer and its implementation through the Montreal Protocol and amendments, the problem of the layer's thinning seems to have entered a phase of resolution.

169. As far as the protection of biodiversity and issues related to desertification are concerned, progress has been far less significant. With regard to climate change, the advances have been regrettably few. Reducing greenhouse gases requires honesty, courage and responsibility, above all on the part of those countries which are more powerful and pollute the most. The Conference of the United Nations on Sustainable Development, "Rio+20" (Rio de Janeiro 2012), issued a wide-ranging but ineffectual outcome document. International negotiations cannot make significant progress due to positions taken by countries which place their national interests above the global

common good. Those who will have to suffer the consequences of what we are trying to hide will not forget this failure of conscience and responsibility. Even as this Encyclical was being prepared, the debate was intensifying. We believers cannot fail to ask God for a positive outcome to the present discussions, so that future generations will not have to suffer the effects of our ill-advised delays.

170. Some strategies for lowering pollutant gas emissions call for the internationalization of environmental costs, which would risk imposing on countries with fewer resources burdensome commitments to reducing emissions comparable to those of the more industrialized countries. Imposing such measures penalizes those countries most in need of development. A further injustice is perpetrated under the guise of protecting the environment. Here also, the poor end up paying the price. Furthermore, since the effects of climate change will be felt for a long time to come, even if stringent measures are taken now, some countries with scarce resources will require assistance in adapting to the effects already being produced, which affect their economies. In this context, there is a need for common and differentiated responsibilities. As the bishops of Bolivia have stated, "the countries which have benefited from a high degree of industrialization, at the cost of enormous emissions of greenhouse gases, have a greater responsibility for providing a solution to the problems they have caused."[127]

171. The strategy of buying and selling "carbon credits" can lead to a new form of speculation which would not help reduce the emission of polluting gases worldwide. This system seems to

provide a quick and easy solution under the guise of a certain commitment to the environment, but in no way does it allow for the radical change which present circumstances require. Rather, it may simply become a ploy which permits maintaining the excessive consumption of some countries and sectors.

172. For poor countries, the priorities must be to eliminate extreme poverty and to promote the social development of their people. At the same time, they need to acknowledge the scandalous level of consumption in some privileged sectors of their population and to combat corruption more effectively. They are likewise bound to develop less polluting forms of energy production, but to do so they require the help of countries which have experienced great growth at the cost of the ongoing pollution of the planet. Taking advantage of abundant solar energy will require the establishment of mechanisms and subsidies which allow developing countries access to technology transfer, technical assistance and financial resources, but in a way which respects their concrete situations, since "the compatibility of [infrastructures] with the context for which they have been designed is not always adequately assessed."[128] The costs of this would be low, compared to the risks of climate change. In any event, these are primarily ethical decisions, rooted in solidarity between all peoples.

173. Enforceable international agreements are urgently needed, since local authorities are not always capable of effective intervention. Relations between states must be respectful of each other's sovereignty, but must also lay down mutually agreed means of averting regional disasters which would eventually

affect everyone. Global regulatory norms are needed to impose obligations and prevent unacceptable actions, for example, when powerful companies or countries dump contaminated waste or offshore polluting industries in other countries.

174. Let us also mention the system of governance of the oceans. International and regional conventions do exist, but fragmentation and the lack of strict mechanisms of regulation, control and penalization end up undermining these efforts. The growing problem of marine waste and the protection of the open seas represent particular challenges. What is needed, in effect, is an agreement on systems of governance for the whole range of so-called "global commons."

175. The same mindset which stands in the way of making radical decisions to reverse the trend of global warming also stands in the way of achieving the goal of eliminating poverty. A more responsible overall approach is needed to deal with both problems: the reduction of pollution and the development of poorer countries and regions. The twenty-first century, while maintaining systems of governance inherited from the past, is witnessing a weakening of the power of nation states, chiefly because the economic and financial sectors, being transnational, tends to prevail over the political. Given this situation, it is essential to devise stronger and more efficiently organized international institutions, with functionaries who are appointed fairly by agreement among national governments, and empowered to impose sanctions. As Benedict XVI has affirmed in continuity with the social teaching of the Church: "To manage the global economy; to revive economies hit by the crisis; to

Wilson, Sam (ECY)

From: Jim Grunewald <gruneji@gmail.com>
Sent: Friday, July 22, 2016 4:40 PM
To: ECY RE AQComments
Subject: Proposed Clean Air Rule

Dear Department of Ecology,

I commend the Governor for putting out efforts to reduce carbon emissions. Nevertheless, the currently proposed rule does not adequately address the need. We face an unprecedented crisis. It is of utmost importance that the clean air rule truly leads to the reductions required to return us to a sustainable climate. I strongly urge you to to set carbon reduction targets based on the latest science, much greater than the reduction in the proposed rule. Washington State can lead the effort to save our planet for our children. Please amend the rule to set a higher target reduction, setting the standard for other states and the nation to take real steps to stem the climate crisis.

I further want to encourage Ecology to rewrite the rule to guide our state to real reductions , not based primarily on carbon offsets. Carbon offsets present real problems in actually achieving the necessary reductions.

Thank you for hearing the concerns and needs of not only our present population, but for the generations to come.

Sincerely,

James Grunewald
Seattle

Wilson, Sam (ECY)

From: Joe Kunzler <growlernoise@gmail.com>
Sent: Sunday, July 03, 2016 7:33 PM
To: ECY RE AQComments
Subject: Clean Air Rule - NO THANKS

3 July 2016

Dear Department of Ecology;

I will be blunt. I think our air is just fine. I don't think downloading costs of environmentalism to our low income & fixed income folks is the way to go, nor is it appropriate to target two of Skagit County's biggest employers. Tesoro & Shell keep the tax base strong and provide family-wage jobs.

If you really want to reduce CO2 emissions, okay then start by amply funding transit. By requiring charging for parking. By encouraging Transit Oriented Development. By giving tax relief to alternative fuels and championing geothermal energy development. There you go.

Please put this clean air rule or my ideas to a referendum and let the voters decide.

THANKS;

Joe Kunzler
growlernoise@gmail.com

Wilson, Sam (ECY)

From: nwsurveyqc@cs.com
Sent: Thursday, July 14, 2016 8:54 PM
To: ECY RE AQComments
Subject: This letter is a comment on the new proposed "Clean Air Rule" for Washington State.

Department of Ecology
P.O. Box 47600
Olympia, WA 98504

This letter is a comment on the new proposed "Clean Air Rule" for Washington State.
In this new WA. Clean Air Rule, the Department of Ecology claims: "Ecology does not have any information that would suggest there will be significant adverse environmental impacts as a result of the proposed rule." This statement is incorrect. There will be huge environmental impacts. We need to further lower the Green House Gas (GHG) emissions here in WA. State. The new rule by Ecology is not enough to lower GHG emissions. We need to lower GHG emissions more than the new rule proposes.
It seems that any rule with inadequate limitations to prevent significant impacts would require a Determination of Significance, and EIS. We need an EIS on this issue.
All government bodies including Washington Department of Ecology have responsibilities for public health, safety and welfare.

The Dept. of Ecology should incorporate Dr. Hansen's science (listed below) into any GHG rule that would not have a significant impact on the environment, and provide for Washington State citizens' public health, safety and welfare.

Thank you;
John Newman
1902 Burbank Ave NW
Olympia, WA 98502

Wilson, Sam (ECY)

From: Clark, Stuart (ECY)
Sent: Tuesday, July 12, 2016 10:01 PM
To: Wilson, Sam (ECY); Goetz, Kimberly (ECY)
Cc: Sarah Rees; Drumheller, Bill (ECY); Caudill, Neil (ECY)
Subject: Fwd: state's proposed clean air plan

Follow Up Flag: Flag for follow up
Flag Status: Flagged

FYI

Sam for rule files

Begin forwarded message:

> **From:** Joe Hiss <joe.hiss.biologist@gmail.com>
> **Date:** July 12, 2016 at 9:09:23 PM PDT
> **To:** <scla461@ecy.wa.gov>
> **Subject: state's proposed clean air plan**
>
> Dear Mr. Clark:
>
> I have been informed that the current proposal falls far short of what is needed. Specifically, that the 1-2% proposed annual reduction in carbon emissions will not be effective, but rather, an annual reduction of 8% will be needed.
>
> I am an environmental educator who ends every class I teach by reminding the students to keep on learning, talking, and caring for their environment, in particular the remarkable Puget Sound nearshore zone where I volunteer regularly. The time has come for me to do some direct caring, too.
>
> So please, update the plan's emission targets to correspond to the latest research, which indicates we have much less time to change our ways than we previously thought.
>
> Now I know the issue is more complicated than that, which is why I plan to attend the public hearing at the Red Lion Hotel in Olympia on July 14, to learn more about what my State can do. But I already believe that the most knowledgeable persons in this field have already found the draft too weak to be of use. So in this case, we must take the cautious approach and aim for the most rapid reduction possible in carbon emissions.
>
> Most sincerely,
>
> Joseph M. Hiss
>
> 225 17th. Ave. SE
> Olympia WA 98501-2238
> (360) 357-4027

joe.hiss.biologist@gmail.com

Retired local fish and wildlife biologist;
Current volunteer environmental educator.

July 14, 2016

To: Honorable Governor Jay Inslee
The WA State Dept. of Ecology

From: Karen Bachelder
2119 NE 81st Street
Seattle, WA 98115

I attended the hearing in Olympia tonight, but had to leave before I was able to share my comments below:

I'm not speaking because I have new information to share or something to say that you haven't already heard, but because I feel ***compelled*** to speak up on behalf of our children and grandchildren, and all WA residents. The Governor and the Dept of Ecology must step up and be the leaders in setting standards that will truly and *adequately* protect the quality of the air we breathe. We deserve this!

I moved to the Pacific Northwest almost 40 years ago precisely because it was a beautiful, unpolluted bioregion that offered clean air and water and an incredible natural environment. At that time, WA residents and our state government shared a commitment to <u>environmental stewardship</u> that was second to none in our country.

Fast forward and the State is now proposing a Clean Air Rule that is woefully inadequate to protect our environment and our children. It is *not* based on the most recent climate science – rather it proposes to decrease carbon pollution by only **1.7%** instead of the **8%** decrease that is needed to begin any *serious* climate recovery. And the rule is inadequate in holding major polluters accountable and in covering all polluters, a particularly concerning omission is industrial agriculture. The Rule should cover *all* businesses that are polluting <u>*as soon as possible*</u>, not starting in 2020 when it will be way too late (and baselines will have shifted).

Our environment is in crisis! I urge you to have the courage to stand up to corporate interests and stop doing “business as usual.” Please revise the Rule so that the standards set will make a *real* difference on the path to climate stability. The future health of our children, and *all* WA residents, depends on it. Thank you.

Wilson, Sam (ECY)

From: Karen <karenmarier1@yahoo.com>
Sent: Friday, July 15, 2016 7:33 AM
To: ECY RE AQComments
Subject: Clean Air Rule

Washington needs a Clean Air Rule that WILL protect the lives of our children on this planet.
Karen Romanelli
Lacey Wa
Sent from my iPhone

Wilson, Sam (ECY)

From: Ken Lans <kenlans@raincity.com>
Sent: Thursday, July 21, 2016 12:46 PM
To: ECY RE AQComments
Subject: Formal Comments on the Washington State Clean Air Rule

Dear Ms. Rees, Governor Inslee, and Department of Ecology,

While I commend Governor Inslee for stepping into a void left by inaction of the legislature and deciding to pursue rulemaking to reduce emissions in our state, I want to register strong concerns that the Clean Air Rule in its current form will not achieve those reductions.

As a physician and health professional, I believe that climate change is the biggest public health threat of the 21st century. We know that climate change hurts real people right now. Children are especially vulnerable. Longer, more frequent and more severe heat waves not only increase heat-related health problems (and even death from heat stroke) directly from the increased heat, but cause serious respiratory and cardiac problems as well from the increased ground-level ozone produced by that heat (especially in the young, elderly, infirm, and low income populations and communities of color). More fires in our forests destroy homes and livelihoods and produce smoke that can impact people downwind. Increasing drought effects crops (and makes the forests less healthy and more vulnerable to fire). A warmer climate raises the chance that disease-carrying vectors (mosquitos and other insects among them) find conditions here much more conducive for survival than at present. And our state happens to have it "lucky." Other areas of the US, but especially other areas around the world, face much more serious and debilitating impacts — more direct impacts from more frequent and extreme storms, floods and droughts; malnutrition and starvation from reduced and uncertain crop production; water-borne diseases from flooding impacting sewage treatment facilities (or worse in areas without adequate, or any, such facilities); rising sea-levels forcing thousands or millions out of their homes and/or inundating their fields; more civil unrest and conflicts arising from populations displaced, affected by famine, with croplands that no longer produce, and/or contending over increasingly scarce and reduced resources — conflicts and unrest which certainly will have indirect, yet very serious impacts, on all of us in the US and Washington. These are among the health impacts untreated climate change will bring.

We also know that CO_2 is not the only source of problems and threats to the health of Washington citizens from these emissions and not the only reason emission reductions must be mandated. The same coal, gasoline and diesel combustion that are responsible for the dangerously rising levels of CO_2 are also responsible for most of our other air pollutants: most worrisomely particulate matter, sulfur dioxide, and nitrogen dioxide.

We have years of evidence and clinical experience showing that burning fossil fuels has had significant, longstanding, ongoing, and harmful impacts on health (aggravating heart disease, lung disease and other health problems). A recently published report on a 10-year UW study[1] shows how air pollution damages the heart. This is just the latest study showing the linkage between air pollution and cardiac disease, but even more importantly (and making it especially relevant to the CAR), it found that people living in areas with more outdoor pollution -- even at lower levels common in U.S. -- accumulate deposits (of calcium in coronary arteries) faster than people living in less polluted areas. The fact that these findings pertain even to the lower levels common in the U.S. is a crucial public health concern and provides strong support and rationale for significant, meaningful, and quickly implemented emission reductions. The same carbon-emission reduction efforts that would mitigate climate change would also have enormous, widespread, and immediate co-benefits for public health.

I see adoption of the Clean Air Rule as a critical step in addressing the major emission sources in our state. It must, though, be a Rule that results in real, near-term, and meaningful reductions in emissions and, to do that, it must use **best available science** to establish health-based limits on global warming pollution. The best available science, including the most recent Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), clearly shows that emissions in developed world economies — which would include our state — need to drop at a rate of at least 4% a year.

I'm concerned that the rule in its current form contains too many loopholes and will fail to drive real reductions in global warming pollution or significant progress in transitioning to a low-carbon economy.

Of special concern:

- It needs to be based on best available science (1.7% a year doesn't cut it! It does little to protect our children.)
- Baseline and credit is unworkable.
- There needs to be an explicit aggregate cap.
- Offsets need to be much more limited, specified, and restricted to those things that lead to new reductions — that actually lead to a decrease in emissions. As is, it's almost totally open to gaming.
- Voluntary participants should not be allowed — if allowed they should be required to stay in and have a required emission reduction pathway.

I also worry that it will send the wrong signal to other states that wish to follow our lead —that even in a state with committed leadership, ambitious climate policy is not possible.

Our state requires a strong policy to realize the prompt, achievable, sizable, and expanding reductions in fossil-fuel emissions needed to protect the individual and public health and well-being of all Washingtonians — and everyone else on our planet — from the significant and growing harms caused by air pollution, carbon emissions, and worsening climate change.

Do the right thing,

Kenneth Lans, M.D., M.B.A.
4240 NE 124th St.
Seattle, WA 98125
206-417-1151
kenlans@raincity.com

[1] Joel D Kaufman et al. Association between air pollution and coronary artery calcification within six metropolitan areas in the USA (the Multi-Ethnic Study of Atherosclerosis and Air Pollution): a longitudinal cohort study.*The Lancet*, 2016.

Wilson, Sam (ECY)

From: Clark, Stuart (ECY)
Sent: Friday, July 15, 2016 12:21 PM
To: Wilson, Sam (ECY)
Cc: Rees, Sarah (ECY); Drumheller, Bill (ECY)
Subject: FW: thanks for being a public servant!!

Follow Up Flag: Follow up
Flag Status: Flagged

Not sure if this warrants classification as official comment but it probably should be somewhere in the files.

From: Klumpp,Elizabeth C (BPA) - DIR-WSGL [mailto:ecklumpp@bpa.gov]
Sent: Friday, July 15, 2016 10:03 AM
To: Clark, Stuart (ECY) <scla461@ECY.WA.GOV>
Subject: thanks for being a public servant!!

I stayed for about 2 hours of the hearing last night.

You were calm, cool and helpful.

I may or may not agree with features of the rule, but I do believe you all are putting your best foot forward to address the problem.

Thanks for the good work your team does.

Liz Klumpp
Western Washington Liaison | Bonneville Power Administration | 360-943-0157 | c. 360-485-2392

Wilson, Sam (ECY)

From: Kristi Skanderup <kristiskan@gmail.com>
Sent: Wednesday, July 13, 2016 7:08 PM
To: ECY RE AQComments
Subject: Science based targets please!

Thank you for leading on climate! We need you to set the targets on what science says we need to do. Our kids and grandkids are depending on you to LEAD. Thank you!

Kristi

Kristi Skanderup
206-351-9495

From: Larry Wilhelmsen
To: ECY RE AQComments
Cc: Arne Mortensen
Subject: New carbon rules, Sarah Rees
Date: Friday, June 03, 2016 10:26:06 AM

Hi Sarah Rees,

Fellow chemical engineer a few few words of comment! I bring a few more years of experience to the table as I graduated in 1960 from U of W and worked 32 years in a pulp mill you now want to put under your miss directed rules. I retired in 1992 and have followed the topic of warming ever since and can not believe how scientists are corrupting their minds with political efforts of the UN. The published efforts of the Climate Impacts Group are so far out of step with normal science that I hang my head as calls and emails to the Group lead to no answers to my questions and no comments to reports I sent them. I lied a little as the comments showed they did not take the time to understand the real scientific work done by the most qualified person who lived and breathed climate for 88 years of his life. He directed over 30 years of research at NOAA after 23 years in the Air Force and development of microwave radar. I can send you his lecture given in 2000. He predicted the slowing of warming only two years after it started while the IPCC still sticks with their computer models. He saw a peaking by 2020 and dropping after that. Wind changing over time goes through cycles of over 170 years so how can we try to control climate when we are at the upper end of a cycle of 25+% velocity change and the amount of heat carried to the upper atmosphere is over ten time the heat from a doubling of carbon dioxide.

Please get your science in order before you force rules on us older people who can see through the fog. Thanks for your time and I would love to bring my data and have a face to face discussion with your directors.

Larry Wilhelmsen, 360-423-8568

Sent from my iPad

Wilson, Sam (ECY)

From: Lars Henrikson <lhenrikson@mac.com>
Sent: Tuesday, July 19, 2016 10:55 PM
To: support@socrata.com
Cc: ECY RE AQComments
Subject: Washington Dept. of Ecology Site

As a user of the State of Washington's Ecology Department webform, I found a major flaw in Socrata's software that should be fixed immediately.

Users on mobile devices hit the submit button and nothing happens. They submit it again and nothing happens. It turns out the the message is being submitted, and it shows up on https://data.wa.gov/Natural-Resources-Environment/Clean-Air-Rule-Formal-Comments-public-view/9bxh-5z8t . This site shows that hitting the submit button did work and worked repeatedly, but the user had no way of knowing. When using a laptop, the form seems to work fine.

Since this is a very important part of the civic engagement system on topics before ecology, and since mobile is now the dominant way that people in Washington interface with the internet, having a system that doesn't provide the assurance that the voices of mobile-using citizens are heard is an oversight that should be corrected as soon as possible.

Thanks for your attention to this important issue.

-Lars

Wilson, Sam (ECY)

From: Laura Eachus <lauraeve@seanet.com>
Sent: Tuesday, July 12, 2016 11:21 PM
To: ECY RE AQComments
Subject: The Clean Air Rule

I'm thrilled that Governor Jay Inslee is taking action to reduce Washington state's carbon pollution, in the form of the Clean Air Rule. Thank you!

If any change is needed, it would be to make it stronger – make emissions reduction targets stronger, in line with current scientific findings, make sure offsets can't lead to double-counting, and increasing the reserve account.

Thank you for your work on this. keep it up!

Laura Eachus
13717 Linden Ave N, Unit 224
Seattle, WA 98133

Wilson, Sam (ECY)

From: Libby Hazen <libmh@yahoo.com>
Sent: Friday, July 15, 2016 8:47 PM
To: ECY RE AQComments
Subject: Children's rights to a livable future

As a parent and grandparent, I am very concerned about the future health of our planet and our children. I ask the Department of Ecology to uphold the climate court decision to uphold the children's rights to a livable future. This was a landmark decision and puts the department in a powerful position to help move our world towards health for all. Please use this opportunity wisely.
Thank you for your willingness to listen to public comment.
Sincerely
Libby Hazen
Bellingham WA

Wilson, Sam (ECY)

From: Turnbow, Marilyn (ECY) on behalf of Clark, Stuart (ECY)
Sent: Friday, July 29, 2016 1:28 PM
To: Wilson, Sam (ECY)
Subject: FW: thanks for being a public servant!!

From: Klumpp,Elizabeth C (BPA) - DIR-WSGL [mailto:ecklumpp@bpa.gov]
Sent: Friday, July 15, 2016 10:03 AM
To: Clark, Stuart (ECY) <scla461@ECY.WA.GOV>
Subject: thanks for being a public servant!!

I stayed for about 2 hours of the hearing last night.

You were calm, cool and helpful.

I may or may not agree with features of the rule, but I do believe you all are putting your best foot forward to address the problem.

Thanks for the good work your team does.

Liz Klumpp
Western Washington Liaison | Bonneville Power Administration | 360-943-0157 | c. 360-485-2392

Wilson, Sam (ECY)

From: Louise Stonington <lstoning@msn.com>
Sent: Tuesday, July 12, 2016 9:23 AM
To: ECY RE AQComments
Subject: Clean Air Rule

TO: Sam Wilson

Dept of Ecology

AQComments@ecy.wa.gov

From: Louise Stonington

Seattle Washington

lstoning@msn.com

206 322-7193

Regarding the Clean Air Rule proposed by the Washington Department of Ecology. thank you for your work on regulations to promote cleaner air.

I write to encourage more rigorous regulation, in keeping with the magnitude of the prospect we face. I request that the rule specify reductions in carbon emissions of 8% per year, and that these reductions should be required for at least 90% of state's carbon emissions. I oppose the use of offsets, as they delay and diminish carbon emission reductions. I further request that calculation of reductions through the use of biomass should be include loss of carbon absorption by plants being used.

An Audubon study found that "Of the 588 North American bird species Audubon studied, ... Our models indicate that 314 species will lose more than 50 percent of their current climatic range by 2080.' http://climate.audubon.org/article/audubon-report-glance

It is time for strong action, to protect our children and the world we leave them.

Thank you.

Wilson, Sam (ECY)

From: Mary Pinckert <kpinckert@gmail.com>
Sent: Thursday, July 14, 2016 11:51 PM
To: ECY RE AQComments
Subject: Carbon emissions

Do all you can to cap carbon emissions to the lowest levels now!

Wilson, Sam (ECY)

From: maryon <maryon@whidbey.net>
Sent: Friday, July 22, 2016 11:25 AM
To: ECY RE AQComments
Subject: comments by July 22, 2016

Importance: High

Washington needs better air quality standards.

Since discovering that the FCLP of the EA-18G Growler at the Outlying Field on Whidbey Island was disrupting transfer of our best farmland from older to younger farmers because the generation coming up does not want to farm under the deafening noise of the Growlers, I began to research how the Navy is impacting the life of our region.

One day watching 4 planes on the "race track" circling around, landing, bouncing up, circling around again I began to wonder how much carbon was going into the atmosphere from this training.

I learned that one hour of Growler flight burns 1300 gallons of jet fuel, emitting 12.5 Metric Tons CO2. That is equal to 30,000 car miles driven! Last time I saw the Growlers training there were 4 in the air. I gleaned from the web that in 2013 training happened 3 hours a day, five days a week. That's 60 flight hours a week. Doing the math, that would equal 800 metric tons a week. That's 40,000 metric tons a year. And that's just from the training flights. In addition they do stationary run-ups of the planes at Ault field I believe daily to keep them in good shape. That might double the Metric Tons of CO2 emitted just by the Growlers at NASWI bringing it close to the threshold of an industry required to report to you. We also have Fairchild and McChord Air Force bases in WA which surely takes the total over 100,000 Metric Tons a Year
from military aircraft.

Background Sources:
The fuel consumption rate of the EA-18G Growler is 1,304 gallons per hour (source: Department of Defense: Selective Acquisition Repor <http://www.dod.mil/pubs/foi/logistics_material_readiness/acq_bud_fin/SARs/2012-sars/13-F-0884_SARs_as_of_Dec_2012/Navy/EA-18G_December_2012_SAR.pdf> t). This appears to be an average fuel consumption rate based on typical operations patterns. Jet fuel produces 9.57 kg CO2 per gallon <http://www.eia.gov/oiaf/1605/coefficients.html> .

The CO2 produced is thus 9.57 kg * 1304 gal/hour = 12479 kg/hour or about 12.5 metric tonnes of CO2 per hour.

The per capita CO2 emissions in Washington state is 10.38 metric tonnes per year <http://en.wikipedia.org/wiki/List_of_U.S._states_by_carbon_dioxide_emissions> , so one hour of flight is about 20% more than the annual CO2 emmisions of a typical Washington state citizen.

Another way of looking at it is to compare to CO2 emissions from a car. A Toyota Prius (1.5 VVTi LE) emits 104 g/km <http://www.thegreencarwebsite.co.uk/green-cars/toyota/prius/> . Thus, one hour of a single EA-18G Growler flight is equivalent to driving 12479kg/(0.104kg/km) = 120,000 km. This is equivalent to driving round trip from Anacortes to New York City <https://www.google.com/maps/dir/Anacortes,+WA/New+York,+NY/@44.1475487,-98.3087263,5z/data=!4m14!4m13!1m5!1m1!1s0x548578d19cc8966b:0xb21d969264e39198!2m2!1d-122.6126718!2d48.5126045!1m5!1m1!1s0x89c24fa5d33f083b:0xc80b8f06e177fe62!2m2!1d-74.0059731!2d40.7143528!5i1> 12.7 times!

Now let's add the carbon pollution from manufacturing the Growlers and other jets and then consider that our elected officials have proudly announced that we have passed a budget including 35 more Growlers.

I am trying to quantify the carbon pollution not just of war but of all the training and preparations and weapons manufacture in support of national defense and find it is impossible to get these numbers BECAUSE THE PENTAGON IS NOT REQUIRED TO ACCOUNT CO2 EMISSIONS as part of our national commitment to lowering CO2 emissions to below 1990 levels.

Contemplate that for a moment. Surely the military in our state accounts for well over the 100,000 Metric Tons of CO2 pollution BUT THEY ARE NO WHERE ON YOUR LIST OF MAJOR CARBON POLLUTERS.

I have come to the very disturbing conclusion that our "military industrial complex" requires behavior that will not only prevent us from meeting our targets but will put illegal and unconscionable levels of CO2 pollution into the atmosphere - putting climate stability and thus all life is at risk.

You do not mention the military as a sector. Your pie chart hides the military's inordinate contribution to our carbon distress.

My request is that you at least comply with the Paris accords and mandate an accounting of the carbon and other climate disrupting gas pollution in Washington State as part of our honest commitment to complying with Clean Air Rules. You don't have to question our military intervention across the world. You don't have to disparage those who serve with a sense of honor and nobility. You don't have to criticize the policies of war. You simply have to require that all military bases in Washington State deliver their accurate accounting of their carbon emissions per annum and if it exceeds targets require them to submit a plan for bringing their emissions back to a 1990 level without sacrificing national defense. None of us has any idea what that accounting will show or how our very intelligent and creative leaders will find to secure the peace with a lower carbon footprint.

I also request that you make it known to the public that you have identified the military in our state as one of the industries above the 100,000 Metric Tons threshold that will be held accountable. I request you change your website and pie chart to indicate that. You don't have to do this with fanfare or indignation, but rather with quiet dignity so the truth is reflected. Give the citizens a full deck to play with as we the people try to figure out how to pull our species and many others off the brink of destruction.

From an article "The US Military is a Major Contributor to Global Warming"
July 10, 2014 by Rowan Wolf. "There is a dangerous feedback loop between war and global warming. Not only is climate change likely to increase conflict, particularly over access to natural resources, but war, in turn, is already accelerating global warming while simultaneously draining our economy of money needed for clean energy.
The increased propensity for war and conflict brought about by global warming is being exploited by the military-industrial complex which is planning on how to profit from it. Defense contractors are looking at climate change as a growth and profit opportunity due to the potential conflicts produced by food and water shortages. They are salivating over the potential profits to be made leading to increased stock market performance and, therefore, higher CEO compensation.
Defense contractors are setting their sights on a narrow minded militarist approach. Indeed, the very companies most responsible for climate change are set to make a killing from its intensification. Just the opposite of the militaristic response to climate change is what is needed, one leading to a meaningful transformation in social relations, cooperation and diplomacy. What the planet needs is increased cooperation among all peoples since we all share the same planet, and we will all suffer the same fate from the effects of global warming. The interests of all earth-citizens coincide for once, but that's not the way military planners see it, and there is little precedent for cooperation on a world scale.
"I think climate change is a real opportunity for the aerospace and defense industry," said Lord Drayson, then British Minister of State for Strategic Defence Acquisition Reform, in 2009.
One of the world's largest defense contractors, Raytheon, agrees. In a briefing to the Carbon Disclosure Project last year, the corporation said that "expanded business opportunities will arise" as a result of "security concerns and their possible consequences," due to the "effects of climate change" both at home and abroad in the form of "storms, droughts, and floods."
Global warming is creating "business opportunities" for defense contractors. What kind of business opportunities? Raytheon expects to see "demand for its military products and services as security concerns may arise as results of droughts, floods, and storm events …" Extreme weather conditions could have "destabilizing effects" and that on an international level, "climate change may cause humanitarian disasters, contribute to political violence, and undermine weak governments".

And this, indeed, is theproblem: the military-industrial complex views the problems and conflicts created by climate change as opportunities to profit instead of as opportunities to work together with other nations to mitigate and adapt to its effects; instead they are determined to justify innovative new ways to save the profits of the few who run the planet by using conventional military techniques.
Of course if the money used for war were used to build renewable energy generating plants, none of the disaster scenarios might ever happen. But that would not increase military-industrial complex profits. Total US spending on the military could cover all of the global investments in renewable power generation needed between now and 2030 in order to decrease current global warming trends and obviate the necessity for new defense products."

In a state that ranks 6th in the nation for military assets and personnel - we must take into account the huge impacts made to Washington's air quality by military personnel and equipment. Otherwise, we are leaving out the largest polluter and your study and standards are meaningless.

Washington needs higher standards.

Wilson, Sam (ECY)

From: Meg Chadsey <mschadsey@gmail.com>
Sent: Friday, July 22, 2016 4:09 PM
To: ECY RE AQComments
Subject: The revised draft Clean Air Rule is not strong enough! We need a rule that will put WA on target for a 50% reduction in greenhouse gas emissions by 2030

Dear WDOE,

I appreciate this opportunity to comment on your current draft Clean Air Rule. I am a scientist who works on the environmental impacts of carbon pollution, and I know that the draft rule as it stands will not result in truly meaningful reductions in Washington's carbon emissions—it must be strengthened to put our state on the track to a 50% reduction in greenhouse gas emissions by 2030. I understand that this goal is politically challenging, but unfortunately the climate doesn't care about politics. It cares about physics and thermodynamics, and if our carbon emission targets and the mechanisms we use to achieve them are not consistent with what the best available science recommends, we'll likely be wasting our time. This is an opportunity for Washington state to demonstrate climate leadership; it matters terribly what we chose to do, because the precedent we set will either galvanize other states to take action, or let them off the hook. We really only have one chance to get this right. I support the specific recommendations put forth by the Washington Environmental Council (see below).

I deeply admire Governor Jay Inslee's commitment to this issue, and I applaud the Dept of Ecology for tackling the problem seriously. I believe that the agency *does* understand the need for a stronger rule, and if Inslee and WDOE need people to hold their feet to the fire to make this happen, then I'm happy to help!

Thank you for your hard work.
Dr. Meg Chadsey

Washington Environmental Council recommends that the WA Dept. of Ecology:

- Consider more aggressive emissions reduction targets consistent with best available science.
- Do not depend on offsets as the primary source of emission reductions. In addition to being an unprecedented approach that could limit the impact of the rule; the fact that offsets can include projects within the capped sectors raises the significant issue of double counting and may cause the Clean Air Rule to fail to achieve the state-mandated emissions reductions. Additionally, the ability to use offsets to meet 100% of your reduction obligation means that there may be no emissions reductions on site, which fails to address the high co-pollutant impacts to fence-line communities.
- Restructure the reserve account created to accommodate for economic growth and compensate for double counting. More work needs to be done to properly structure this account, including its size, charging, and other considerations to make it workable.

Wilson, Sam (ECY)

From: Megan Black <Mmdblack@yahoo.com>
Sent: Saturday, July 23, 2016 7:59 PM
To: ECY RE AQComments
Subject: Make the Clean Air Rule more biofuel friendly

This language of the carbon emissions regulations does not encourage biofuels. Biofuels cycle carbon already in the atmosphere so there is no net carbon gain from their usage. We must have fungible fuels and biofuels are the ultimate solution. As an algal scientist, I have put much thought into this problem. Please don't add regulatory costs to this already expensive yet sensible solution.

Sincerely,
Megan Black

Megan Black
160 n diamond shore ln
Sequim, WA 98382

7 June 2016

Michael L. Shevham

7621 E. 18th Ave.

Spokane Valley, WA 99212

Mr. Sam Wilson, Air Quality

Department of Ecology

P.O. Box 47600

Olympia, WA 98504

Dear Sir:

No one not trying to impress our current government leaders believe in any of this "Carbon pollution has reached rampant levels" issue. This is just a means to take more money for larger government. STOP increasing taxes and adding regulations to businesses for Nonexistent climate change. If there is 'warming' it is not human caused.

Stop all this nonsense and leave our business climate alone. There is NO proof of 'climate change', only indications of greedy members of a corrupt government. There is no legal "Clean Air Rule" and all this is just a scare tactic for the uninformed.

Sincerely,

Michael L. Shevham

Wilson, Sam (ECY)

From: michelle wainstein <michellewainstein@gmail.com>
Sent: Thursday, July 21, 2016 8:56 AM
To: ECY RE AQComments
Subject: clean air rule

Dear Governor Inslee -

Please take this clean air ruling opportunity to defend our children's essential resources, air and water. The WA Dept of Ecology rulemaking has power to change our the future for the better, but as it is written, the rule squanders our best chance to defend living things.

I support the expert scientific legal briefs demanding a constitutional and moral rule. The current rule needs to be 10x stronger. Aiming to pollute means climate recovery can't happen for centuries, if ever. That's a crime against humanity and nature. We demand polluters stop poisoning our air.

Please support a cut in pollution of 8% this year, 9% next year, and more every year after that until we get all polluters onboard. A couple years ago 4% was enough to do our fair share. Now it's double. If we wait until 2020 we will need to cut pollution 15% a year to have a shot at recovery and yet still we could cook the planet.

Thank you,

Michelle Wainstein
Seattle, WA

Wilson, Sam (ECY)

From: nancy-ben <nancy-ben@comcast.net>
Sent: Friday, July 22, 2016 3:16 PM
To: ECY RE AQComments
Subject: Comment on the Department of Ecology Clean Air Rule

The carbon dioxide in the atmosphere has passed 400 parts per million, putting us at 45 percent above the pre-industrial level. We are adding carbon dioxide at an increasing rate. These emissions must be dramatically reduced to avert the serious consequences to our environment. We need to reduce greenhouse gas emissions and face up to our fossil fuel addiction.

The Department of Ecology needs to promptly implement clean air standards. The latest draft rules provide ridiculously inadequate measures. Starting by requiring fewer than a couple dozen firms to reduce emissions and asking them to reduce emissions by such a small measure falls far short of what is needed. I urge you to ensure the Clean Air Rule uses the latest climate science as the basis for the carbon reduction requirements for the big climate polluters in our state. Currently the rule relies on outdated science from 2008. The rule must reflect current science. Increasingly people in this state are clamoring for a transition off of dirty fossil fuels to the abundant clean energy alternatives. The Department of Ecology's Clean Air Rule must require meaningful reductions by climate polluters as industries in our state make the transition to clean energy.

Please make the Clean Air Rule strong, meaningful and match the seriousness of the problems our children and grandchildren will be facing in the decades ahead.

Nancy Maranville

Wilson, Sam (ECY)

From: Nancy Shimeall <nshimeall@gmail.com>
Sent: Saturday, July 09, 2016 10:25 AM
To: ECY RE AQComments
Subject: Make the Clean Air Rule science-based

Thank you for the opportunity to comment on the revised draft of the Washington State Department of Ecology Clean Air Rule that aims to cap global warming pollution in Washington State.

I commend Governor Jay Inslee for responding to legislative inaction by pursuing rulemaking to reduce Washington state's carbon pollution to protect current and future generations from the impacts of climate change and air pollution.

The Department made significant changes to the previously released draft rule, including the addition of a reserve account, a registry system, and initial steps toward an aggregate cap over all covered sectors of the economy. These changes have made this a stronger rule than the draft originally released. However, I remain deeply concerned that the proposed Clean Air Rule is insufficient to achieve the state's carbon reduction goals and sets a dangerous precedent for other jurisdictions to follow. I encourage you to make the following changes to strengthen this rule:

- I urge the Department to set more aggressive emissions reduction targets consistent with best available science. James Hansen among other climate scientists set the level at 8% per year starting 2017.. IF WE WAIT UNTIL 2020 THAT YEARLY REDUCTION MUST BE 10% IN ORDER TO AVERT CLIMATE CALAMITY.

- The Department chose to depend on offsets as the primary source of emission reductions. In addition to being an unprecedented approach that could limit the impact of the rule; the fact that offsets can include projects within the capped sectors raises the significant issue of double counting and may cause the Clean Air Rule to fail to achieve the state-mandated emissions reductions. Additionally, the ability to use offsets to meet 100% of your reduction obligation means that there may be no emissions reductions on site, which fails to address the high co-pollutant impacts to fence-line communities.

- Adding a reserve account to accommodate for economic growth and compensate for double counting was a key recommendation of the environmental community. While I appreciate that Ecology heeded this advice, more work needs to be done to properly structure this account, including its size, charging, and other considerations to make it workable.

The Clean Air Rule relies on limited authority and cannot be the comprehensive carbon reduction package Washington needs, with revenue raised from emissions and reinvested into continuing to solve the critical problems of carbon emissions and climate change. However, we believe that even with the limitations presented the Clean Air Rule could still be a stronger mechanism for emissions reductions than this draft reflects.

Thank you for your hard work.

Nancy Shimeall
6634 159th Ave NE
Redmond
Redmond, WA 98052

Wilson, Sam (ECY)

From: Patricia A. Townsend <ptownsen@uw.edu>
Sent: Sunday, July 10, 2016 10:06 AM
To: ECY RE AQComments
Subject: Re: Clean Air Rule

Follow Up Flag: Follow up
Flag Status: Completed

Please make the rule stronger to require more restrictions on CO2 emissions. I am a scientists and knowledgeable of the effects of climate change on our state.

Thank you,
Patricia Townsend
PH. D.
Seattle, WA

Wilson, Sam (ECY)

From: Patrick Mazza <cascadia2012@gmail.com>
Sent: Wednesday, July 20, 2016 3:06 PM
To: ECY RE AQComments
Subject: Comment on Chapter 173-442 WAC, Clean Air Rule

A business-as-usual climate rule for a climate crisis world

Patrick Mazza

When Washington Gov. Jay Inslee in 2015 ordered the state Department of Ecology to draft a rule limiting greenhouse gas emissions, he set a precedent. For the first time, a state government moved to cut climate pollution on the authority of existing environmental legislation.

The groundwork for the rule was the state Clean Air Act, which mandates state government to "(p)reserve, protect and enhance the air quality for current and future generations." On this basis, Ecology has drafted a rule that is in a public comment phase ending this week.

Pollution reductions called for under the rule fall substantially far short of what it would take to actually meet the Clean Air Act mandate. The rule calls for annual 1.7% emissions cuts from large polluters. It would eventually cover two-thirds of state greenhouse gas (ghg) emissions. Thus the overall yearly pollution reduction is more like 1%. That assumes that offsets, which polluters can purchase to meet 100% of their obligations, will actually all generate the real emissions reductions that are claimed. Many are skeptical, and loopholes in the draft rule actually allow one unit of carbon reduction to count for two units in some circumstances.

The actual scientific requirement is closer to an 8% annual ghg cut, and this curve is rapidly growing steeper. By next year it will be around 9%. These numbers are based on the target for recovery of climate stability, returning atmospheric carbon dioxide concentrations to 350 parts per million by 2100. 350ppm is where the atmosphere stops trapping solar heat, the basis of global warming. The longer that CO2 levels are higher than 350ppm – they are now above 400ppm – the more heat the planet will

absorb, and the more probable that feedbacks will push global warming beyond human control – feedbacks including loss of natural carbon sinks such as Arctic permafrost.

This is based on science done by leading climatologist James Hansen and his team for a series of lawsuits promoted by Our Children's Trust. Youth lawsuits are being brought against a number of state governments, the federal government and other national governments. They argue, along the same lines as the theory under which Gov. Inslee ordered the climate rulemaking, that existing constitutional and statutory obligations to protect natural resources are sufficient grounds regulate carbon and other ghgs.

In one of the cases, eight youth have won a court order requiring Washington state to limit climate pollution. King County Superior Court Judge Hollis Hill said the state must issue a rule by the end of the year. Though the state opted to appeal the order, it nonetheless is the legal requirement under which the state is now operating.

The state claims it might need more time. But truly, there is no more time for delay. NASA just reported that the first six months of the year were the hottest on record, 1.3°C warmer than the late 19th century. That is perilously close to the 1.5°C target set by the recent Paris climate summit to avert the worst consequences of climate disruption. Even more alarming is the fact this is 0.3°C above any temperature high previously recorded – a phenomenal spike indicating the planet may be moving into a new climate state.

NASA also reported that Arctic sea ice was at record lows five of the year's first six months. During winter, Arctic sea icepack typically peaks at 40% of its early 1980s extent. That drives growing heat. Ice sends 90% of solar heat back to space, while blue water absorbs 90%. Global warming is already feeding global warming in the Arctic, with a worldwide impact.

If ever the climate crisis was upon us, it is upon us now. Yet the world continues to operate as if it was business as usual – As if minor course corrections can possibly avert a collision with the physical realities of an increasingly disrupted climate. No, they can't. This is why Ecology's draft climate rule is not an adequate response to the Clean Air Act mandate. It is not a climate crisis rule. It is a business as usual rule.

A fundamental problem is a contradiction in the rulemaking process itself. When Gov. Inslee ordered the rulemaking, it was done not only on the basis of the Clean Air Act, but also a 2008 law that set ghg limits for the state: 1990 levels by 2020; 25% below 1990 levels by 2035, and 50% below 1990 levels by 2050. There is wide agreement that these limits are too low, including from Ecology. In a December 2014 update required by law, the department said (on page 18):

"Washington State's existing statutory limits should be adjusted to better reflect the current science. The limits need to be more aggressive in order for Washington to do its part to address climate risks and to align our limits with other jurisdictions that are taking responsibility to address these risks. . . Ecology concludes that Washington's existing statutory statewide reductions limits under RCW 70.235.020, especially limits for 2035 and 2050, need to be updated through changes to the statute."

Critically, Judge Hill also found those limits inadequate to meet Clean Air Act requirements. In a November ruling she said, ". . . the emission standards currently adopted by Ecology do not fulfill the mandate to '(p)reserve, protect and enhance the air quality for current and future generations.'"

Ecology is required under law to submit updates in the limits to the Legislature. In its 2014 report the department recommended waiting until after the Paris summit. In her most recent ruling in April the Judge ordered Ecology to fulfill this legal mandate. That is also part of the ruling that has been appealed. At a July 14 public hearing on the rule in Olympia an Ecology representative said the department is exploring an update and hopes to make recommendations by the end of the year. Everyone understands the 2008 limits are inadequate.

Thus, it is clear that to base the rulemaking on both the Clean Air Act and the 2008 limits sets up a contradiction. If Ecology holds within the 2008 limits, it cannot meet the legal requirements of the Clean Air Act to protect the atmosphere for present and future generations. It's either one or the other.

To say the rule proposed by Ecology even meets the 2008 standard would be a misnomer. In fact, parallel to its coverage of polluters, the rule would only hit around two-thirds of the 2035 target. The remaining emissions reductions would have to come from currently uncovered sectors.

One reason state officials give for holding the rulemaking within the 2008 limits, making them a ceiling rather than a floor, is because they believe it provides more solid footing to fight off inevitable industry lawsuits than basing the process on the Clean Air Act alone. They would rather win a 1% annual pollution reduction than lose with a requirement closer to scientific necessities. But just how solid a groundwork the 2008 law actually provides is open to question. In 2015 State Sen. Doug Ericksen, the oil industry's best friend in Olympia, asked the state attorney general his opinion on what the law actually required.

The AG responded that it places no requirement on the Legislature. "There is no language in the statute requiring the legislature to create a program to achieve greenhouse gas emission reductions." Neither does it provide a legal ground to sue the state if it does not meet the limits. The law "does not expressly create a cause of action for obtaining a court order requiring that the greenhouse gas emission reductions identified in that statute be enforced." Nor can anyone collect damages for failure to reach the limits. "There is no language in RCW 70.235.020 that expressly creates a cause of action for damages against the state for a failure to achieve the greenhouse gas emission reductions identified in that statute."

Certainly any lawsuit brought by the oil industry and other interests will cite that AG opinion to undermine the legal authority of the 2008 law in the rulemaking. They will argue the law was essentially toothless, and have a basis on which to make that case. The Clean Air Act authority is far more solid, and really meeting its mandate would require much more than the business as usual rule now proposed by Ecology.

These are legal points, and they are important. But beyond the legal, technical and bureaucratic framework in which this rule is conceived, another force is at play. It was evident in the July 14 Ecology hearing when person after person placed the issue in the overriding moral context. Around 24 people had been fasting the three days before, mostly parents and grandparents, to ask for a rule worthy of our children. I was one of them. I concluded my testimony with this:

“The ultimate test of any climate policy is what happens on this planet. What will the world look like in 44 years when my 19-year-old daughter is my age? I fear it will be a nightmare world in which civilization is breaking down. The longer we delay acting in proportion to the crisis, the more likely this catastrophic future becomes.

“I implore you, as people I know are aware of these facts, and as concerned about them as I am, to listen to your heart and enact a rule to save our children’s generation. It is up to us to act now in proportion to the crisis we face.”

Once again, I make that call to Ecology, and the governor. This is no longer a business-as-usual world. We need a climate crisis rule for a climate crisis world. Please give us one.

Wilson, Sam (ECY)

From: Philipp Schmidt-Pathmann <psp@neomer.us>
Sent: Thursday, July 21, 2016 10:50 AM
To: ECY RE AQComments
Subject: Comment to Clean Air Rule (WA State)
Attachments: BMU - A milestone for environmental protection - landfilling of untreated wastes consigned to the past.doc; Waste Disposal Position of Alliance90-The Greens cc WRSI.pdf; The Climate Change Mitigation Potential of the Waste Sector - IFEU OEKO UBA[1].pdf

Greetings,
I did attend the online call on June 23, the in-person hearing on July 14th in Olympia (and gave a statement) and I am also submitting three document attached that are vital in the determination process rearing the clean air rule. Waste can be a significant contributor to Greenhouse Gases and depending on method chosen to manage resource waste. Just as the waste hierarchy by the US EPA landfilling is least sustainable (also see attached document written by the German Green Party "Waste Disposal Position of Alliance 90…" (we have a very close working relationship on solid waste and representatives from the German Green Party have been to the US on our behalf on several occasions) followed by incineration without energy recovery. Waste Incineration with energy and material recovery is a large contributor to reducing the carbon footprint. Overall moving to less waste to landfill and more avoidance recycling and reuse coupled with thermal treatment (usually incineration) is an important step in a circular economy. While we produce waste it should not be landfilled or if it has to, needs to be pretreated prior to avoid the environmental impact. Current landfill practices are not sufficient and only pretreated with a TOC (Total Organic Content) of less than 3% should be accepted.

The second attachment "BMU – A milestone for environmental protection - …" is a statement by the German Environmental Minister 2005 regarding the ordinance that prohibits landfilling of untreated solid waste in Germany, a law that went into effect on June 1st 2005. In retrospect, because of this law, Germany has achieved a minimum reduction of Greenhouse Gases of 50 million tons, created over 200,000 jobs and contribute over $50 billion Euros to the German Economy.

The third attachment is a 2014-15 study by our German partners (to get in contact with them please contact me): IFEU Institute and OEKO Institute for the German Federal Ministry of the Environment "The Climate Change Mitigation Potential of the Waste Sector….". The study examines the GHG reduction potential via waste management. It clearly identifies that the US has a significant reduction potential by moving away from landfilling, focusing on recycling and incineration with material and energy recovery.

Please feel free to contact me for further information via email: psp@wrsi.info and psp@neomer.com.
I will be in Europe until August 15th but am available via Email or text: 206-313-9774.

Best,
Philipp Schmidt-Pathmann

Philipp Schmidt-Pathmann, Managing Partner
neomer
Innovations. Sustainability. Business Development.

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Founder and CEO Zero Landfill Initiative (ZLI)
http://www.zerola.org

July 22, 2016

Department of Ecology
Via e-mail to: aqcomments@ecy.wa.gov

Re: Clean Air Rule comments

To the Department of Ecology:

Thank you for the opportunity to submit comments on the proposed rule to reduce greenhouse gas (GHG) emissions. The state of Washington is faced with a critical opportunity to address the most pressing environmental issue on the planet. Unfortunately, the draft rule falls short. Let's face it, you're not going to get a second chance. We encourage you to take substantially more aggressive steps to limit GHG emissions.

Aggregate emissions cap: The rule should establish an aggregate cap on GHG emissions, with best science-based limits. The revised draft takes initial steps towards creating an implicit aggregate cap on economy-wide emissions. However, the rule does not go far enough in articulating an overall limit, and the reduction requirements are not consistent with the best available science.

Limit use of offsets: Offsets should be strictly limited within the program, and the rule should ensure that they are only directed to real, additional, verified, enforceable and permanent projects. In California's carbon reduction program, companies can use offsets for a maximum of 8% of their reduction obligation, and the types of offsets are strictly limited. Washington's program should be similarly strong. We are also concerned about Ecology's staff capacity to set up and regulate a "registry" of these offsets. Strong oversight and regulation is essential to ensuring the validity of the offsets.

Avoid double credit: The rule should limit the use of offsets in covered sectors to avoid double counting. The current draft rule depends on offset projects as the primary compliance mechanism, but because the rule allows these offsets within sectors already required to reduce, we worry that the Department of of Ecology could double-count each project—once as a result of the initial investment, and again after the project is completed.

Encourage the growth of biofuels: Transportation, fueled by gasoline and diesel, is the largest source of carbon pollution in Washington state, making up 46% of our greenhouse gas emissions. Right now, the Rule treats biofuels—a more sustainable alternative to gas and diesel—identically to fossil fuels. Not only is this bad policy, but it puts at risk the growth of a critical climate solution. We recommend that Ecology exempt biomass used for fuels, as is done in California, to make sure we can continue nurturing this as one of the many needed ways to move us beyond oil.

Sincerely,

Rachael & John Osborn
2421 W. Mission Ave., Spokane, WA 99201
rdpaschal@earthlink.net / 509-954-5641

Wilson, Sam (ECY)

From: Raimo Hanski <raikit2@aol.com>
Sent: Friday, July 22, 2016 8:26 AM
To: ECY RE AQComments
Subject: climate Change

Gov. Inslee,
Please ask the Dept of Ecology issue a much stronger Clean Air Rule.
Ask for a requirement of a yearly 6 - 10% reduction in carbon emissions that applies to all emitters in the state.
Thank you

Kathryn Hanski
raikit2@aol.com

Wilson, Sam (ECY)

From: Rick Harlan <ricksongrick@gmail.com>
Sent: Tuesday, July 19, 2016 7:07 AM
To: ECY RE AQComments
Subject: Clean Air rule

Sam Wilson,
Please toughen the Clean Air rule. Less than 2% a year is less than 4 times what science says is needed.

Also:

improve the Rule:

- No double counting offsets;
- Real reductions are needed, limit the use of offsets;
- Agricultural emissions should be covered;
- Vehicle emissions should be covered, like the diesel exhaust affecting neighborhoods around the Port of Seattle;
- Utilities should be held to the stronger requirements of the Clean Air Rule instead of the federal Clean Power Plan;
- And by not holding hearings in Seattle the voices of front line communities were excluded.

Rick Harlan
206 271 8871

This we know: All things are connected like the blood that unites us. We did not weave the web of life, we are merely a strand in it. Whatever we do to the web, we do to ourselves." ---Chief Sealth

Wilson, Sam (ECY)

From: Robert Kaminski <robert.kaminski91@gmail.com>
Sent: Friday, July 22, 2016 4:56 PM
To: ECY RE AQComments
Subject: Clean Air Rule Comments

Good evening Department of Ecology,

I would like to submit some comments on the Draft Clean Air Rule. First and foremost, I believe the reductions targets (1.7% per annum) are far too low to bring much meaningful reduction in Washington-sourced carbon emissions. This, being one of the first carbon reduction rules under serious consideration in the US, needs to set a much stronger precedent for other states to follow; a much higher reduction rate should be mandated, especially given that the actors covered under this rule are large industrial polluters who have large amounts of resources that can be devoted to these tasks.

The rules for carbon offset accounting and and emissions reduction are similarly a problem; the risk of so-called "double counting" is high, as is the potential for exploitation of the carbon "savings bank." This scheme seems to be a bit of a deviation from other cap-and-trade-based rules that I am aware of, and I believe it needs to be re-examined or removed from the final rule.

Further, I am disheartened that this rule does not cover other major sources of carbon pollution - agriculture and transportation. I am unaware of any other nascent policies being drafted between Ecology, Agriculture, and Transportation, but I hope there is something being done to help rein these sources in. A tax on vehicle miles traveled, credits to public transit users, something like that, would help bring some people out of cars and onto buses/trains. Further, expansion of funding for public transit systems would be excellent (although admittedly that is fully in WSDOT court). Some European countries have seen some success in congestion pricing, restricting car use in dense areas, etc., which could be put in place by DOT to meet (strict) goals set in place by Ecology.

A further issue I have with the public hearing process is that there was no hearing held in Seattle or the surrounding area, which made it difficult or impossible for those most affected by environmental pollution and problems, namely low-income persons and indigenous groups, to provide spoken testimony. Ask that in the future greater consideration is given to these groups and the states' economic and cultural center.

In summary, I ask for a stronger rule based on Ecology and the Climate Action Group's own scientific analyses and data. The COP21 agreement calls for limiting global warming to "well below 2C," but that is a target that is very aggressive and requires significant action and commitment from sub-national actors. It will be a hard battle fraught with legal challenges from vested interests, but I know Ecology has the legal authority under the Clean Air Act and the Washington State Constitution to set a global precedent and example for others to follow.

Thank you for the extraordinarily difficult work that you all do. I understand that you are likely of a similar mind and have the same goals as I do - to avoid environmental catastrophe and ensure Washington's incredible ecology and landscapes remain healthy and thriving. Please consider strengthening this rule to bring those goals closer to reality.

Best regards,
Robert Kaminski

--
Robert A. Kaminski
robert.kaminski91@gmail.com
Seattle, WA

Wilson, Sam (ECY)

From: Ron Sherman-Peterson <ronsp44@yahoo.com>
Sent: Friday, July 22, 2016 4:49 PM
To: ECY RE AQComments
Subject: Clean air rule needs to be stronger than proposed

I submitted my comments via the online form and could not tell whether it went through, so I am submitting them again via the e-mail option.

The proposal of a 1.7 percent reduction per year is not sufficient. You need to require reduction of all carbon emissions statewide by 8 percent per year in order to do Washington State's part in preventing a dangerous rise in global warming. Each year this is put off, the percent reductions needed will be greater. You need to base the clean air rule on valid current science. In addition, other requirements of the rule must be strengthened as well, including by the following means:

-- No double counting offsets;
-- Real reductions are needed, limit the use of offsets;
-- Agricultural emissions should be covered;
-- Vehicle emissions should be covered, like the diesel exhaust affecting neighborhoods around the Port of Seattle;
-- Utilities should be held to the stronger requirements of the Clean Air Rule instead of the federal Clean Power Plan.

Thank you,

Ron Sherman-Peterson
Seattle

Wilson, Sam (ECY)

From: Ryan Provonsha <rprovonsha@gmail.com>
Sent: Sunday, July 17, 2016 10:47 AM
To: ECY RE AQComments
Subject: Commenting pro-Clean Air Rule

Nobody ever said implementing legislation like the Clean Air Rule would be easy, or would be popular at first; especially seeing as Washington is an early-adopter of such legislation. But I know that if you stand firm and uphold this legislation, it will be something you'll be able to look back on with pride, knowing that you made a good decision.

I think many of you, like many of the general public, recognize the need to do this, on a general level. But then we are made to feel like we're not being moderate, or reasonable, or mainstream; an argument often made by interests who may frequently be pretty extreme themselves. They argue, purely from a business standpoint as if it were the only valid perspective, that what we need most right now (and always, unsurprisingly) is more jobs, profitability, etc. And we certainly don't deny that jobs and profitability are helpful for the state, its people and its industries, but we do deny that industry needs unlimited rights to pollute in order to remain solvent. And we do deny that only polluting industry can serve as a foundation for our state economy (even when it comes to trade, by the way).

The net effect of industry arguments has been to cast doubt in the halls of government that human life in posterity needs any protection whatsoever. Even though the overwhelming majority of peer-reviewed scientific study confirms that human activity is driving the climate into ever-more extreme states, industry is somehow able to make us feel guilty for requiring the necessary steps to stabilize the climate. And I ask, when it comes to rules like the Clean Air Rule, what other way is there to create safeguards for ourselves within a civil society?

None of this is news to you; I just wanted to put it in perspective again and remind my state government that they are doing the right thing in upholding the Clean Air Rule. Emotionally, I can't understand why Governor Inslee would delay its implementation, but another part of me knows exactly what must have happened.

We turn to you, and ask you to exercise foresight and remain conscientious, and not unduly influenced by moneyed interests. Judicial institutions are among those in this country which retain our highest respect. We have great confidence in you, and hope it will always remain so.

Help us and our society to have a livable future, and don't be afraid to uphold what the courts have already decided.

Thank you sincerely,
Ryan Provonsha
Lynnwood, WA

To the Department of Ecology, regarding the Clean Air Rule (Revised)

My name is Sally Jo Gilbert de Vargas. I write to you as a mother, a grandmother, a public school teacher, an Associate Minister of Interfaith Community Sanctuary in Seattle, and as a citizen of Mother Earth. I am one of about 25 people who fasted for 3 days prior to the public hearing in Olympia on July 14th. I did not get a chance to read all of my statement, so I am submitting it in writing today. Why did we fast? And Why now? Fasting is a spiritual act, an act of purification and self-sacrifice. It is difficult! It requires courage and determination. I myself had to break my fast after 34 hours due to extremely low blood pressure. It felt terrible to fall short of my goal – our goal – but I didn't give up! I came back on Thursday and fasted again for day 3. I urge all of us NOT to give up on our goal of 8% reduction in Carbon Dioxide equivalents. Why now? This is our last chance to influence the Department of Ecology about the proposed Clean Air Rule, which as it stands, falls woefully short of the 8% reduction we need across the board in Washington State and beyond.

Fasting symbolizes the sacrifices we need to make now to ensure a future for our children and future generations. The power to reverse the course of climate change rests with us. The children are pointing the way, and I thank them for that. But it is we adults in power who must make the difficult decisions and sacrifices now to cut back carbon emissions at least 8% per year, starting right away. If we fail to act courageously now, our children will be powerless to reverse the course of global warming when they are adults. We set this mess in motion – not they! We must recognize their right to a livable future. We have the scientific knowledge and expertise to understand and correct the mess we have made. We must base every decision now on sound science. We must have the moral courage to sacrifice our comfort. If we do act now Washington State can inspire and lead the way for other states to do the same and better. We must ensure that we do not reach the tipping point of global warming, after which we know it will be impossible to reverse the trend. We must act with courage – NOW. We the people will stand behind the difficult decisions you, the Department of Ecology, must make.

Thank you for your consideration of my testimony, and the testimony of so many children.

Wilson, Sam (ECY)

From: Senior Resources <guide@olypen.com>
Sent: Friday, July 22, 2016 3:26 PM
To: ECY RE AQComments
Subject: Port Townsend Paper Corp PUBLIC COMMENT -- 7/22/16

Sam Wilson

Periodically the air quality in my neighborhood beside the Blue Heron Middle School is significantly affected by Port Townsend Paper Corp's stench.

Thank-you for noting this.

Stephen Boyd
POB 1717
Port Townsend, WA 98368

Comment on Washington State's Proposed Clean Air Act Rule:

Washington Administrative Code Chapters 173-441 and 442

By Steve Marshall marshallsj@comcast.net

July 22, 2016

There is a major flaw in the proposed rule that can be easily corrected before it would go into effect.

The flaw is that the rule permits organizations that generate large amounts of greenhouse gas emissions to comply with the regulation by using an option to "purchase carbon reduction allowances from other established, multi-sector carbon markets." In other words, under the proposed rule, emissions in Washington State can—and probably will-- be offset by sending money generated in Washington State to out-of-state markets.

The option to send money out-of-state should be removed in favor of using that money to pay for emission reduction units from projects in Washington State. Money spent in Washington State will help the state achieve its carbon reduction goals, but money sent out-of-state will do nothing to reduce state emissions, which is what the legislature intended when it set state emission reduction targets in 2008.[1]

Most of the comments at the public hearings have complained that under the proposed regulations, the state will still fall far short of the goals set by the legislature. Under those circumstances, it not only makes sense to require funds under the program to be spent on Washington State projects, it may be beyond the legal authority of the Department to allow money to be spent on out-of-state carbon markets, where the state has no jurisdiction to make sure those markets are not being manipulated or wasted.

Senator Cantwell opposed a cap and trade bill in Congress because she was concerned that emissions trading would be manipulated the way Enron manipulated the West Coast energy markets. Instead, she and Senator Snow proposed a bipartisan cap and invest alternative, where the funds generated by the cap would be invested in targeted projects to further reduce emissions.

Washington State should limit its regulation to cap and invest—in Washington State projects.

Washington State has legal jurisdiction over industries located in the state and can regulate pollution and emissions generated in the state. The state has no jurisdiction over industries located out-of-state and no power to regulate out-of-state pollution or emissions. Washington State can control and enforce regulations that would cap or reduce pollution and emissions, but has no such power over out-of-state markets. Washington State also has no power to investigate out-of-state markets or to direct priorities

[1] RCW 70.235.020. In the CR 102 to its Proposed Rule Making, Ecology said "Consistent with the Legislature's intent to reduce GHG emissions, Ecology is using its existing authority under the Washington Clean Air Act to adopt a rule that limits emissions of GHGs." But there is nothing in RCW 70.235.020 that authorizes funds generated by regulations on state emissions to be used for out-of-state emission reductions. Each of the targets set under the RCW refers to reduction of overall emissions of GHGs "in the state."

set by out-of-state markets, many of which have had significant problems even in setting workable market price signals.

But perhaps the biggest problem with allowing an out-of-state market option is that it will displace most if not all investments in Washington State projects. Because the price of emission credits from out-of-state markets will likely be far less expensive that any local project, no funds will be invested here in the state. Companies subject to a cap will find the least cost way to comply. Allowing use of out-of-state markets will, as a practical matter, mean that no state projects will be funded. This massive unintended consequence has not been properly analyzed. The best way to deal with it at this stage of the rule making process is to eliminate the option to use out-of-state markets.

In a section called "Purchasing allowances from outside of Washington," The Department of Ecology states in its materials that "in order to help organizations adapt to Washington's emission limits, it makes sense to allow them to participate in existing programs initially. A business can use allowances for 100% of their compliance thorough 2023 and over time the percentage of reductions from out-of-state allowances coming will decline." But this is backward. If Washington wants to accelerate emission reduction projects based in the state to get started, allowing 100% compliance at the start will stifle if not kill those alternatives.

There is an additional reason to require emission reduction units to come from projects in Washington State: Our state is unique in that most of our emissions come from the transportation sector. We have the cleanest and least expensive power grid in the United States, which means our priorities for reducing in state emissions are different from any other state. Allowing use of out-of-state markets that have different priorities makes no sense. Washington State should set priorities, not out-of-state markets.

The state has already set an energy strategy that recognizes our unique circumstances. It is set forth in the 2012 Washington State Energy Strategy issued by the Washington State Department of Commerce pursuant to legislative direction. As the Director of the Department of Commerce said in his preface to the report:

> "The primary focus of the strategy is energy use in the transportation sector where we use the most energy, emit the most greenhouse gases and spend the majority of our energy dollars. Our transportation system is also our least efficient sector—presenting real opportunities to improve efficiency and keep more dollars and jobs in Washington."

The Washington State Energy Strategy was developed under RCW 43.21F.010(4) in which the Legislature declared that "a successful state energy strategy must balance three goals to:

> "Maintain competitive energy prices that are fair and reasonable for consumers and businesses and support our state's continued economic success;
>
> "Increased competitiveness by fostering a clean energy economy and jobs through business and workforce development; and
>
> "Meet the state's obligation to reduce greenhouse gas emissions."

The Washington state energy strategy set forth a number of recommendations that would help meet the state's greenhouse gas emission target and also help the economy. For example, the state energy

strategy emphasized electric vehicles: “Electric vehicles are a reality and our state’s policy approach can make a difference in how quickly they are adopted by consumers and businesses.” Because Washington imports all of its oil from other states or countries, drivers send $10-15 billion a year out of state when we could be using less expensive carbon free electric power from Washington State sources. The Washington State Department of Transportation at the request of the governor published an “Electric Vehicle Action Plan” last year that set forth recommendations on how to accelerate the adoption of electric vehicles in Washington State. The government vehicle fleets are also a candidate for more EVs and can be an early source for Emission Reduction Units, but would need support that could come from ERU payments.

The Department of Ecology also recognizes the Commute Trip Reduction Act programs would be eligible for state emission reduction units[2], but there is no mechanism to ensure that this is a priority. In addition to reducing congestion, which would save commuters time, it would also reduce emissions. Vanpools that are also electric vehicles would accelerate GHG reductions.

There are also Washington State wind projects in need of support that could be used for emission reduction units, which would be especially useful given the phase-out of the Centralia coal plant and the need for more clean energy sources.

The problems is that none of these Washington State based emission reduction projects will get funded through the Clean Air Act regulation plan if companies can buy out-of-state allowances instead.

[2] WAC 173-442-150 (1) (e) (ii) (D) Commute trip reduction programs as established through RCW 70.94.527 per WAC 173-442-160(3)

Date: July 22, 2016
RE: Chapter 173-442 WAC, Clean Air Rule

TO: Washington Department of Ecology
Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600
AQComments@ecy.wa.gov

Comment:

I urge you to adopt a Clean Air Rule that meets the scientific mandate for protecting our global climate. The currently proposed rule calls for less than 2% carbon reductions per year whereas the scientific mandate is for reductions of at least 8% per year. Although it is clear that Washington State cannot solve this global problem on its own, there is neither a moral nor a legal justification for Washington State failing to do its part.

This is an urgent matter. In addition to decades of research backing the overwhelming scientific consensus that human-induced climate change is real and potentially catastrophic if greenhouse gas emissions are not rapidly reduced, the most recent global temperature data show an unprecedented spike. We may already be entering a state of climate crisis. I expect my state government to respond accordingly and fulfill its solemn responsibility to "(p)reserve, protect and enhance the air quality for current and future generations" [as mandated in the Clean Air Act].

Thank you for considering this comment.

Theodore L Anderson, PhD
Atmospheric Scientist
2807 NW 68th St
Seattle, WA 98117
email: tadand99@gmail.com

Wilson, Sam (ECY)

From: Thad Curtz <curtzt@nuprometheus.com>
Sent: Friday, July 22, 2016 6:11 PM
To: ECY RE AQComments
Subject: Comments on the Clean Air Rule draft

My wife and I have two grandchildren; Hazel is 2 1/2 and Everett is 6. I hope that in 65 years, when they're my age, the planet will not be a much harsher and more difficult place to live...

I think that anyone who has looked seriously at this issue knows that the scientific consensus is that we need an 80% reduction from 1990 levels by 2050, not the 50% reduction that's Washington's current goal. We know that the current official estimates of climate effects are ten years or so behind current field work, and that things look more and more serious.

I do not think that the current draft of the rule covers a large enough share of the emissions in the State, and I don't think that the rate of reductions that it will produce is sufficient to address the severity of this problem. I hope you'll do what you can to strengthen it, and to establish a rule which will reduce our State's share of these pollutants as rapidly and as effectively as possible.

Best wishes,
Thad Curtz, Ph.D.
113 17th Ave SE
Olympia, WA 98501

7430 Tsuga Court, SW
Olympia, WA 98512
July 19, 2016

Sam Wilson
Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

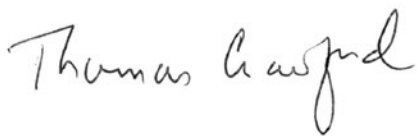
RE: Proposed Clean Air Rule

Dear Sam:

I am writing to express my opinion about the Department of Ecology's proposed clean air rule. As someone who has volunteered for the past eight years here in Thurston County to help reduce our communities' greenhouse gas emissions, I am very concerned about carbon pollution and its immediate and long term effects on real people in our communities. I helped found Thurston Climate Action Team, which worked with our local economic development council to attract federal money to our communities to establish an effective energy efficiency service (Thurston Energy). I also led a community-wide greenhouse gas inventory, proposed science based targets for reducing our carbon pollution which were adopted by Thurston Regional Planning Council as part of its county-wide sustainability plan, and am now working with elected officials and other community leaders to establish a county-wide clean energy fund.

With this background, I am very aware of the threat that carbon-pollution-driven climate disruption poses to us in Thurston County, and throughout the state of Washington. I also rejoiced at the recent King County Superior Court ruling in favor of urgent action to establish science-based limits on carbon pollution (e.g., 80% reduction from 1990 levels by 2050). To quote Judge Hill, "the youths'] very survival depends upon the will of their elders to act now, decisively and unequivocally, to stem the tide of global warming…before doing so becomes first too costly and then too late." As Judge Hill made clear, now is the time for bold action on this front. I am deeply concerned that the Department of Ecology's proposed rule doesn't go near far enough, and squanders an historic opportunity to make a real difference in the battle against climate catastrophe. This court ruling provides a solid legal basis for moving much further than is proposed in this rule. Please use this opportunity, if not for the sake of us parents and grandparents, then for the sake of our children and grandchildren (I have four grandchildren and one great-grandchild).

Thank you for your consideration.



Tom Crawford

Cc: Governor Jay Inslee

Director Maia Bellon

Wilson, Sam (ECY)

From: Vicki Bekkers <vicki.b1013@gmail.com>
Sent: Tuesday, July 19, 2016 10:09 AM
To: ECY RE AQComments
Subject: Clean Air Rule

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Lawmakers,

I think we need to make the strongest rules possible, going beyond, the minimum recommendations. We are on a path to disaster for future generations. Please be courageous and do what's right. Thank you. 98115

Wilson, Sam (ECY)

From: Vicki Robin <1vickirobin@gmail.com>
Sent: Thursday, July 21, 2016 10:18 PM
To: ECY RE AQComments
Subject: Comment on Clean Air Rule

Thank you for receiving comments on this new Clean Air Rule.

Since discovering that the FCLP of the EA-18G Growler at the Outlying Field on Whidbey Island was disrupting transfer of our best farmland from older to younger farmers because the generation coming up does not want to farm under the deafening noise of the Growlers, I began to research how the Navy is impacting the life of our region.

One day watching 4 planes on the "race track" circling around, landing, bouncing up, circling around again I began to wonder how much carbon was going into the atmosphere from this training.

I learned that one hour of Growler flight burns 1300 gallons of jet fuel, emitting 12.5 Metric Tons CO2. That is equal to 30,000 car miles driven! Last time I saw the Growlers training there were 4 in the air. I gleaned from the web that in 2013 training happened 3 hours a day, five days a week. That's 60 flight hours a week. Doing the math, that would equal 800 metric tons a week. That's 40,000 metric tons a year. And that's just from the training flights. In addition they do stationary run-ups of the planes at Ault field I believe daily to keep them in good shape. That might double the Metric Tons of CO2 emitted just by the Growlers at NASWI bringing it close to the threshold of an industry required to report to you. We also have Fairchild and McChord Air Force bases in WA which surely takes the total over 100,000 Metric Tons a Year

from military aircraft.

Now let's add the carbon pollution from manufacturing the Growlers and other jets and then consider that our elected officials have proudly announced that we have passed a budget including 35 more Growlers.

I am trying to quantify the carbon pollution not just of war but of all the training and preparations and weapons manufacture in support of national defense and find it is impossible to get these numbers BECAUSE THE PENTAGON IS NOT REQUIRED TO ACCOUNT CO2 EMISSIONS as part of our national commitment to lowering CO2 emissions to below 1990 levels.

Contemplate that for a moment. Surely the military in our state accounts for well over the 100,000 Metric Tons of CO2 pollution BUT THEY ARE NO WHERE ON YOUR LIST OF MAJOR CARBON POLLUTERS.

I have come to the very disturbing conclusion that our "military industrial complex" requires behavior that will not only prevent us from meeting our targets but will put illegal and unconscionable levels of CO2 pollution into the atmosphere - putting climate stability and thus all life at risk.

And yet we cannot talk about it. Is it because the military industrial complex has become not only too big to fail but too big for civilian oversight, too big to be accountable to the citizens of this state, nation and world, and so big, so woven into our national identity and prosperity and "interests" (corporate interests) that questioning the Pentagon's right to disrupt the climate is simply not up for discussion. Ever.

You do not mention the military as a sector. Your pie chart hides the military's inordinate contribution to our carbon distress.

My request is that you at least comply with the Paris accords and mandate an accounting of the carbon and other climate disrupting gas pollution in Washington State as part of our honest commitment to complying with Clean Air Rules. You don't have to question our military intervention across the world. You don't have to disparage those who serve with a sense of honor and nobility. You don't have to criticize the policies of war. You simply have to require that all military bases in Washington State deliver their accurate accounting of their carbon emissions per annum and if it exceeds targets require them to submit a plan for bringing their emissions back to a 1990 level without sacrificing national defense. None of us has any idea what that accounting will show or how our very intelligent and creative leaders will find to secure the peace with a lower carbon footprint.

I also request that you make it known to the public that you have identified the military in our state as one of the industries above the 100,000 Metric Tons threshold that will be held accountable. I request you change your website and pie chart to indicate that. You don’t have to do this with fanfare or indignation, but rather with quiet dignity so the truth is reflected. Give the citizens a full deck to play with as we the people try to figure out how to pull our species and many others off the brink of destruction.

I would like a personal reply to this email with your stated intention to follow up on this requirement that the military as a sector report to you or the reasons you won't or can't do it. I know this request is extremely difficult to take on because we are cowed by the military into not questioning them, we are told we are colluding with the enemy and making our country weak if we question their compliance with the laws of the land, but I trust you will take this to heart.

With best regards and a sliver of hope,

Vicki Robin

Wilson, Sam (ECY)

From: Vieira John <vieivintage@frontier.com>
Sent: Tuesday, July 19, 2016 12:41 PM
To: ECY RE AQComments
Subject: Primates

Your obstinate behavior follows the lower primates who graze the fields for sustenance and have no idea that carbon exits or much less understand the planet's vulnerability. You should be ashamed of your selves. Youngsters have to go to court to challenge your weak and faint science in response to climate change.

Wilson, Sam (ECY)

From: V <boricuavv@gmail.com>
Sent: Wednesday, July 20, 2016 6:31 PM
To: ECY RE AQComments
Subject: Chapter 173-442 WAC, Clean Air Rule Chapter 173-441 WAC, Reporting of Emissions of Greenhouse Gases

The actual scientific requirement is closer to an 8% annual ghg cut, and this curve is rapidly growing steeper. By next year it will be around 9%. These numbers are based on the target for recovery of climate stability, returning atmospheric carbon dioxide concentrations to 350 parts per million by 2100. 350ppm is where the atmosphere stops trapping solar heat, the basis of global warming. The longer that CO2 levels are higher than 350ppm – they are now above 400ppm – the more heat the planet will absorb, and the more probable that feedbacks will push global warming beyond human control – feedbacks including loss of natural carbon sinks such as Arctic permafrost.

Please go back to the table and write consistent, better rules now, before it's too late. At the rate we're going, it might already be too late.

Virginia Velez
Bainbridge Island, WA 98110

Wilson, Sam (ECY)

From: Whitney Howe <whitney.moller@gmail.com>
Sent: Tuesday, July 19, 2016 2:16 PM
To: ECY RE AQComments
Subject: Fix the Clean Air Rule
Attachments: Mona and Mama.JPG

Attached is a picture of me with my daughter Mona - she is 2 years old and loves bubbles, giraffes, and dancing. She's a happy and carefree child with one hell of a burdened life awaiting her. She will see in her lifetime the ravages of climate change, she will witness more and more people dying from extreme heat, lack of food and water, and the extinction of 50% of the animal species on Earth. She will likely not get to experience the profound joy of parenthood, because it will be too cruel and strained a world to bring a child into. I write to you today, and I participate in climate activism, because I still have hope that those with the power to make a difference will do everything necessary to reverse this course. **Just to be clear: that's you, and the time is now.** We are the last generation with the ability to create policy to reverse this course toward climate chaos.

Climate Scientist James Hansen has calculated that we need to reduce carbon emissions by 8% per year to get us back on the path to climate stability, and this draft rule cuts emissions by 1.7% - nowhere near where we need to be. I'm sure I don't need to remind you that the Department of Ecology was sued by a group of children fighting for their right to clean air, fighting for the Department of Ecology to protect them and their future. I don't need to remind you that they won, and that Judge Hill ordered you to write a clean air rule based on current climate science. **Your appeal of this ruling is shameful, as is the weak draft rule you have written.** Washington should be the leader on this; citizens should not have to sue and protest and write the Department of Ecology to force them to do their job. Since you seem to need that push, here are some helpful suggestions for improving the rule:

- Remove the ability to double count offsets and limit the use of offsets altogether;
- Cover vehicle and agricultural emissions;
- Hold utilities to the stronger requirements of the Clean Air Rule and not the federal Clean Power Plan;
- Seek input from communities who stand to be most affected by climate change

I have heard the governor and Ecology employees complain about their hands being tied, and about punishing industry. How will industry fare when crops can't grow, or when the Duwamish industrial zone is underwater? That's the thing about climate - access to clean air, and weather stability, and food resources, and water - eventually it's going to affect us all. Maybe not you (I don't know your age), but probably your children and definitely your grandchildren. At some point, we are going to be forced to change our systems, and we can do it now or we can do it when we have no other choice because the world is literally crumbling around us. For the sake of my daughter and countless other children like her, it's time to untie your hands and do what you know is right. **Fix the rule: the kids can't wait.**

Sincerely,
Whitney Howe

Wilson, Sam (ECY)

From: William McPherson <wrmcpherson@gmail.com>
Sent: Friday, July 15, 2016 11:16 AM
To: ECY RE AQComments
Subject: Text of my Testimony

I testified on July 15 on the Webinar; below is the text of my testimony if the court reporter would like to see it.

I am William McPherson, President of the board of Unitarian Universalist Voices for Justice. I am a retired diplomat. I would like to set context for the Clean Air Rule at the global, national and state levels.

The US agreed with 194 other countries on the Paris Agreement. Our pledge (Nationally Determined Contribution) is too weak, and along with other pledges will lead to 3.2 degree increase; instead 26-28% by 2025 US should pledge 40%.

To reach our stated goal of "less than 2 degrees," the world is obligated to stay within a carbon budget of 1000 gigatons. Human induced emissions have amounted to 565 gigatons so far, leaving 435 gigatons, which at current rates (30 gigatons per year) would be exhausted in 15 years, by 2030. Reductions must accelerate.

How do we fit this budget? Washington is at 10 tonnes per person per year, which is better than U.S. average (20) but we are behind CA, OR, and BC; further, we are at more than twice world average (4.6), and at five times level advocated by science, 2 tonnes per capita.

If a carbon budget target were to be realized, we would need to reduce at much more ambitious rate. It is a moral obligation for us to approach reductions not only in terms of tonnage in state reduction but also in terms of tonnage per person. I urge ECY to analyze and report the effect of the rule on tonnage per person.