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**Western Environmental Law Center**

July 22, 2016

*Via Electronic & U.S. Mail (exhibits available here)*

Sam Wilson  
Department of Ecology  
P.O. Box 47600, Olympia, WA 98504-7600  
Email: [AQComments@ecy.wa.gov](mailto:AQComments@ecy.wa.gov)

Re: Comments on Ecology’s Proposed Clean Air Rule

Dear Mr. Wilson,

These comments are being submitted on behalf of our clients, Aji and Adonis Piper, Wren Wagenbach, Lara and Athena Fain, and Gabriel Mandell, the youth who took the Washington Department of Ecology (“Ecology”) to court for failing to protect their fundamental constitutional rights in response to climate change in *Foster, et al. v. Ecology*. These young people secured a court order directing Ecology to promulgate a rule limiting greenhouse gas emissions in Washington by the end of 2016. These comments are also submitted on behalf of the people and organizations who believe these children have a constitutional right to a livable future, a list of whom is included as Exhibit A to these comments. Finally, these comments are submitted on behalf of all future generations and the rights and natural resources we are working hard to pass down to them, and to whom you owe a profound obligation as their fiduciary trustee.

Thank you for the opportunity to comment on Ecology’s Proposed Clean Air Rule. We truly hope that you take this opportunity to promulgate a rule that is based on science, as time is running out. Our comments are supported by declarations by some of the world’s most foremost climate scientists and policy experts. As we rapidly approach climate tipping points, only the current Ecology policymakers are capable of protecting the rights of these young people. They, and the world’s children, are depending on you.

**I. INTRODUCTION**

Ecology has clear constitutional and statutory responsibilities to cap and regulate carbon dioxide emissions based upon best available science. The best way to do that is through the direct regulation of known emission sources to force polluters to implement the pollution-prevention technology that is needed to eliminate the need for the pollution in

the first place. Technology-forcing serves as a bedrock principle of the federal Clean Air Act and has been described as follows:

The idea, briefly put, is that the government can order into being technological achievements not now enjoyed by a particular industry. A policy of technology-forcing assumes that existing market forces fail to produce an appropriate level of pollution control, either because of explicit collusion among the manufacturers<sup>1</sup> or because of the inability of spillover victims to communicate and enforce their needs within the market. A policy of technology-forcing presupposes also that intervention by law will bring a response, either from the manufacturers themselves or equipment suppliers, and that these new forces can be loosed to create a technology that is “superior” to the ones it replaces. The metaphors of this movement are of reluctance overcome, of fires being lit, of perceived limits quickly surpassed, of wills and ways.<sup>2</sup>

Ecology’s proposed Clean Air Rule, as it is currently structured, serves to undercut technological solutions to climate change. A cap and trade system, if it is to be used at all, should be the cherry on top of a powerful regulatory scheme mandating the reduction, and ultimate elimination, of carbon dioxide emissions. Cap and trade can potentially be one tool to make a scientifically-targeted regulatory program more palatable for those corporations who put profits before the health and wellbeing of their children and future generations. However, it should not be used as the centerpiece of a regulatory plan that exempts, excuses and makes allowances for not reducing emissions that can technically, economically and feasibly be reduced to protect life, liberty, and all of the fundamental rights of citizens, especially Washington youth and future generations.

These comments set forth both a specific critique of the proposed Clean Air Rule and identifies alternative regulatory mechanisms that Ecology has the existing authority to promulgate and implement. As you know, in June 2014, youth submitted a Petition for Rulemaking with the Department of Ecology asking the agency to use its existing authority to cap and regulate GHG emissions based upon best available science. Two years later, we are saddened and frustrated that Ecology continues to ignore the scientific consensus on what needs to be done to stem the tide of climate change. Ecology, as the legislatively designated trustee of the natural resources of Washington, must adopt a rule to achieve science-based emission reductions necessary to do Washington’s part to stabilize the climate and protect our oceans.

## II. THE PROPOSED RULE DOES NOT COMPLY WITH THE COURT ORDER IN *FOSTER, ET AL. v. ECOLOGY*

On June 24, 2014, eight young Washingtonians filed a petition for rulemaking with Ecology, asking that the agency use its existing legal authority to (1) promulgate a

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<sup>1</sup> Indeed, the Clean Air Act was largely passed in response to the “smog conspiracy,” whereby automobile manufacturers conspired to retard the development of pollution prevention control technology.

<sup>2</sup> Rodgers, 1 Environmental Law at § 3.25(A).

rule mandating reductions of greenhouse gases (“GHGs”) based upon the most current climate science; and (2) and make its statutorily-required recommendation to the legislature on adjusting GHG emission limits (RCW 70.235.040) based on current science through rulemaking.<sup>3</sup> On August 14, 2014, Ecology denied Youth Petitioners’ Petition for Rulemaking.<sup>4</sup> Without addressing the scientific basis for the proposed rule, or its legal responsibility to manage essential natural resources such as air and water, the agency summarily denied the petition for three reasons: (1) nothing in RCW 70.235 requires Ecology to adopt different emissions reductions, develop a plan to ensure those reductions, or implement the monitoring requirements in the proposed rule; (2) Washington “is working to achieve the reductions” set forth in RCW 70.235 and “the measures it is taking are an alternative approach to your proposed rule;” and (3) none of the additional cited sources in the petition require Ecology to adopt the proposed rule.<sup>5</sup> After over a year of litigation, on November 19, 2015 the Court issued a landmark decision outlining Ecology’s legal responsibilities to take immediate action to address climate change.<sup>6</sup> At that time, the Court did not order Ecology to undertake rulemaking as Governor Inslee had directed Ecology to do so in July 2015, shortly after meeting with the youth petitioners to discuss the case.

After Ecology withdrew the proposed Clean Air Rule in February 2016, the youth went back to Court, this time securing a court order directing Ecology to do two things: “(1) Ecology shall proceed with the rulemaking procedure to adopt a rule to limit greenhouse gas emissions in Washington state as directed by Governor Inslee in July 2015, and shall issue the rule by the end of calendar year 2016; (2) Ecology shall provide a recommendation to the 2017 legislature on greenhouse gas limits for the state of Washington as provided in RCW 70.235.040.”<sup>7</sup> When exercising its authority to promulgate a rule regulating carbon dioxide emissions as mandated by Court order, Ecology has a responsibility to fulfill its legal obligations as interpreted by Judge Hill in the *Foster* case.

a. Ecology’s Existing Efforts Are Inadequate

Importantly, in the *Foster* case, the Court found that Ecology’s “alternative approach” to dealing with climate change was legally insufficient. Specifically:

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.’ The regulations currently in place specify technological controls of a small number of air pollution sources while not even addressing transportation which as of 2010 was responsible for 44% of annual total GHG emissions in Washington State. *One need*

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<sup>3</sup> Petition for Rulemaking (June 17, 2014) (Exhibit B).

<sup>4</sup> Ecology’s Denial (August 14, 2014) (Exhibit C).

<sup>5</sup> *Id.* at 1.

<sup>6</sup> *Foster, et al. v. Ecology*, No. 14-2-25295-1 SEA (King County Superior Court) (Order Affirming the Department of Ecology’s Denial of Petition for Rulemaking) (Nov. 19, 2015) (Exhibit D).

<sup>7</sup> *Foster, et al. v. Ecology*, No. 14-2-25295-1 SEA (King County Superior Court) (Order on Petitioners’ Motion for Relief Under CR 60(b)) (May 16, 2016) (Exhibit E).

*only go back to Ecology's pronouncement in the December 2014 report to appreciate the inadequacy of its current efforts to preserve, protect and enhance the air quality for current and future generations.*<sup>8</sup>

In rendering her decision, the Court made it clear that Ecology needed to undertake additional actions to protect the fundamental rights of the youth petitioners:

In fact, as Petitioners assert and this court finds, their very survival depends upon the will of their elders to act now, decisively and unequivocally, to stem the tide of global warming by accelerating the reduction of emission of GHG's before doing so becomes first too costly and then too late. The scientific evidence is clear that the current rates of reduction mandated by Washington law cannot achieve the GHG reductions necessary to protect our environment and to ensure the survival of an environment in which Petitioners can grow to adulthood safely. In fact, in its 2014 report to the legislature, the Department stated, "Washington'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 . . . ."<sup>9</sup>

The Court's findings regarding the inadequacy of Ecology's current approach to climate change is pertinent as it highlights where Ecology must focus its efforts when regulating carbon dioxide emissions.

b. Ecology Has A Mandatory, Statutory Duty To Protect Air Quality for Current & Future Generations Under the WA Clean Air Act

The Court found that Ecology "does have the mandatory duty under the Clean Air Act to '[a]dopt rules establishing air quality standards' for GHG emissions, including carbon dioxide that 'shall constitute minimum emissions standards throughout the state.' RCW 70.94.331(2)(a)(b). *This obligation must be implemented in a manner that '[p]reserves, protect[s] and enhance[s] the air quality for the current and future generations.'* RCW 70.94.011."<sup>10</sup> The draft Clean Air Rule violates the plain language of the Clean Air Act as it will not "preserve, protect, and enhance the air quality for current and future generations."<sup>11</sup> Furthermore, the draft Clean Air Rule violates the Legislature's express purpose for adopting the Clean Air Act. The Legislature has found that:

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

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<sup>8</sup> *Foster, et al. v. Ecology*, No. 14-2-25295-1 SEA (King County Superior Court) (Order Affirming the Department of Ecology's Denial of Petition for Rulemaking) (Nov. 19, 2015) at 6 (emphasis added) (Exhibit D).

<sup>9</sup> *Id.* at 5.

<sup>10</sup> *Id.* at 6 (emphasis added).

<sup>11</sup> RCW 70.94.011.

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.<sup>12</sup>

These are not merely words on paper. When Ecology implements its delegated authority to “adopt rules establishing air quality objectives and air quality standards” and “adopt emission standards which shall constitute minimum emission standards throughout the state,”<sup>13</sup> it must do so in a manner that fulfills the legislative intent as expressed in RCW 70.94.011. The draft Clean Air Rule fails to do so.

c. Ecology Has A Constitutional Duty to Protect Public Trust Resources

The Court held that “Washington courts have found that this provision [WA Const. Art. XVII, Sec. 1] requires the State through its various administrative agencies, to protect trust resources under their administrative jurisdiction.”<sup>14</sup> “Therefore, the State has a constitutional obligation to protect the public’s interest in natural resources held in trust for the common benefit of the people of the State.”<sup>15</sup> The Court recognized the scientific reality that “[t]he navigable waters and the atmosphere are intertwined and to argue a separation of the two, or to argue that GHG emissions do not affect navigable waters is nonsensical. Therefore, the Public Trust Doctrine mandates that the State act through its designated agency to protect what it holds in trust. The Department of Ecology is the agency authorized both to recommend changes in statutory emission standards and to establish limits that are responsible.”<sup>16</sup>

Ecology continues to ignore the fact that it has a constitutional duty to protect Public Trust Resources in the state. The draft Clean Air Rule will not protect public trust resources within Ecology’s jurisdiction such as air, tidelands, shorelands, and water.

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<sup>12</sup> RCW 70.94.011.

<sup>13</sup> RCW 70.94.331(1), (2).

<sup>14</sup> *Id.* at 7.

<sup>15</sup> *Id.* at 8.

<sup>16</sup> *Id.*

d. The Youth Have Fundamental & Inalienable Rights to Live in a Healthful & Pleasant Environment

Most significantly, the Court acknowledged that “Ecology’s enabling statute states, “[I]t is a fundamental and alienable right of the people of the State of Washington to live in a healthful and pleasant environment.” RCW 43.21A.010. Although courts have stated that a statutory duty cannot be created merely from the words of the enabling statute, this language [in RCW 43.21A.010] does evidence the legislature’s view as to rights retained under Article I, Section 30” of the Washington Constitution.<sup>17</sup> In light of those fundamental legal rights,

If ever there were a time to recognize through action this right to preservation of a healthful and pleasant atmosphere, the time is now as: ‘Climate change is not a far off risk. It is happening now globally and the impacts are worse then previously predicted, and are forecast to worsen . . . If we delay action by even a few years, the rate of reduction needed to stabilize the global climate would be beyond anything achieved historically and would be more costly.’<sup>18</sup>

Ecology is legally obligated to promulgate a rule that complies with the Court’s prior interpretations of the law in the *Foster* case, as that is the controlling precedent. Unfortunately, for the reasons set forth below, Ecology’s proposed Clean Air Rule does not come close to satisfying the law as specified in Judge Hill’s order, including Ecology’s statutory, constitutional and public trust obligations. Ecology is legally and morally obligated to create a statewide Climate Action Plan that protects the fundamental constitutional rights of young people in this state.

III. ECOLOGY HAS THE LEGAL AUTHORITY & DUTY TO PROMULGATE SCIENCE-BASED EMISSION LIMITS

As described above, Judge Hill clearly laid out the constitutional and statutory framework for Ecology to promulgate a rule that fulfills its legal obligations while protecting the rights of young people and future generations. In addition, Ecology has other sources of authority that can and should be invoked in developing a true Climate Action Plan based upon science. Climate change is an “all hands on deck” issue that requires Ecology to implement the full panoply of their legal authority.

a. Ecology Must Do Its Part To Reach Global Climate Stabilization Levels

RCW 70.235.020 sets the following *floor* for GHG emission reductions:

- (i) By 2020, reduce overall emissions of greenhouse gases in the state to 1990 levels.

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<sup>17</sup> *Id.* at 9.

<sup>18</sup> *Id.* (quoting Ecology, Washington Greenhouse Gas Emissions Reduction Limits, Prepared Under RCW 70.235.040 (Dec. 2014) (Exhibit G)).

- (ii) By 2035, reduce overall emissions of greenhouse gases in the state to twenty-five percent below 1990 levels;
- (iii) By 2050, the state will do its part to reach global climate stabilization levels by reducing overall emissions to fifty percent below 1990 levels, or seventy percent below the state's expected emissions that year.

Ecology has correctly noted that this statute reflects “the Legislature’s intent to reduce GHG emissions,” but improperly views the statutory emission limits as a constraint on its authority to establish science-based GHG emissions limits.<sup>19</sup> The AG has interpreted this statute as suggesting that “the legislature intended the reductions goals to be taken seriously . . . .”<sup>20</sup> *RCW 70.235 does not in any way limit Ecology’s authority to promulgate a science-based rule; indeed, the statute only sets a floor for GHG emission limits and does not preclude Ecology from recommending more stringent limits pursuant to its existing statutory authority and constitutional obligations.*<sup>21</sup> It would be illogical to interpret RCW 70.235 as the most stringent emission limits that Ecology can adopt. For example, would Ecology be in violation of the statute if it were to achieve emissions reductions of 26% below 1990 levels by 2035, instead of 25%? This would be an absurd result.<sup>22</sup> What is clear from the plain language of RCW 70.235.020 is the legislature’s intent that Washington base its efforts on the best available climate science and “do its part to reach global climate stabilization levels,” which the current scientific evidence demonstrates is global atmospheric concentrations of 350 ppm by the end of the century, a standard never disputed by Ecology.

When the statute is read in its entirety, it is clear that Ecology is not constrained by the emission targets based in RCW 70.235.020. Indeed, the State’s GHG reduction statute imposes the following mandatory duty on Ecology:

Within eighteen months of the next and each successive global or national assessment of climate change science, the department shall consult with the climate impacts group at the University of Washington regarding the science on human-caused climate change and provide a report to the legislature summarizing that science and make recommendations regarding whether the greenhouse gas emissions reductions required under RCW 70.235.020 need

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<sup>19</sup> Ecology, SEPA Environmental Checklist – Clean Air Rule, Appendix A, Staff Report – SEPA Non-Project Review Form, Proposed Clean Air Rule (May 2016) at 5.

<sup>20</sup> Attorney General Opinion to Senator Doug Ericksen (Sept. 1, 2015) at 2.

<sup>21</sup> While we do not necessarily agree with the interpretation of RCW 70.235 by the Attorney General’s Office, it has taken the position that RCW 70.235 is not enforceable, nor binding on the State. Thus, whether our legal interpretation is correct or Ecology follows the advice of the Attorney General, the statute does not pose any barrier to Ecology’s ability to fully implement its statutory, constitutional, and public trust mandate. *Id.* at 1 (finding that the emission “reductions are not a ministerial duty of any specific state official.”).

<sup>22</sup> See *Tingley v. Haisch*, 159 Wn.2d 652, 664, 152 P.3d 1020 (2007) (quoting *State v. J.P.*, 149 Wn.2d 444, 450, 69 P.3d 318 (2003) (“A reading [of a statute] that produces absurd results must be avoided because ‘it will not be presumed that the legislature intended absurd results.’”) (internal quotations omitted)).

to be updated.<sup>23</sup>

This language makes it clear that the legislature intended the limits be based upon the most current climate science. After Governor Inslee directed Ecology to make this recommendation to the legislature by July 15, 2014,<sup>24</sup> the Youth Petitioners asked Ecology to make its recommendations to the Legislature through the rulemaking process because “Ecology’s legislative recommendations implicate youth petitioners’ and future generations’ rights to essential public trust resources . . . .”<sup>25</sup> It has been over eight years since RCW 70.235 was enacted, and Ecology has still not made a recommendation to the legislature to update the reductions in RCW 70.235.020, despite several advances in the climate science. This failure is fatal to the development of the Clean Air Rule as it is impossible for Ecology to target its reductions in a fashion that protects the rights of young people and future generations, if it continues to refuse to tell the public what those targets should be.

Ecology’s independent decision to target the Clean Air Rule to the emissions limits in RCW 70.235, rather than the best science, is arbitrary in light of the fact that Ecology has concluded that “Washington State’s existing statutory limits should be adjusted to better reflect the current science” and that “[t]he 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.”<sup>26</sup> Ecology’s continued failure to make a substantive “recommendation” to the Legislature to update RCW 70.235.020 based upon current climate science serves to exacerbate, prolong, and potentially ensure perpetually the impairment of Youth Petitioners’ fundamental and inherent rights to a healthful and pleasant environment.<sup>27</sup> Not only is Ecology failing to take legally required action,<sup>28</sup> but the agency is affirmatively advocating, by virtue of its silence, that the Washington Legislature “impos[e] risks on future generations (causing intergenerational inequities) and liability for the harm that will be caused by climate change that we are unable or unwilling to avoid.”<sup>29</sup> In light of the clear threats to Youth Petitioners’ inalienable rights to a healthful and pleasant environment, Ecology’s decision to target the Clean Air Rule to RCW 70.235.020 is irrational and will not be upheld by a

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<sup>23</sup> RCW 70.235.040.

<sup>24</sup> Washington Executive Order 14-04 (April 29, 2014) (Exhibit F).

<sup>25</sup> Youth Petition for Rulemaking (June 17, 2014) (Exhibit B) at 53.

<sup>26</sup> Ecology December 2014 Report (Exhibit G) at 18. Ecology’s action essentially asks the Legislature to violate the Public Trust Doctrine which “prohibits the State from disposing of its interest in the waters of the state in such a way that the public’s right of access is substantially impaired, unless the action promotes the overall interests of the public.” *Rettkowski*, 122 Wn.2d at 232.

<sup>27</sup> Ecology December 2014 Report (Exhibit G) at 15 (“Globally, 2013 was the fourth warmest year on record. Globally averaged temperature has increased by 1.5° or 0.85°C between 1880 and 2012. The [IPCC] confirmed continuing the current pattern of greenhouse gas emissions would likely lead to a rise in temperature which will pose unprecedented risks to people’s lives and wellbeing.”).

<sup>28</sup> Ecology is now court ordered to make the recommendation to the legislature in advance of the 2017 legislative session. *Foster et al. v. Ecology*, No. 14-2-25295-1, King County Superior Court (Order on Petitioners’ Motion for Relief Under CR 60(b)) (May 16, 2016) (Exhibit E) at 3 (“Ecology shall provide a recommendation to the 2017 legislature on greenhouse gas limits for the state of Washington as provided in RCW 70.235.040.”).

<sup>29</sup> *Id.* at 18.



court of law.

Furthermore, Ecology's claims that "[t]he proposed rule is intended to at a minimum achieve the statutory reductions in Chapter 70.235 RCW," is contradicted by information in the rulemaking record.<sup>30</sup>

It makes no sense for Ecology to promulgate a Clean Air Rule in advance of making its recommendation to the Legislature to revise the emission reductions in RCW 70.235.020. The science is clear as to what those reductions need to be, but Ecology continues to abdicate its moral and legal responsibility to tell Washingtonians how we collectively must reduce our GHG emissions to "do [our] part to reach global climate stabilization levels."<sup>31</sup> Because Ecology is now court-ordered to make this legislative recommendation, it is imperative that Ecology target its Clean Air Rule towards achieving the science-based emission reductions contained in its recommendation, not the reductions set forth in RCW 70.235.020, which the agency acknowledge would lead to dangerous levels of warming and would jeopardize the rights of young people.

b. Ecology Must Use Its Authority To Protect Public Health

Ecology's proposed rule permits GHG emissions beyond levels that are safe for humanity. By legalizing emissions at dangerous levels, Ecology places the public's health at serious risk. As discussed above, Ecology is bound by law to "preserve, protect, and enhance the air quality for current and future generations."<sup>32</sup> Ecology's authority under the Washington Clean Air Act is quite broad. Under the law, the Legislature directs Ecology to "secure and maintain levels of air quality that protect human health and safety."<sup>33</sup> Furthermore, this protection is extended to plants, animals, and property.<sup>34</sup> Recognizing the serious consequences of air pollution in Washington, the Legislature called for immediate action to return air quality levels to "protect health and the environment" and 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."<sup>35</sup>

Human-caused fossil fuel burning and the resulting climate change are already contributing to an increase in asthma, cancer, cardiovascular disease, stroke, heat-related morbidity and mortality, food-borne diseases, and neurological diseases and disorders.<sup>36</sup> Climate change has been called "the most serious threat to the public health of the 21st

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<sup>30</sup> Ecology, Cost Benefit Analysis at 51.

<sup>31</sup> RCW 70.235.020(1)(a)(iii).

<sup>32</sup> RCW § 70.94.011.

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> See The Center for Health and the Global Environment, Harvard Medical School, *Climate Change Futures: Health, Ecological, and Economic Dimensions* (Nov. 2005), [http://coralreef.noaa.gov/aboutcrp/strategy/reprioritization/wgroups/resources/climate/resources/cc\\_future\\_s.pdf](http://coralreef.noaa.gov/aboutcrp/strategy/reprioritization/wgroups/resources/climate/resources/cc_future_s.pdf); USGCRP, *Climate Change Impacts*, *supra* note 102, at 221-28.

century.”<sup>37</sup> Droughts, floods, heat waves and other extreme weather events linked to climate change also lead to a myriad of health issues.<sup>38</sup> The World Health Organization has stated that “[l]ong-term climate change threatens to exacerbate today’s problems while undermining tomorrow’s health systems, infrastructure, social protection systems, and supplies of food, water, and other ecosystem products and services that are vital for human health.”<sup>39</sup> Climate change is not only expected to affect the basic requirements for maintaining health (clean air and water, sufficient food, and adequate shelter) but is likely to present new challenges for controlling infectious disease and even “halt or reverse the progress that the global public health community is now making against many of these diseases.”<sup>40</sup> Children are especially vulnerable to adverse health impacts due to climate change.

Recent studies have highlighted the adverse mental health effects that result from climate change. One study noted that as many as 200 million Americans are expected to have mental health problems as a result of climate change impacts and added that mental health disorders are likely to be one of the most dangerous indirect health effects of climate change. The mental health effects can include elevated levels of anxiety, depression, PTSD, and a distressing sense of loss. The impacts of these mental health effects include chronic depression, increased incidences of suicide, substance abuse, and greater social disruptions like increased violence.<sup>41</sup>

In Washington, most health effects associated with climate change are expected to be negative and will include increased respiratory diseases, including asthma, heart attacks, and cancer.<sup>42</sup> Moreover, as GHG emissions stay the same and continue to rise, Washingtonians can expect increased water shortages due to decreased snowpack and early snowmelt.<sup>43</sup> Water shortages affect the viability of native salmon species, which jeopardizes the mental health and welfare of the state’s tribal communities, who have relied upon these natural resources for time immemorial.

By authorizing the State’s top polluters to continue unsafe levels of GHG emissions that exceed both scientific and end existing statutory limits, Ecology actively puts Washingtonians’ health at risk, in violation of Ecology’s mandate under the Clean Air Act. The People entrusted Ecology to protect them from the harmful effects of air pollution and climate change. By allowing industry to continue to pollute beyond safe limits, the department breaches this trust.

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<sup>37</sup> Casey Crandell, *Climate Action Holds Potential for Massive Improvements in Public Health*, Physicians for Social Responsibility (June 22, 2015), <http://www.psr.org/blog/climate-action-holds-potential-improvements-public-health.html>.

<sup>38</sup> *Id.*

<sup>39</sup> World Health Organization, *Atlas of Health and Climate* 4 (Oct. 2012), <http://www.who.int/globalchange/publications/atlas/report/en/>.

<sup>40</sup> World Health Organization, *Protecting Health from Climate Change: Connecting Science, Policy, and People* 2 (2009), <http://www.who.int/globalchange/publications/reports/9789241598880/en/index.html>.

<sup>41</sup> Nick Watts et al., *Health and Climate Change: Policy Responses to Protect Public Health*, The Lancet (June 23, 2015), <http://www.thelancet.com/commissions/climate-change-2015>.

<sup>42</sup> See Devra R. Cohen, *Forever Evergreen: Amending the Washington State Constitution for a Healthy Environment*, 90 Wash. L. Rev. (2015) 349, 391.

<sup>43</sup> *Id.*

c. The Clean Air Rule Must Protect the Waters of the State

By not developing a rule that is based on science and targeted to put Washington on a path to reaching global climate stabilization levels, Ecology is abdicating its responsibility as trustee of the waters of the state. The legislature has delegated a significant amount of authority to Ecology to act to protect the natural resources in the state, including air and water. In passing the Clean Air Act, the legislature explicitly recognized “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.”<sup>44</sup> Ecology can and should implement this authority to fulfill its statutory mandate to protect both the air and waters of the state:

it is the purpose of this chapter to establish a single state agency with the authority *to manage and develop our air and water resources in an orderly, efficient, and effective manner and to carry out a coordinated program of pollution control involving these and related land resources.* To this end a department of ecology is created by this chapter to undertake, in an integrated manner, the various water regulation, management, planning and development programs now authorized to be performed by the department of water resources and the water pollution control commission, the air regulation and management program now performed by the state air pollution control board, the solid waste regulation and management program authorized to be performed by state government as provided by chapter [70.95](#) RCW, and such other environmental, management protection and development programs as may be authorized by the legislature.<sup>45</sup>

“The legislature further recognizes that as the population of our state grows, the need to provide for our increasing industrial, agricultural, residential, social, recreational, economic and other needs will place an increasing responsibility on all segments of our society to plan, coordinate, restore and regulate the utilization of our natural resources in a manner that will protect and conserve our clean air, *our pure and abundant waters*, and the natural beauty of the state.”<sup>46</sup>

Ecology is specifically charged with “the supervision of public waters within the state.”<sup>47</sup> “[A]ll waters within the state belong to the public” and “[t]he power of the state to regulate and control the waters within the state shall be exercised” in accordance with

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<sup>44</sup> RCW 70.94.011.

<sup>45</sup> RCW 43.21A.020 (emphasis added).

<sup>46</sup> RCW 43.21A.010 (emphasis added).

<sup>47</sup> RCW 43.21A.064(1).

RCW 90.03.<sup>48</sup> Only Ecology has the authority to establish and protect minimum flows or levels.<sup>49</sup> Only Ecology has “the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the state of Washington.”<sup>50</sup> As part of that authority, Ecology has a mandatory duty to promulgate “rules and regulations relating to standards of quality for waters of the state and for substances discharged therein in order to maintain the highest possible standards of all waters of the state in accordance with the public policy as declared in RCW 90.48.010.”<sup>51</sup> Given the devastating impacts our waters are, and will be, facing due to climate change, it is imperative that Ecology invoke its statutory authority as trustee of our state’s water resources and promulgate a Clean Air Rule that is based on science.

d. The Clean Air Rule Must Mitigate Against Ocean Acidification

Ecology has recognized that global warming is occurring and adversely impacting Earth’s climate.<sup>52</sup> At the same time, ocean acidification “has been observed,” due to the ocean absorbing approximately “30 percent of the emitted anthropogenic carbon dioxide,” thereby threatening Earth’s ocean life.<sup>53</sup> If immediate action is not taken to draw down carbon dioxide emissions, the costs of climate change and ocean acidification impacts to Washington are projected at \$10 billion per year by 2020.<sup>54</sup>

As discussed above, Ecology is the agency with the authority to adopt “rules and regulations relating to standards of quality for waters of the state and for substances discharged therein in order to maintain the highest possible standards of all waters of the state in accordance with the public policy as declared in RCW 90.48.010.”<sup>55</sup> The State has previously acknowledged, “acidification near the coasts, and particularly in highly populated and developed areas, is often exacerbated by local sources of pollutants, such as nutrients and organic material, that generate additional carbon dioxide in marine waters.”<sup>56</sup> In spite of long-standing efforts by the Center for Biological Diversity,<sup>57</sup> Ecology still has not amended its water quality standards or taken other regulatory action

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<sup>48</sup> RCW 90.03.010.

<sup>49</sup> RCW 90.03.247; RCW 90.22.010 (“The department of ecology may establish minimum water flows or levels for streams, lakes or other public waters for the purposes of protecting fish, game, birds or other wildlife resources, or recreational or aesthetic values of said public waters whenever it appears to be in the public interest to establish the same.”).

<sup>50</sup> RCW 90.48.030.

<sup>51</sup> RCW 90.48.035.

<sup>52</sup> *Foster, et al. v. Ecology*, King County Superior Court No. 14-2-25295-1 SEA (Ecology’s Answer) (filed October 6, 2014) at 3:3-5.

<sup>53</sup> *Id.* at 3:4, 14-16.

<sup>54</sup> Washington Executive Order 14-04 (April 29, 2014).

<sup>55</sup> RCW 90.48.035.

<sup>56</sup> Washington Executive Order 12-07 (November 27, 2012).

<sup>57</sup> The legal authority and obligation to use existing authority to address ocean acidification is set forth in the attached petitions, both of which are hereby incorporated by reference. Center for Biological Diversity, Petition to EPA for Additional Water Quality Criteria & Guidance Under Section 304 of the Clean Water Act, 33 U.S.C. § 1314, to Address Ocean Acidification (April 17, 2013) (Exhibit H); Center for Biological Diversity Petition to EPA for Revised State Water Quality Standards for Marine pH Under the Clean Water Act, 33 U.S.C. § 1313(c)(4) (October 18, 2012) (Exhibit I).

to address ocean acidification. This should be done forthwith and is an integral component of any attempt by Ecology to address climate change.

IV. THE PROPOSED CLEAN AIR RULE VIOLATES ECOLOGY'S STATUTORY & CONSTITUTIONAL OBLIGATIONS BECAUSE IT LEGALIZES DANGEROUS LEVELS OF GHG EMISSIONS & FAILS TO UTILIZE CURENT CLIMATE SCIENCE

The draft Clean Air Rule violates Ecology's constitutional and statutory responsibilities as outlined above because it legalizes dangerous levels of carbon dioxide emissions. No person or corporation has the legal right to emit unlimited amounts of carbon dioxide in a manner that abridges the constitutional rights of young people and violates the existing statutory laws. Ecology's historic inability to regulate emissions of carbon dioxide does not somehow confer upon an entity the right to continue to pollute, because that right never existed. By promulgating a Clean Air Rule that regulates only a very small segment of entities that emit GHG gases over a certain threshold (beginning at 100,000 metric tons of CO<sub>2</sub>e starting in 2017, and leading to 70,000 metric tons of CO<sub>2</sub>e in 2035), Ecology has implicitly authorized continued emission of GHGs by all entities that fall under those thresholds, including non-covered entities. Ecology is without authority to do so because the science is clear that action violates the constitutional rights of young people.

- a. Ecology Must Base Its Rule On The Best Available Climate Science to Protect Young People & Future Generations
  - i. The Best Available Climate Science Provides a Prescription for Restoring the Atmosphere, Stabilizing the Climate System & Protecting the Waters of the State: Atmospheric CO<sub>2</sub> Levels Must Be Reduced to Below 350 ppm By 2100

In order to protect our planet's climate system and vital natural resources on which human survival and welfare depends, and to ensure that young people's and future generations' fundamental and inalienable human rights are protected, the Clean Air Rule *must* be based on the best available climate science. There are numerous scientific bases for setting 350 parts per million ("ppm") as the uppermost safe limit for atmospheric CO<sub>2</sub> concentrations. Ecology continues to shirk its responsibility to inform the public what GHG emissions are necessary to fulfill its constitutional and statutory obligations. Notably, the agency has presented no science that contradicts this scientific prescription first presented by youth in Washington State in 2011.<sup>58</sup>

There are three main reasons why Ecology must adopt the scientific prescription described in these comments. First, returning CO<sub>2</sub> concentrations to 350 ppm would restore the energy balance of Earth and allow as much heat to escape into

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<sup>58</sup> *Svitak, et al. v. State*, King County Superior Court No. 11-2-16008-4 SEA (Amended Complaint) (filed May 18, 2011) (Exhibit J).

space as Earth retains, which has kept our planet in the “sweet spot” for humans and other species to thrive.

Second, CO<sub>2</sub> levels exceeding 350 ppm are creating a planet warmer than humans have ever lived in and are disrupting the physical and biological systems in which human civilization has evolved. The consequences of even 1 degree Celsius of warming will be significant for humanity, but scientists believe we can preserve our ice sheets and for the most part our shorelines and ecosystems, if we limit long-term warming to 1 degree Celsius (short-term warming will inevitably exceed 1 degree Celsius but must exceed 1 degree Celsius for a minimal amount of time). If we allow sustained global average temperature increases of more than 1 degree Celsius we will suffer irreversible climate destabilization and a planet largely inhospitable to human civilization.

Third, marine animals, including coral reefs, cannot tolerate the acidifying and warming of our ocean waters that results from increased CO<sub>2</sub> levels, 30% of which is absorbed by the oceans. At 400 ppm CO<sub>2</sub>, the coral reefs of the world and shellfish are rapidly declining and will be irreversibly compromised if we do not quickly reverse course. The economic and cultural consequences of the loss of marine resources, including salmon and shellfish, are exponential and cannot be quantified.

All government policies, including the Clean Air Rule promulgated by Ecology, regarding greenhouse gas/CO<sub>2</sub> pollution and de/reforestation worldwide should be aimed at 350 ppm by 2100. Fortunately, it is still not only technically and economically feasible to get there, but transitioning to renewable energy sources will provide significant economic and public health benefits and improve the quality of lives. But time is running out. We cannot continue to base life and death policies on politics rather than science.

## 1. Restoration of the Earth’s Energy Balance

To protect Earth’s climate for present and future generations, we must restore Earth’s energy balance. By burning fossil fuels and deforesting the planet,<sup>59</sup> which results in an increase in greenhouse gases in the atmosphere, especially CO<sub>2</sub>, humans have altered Earth’s energy balance.<sup>60</sup> The best climate science shows that if the planet once again sends as much energy into space as it absorbs from the sun, this will restore the planet’s climate equilibrium.<sup>61</sup> Scientists have accurately calculated how Earth’s energy balance will change if we reduce long-lived greenhouse gases

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<sup>59</sup> Intergovernmental Panel on Climate Change, *Summary for Policymakers, Climate Change 2014: Impacts, Adaptation, and Vulnerability* 5 (2014).

<sup>60</sup> James Hansen et al., *Assessing “Dangerous Climate Change”: Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, PLOS ONE 8:12, 3763 (2013) (“Assessing Dangerous Climate Change”).

<sup>61</sup> John Abatzoglou et al., *A Primer on Global Climate Change and Its Likely Impacts, in Climate Change: What It Means for Us, Our Children, and Our Grandchildren* 11, 15-22 (Joseph F. C. DiMento & Pamela Doughman eds., 2007).

such as CO<sub>2</sub>.<sup>62</sup> We would need to reduce atmospheric CO<sub>2</sub> concentrations by at least 50 ppm, from their 2015 level of 400 ppm in order to increase Earth's heat radiation to space, if other long-lived gases do not continue to increase.<sup>63</sup>

## 2. Stop Global Surface Warming that Will Disrupt the Physical and Biological Systems on Which Humans Depend

In order to protect the physical and biological systems on which humans rely for their basic needs and the stability of their communities, we must reduce atmospheric CO<sub>2</sub> concentration to no more than 350 ppm and stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.<sup>64</sup>

Current science shows that while global surface heating may rise as much as 1.5 °C above pre-industrial temperatures because of warming already locked into the pipeline from existing CO<sub>2</sub> pollution, to protect Earth's natural systems, long-term average global surface heating should not exceed 1°C this century. In other words, even 1.5 °C of heating is unsafe, and we must stabilize at no more than 1°C of heating over pre-industrial temperatures. *According to current climate science, to prevent global heating greater than 1°C, concentrations of atmospheric CO<sub>2</sub> must decline to 350 ppm or less by the end of this century.*<sup>65</sup> However, today's atmospheric CO<sub>2</sub> levels are over 400 ppm and rising.<sup>66</sup>

## 3. Targeting Reductions to Allow More than 2° Warming is Unlawful

A target of keeping global surface heating to 2°C above pre-industrial temperatures, which approximately equates to an atmospheric CO<sub>2</sub> concentration of 450 ppm, cannot be considered a safe target for present or future generations, and is not supported by current science of climate stabilization or ocean protection, nor is it accepted by the IPCC.<sup>67</sup> Notably, Ecology has admitted that “the Washington state

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<sup>62</sup> James Hansen, *Storms of My Grandchildren* 166 (2009) (“Also our best current estimate for the planet's mean energy imbalance over the past decade, thus averaged over the solar cycle, is about +0.5 watt per square meter. Reducing carbon dioxide to 350 ppm would increase emission to space 0.5 watt per square meter, restoring the planet's energy balance, to first approximation.”).

<sup>63</sup> James Hansen, *Storms of My Grandchildren* 166 (2009); *see also* James E. Hansen et al., *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?* 2 *The Open Atmospheric Science Journal* 217, 217-31 (2008), [http://www.columbia.edu/~jeh1/2008/TargetCO2\\_20080407.pdf](http://www.columbia.edu/~jeh1/2008/TargetCO2_20080407.pdf) [hereinafter *Where Should Humanity Aim?*].

<sup>64</sup> *See* Hansen, *Where Should Humanity Aim?*, 217 (2008) (“If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, Paleoclimate evidence and ongoing climate change suggest that CO<sub>2</sub> will need to be reduced from its current 385 ppm to at most 350 ppm.”).

<sup>65</sup> *See id.*; James Hansen, *Storms of My Grandchildren* (2009).

<sup>66</sup> NASA, Facts, Carbon Dioxide, <http://climate.nasa.gov/vital-signs/carbon-dioxide/> (last visited May 2, 2016).

<sup>67</sup> United Nations, Framework Convention on Climate Change, Conference of the Parties, Paris Agreement, Article 2 (“1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by: (a) Holding the increase in the global average

emission reductions currently required by RCW 70.235.020 are not sufficient to keep the rise in surface temperature below 2°C.”<sup>68</sup> Earth’s paleoclimate history demonstrates that climate impacts accompanying global warming of 2°C or more would be irreversible and catastrophic for humanity. For example, the paleoclimate record shows that warming consistent with CO<sub>2</sub> concentrations as low as 450 ppm may have been enough to melt almost all of Antarctica.<sup>69</sup> The warming of the past few decades has brought global temperature close to if not slightly above the prior maximum of the Holocene epoch. Human society must keep global temperature at a level within or close to the Holocene range to prevent dangerous climate change. Global warming of 2°C would be well above Holocene levels and far into the dangerous range and has been described as “an unacceptably high risk of global catastrophe.”<sup>70</sup>

The widely used models that allow for 2°C temperature increase, and therefore advocate for a global CO<sub>2</sub> emission reduction target aimed at a 450 ppm CO<sub>2</sub> standard, do not take into account significant factors that will compound climate impacts. Most importantly, they do not include the slow feedbacks that will be triggered by a temperature increase of 2°C.<sup>71</sup> Slow feedbacks include the melting of ice sheets and the release of potent greenhouse gases, particularly methane, from the thawing of the tundra.<sup>72</sup> These feedbacks might show little change in the short-term, but can hit a point of no return, even at a 2°C temperature increase, that will trigger further warming and sudden catastrophic impacts. For example, the Greenland and Antarctic ice sheets “required millennia to grow to their present sizes. If ice sheet disintegration reaches a point such that the dynamics and momentum of the process take over, reducing greenhouse gases may be futile to prevent major ice sheet mass loss, sea level rise of many meters, and worldwide loss of coastal cities—a consequence that is irreversible for practical purposes.”<sup>73</sup>

These slow feedbacks are part of the inertia of the climate system, where “[t]he inertia causes climate to appear to respond slowly to this human-made forcing, but further long-lasting responses can be locked in.”<sup>74</sup> Thermal inertia is primarily a result of the global ocean, which stores 90% of the energy surplus, and therefore perpetuates increased global temperature even after climate forcings, or emissions, have declined.<sup>75</sup> Thus, the longer we wait to reduce global CO<sub>2</sub> concentrations, the

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temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5° above pre-industrial, recognizing that this would significantly reduce the risks and impacts of climate change.”).

<sup>68</sup> *Foster, et al. v. Ecology*, King County Superior Court No. 14-2-25295-1 (Department of Ecology’s Response to June 23, 2015 Court Order) (filed August 7, 2015) (Exhibit K) at 4.

<sup>69</sup> Dec. of Dr. James E. Hansen, *Juliana et al., v. United States et al.*, No. 6:15-cv-01517-TC, 14 (D. Or. Aug. 12, 2015).

<sup>70</sup> *Id.* at 17.

<sup>71</sup> Hansen, *Assessing “Dangerous Climate Change,”* 15.

<sup>72</sup> *Id.*

<sup>73</sup> *Id.* at 13.

<sup>74</sup> *Id.* at 1.

<sup>75</sup> *Id.* at 4-5, 13.



more thermal inertia will already be in play and climate impacts will continue to escalate.

Furthermore, 2°C targets would lead to an increase in the use of fossil fuels that are more difficult to extract, and thus are compounded with the expenditure of greenhouse gases due to the transport and intensive mining process resulting in “more CO<sub>2</sub> [emissions] per unit useable energy.”<sup>76</sup> The 2°C target also reduces the likelihood that the biosphere will be able to sequester CO<sub>2</sub> due to carbon cycle feedbacks and shifting climate zones.<sup>77</sup> Under the allowable emissions with this target, other greenhouse gases, such as methane and nitrous oxide would continue to increase, further exacerbating climate change impacts.<sup>78</sup> These factors are missing from the 2°C scenarios, which have been widely accepted and used in the creation of climate policies and plans.

A temperature rise of 2°C will not only lock in a further temperature increase due to thermal inertia, but it will also trigger irreversible impacts, including rapid, nonlinear sea level rise and species loss described above.<sup>79</sup> Most models look at sea level rise as a gradual linear response to melting ice sheets. However, “it has been argued that continued business-as-usual CO<sub>2</sub> emissions are likely to spur a nonlinear response with multi-meter sea level rise this century.”<sup>80</sup> This sea level rise would occur at a pace that would not allow human communities or ecosystems to respond.

An emission reduction target aimed at 2°C would “yield a larger eventual warming because of slow feedbacks, probably at least 3°C.”<sup>81</sup> Once a temperature increase of 2°C is reached, there will already be “additional climate change “in the pipeline” even without further change of atmospheric composition.”<sup>82</sup> Dr. James Hansen warns that “distinctions between pathways aimed at 1°C and 2°C warming are much greater and more fundamental than the numbers 1°C and 2°C themselves might suggest. These fundamental distinctions make scenarios with 2°C or more global warming far more dangerous; so dangerous, we [James Hansen et al.] suggest, that aiming for the 2°C pathway would be foolhardy.”<sup>83</sup> This target is at best the equivalent of “flip[ping] a coin in the hopes that future generations are not left with few choices beyond mere survival. This is not risk management, it is recklessness and we must do better.”<sup>84</sup> Thus, a global average atmospheric concentration of CO<sub>2</sub> of 450 ppm, or a concentration of CO<sub>2</sub>e between 450 and 550 ppm, would result in dangerous anthropogenic interference with the climate system and would threaten all

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<sup>76</sup> *Id.* at 15.

<sup>77</sup> *Id.* at 15, 20.

<sup>78</sup> *Id.* at 20.

<sup>79</sup> *Id.* at 6.

<sup>80</sup> *Id.*

<sup>81</sup> *Id.* at 15.

<sup>82</sup> *Id.* at 19.

<sup>83</sup> *Id.* at 15.

<sup>84</sup> Matt Vespa, *Why 350? Climate Policy Must Aim to Stabilize Greenhouse Gases at the Level Necessary to Minimize the Risk of Catastrophic Outcomes*, 36 *Ecology Law Currents* 185, 186 (2009), [http://www.biologicaldiversity.org/publications/papers/Why\\_350.pdf](http://www.biologicaldiversity.org/publications/papers/Why_350.pdf).

public natural resources around the world and the health and well-being of all Earth's inhabitants.

*Importantly, the Intergovernmental Panel on Climate Change (“IPCC”) has not established nor endorsed a target of 2°C warming above the preindustrial period as a limit below which the climate system will be stable.*<sup>85</sup> The 2°C figure was reached as *a compromise* between the emission reduction scenarios and associated risks summarized by Working Group I of the 2007 IPCC Fourth Assessment Report,<sup>86</sup> and because policy makers felt that it was politically achievable.<sup>87</sup> As the IPCC makes clear, “each major IPCC assessment has examined the impacts of [a] multiplicity of temperature changes but has left [it to the] political processes to make decisions on which thresholds may be appropriate.”<sup>88</sup> *Two degrees Celsius warming above pre-industrial levels has never been universally considered “safe” from either a political or scientific point of view.* As the United Nations Framework Convention on Climate Change (“UNFCCC”) stated: “The ‘guardrail’ concept, in which up to 2°C of warming is considered safe, is inadequate and would therefore be better seen as an upper limit, a defense line that needs to be stringently defended, while less warming would be preferable.”<sup>89</sup> And according to a Coordinating Lead Author of the IPCC’s 5th Assessment Report, the 2°C “danger level” seemed:

utterly inadequate given the already observed impacts on ecosystems, food, livelihoods, and sustainable development, and the progressively higher risks and lower adaptation potential with rising temperatures, combined with disproportionate vulnerability.<sup>90</sup>

The most recent IPCC synthesis of climate science confirms that additional warming of 1°C (we already have 0.9°C warming above the preindustrial average) jeopardizes unique and threatened systems, including ecosystems and cultures.<sup>91</sup> The IPCC also warns of risks of extreme events, such as heat waves, extreme precipitation, and coastal flooding, and “irreversible regime shifts” with additional warming.<sup>92</sup>

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<sup>85</sup> See Dec. of Dr. James E. Hansen, *Juliana et al., v. United States et al.*, No. 6:15-cv-01517-TC, 5 (D. Or. Aug. 12, 2015).

<sup>86</sup> See IPCC, *Summary for Policymakers*, Climate Change 2007: The Physical Science Basis (Solomon, S., D. Qin,

M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)) (2007) (Table SPM.3).

<sup>87</sup> See Dec. of Dr. Richard H. Gammon, *Foster v. Wash. Dep’t of Ecology*, No. 14-2-25295-1 SEA 1 (Wash. Super. Ct. Aug. 24, 2015).

<sup>88</sup> IPCC, *Climate Change 2014: Mitigation of Climate Change, Contribution of Working Group III to the Fifth Assessment Report*, 125 (2014), [http://report.mitigation2014.org/report/ipcc\\_wg3\\_ar5\\_chapter1.pdf](http://report.mitigation2014.org/report/ipcc_wg3_ar5_chapter1.pdf).

<sup>89</sup> UNFCCC, *Report on the structured expert dialogue on the 2013–2015 review*, 18 (2015), <http://unfccc.int/resource/docs/2015/sb/eng/inf01.pdf>.

<sup>90</sup> Petra Tschakert, *1.5 °C or 2 °C: a conduit’s view from the science-policy interface at COP20 in Lima, Peru*, Climate Change Responses 8 (2015), <http://www.climatechangeresponses.com/content/2/1/3>.

<sup>91</sup> IPCC, *Summary for policymakers* at 13-14, Climate Change 2014: Impacts, Adaptation, and Vulnerability (2014), [http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/ar5\\_wgII\\_spm\\_en.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/ar5_wgII_spm_en.pdf).

<sup>92</sup> *Id.*

#### 4. Protect Waters of the State & Marine Life From Deadly Acidification and Warming of Ocean Waters

Conveniently, oceans have the same scientific standard of protection as the atmosphere and climate system. Marine organisms and ecosystems are already harmed and will increasingly continue to be harmed by the effects of ocean acidification. Critically important ocean ecosystems, such as coral reefs, are severely threatened by present day CO<sub>2</sub> concentrations of approximately 400 ppm and it is vitally important that atmospheric CO<sub>2</sub> levels are reduced to below 350 ppm in order to protect ocean ecosystems.<sup>93</sup> The IPCC never concluded that 2°C warming or 450 ppm would be safe for ocean life.<sup>94</sup> According to Dr. Ove Hoegh-Guldberg, one of the world's leading experts on ocean acidification and the Coordinating Lead Author of the oceans chapter of the 5th Assessment Report of the IPCC:

Allowing a temperature rise of up to 2°C would seriously jeopardize ocean life, and the income and livelihoods of those who depend on healthy marine ecosystems. Indeed, the best science available suggests that coral dominated reefs will completely disappear if carbon dioxide concentrations exceed much more than today's concentrations. Failing to restrict further increases in atmospheric carbon dioxide will eliminate coral reefs as we know them and will deny future generations of children from enjoying these wonderful ecosystems.<sup>95</sup>

Even the 2015 Paris Agreement backed off of making any assumptions that 2°C is a safe level of warming though it did not state a maximum safe level of long-term warming, instead committing to pursue efforts to limit the temperature increase to 1.5°C.<sup>96</sup> To prevent further degradation or the eventual depletion of the oceanic resources, it is imperative that atmospheric CO<sub>2</sub> concentrations be returned to below 350 ppm by the end of this century.

#### 5. The Clean Air Rule Must Be Aimed at 350 ppm and Mandate Annual Reductions of 8% Per Year

It is imperative that all states and governments around the world, including the Washington Department of Ecology, set GHG emission limits targeted at 1°C temperature change, or a maximum of 350 ppm in global CO<sub>2</sub> levels, in order to avoid the cascading impacts that will occur with a 2°C or 450 ppm default policy based on political feasibility rather than scientific necessity. *To reduce global atmospheric CO<sub>2</sub> to 350 ppm by the end of this century, this target would require that if global CO<sub>2</sub> emissions had flatlined with a peak in 2016, Washington emissions be reduced by 8% per year beginning in 2017, alongside Washington's share in*

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<sup>93</sup> See Dec. of Dr. Ove Hoegh-Guldberg, *Foster v. Wash. Dep't of Ecology*, No. 14-2-25295-1 SEA, 1 (Wash. Super. Ct. Aug. 24, 2015) (Exhibit M).

<sup>94</sup> *Id.* at 2.

<sup>95</sup> *Id.*

<sup>96</sup> Paris Agreement, Article 2, Section 1(a).

*achieving 100 GtC of global CO<sub>2</sub> sequestration through reforestation and soil protection.*<sup>97</sup> Continued delay makes it harder and harder for youth and future generations to protect a livable world. It is imperative to establish emission limits to put states and sovereigns around the world on a trajectory aimed for 350 ppm.

Atmospheric CO<sub>2</sub> levels are currently on a path to reach a climatic tipping point.<sup>98</sup> Absent immediate action to reduce CO<sub>2</sub> emissions, atmospheric CO<sub>2</sub> may reach levels so high that life on Earth as we know it is unsustainable at these levels. Governments have the present ability to curtail the environmental harms detailed above. Atmospheric CO<sub>2</sub> concentrations will decrease if states stop (or greatly reduce) their burning of fossil fuels.<sup>99</sup> The environmental harms and threat to human health and safety as described above can only be avoided if atmospheric CO<sub>2</sub> concentrations are immediately reduced. Any more delay risks irreversible and catastrophic consequences for youth and future generations.

Fossil fuel emissions must decrease rapidly if atmospheric CO<sub>2</sub> is to be returned to a safe level in this century.<sup>100</sup> Improved forestry and agricultural practices can provide a net drawdown of atmospheric CO<sub>2</sub>, primarily via reforestation of degraded lands that are of little or no value for agricultural purposes, returning us to 350 ppm somewhat sooner.<sup>101</sup> However, the potential of these measures is limited. Immediate and substantial reductions in CO<sub>2</sub> emissions are required in order to ensure that the youth and future generations inherit a planet that is inhabitable.

## 6. An Additional 100 gtC Must Be Sequestered Through Reforestation & Soil Protection Measures<sup>102</sup>

The scientific prescription for climate recovery requires both emission reductions *and* sequestration of 100 gigatons of carbon through reforestation and soil protection.<sup>103,</sup>  
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<sup>97</sup> Hansen Decl. (Exhibit O).

<sup>98</sup> James Hansen, *Storms of My Grandchildren* 224-30, 260 (2009).

<sup>99</sup> Harvey Blatt, *America's Environmental Report Card* xiii (2005) ("How can we stop this change in our climate? The answer is clear. Stop burning coal and oil, the sources of nearly all the carbon dioxide increase.").

<sup>100</sup> Hansen, *Where Should Humanity Aim?*, 217 (discussing the need to reduce the atmospheric CO<sub>2</sub> concentration to 350 ppm).

<sup>101</sup> *Id.* at 227.

<sup>102</sup> For an overview of the carbon cycle and sequestration potential of forests and soil, see Expert Declaration of Thomas Crowther, Ph.D., in support of Western Environmental Law Center and Our Children's Trust's comments on proposed Clean Air Rule, WASH. ADMIN. CODE § 173-442 (July 22, 2016) ("Crowther Decl.").

<sup>103</sup> Hansen et al., *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, PLOS ONE, Dec. 2013, at 1, 1, <http://journals.plos.org/plosone/article/asset?id=10.1371%2Fjournal.pone.0081648.PDF>.

<sup>104</sup> It is important to note that reforestation and sequestration efforts are not a replacement for emission reductions of at least 8% per year (2016 baseline); they are in addition to emission reductions.

We cannot halt the rise in global surface temperatures without addressing forest and vegetation loss and degradation of soil. Furthermore, since the concentration of CO<sub>2</sub> in the atmosphere is currently over 400 parts per million (ppm) and the safe level is no more than 350 ppm, we need to draw down this excess CO<sub>2</sub> out of the atmosphere.<sup>105</sup>

Specifically, Washington must sequester at least 9,393,160 metric tons of CO<sub>2</sub> per year between 2012 and 2050 in order to proportionally contribute to the global prescription of 350 ppm.<sup>106</sup> In actuality, since Washington's forests have above average potential for carbon sequestration, Ecology should aim to sequester even more CO<sub>2</sub> than its average share. To comply with the scientific prescription for climate recovery, Ecology must promulgate regulations and policies that mandate sequestration *in addition* to reducing emissions.<sup>107</sup> Ecology's Rule fails to properly analyze sequestration in a number of ways: 1) it does not address deforestation or reforestation; 2) it does not provide for sustainable forest management practices to improve sequestration and reduce wildfires; and 3) it fails to properly consider soil carbon sequestration.

(a) Forest Carbon Sequestration is an Integral Component of Climate Recovery that Ecology Failed to Consider.

The Rule fails to properly consider possibilities for reforestation or for slowing deforestation. Washington is home to 20-21 million acres of forestland – half of its total land area.<sup>108</sup> State-conducted inventories report that Washington forests are net sinks of CO<sub>2</sub>.<sup>109</sup> About 29 MMtCO<sub>2</sub>e are sequestered by Washington forest biomass every year.<sup>110</sup> Consequently, forest management is integral to any effective and enduring climate change mitigation strategy in Washington.

Washington forests are exceptional carbon sinks but deforestation poses a serious risk to their carbon storage capacity. Pacific Northwest (PNW) forests have the highest

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<sup>105</sup> Crowther Decl. ¶ 5.

<sup>106</sup> This number is calculated by multiplying the annual carbon sequestration requirement per capita for 2012-2050 by the population of Washington. Based on a global annual carbon sequestration requirement of 1.31 Metric Tons CO<sub>2</sub> per person, EUGENE SUSTAINABILITY OFFICE, METHODOLOGY FOR ESTABLISHING A COMMUNITY CARBON BUDGET 6, at <https://www.eugene-or.gov/DocumentCenter/View/26229>, and Washington population estimates of 7,170,351 in 2015, *Washington*, UNITED STATES CENSUS BUREAU: QUICKFACTS, at <https://www.census.gov/quickfacts/table/PST045215/53,00> (last visited July 20, 2016).

<sup>107</sup> Crowther Decl..

<sup>108</sup> GORDON BRADLEY ET AL., THE RURAL TECHNOLOGY INSTITUTE, FOREST LAND CONVERSION IN WASHINGTON STATE, *in* FUTURE OF WASHINGTON'S FOREST AND FOREST INDUSTRIES STUDY 260 (2007), [http://www.ruraltech.org/projects/fwaf/final\\_report/index.asp](http://www.ruraltech.org/projects/fwaf/final_report/index.asp).

<sup>109</sup> CENTER FOR CLIMATE STRATEGIES, WASHINGTON STATE GREENHOUSE GAS INVENTORY AND REFERENCE CASE PROJECTIONS, 1990-2020 I-1 (2007), [http://www.ecy.wa.gov/climatechange/docs/WA\\_GHGInventoryReferenceCaseProjections\\_1990-2020.pdf](http://www.ecy.wa.gov/climatechange/docs/WA_GHGInventoryReferenceCaseProjections_1990-2020.pdf); *See also* UNITED STATES GEOLOGICAL SURVEY, PROFESSIONAL PAPER 1797, BASELINE AND PROJECTED FUTURE CARBON STORAGE AND GREENHOUSE-GAS FLUXES IN ECOSYSTEMS OF THE WESTERN UNITED STATES 2 (Zhiliang Zhu and Bradley C. Reed, eds., 2012), [http://pubs.usgs.gov/pp/1797/pdf/PP1797\\_WholeDocument.pdf](http://pubs.usgs.gov/pp/1797/pdf/PP1797_WholeDocument.pdf).

<sup>110</sup> CENTER FOR CLIMATE STRATEGIES, *supra* note 7, at ES-4.

carbon stocks in the United States.<sup>111</sup> Forests in the western PNW are particularly effective carbon sinks due to the large presence of coniferous and old growth trees and historically infrequent fires.<sup>112</sup> All of these factors allow significant amounts of carbon to accumulate in PNW forests.<sup>113</sup> However, between 1988 and 2004, 17% of western Washington's forestland was converted to other uses.<sup>114</sup> Every year, an additional 0.37% to 1.04% of Washington's forestland is converted into residential or commercial development.<sup>115</sup> Such land use change reduces Washington's overall carbon storage capacity and thus impairs capacity for climate recovery.

Mandating carbon storage in Washington forests is vital to restoring a safe atmospheric balance of CO<sub>2</sub>. In a report commissioned by Ecology in response to an executive order from Governor Gregoire, the 2010 Forest Carbon Workgroup expressed its belief that "conversion of forestland to non-forest uses represents one of the greatest sources of loss of forest carbon sequestration and storage, and therefore avoiding such conversion where feasible is a high priority means of reducing those losses and accompanying GHG emissions."<sup>116</sup> Similarly, the United Nations has stated, "combating climate change without slowing deforestation is a lost cause."<sup>117</sup> These conclusions are based on the scientific consensus that deforestation is "one of the largest anthropogenic sources of emissions to the atmosphere globally."<sup>118</sup> Net deforestation is responsible for 20% of the increase of atmospheric CO<sub>2</sub> globally since the preindustrial era.<sup>119</sup> This amounts to an additional 100 gigatons of carbon in the atmosphere.<sup>120</sup>

To adequately heed current science, Ecology must include regulations aimed at increasing carbon sequestration by preventing any net forest loss immediately, then promoting reforestation and more sustainable forestry practices aimed at achieving the required 9,393,159 metric tons of CO<sub>2</sub> sequestration per year. These measures must be *in addition* to reducing overall emissions from other sectors.

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<sup>111</sup> Crystal L. Raymond & Donald McKenzie, *Carbon Dynamics of Forests in Washington, USA: 21st Century Projections Based on Climate-driven Changes in Fire Regimes*, 22 *ECOLOGICAL APPLICATIONS* 1589, 1589 (2012).

<sup>112</sup> *Id.*

<sup>113</sup> *Id.*

<sup>114</sup> BRADLEY ET AL., *supra* note 6, at 269.

<sup>115</sup> *Id.* at 260.

<sup>116</sup> 2010 FOREST CARBON WORKGROUP, WASHINGTON STATE DEPARTMENT OF ECOLOGY, PUB. NO. 11-10-006, FINAL REPORT 6 (2010), <https://fortress.wa.gov/ecy/publications/publications/1110006.pdf>.

<sup>117</sup> Department of Economic and Social Affairs, *Reforestation: the easiest way to combat climate change*, UNITED NATIONS (2010), <http://www.un.org/en/development/desa/news/forest/reforestation-the-easiest.html>.

<sup>118</sup> Environmental Protection Agency, *Land Use, Land-Use Change, and Forestry*, in *INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2014* 6-54 (2016), <https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Chapter-6-Land-Use-Land-Use-Change-and-Forestry.pdf>.

<sup>119</sup> Hansen et al., *supra* note 2, at 10.

<sup>120</sup> *Id.*

(b) Ecology Failed to Properly Analyze Forest Health Management and Wildfire Alleviation as Methods to Improve Forest Carbon Sequestration.

Ecology has failed to properly consider forest health management or analyze the impacts of increasing intensity and frequency of forest fires on sequestration potential. Unhealthy forests increase the risk of extreme wild fires, which in turn reduce forest sequestration potential. With wildfires increasing in frequency and intensity across Washington State, managing forest health will be essential to protecting carbon storage processes.

The dangers of increased fire risk with regards to sequestration have been noted by numerous state-sponsored efforts in Washington.<sup>121</sup> Forest fires release carbon sequestered in forests and reduce the carbon storage capacity across the state.<sup>122</sup> Forest fires reduce sequestration potential by “affect[ing] the land-atmosphere exchange of [carbon] directly by releasing CO<sub>2</sub> to the atmosphere . . . and indirectly by shifting forest age class distributions toward a greater proportion of young forests.”<sup>123</sup>

As climate change worsens, “Washington’s forests are likely to experience significant changes in the establishment, growth, and distribution of tree species as a result of increasing temperatures, declining snowpack, and changes in soil moisture.”<sup>124</sup> Forests also face increased threats of fire, insect outbreaks, and diseases.<sup>125</sup> All of these factors result in hazardous amounts of excess fuel in forests,<sup>126</sup> which will result in an increased frequency and intensity of wildfires in Washington.<sup>127</sup> In fact, Washington is already experiencing its worst fire seasons in recorded history – more than 1,000,000 acres burned in 2015 and 400,000 acres in 2014.<sup>128</sup> Around 13.3 million acres – greater than half – of Washington forests are at moderate to high risk for fire.<sup>129</sup>

Despite the huge importance of forest carbon sequestration in climate recovery, Ecology’s Rule fails to consider or recommend any methods for restoring and maintaining the health of Washington’s forests to avoid the detrimental impacts of severe wildfires on Washington’s sequestration potential. While Ecology does not directly

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<sup>121</sup> 2010 FOREST CARBON WORKGROUP, *supra* note 14, at 11.

<sup>122</sup> *Id.*

<sup>123</sup> Raymond & McKenzie, *supra* note 9, at 1589-90.

<sup>124</sup> WASHINGTON STATE DEPARTMENT OF ECOLOGY, PUB. NO. 14-01-006, WASHINGTON GREENHOUSE GAS EMISSION REDUCTION LIMITS 12 (2014), <https://fortress.wa.gov/ecy/publications/documents/1401006.pdf>.

<sup>125</sup> *Id.*

<sup>126</sup> 2010 FOREST CARBON WORKGROUP, *supra* note 14, at 11.

<sup>127</sup> CENTER FOR CLIMATE STRATEGIES, *supra* note 7, at I-5.

<sup>128</sup> WASHINGTON FOREST PROTECTION ASSOCIATION, ANNUAL REPORT 2015 (2015), <http://www.wfpa.org/workspace/resource/document/wfpa-2015-annual-report.pdf>.

<sup>129</sup> DUSHKU ET AL., WINROCK INTERNATIONAL, CARBON SEQUESTRATION THROUGH CHANGES IN LAND USE IN WASHINGTON: COSTS AND OPPORTUNITIES 4 (2005), <http://www.ecy.wa.gov/climatechange/twgdocs/agr/051707agrwestcarb2.pdf>.



manage state and private forest lands,<sup>130</sup> Ecology is the agency established “to manage and develop our air and water resources in an orderly, efficient, and effective manner.”<sup>131</sup>

(c) Ecology Failed to Mandate Soil Protection and Enhancement as a Means to Increase Washington’s Carbon Sequestration Potential.

Finally, the proposed Rule fails to require measures to increase and protect soil carbon sequestration. Through both organic matter and inorganic compounds, “soil is a large reservoir of carbon.”<sup>132</sup> Soil organic matter stores about three times more carbon than forests and other vegetation.<sup>133</sup> Every 1% increase in average soil organic carbon content has the potential to reduce CO<sub>2</sub> in the atmosphere by up to 2%.<sup>134</sup> Methods for improving soil carbon sequestration include the application of compost,<sup>135</sup> diversifying planting practices on farms, and adding biochar to soils.<sup>136</sup>

In addition, agricultural soils in Washington store an estimated 1.4 MMtCO<sub>2</sub>e per year<sup>137</sup> but have the potential to store much more with management aimed at improving sequestration.<sup>138</sup> The agricultural sector could improve soil carbon storage capacity through sustainable farming practices such as efficient fertilizer use and solid manure management.<sup>139</sup> Ecology must produce soil protection guidelines and encourage and incorporate such methods into the Rule to comply with the scientific prescription. Ecology is in the process of developing a general discharge permit for Concentrated Animal Feeding Operations on the state.<sup>140</sup> As part of this permit, Ecology is able to mandate manure management practices that are designed to enhance the state’s sequestration potential. In its current form, the draft permit does nothing to do that, but measures can and should be incorporated into the final version of the permit. By failing to mandate soil carbon sequestration and sustainable agriculture practices, Ecology ignores processes pivotal to climate recovery in Washington.

Ecology has failed to properly consider the sequestration potential of forests and soil in the proposed Rule. To comply with the current scientific consensus that effective

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<sup>130</sup> The Washington Department of Natural Resources manages state trust lands, including forests, on behalf of the people of Washington.

<sup>131</sup> RCW 43.21A.020.

<sup>132</sup> WASHINGTON STATE DEPARTMENT OF ECOLOGY, FOCUS ON SOIL CARBON SEQUESTRATION 1 (2013), <https://fortress.wa.gov/ecy/publications/publications/1307031.pdf>.

<sup>133</sup> *Id.*

<sup>134</sup> *Id.*

<sup>135</sup> *What is Carbon Farming?*, MARIN CARBON PROJECT, <http://www.marincarbonproject.org/what-is-carbon-farming> (last visited July 15, 2016).

<sup>136</sup> WASHINGTON STATE DEPARTMENT OF ECOLOGY, at 2-3; Crowther Decl. at 5.

<sup>137</sup> CENTER FOR CLIMATE STRATEGIES, at ES-4.

<sup>138</sup> WASHINGTON STATE DEPARTMENT OF ECOLOGY, PUB. NO. 15-07-005, SOIL ORGANIC CARBON STORAGE (SEQUESTRATION) PRINCIPLES AND MANAGEMENT vii (2015), <https://fortress.wa.gov/ecy/publications/publications/1507005.pdf>.

<sup>139</sup> *Sources of Greenhouse Gas Emissions*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, <https://www3.epa.gov/climatechange/ghgemissions/sources/agriculture.html> (last visited July 18, 2016).

<sup>140</sup> Ecology, Concentrated Animal Feeding Operation General Permit, at <http://www.ecy.wa.gov/programs/wq/permits/cafo/index.html> (last visited July 22, 2016).



climate recovery initiatives must include sequestration improvements, Ecology must address factors such as reforestation, forest management, soil carbon sequestration, and sustainable agricultural practices in its Rule.<sup>141</sup> These sequestration initiatives must be *in addition* direct reductions in Washington’s GHG emissions.<sup>142</sup> Forest and soil management are not an alternative to reducing emissions but rather a discrete, pivotal component of any effective climate recovery plan.

b. The Proposed Clean Air Rule is Not Targeted To Achieve 350 ppm By the End of the Century

i. Ecology’s Proposed Rule is Designed to Reduce Washington Emissions by Roughly 1% Per Year, Which Is Illegal

Ecology must fully analyze and disclose annual emission reduction rates relative to statewide emissions in order to understand the full impact of the rule on all of the emissions for which Washington must control and reduce. Because that analysis does not exist, our calculations show that for the first 3 years the rate of reduction relative to statewide emissions is only ~0.92% per year, gradually increasing through 2036, but still at rates far beneath the 8% required if emission reductions began in 2017 based on a 2016 flatline peak. However because Ecology’s rule delays actual emission reductions until 2018, and far later for many sectors, Ecology’s proposed emission reductions are even further off track from the best science, which by 2018 would require at least 8.5 percent annual reductions, coupled with carbon sequestration in soils and forests.<sup>143</sup>

ii. The Proposed Rule Regulates An Insufficient Number of Sources

In the proposed Clean Air Rule, Ecology fails to regulate a sufficient number of greenhouse gas emissions sources. The proposed rule claims to cover only 66% of overall state greenhouse gas emissions.<sup>144</sup> By establishing an excessively high compliance threshold (starting at 100,000 MT of CO<sub>2</sub>e dropping to 70,000 MT of CO<sub>2</sub>e) and failing to regulate some of the state’s most significant emission sectors, the agency proposes a severely inadequate emissions reduction scheme. In *Foster v. Ecology*, the court found that Ecology’s current climate change policies did not “preserve, protect and enhance the air quality for current and future generations.”<sup>145</sup> Under the current proposed rule, Ecology continues to narrow the scope of the rule, to exclude some of the largest state emissions sources, including transportation, industrial forestry, agriculture, and corporations that emit less than 70,000 MT of CO<sub>2</sub>e. *Ecology has the authority, and legal obligation, to create a comprehensive and more stringent rule and set standards for all*

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<sup>141</sup> See Crowther Decl., *supra* note 1, at 3.

<sup>142</sup> Hansen et al., *supra* note 2, at 1.

<sup>143</sup> See Hansen Decl. (Exhibit O), ¶¶ 70, 82, 84.

<sup>144</sup> See Department of Ecology, *SEPA Environmental Checklist - Clean Air Rule at 5*, available at <http://www.ecy.wa.gov/programs/air/rules/docs/173442sepacheck-2.pdf>. As discussed above, Ecology’s claim that it actually regulates 66% of emissions is dubious.

<sup>145</sup> *Foster v. Wash. Dep’t of Ecology*, No. 14-2- 25295-1 SEA, 6 (Wash. Super. Ct. Nov. 19, 2015) (Exhibit D).

*emissions sources.*<sup>146</sup> In order to ensure the protection of current and future generations, Ecology must expand the rule to cover all major sources of GHG emissions in the state of Washington.

## 1. Ecology Must Regulate Transportation Emissions

In the proposed Clean Air Rule, Ecology does very little to require actual reductions of state transportation emissions. Washington’s transportation sector accounts for the largest percentage of greenhouse gas emissions, approximately 44%, and thus must be regulated in the proposed Clean Air Rule.<sup>147</sup> The state has recognized that “addressing [transportation] emissions is key to achieving Washington’s statutory greenhouse gas reduction goals (RCW 70.235.020).”<sup>148</sup> The *Foster* court noted that Ecology has not adequately addressed transportation emissions in existing policies and thus suggested that Ecology is obligated to address transportation emissions in the Clean Air Rule in order to protect the rights of young people.<sup>149</sup>

The proposed rule provides an option for covered parties to obtain ERUs through existing commute trip reduction programs. However, this provision is of little value. Commute trip reduction program emission reductions are separate from the proposed rule, and are presumed to occur even without the rule. As a result, any ERUs generated under commute programs are non-additional to overall emissions reductions. It is illogical for emission reductions from the commute trip reduction generated ERUs to be counted in determining transportation sector emission reductions.

Ecology’s delayed regulation of petroleum fuel producers and importers does not suffice to address the state’s tremendous amount of GHG emissions from transportation. Ecology has essentially ignored the back end of the problem, i.e. the emissions from combustion of fossil fuels by vehicles. Within the transportation sector, “the consumption of gasoline in vehicles is the largest single source of emissions in Washington . . . accounting for over 23% of total emissions in 2010.”<sup>150</sup> The bottom line is that Ecology does not explicitly set emissions standards for or regulate transportation sector emissions in the rule, leaving to our children the challenge of emission reductions in this significant sector. There is no question that Ecology has the existing legal authority to regulate emissions resulting from the sale of petrochemical products (gasoline, diesel, propane, etc.), or vehicle emissions specifically, as illustrated by its

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<sup>146</sup> RCW § 70.94.331.

<sup>147</sup> “In Washington, the transportation sector is the largest source of emissions, accounting for over 44% of total emissions in 2011.” See Department of Ecology, *Washington Greenhouse Gas Emission Reduction Limits: Report prepared under RCW 70.235.040*, at 8 available at <https://fortress.wa.gov/ecy/publications/documents/1401006.pdf>.

<sup>148</sup> Life Cycle Associates, LLC for WA Office of Financial Management, A Clean Fuel Standard in Washington State, Revised Analysis With Updated Assumptions DRAFT (September 29, 2014), at [http://www.ofm.wa.gov/initiatives/cleanfuelstandards/Documents/Carbon\\_Fuel\\_Standard\\_evaluation\\_2014\\_draft.pdf](http://www.ofm.wa.gov/initiatives/cleanfuelstandards/Documents/Carbon_Fuel_Standard_evaluation_2014_draft.pdf) (last visited July 22, 2016) at 8.

<sup>149</sup> *Foster v. Wash. Dep’t of Ecology*, No. 14-2- 25295-1 SEA, 6-7 (Wash. Super. Ct. Nov. 19, 2015) (Exhibit D).

<sup>150</sup> Leidos, Evaluation of Approaches to Reduce Greenhouse Gas Emissions in Washington State – Final Report (October 14, 2013) at 7.

development of a draft Clean Fuel Standard. The Legislature has not taken that authority away and it must be implemented as part of the Clean Air Rule. For example, all distributors of gasoline, diesel, or propane could be required to reduce the emissions resulting from the sale of those products by 8 percent per year.

#### 4. Ecology Must Regulate Emissions from New and Retrofitted Buildings

Residential, commercial, and industrial greenhouse gas emissions represent 22-30% of Washington's GHG emissions.<sup>151</sup> To address these emissions, Ecology must establish emissions standards for new or retrofitted buildings to ensure that new buildings are not locking in old energy-inefficient infrastructure and that the emissions for which they are responsible meet the limits set by Ecology, consistent with science-based standards. The new emission standards for buildings must put Washington on track to achieve a rate of reductions for this sector, which when combined with other sectors, will equal the total annual emission reductions required by the best science. We are not asking Ecology to change existing state law regarding energy-related building standards,<sup>152</sup> but rather that Ecology acknowledge the reality that buildings are sources of GHG emissions and should be regulated as such.

#### 3. Ecology Must Regulate Industrial Forestry

Ecology must do more to limit industrial logging emissions by regulating the industrial forestry sector under the Clean Air Rule. At present, Ecology fails to properly disclose or analyze GHG emissions from the forestry sector, even though those emissions trigger reporting requirements under existing state law.<sup>153</sup> A recent study critiques the global accounting practice used in assessing forest sector GHG emissions, which lumps timber industry emissions with carbon sequestered on forest conservation land.<sup>154</sup> Ecology cannot fall into the same trap and assume that all GHG emissions from the forestry sector are counteracted by forest sequestration. Instead, Ecology must include GHG emissions from the forestry sector in its GHG inventory and regulate the forestry sector as part of its emission reduction regime.

#### 4. Ecology Must Regulate Emissions from Agriculture

Ecology's proposed rule also fails to regulate agricultural activities (including manure management and fertilizer use), which are responsible for a sizeable amount of GHG emissions in the state.<sup>155</sup> The failure to regulate agriculture makes no sense,

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<sup>151</sup> See Department of Ecology, Climate Change, Frequently asked questions about the Washington Clean Air Rule (July 21, 2016), at <http://www.ecy.wa.gov/climatechange/CarbonRuleFAQ.html>; RCW § 19.27A.130.

<sup>152</sup> RCW 19.27A.

<sup>153</sup> RCW 70.94.151(5)(a).

<sup>154</sup> JOHN TALBERTH ET AL., CENTER FOR SUSTAINABLE ECONOMY, CLEARCUTTING OUT CARBON ACCOUNTS 1 (2015), <http://sustainable-economy.org/wp-content/uploads/2015/11/Clearcutting-our-Carbon-Accounts-Final-11-16.pdf>.

<sup>155</sup> *Sources of Greenhouse Gas Emissions*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, <https://www3.epa.gov/climatechange/ghgemissions/sources/agriculture.html> (last visited July 18, 2016).

especially in light of the fact that the agricultural sector seeks to benefit substantially from Ecology's proposal to count agricultural activities as recognized as generating emission reduction units.<sup>156</sup> In 2012, agricultural soils in Washington emitted 1.7 MMTCO<sub>2</sub>e and manure management was responsible for another 1.2 MMTCO<sub>2</sub>e.<sup>157</sup> Together with emissions from livestock through enteric fermentation, the agricultural sector was responsible for around 5.4% of Washington's total emissions in 2012.<sup>158</sup>

Concentrated Animal Feeding Operations (CAFOs) are major contributors of greenhouse gas emissions ("GHG") in the state of Washington. "Agricultural activities such as manure management, fertilizer use, and livestock (enteric fermentation) result in methane and nitrous oxide emissions that account for 6% of State GHG emissions in 2005."<sup>159</sup> Worldwide, the livestock sector generates more GHG emissions as measured in CO<sub>2</sub> equivalent (18%) than the transportation sector.<sup>160</sup> Livestock generates 65% of human-related nitrous oxide which has 296 times the global warming potential of CO<sub>2</sub>, accounts for 37% of all human-induced methane<sup>161</sup> and is responsible for 64% of ammonia emissions: devastating health effects. *Id.* Global greenhouse gas emissions from the agricultural sector totaled 4.69 billion tons of carbon dioxide (CO<sub>2</sub>) equivalent in 2010 (the most recent year for which data are available), an increase of 13 percent over 1990 emissions. By comparison, global CO<sub>2</sub> emissions from transport totaled 6.76 billion tons that year, and emissions from electricity and heat production reached 12.48 billion tons, according to Worldwatch Institute's Vital Signs Online service ([www.worldwatch.org](http://www.worldwatch.org)).<sup>162</sup> Manure management activities have been identified as a major contributing factor to increased GHG emissions:

Manure that is deposited and left on pastures contributes to global nitrous oxide emissions because of its high nitrogen content. When more nitrogen is added to soil than is needed, soil bacteria convert the extra nitrogen into nitrous oxide and emit it into the atmosphere—a process called nitrification. Emissions from manure on pasture were highest in Asia, Africa, and South America, accounting for a combined 81 percent of global emissions from this source.<sup>163</sup>

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<sup>156</sup> WAC 173-442-160(6).

<sup>157</sup> WASHINGTON STATE DEPARTMENT OF ECOLOGY, 2010 WASHINGTON STATE GREENHOUSE GAS EMISSIONS INVENTORY (2012), <http://www.ecy.wa.gov/climatechange/docs/2012GHGtable.pdf>.

<sup>158</sup> *Id.*

<sup>159</sup> WA Department of Community, Trade & Economic Development, Washington State Greenhouse Gas Inventory and Reference Case Projections, 1990-2010 (December 2007), *available at* [http://www.ecy.wa.gov/climatechange/docs/WA\\_GHGInventoryReferenceCaseProjections\\_1990-2020.pdf](http://www.ecy.wa.gov/climatechange/docs/WA_GHGInventoryReferenceCaseProjections_1990-2020.pdf) (last visited March 31, 2014).

<sup>160</sup> Livestock's Long Shadow – Environmental Issues and Options, United Nations Food & Agriculture Organization (Nov. 29, 2006).

<sup>161</sup> This assumes that methane causes 23 times as warming as CO<sub>2</sub>, but as discussed below, this measure of warming is outdated. Methane is now estimated to cause 34 times the amount of warming of CO<sub>2</sub>.

<sup>162</sup> Worldwatch Institute, "Agriculture and Livestock Remain Major Sources of Greenhouse Gas Emissions," *available at* <http://www.worldwatch.org/agriculture-and-livestock-remain-major-sources-greenhouse-gas-emissions-1> (last visited March 31, 2014).

<sup>163</sup> *Id.*

In Washington, “[t]he manure management category [of emissions], which shows the highest rate of growth relative to the other categories, accounted for 11% [] of total agricultural emissions in 1990 and is estimated to account for about 25% [] of total agricultural emissions in 2020.”<sup>164</sup> The science is clear that livestock population is a critical component of any emissions calculation for the agricultural sector. *Id.* The GHG emissions calculations done in Washington for the agricultural sector explicitly recognize the need for more precise data because “[e]missions from enteric fermentation and manure management are dependent on the estimates of animal populations and the various factors used to estimate emissions for each animal type and manure management system (i.e., emission factors which are derived from several variables including manure production levels, volatile solids content, and CH<sub>4</sub> formation potential).” *Id.* at F-6.

In 2012, the leading source of methane in the United States was enteric fermentation, and manure management was the fifth largest source.<sup>165</sup> Activities associated with manure management are also the third largest source of nitrous oxide, another powerful greenhouse gas.<sup>166</sup> In Washington State, enteric fermentation was responsible for 2.0 million metric tons of CO<sub>2</sub> equivalents (“MMT CO<sub>2</sub>eq”) and manure management was responsible for 1.1 MMT CO<sub>2</sub>eq in the year 2010.<sup>167</sup>

Methane is produced by ruminants during the digestion process. Furthermore, anaerobic conditions in manure holding areas and runoff lagoons lead to methane emissions. The EPA website estimates that one cow produces up to 110 kg of methane per year.<sup>168</sup> Nitrous oxide, a powerful greenhouse gas,<sup>169</sup> is also produced from combined manure and urine during storage. In addition, the farm equipment, generators and boilers used at the feedlot facility and heavy-duty diesel trucks transporting livestock and feed will produce carbon dioxide from fuel usage and from electricity usage. Diesel-powered engines and generators are also a significant source of black carbon. If Ecology wants to give the agricultural industry the economic benefit of generating emission reduction units, it must also treat agriculture as a covered party under the rule.

## 5. Ecology Must Regulate Consumption-based Emissions

Ecology must do a greenhouse gas emissions inventory that includes consumption-based emissions. A consumption-based emissions inventory is a greenhouse gas inventory including estimates of embedded emissions associated with the

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<sup>164</sup> WA Department of Community, Trade & Economic Development, Washington State Greenhouse Gas Inventory and Reference Case Projections, 1990-2010 (December 2007), *available at* [http://www.ecy.wa.gov/climatechange/docs/WA\\_GHGInventoryReferenceCaseProjections\\_1990-2020.pdf](http://www.ecy.wa.gov/climatechange/docs/WA_GHGInventoryReferenceCaseProjections_1990-2020.pdf) (last visited March 31, 2014) at F-4.

<sup>165</sup> USEPA, Inventory of US Greenhouse Gases and Sinks: 1990-2012 2-4 (Apr. 15, 2014).

<sup>166</sup> *Id.* at 2-5.

<sup>167</sup> WA Dept. of Ecology, WASHINGTON STATE GREENHOUSE GAS EMISSIONS INVENTORY 1990-2010 at 4 (2012).

<sup>168</sup> See <http://www.epa.gov/rlep/faq.html>, last visited May 21, 2014.

<sup>169</sup> Myhre et al, IPCC AR5 Chapter 8 at 714 (N<sub>2</sub>O GWP = 298 over 100 years and 268 over 20 years).

life cycle of materials and services, including electricity and fuels, consumed in Washington. These emissions are included regardless of whether they physically originate in Washington. A consumption-based inventory uniquely counts out-of-state emissions associated with producing the products, services, and fuels consumed in Washington. It also counts emissions associated with producing fuels that are used to generate electricity consumed in Washington. Ecology has not provided a consumption-based inventory for CO<sub>2</sub> emissions, which would include all embedded CO<sub>2</sub> emissions for goods produced outside of Washington and consumed within Washington. Without this inventory and analysis, Ecology cannot accurately account for all of the State's emissions sources to ensure that it is fulfilling its constitutional and statutory mandate to protect the rights of young people and future generations.

Oregon is a model state for accounting for consumption emissions. The state has recognized that Oregon households' consumption affects the global environment and contributes to climate change.<sup>170</sup> In order to assess more complete carbon footprint, the State developed a scheme to include out-of-state production emissions for products consumed within the state. Emissions are counted if they satisfy households' economic final demand.<sup>171</sup> The inventory includes emissions associated with tangible commodities such as food, vehicles, appliances, furnishings and electronics. It also includes services, fuels, and electricity.<sup>172</sup> The inventory helps Oregon "design strategies that lower the carbon intensity of goods and services consumed by Oregonians and create incentives for Oregon's in- and out-of-state suppliers to shift to production methods that reduce their carbon footprint."<sup>173</sup> Ecology has failed to include emissions standards for consumption emission reductions into the rule. In order to effectively address all of Washington's GHG emissions, Ecology must 1) prepare a consumption-based inventory of Washington GHG gases and 2) set consumption emission reduction emission standards as part of the Clean Air Rule.

## 6. Ecology Must Lower the Threshold for Covered Parties

Ecology must lower the threshold for parties to be covered under the rule in order to adequately reduce atmospheric CO<sub>2</sub> levels. The current threshold schedule is arbitrary and not based on sound science. Under the proposed rule, the first compliance period includes covered parties with annual emissions greater or equal to 100,000 MT CO<sub>2</sub>.<sup>174</sup> The compliance threshold gradually decreases by 5,000 MT CO<sub>2</sub> each compliance period until it reaches 70,000 MT CO<sub>2</sub> in 2035, after which the threshold remains at 70,000 MT CO<sub>2</sub>. So in essence, Ecology is legalizing the emission of massive amounts of CO<sub>2</sub> and makes it impossible for the state to reduce its GHG emissions in the manner prescribed

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<sup>170</sup> See Oregon Department of Environmental Quality, Oregon Department of Energy, Oregon Department of Transportation, *Oregon's Greenhouse Gas Emissions Through 2010: In-Boundary, Consumption-Based and Expanded Transportation Sector Inventories* (July 18, 2013) at 9, available at [http://www.oregon.gov/deq/AQ/Documents/OregonGHGInventory07\\_17\\_13FINAL.pdf](http://www.oregon.gov/deq/AQ/Documents/OregonGHGInventory07_17_13FINAL.pdf).

<sup>171</sup> *Id.*

<sup>172</sup> *Id.* at 29.

<sup>173</sup> *Id.* at 9.

<sup>174</sup> Clean Air Rule, Wash. Admin. Code § 173.442.110(3) (proposed May 31, 2016); WAC § 173.442.030(3).



by best available climate science. The thresholds selected by Ecology grossly deviate from current state and federal reporting requirements as well as other cap and trade programs. In Washington, facilities and transportation fuels suppliers emitting at least 10,000 MT CO<sub>2</sub> of greenhouse gases are statutorily required to report their emissions.<sup>175</sup> It follows, then, that Ecology has express legislative approval to regulate sources that exceed more than the 10,000 MT CO<sub>2</sub> threshold.

Additionally, the EPA reporting threshold is 25,000 MT CO<sub>2</sub>.<sup>176</sup> California's reporting threshold is 25,000 MT CO<sub>2</sub>, and the state also requires entities whose annual emissions equal or exceed 25,000 MT CO<sub>2</sub> of GHG emissions to comply with the state cap-and-trade program.<sup>177</sup> To date, Ecology has offered no justification for deviating from either the 10,000 MT CO<sub>2</sub> or 25,000 MT CO<sub>2</sub> thresholds or failing to connect its established thresholds to science-based levels of emission reductions. In order to be on track to adequately reduce statewide emissions, Ecology should lower the compliance threshold to at least match the GHG emission reporting threshold of 10,000 MT CO<sub>2</sub>.

Washington's Clean Air Act provides Ecology broad authority to cover significantly more parties than what is proposed in the current draft of the rule.<sup>178</sup> Pursuant to the Washington Clean Air Act, Ecology is charged with securing and maintaining the ". . . levels of air quality that protect human health and safety. . ." <sup>179</sup> In order to reduce atmospheric CO<sub>2</sub> emissions to 350 ppm by the end of the century, it is imperative that Ecology regulate a significantly larger segment of GHG emitters.<sup>180</sup>

iii. The Proposed Rule Illegally Delays Compliance & Contradicts Ecology's Own Findings that Urgent Action is Needed to Draw Down GHG Emissions

After detailing the devastating impacts all sectors of Washington will face in light of climate change, in December 2014 Ecology proclaimed:

If we delay action by even a few years, the rate of reduction needed to achieve these goals would have to be beyond anything achieved historically and could be very costly.

\* \* \*

Climate change is not a far off risk. Globally, it is happening now and is worse than previously predicted, and it is forecasted to get worse.

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<sup>175</sup> RCW § 70.94.151 (5)(a) ("The department shall adopt rules requiring persons to report emissions of greenhouse gases as defined in RCW [70.235.010](#) where those emissions from a single facility, source, or site, or from fossil fuels sold in Washington by a single supplier meet or exceed ten thousand metric tons of carbon dioxide equivalent annually.").

<sup>176</sup> 40 C.F.R. § 98.2.

<sup>177</sup> Cal. Code Regs. tit. 17, §§ 95812, 95101.

<sup>178</sup> RCW § 70.94.331.

<sup>179</sup> RCW § 70.94.011.

<sup>180</sup> See Hansen, et al. *Assessing 'Dangerous Climate Change.'*

We are imposing risks on future generations (causing intergenerational inequities) and liability for the harm that will be caused by climate change that we are unable or unwilling to avoid.<sup>181</sup>

In spite of this finding, which simply reiterates what the agency has been saying for years,<sup>182</sup> Ecology has arbitrarily allowed a twenty-year “phase-in” for covered parties to come into compliance with the requirements of the rule. It is unfathomable for Ecology to sanction such a long delay for implementation of the rule in light of its own findings regarding the urgency of the climate crisis. The Clean Air Rule must require immediate reductions of GHG emissions if we are to have any hope of contributing to the resolution of the climate crisis. We have a very small window of opportunity to achieve global concentrations of 350 ppm by the end of the century and Ecology’s “kick the can down the road” approach is unlawful.

iv. The Emissions Threshold Arbitrarily Does Not Continue To Decrease After 2035

Remarkably, Ecology does not decrease the emissions threshold after 2035, a time when the young people of today will be experiencing more severe impacts of living in a climate-changed world. Ecology offers no justification for this. Given the science that clearly demonstrates the need and feasibility of a achieving net-zero carbon economy in Washington state,<sup>183</sup> it is illegal for Ecology to sanction such dangerous levels of GHG emissions after 2035.

v. The Proposed Rule Arbitrarily Relies Upon A Flawed Washington GHG Reporting Program

The current GHG reporting program (GHGRP) rules does not cover all petroleum products, and appears to be limited to “liquid motor vehicle fuel, special fuel, or aircraft fuel.” This should be clarified and addressed by Ecology. Are liquefied petroleum gases and all other petrochemical products covered by the reporting program? If so, they should be regulated under the proposed Clean Air Rule.

Even under its current GHGRP, Ecology is 4 years behind in reporting emissions data. Our consultant has provided up to date emissions data for WA through 2015 based on the EPA Tool and EIA SEDS data.<sup>184</sup> This level of information on emissions and the trajectory are a major failing of the proposed rule.

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<sup>181</sup> Ecology, Washington Greenhouse Gas Emission Reduction Limits, Ecology Publication No. 14-01-006 (December 2014) at 18.

<sup>182</sup> See, e.g., Ecology, Path to a Low Carbon Economy, Ecology Publication No. 10-01-011 (December 2010) at 1 (“Global climate change is the economic and environmental issue of our lifetime. The science is clear that we must move forward quickly to reduce greenhouse gas (GHG) emissions in order to mitigate its effects. Without action, climate change will negatively affect nearly every part of Washington’s economy through changes in temperature, sea level, and water availability.”).

<sup>183</sup> See Jacobson Decl. (Exhibit P).

<sup>184</sup> See Exhibit Q (Washington Emissions Data Compared to Science-Based Emissions Reductions-OCT).



Further, Ecology intends to update the reporting methodology and requirements for GHG reporting in preparation for the Clean Air Rule implementation in a way that, when the updates take effect, expected emissions from individual fuel providers will change (based upon the new methodology) and entities that currently appear that they would be covered or not covered under the program based on old data may switch to being covered or not covered when the new reporting methodology comes into effect. However, none of this is clear in the proposed rule, which leaves a tremendous amount of uncertainty for the public and industry. Furthermore, an accurate reporting system is a necessary first step towards fulfilling Ecology's obligation to address climate change.

vi. The Rule's Reliance on Offsets is Flawed

(a) The proposed Rule Allows Ecology to Delegate Responsibility for the Creation of Offsets and their Attendant Emissions Reductions to Other State Agencies and External Carbon Registries.

Ecology's strong reliance on the use of offsets is ill advised.<sup>185</sup> The proposed rule establishes a compliance obligation WAC 173-442-200(3) that must be met with emissions reductions by the end of each compliance period as measured in Emissions Reduction Units, which are equivalent to one metric ton of CO<sub>2</sub>e WAC 173-442-020(1)(m). According to Ecology's cost-benefit analysis, covered parties may, individually or in combination:

- A. Reduce emissions on-site at the covered party, or obtain the equivalent of similar reductions from other covered or voluntarily participating parties.
- B. Offset emissions using an in-state emissions reduction project or program, including RECs, as allowed by the proposed rule.
- C. Purchase emissions allowances through existing carbon markets if allowed by the proposed rule.<sup>186</sup>

In their analysis, Ecology forecast a range of compliance costs per MT CO<sub>2</sub>e for each compliance option. The estimated costs are:

Emission reduction programs (Renewable Energy Credits): \$3 – \$11 per MT CO<sub>2</sub>e

Emissions reduction projects: \$5 – \$29 per MT CO<sub>2</sub>e

Market emissions reductions: \$13 – \$14 per MT CO<sub>2</sub>e

On-site emissions reductions: \$23 – \$57 per MT CO<sub>2</sub>e<sup>187</sup>

The cost-benefit analysis acknowledged that:

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<sup>185</sup> For a more thorough description of the problems associated with offsets, *see* the comments submitted by Food and Water Watch on the proposed Clean Air Rule.

<sup>186</sup> Preliminary Cost-Benefit and Least Burdensome Alternative Analysis, p. 13.

<sup>187</sup> *Id.* p. 14-15.

Actual costs depend on the method of compliance chosen, and Ecology assumes that covered parties will choose the lowest-cost option available to them. In order, these are RECs, in-state emissions reduction projects, market purchases, and on-site emissions reductions.<sup>188</sup>

These projected results highlight the importance of offset projects and programs under the proposed rule, given that Ecology expects them to be preferred by covered parties given their more favorable economics. Further, as a centerpiece to the proposed rule, Ecology identifies a wide range of projects and programs that can generate offset credits, and indeed encourages polluters to take advantage of offsets rather than reducing their own emissions in the state. This is the wrong approach.

As the agency responsible for operating and enforcing any Washington GHG reduction program, Ecology is legally obligated to ensure that its verification criteria are met. However, the proposed rule shifts responsibility for determining projects and programs that generate offset credits to other state agencies and external registry programs, and provides contradictory provisions as to eligible programs, making Ecology's job of policing offsets criteria virtually impossible.

A key criterion for offset credit is that the emissions reductions must be “[a]dditional to existing law or rule” and cannot be used if “[i]f an emission reduction is required by another statute, rule, or other legal requirement.” WAC 173-442-150 Nevertheless, the proposed rule would allow emissions reductions from the following already-existing “policies” to create ERUs and be used for compliance: (1) The EPA Clean Power Plan; (2) The Washington GHG emissions performance standard; (3) The Washington CO<sub>2</sub> mitigation standard for fossil-fueled thermal electric generation facilities; and (4) Commute trip reduction programs.

To the extent that emission reductions are required by these programs, their use for the creation of offsets would lead to double-counting and violate the additionality criterion. To generate ERUs, sectors include transportation, combined heat and power, energy, livestock and agriculture, waste and wastewater, and industrial sectors. The proposed rule establishes exceedingly complicated and poorly specified processes to determine actual emissions reductions and the generation of ERUs from activities and programs within these sectors. WAC 173-442-160. They include protocols from established registries or state agency processes to establish the eligibility of activities and programs in each sector, and the ensuing emissions reductions that Ecology would rely on to assign ERUs. The sole responsibility for Ecology for offsets would be to “assign the appropriate quantity of ERUs.” WAC 173-442-160.

For each sector, other entities besides Ecology would be responsible for determining emissions reduction activities and programs and the resulting emission reductions. However, for each of these sectors, emissions reductions may also be determined through a methodology approved by Ecology, with Ecology assigning a value

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<sup>188</sup> *Id.* p. 23.

for a quantity of ERUs. WAC 173-442-060. Ecology's ability to judge whether or not projects and programs meet established criteria, especially the critical criterion of non-additionality, would be highly compromised given that these offsets would be administered by separate agencies and held to the standards of different registry protocols.

Finally, nowhere in the proposed rule is it specified how covered parties can acquire offset credits or the ERUs deemed created by Ecology, by funding projects and programs, purchasing credits from the responsible parties, or other means. The failure of the proposed rule to spell out how the marketplace for offset credits would operate is an enormous and inexplicable gap in the design of the proposed offset program.

(b) The Excessive Role Envisioned for Allowances Would Impose Costs and Deny Benefits to Washingtonians.

The proposed rule establishes purchases of allowances from external multisector GHG emission reduction programs as a compliance option. WAC 173-422-110(3). The proposed rule sets limits on how much of a covered party's compliance obligation can be met through allowances, starting at 100% for the first two compliance periods and declining slowly over time. WAC 173-442-170. Ecology's focus should be on requiring polluters to install the technology needed to minimize the pollution. Ecology should not be legalizing the continued discharge of dangerous levels of GHG emissions. Such an approach puts those in close proximity to the polluting facilities in harms way. Those are precisely the people Ecology is supposed to be protecting.

As an initial matter, the proposed rule states that allowances must be "derived from methodologies congruent with chapter 173-441 WAC."<sup>189</sup> This chapter is Washington's GHG reporting rule. Allowances are not the same as activities that generate GHG emissions reductions reportable to the Washington system. Rather, they are officially-sanctioned authorizations by air quality regulators allowing a certain amount of GHG emissions to be emitted. It is unclear what this provision seeks to accomplish.

The ability of covered parties to use allowances for all or most of their compliance obligations prioritizes perceived market efficiencies over equally important non-market factors. Ecology's cost-benefit analysis acknowledges that there are trade-offs between in-state reductions and allowances. For example, the cost-benefit analysis identifies important pollution and environmental justice factors to weigh against the use of allowances. It acknowledges that reductions in associated emissions such as criteria pollutants and toxic air pollutants can have major public health benefits.<sup>190</sup> Ecology identified a number of population groups living near GHG emissions facilities: children, the elderly, minorities, and low-income, linguistically-isolated, and less educated populations. While each of these groups living near covered facilities stand to benefit from on-site emissions reductions, Ecology declined to analyze the tradeoffs between

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<sup>189</sup> Id. p. 18.

<sup>190</sup> Id. p. 39

these. This is reflected in the proposed rule, which leaves it up to covered parties to decide which compliance options to use based on their monetary costs alone. Ecology's assumption that on-site emission reductions will be selected last by covered parties makes it highly likely that Washingtonians are not going to see the potential benefits of a rule that regulates actual GHG emissions.

(c) Ecology Must Create Opportunities for Public Involvement in the Implementation of Any GHG reduction Program.

Any offset program should be fully transparent and involve public participation in implementation, such as third-party verification of reductions, the assignment of emissions to entities that do not have reported emissions, and the assignment of ERUs to offset projects. We believe that a vehicle for public oversight should be established under the rule to provide the public with opportunities to participate directly in the state's efforts to reduce GHG emissions. In California, oversight committees were established during the initial operations of the CA Cap and Trade Program, including an Emissions Market Assessment Committee and an Economic and Allocation Advisory Committee. A public oversight committee should include representatives of groups interested in the achievement of GHG reductions in Washington and communities disproportionately impacted by GHG pollution and climate change.

V. ECOLOGY'S COST BENEFIT ANALYSIS IS FLAWED

a. The Social Cost of Carbon Estimates Require Reductions Based on Science

i. Ecology is Required to Consider the Real Costs & Benefits of the Proposed Clean Air Rule.

Under RCW 34.05.328, the Department of Ecology is required to “[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 assessed some costs in its Preliminary Cost-Benefit and Least Burdensome Alternative Analysis.<sup>191</sup> In this analysis, Ecology estimates the value of reducing GHG emissions based on the social cost of carbon (SCC) developed by the federal government and the expected trajectory of GHG reductions as covered parties meet their GHG emission reduction pathways. The SCC developed and used by the federal government estimates economic damages expected from increases in carbon dioxide emissions, monetized as dollars per metric ton.<sup>192</sup> The damages from climate change assessed in the SCC include “changes in net agricultural productivity, human health, property damages from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning.”<sup>193</sup> The

<sup>191</sup> Ecology Publication No. 16-02-008 (June 2016).

<sup>192</sup> EPA, “The Social Cost of Carbon,” (Last updated Feb. 23, 2016) available at <https://www3.epa.gov/climatechange/EPAactivities/economics/scc.html> (last visited July 7, 2016).

<sup>193</sup> *Id.*

purpose of the SCC, pursuant to Executive Order 12866, is to enable governmental agencies to include the social benefits of reducing CO<sub>2</sub> emissions when conducting cost-benefit analyses on regulatory actions that affect global emissions.<sup>194</sup> We applaud and support Ecology's use of the SCC as part of its rulemaking process, especially since the most significant social costs of climate change will be experienced by the young and future generations. It is important that those costs are weighed against the minimal costs imposed on the corporations who are to be primarily regulated under the rule. We also support Ecology's focus on global damage estimates as opposed to solely domestic estimates because of the inherent global nature of climate change. That being said, we offer the following comments to improve the accuracy of Ecology's analysis.

ii. The U.S. Social Cost of Carbon Analysis Undervalues the Rights of Children & Future Generations.

For 2015, the U.S. has estimated the SCC range as between \$11 and \$105 per metric ton; for 2020, the range is between \$12 and \$123.<sup>195</sup> When these estimates are viewed as "avoided costs," they represent the dollar value of the benefits from avoiding future damages caused by climate change. However, the U.S. (and now Ecology) erroneously uses unreasonably high discount rates as a key component of the SCC, which discounts future benefits more steeply than near-term benefits, thereby valuing adults of the present generation more highly than children and all future generations, in violation of long-standing principles of evolutionary biology<sup>196</sup> and morality, as well as legal rights of youth and future generations. Discount rates essentially are used to calculate the present value of future damages,<sup>197</sup> and are represented as percentages. The federal government uses four discount rates to calculate a range of present values for the average annual SCC forecast by three integrated assessment models. The discount rates are 5%, 3%, 2.5%, and the 95<sup>th</sup> percentile at 3%, the high end of the distribution of potential future damages.<sup>198</sup> Higher discount rates give less value to future damages and yield lower present values and, alternatively, lower discount rates give greater value to future damages and yield higher present values.<sup>199</sup> The federal government uses a range of

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<sup>194</sup> U.S. Interagency Working Group on Social Cost of Carbon, "Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866," at 3 (May 2013) available at [http://www.whitehouse.gov/sites/default/files/omb/inforeg/social\\_cost\\_of\\_carbon\\_for\\_ria\\_2013\\_update.pdf](http://www.whitehouse.gov/sites/default/files/omb/inforeg/social_cost_of_carbon_for_ria_2013_update.pdf) (last visited July 7, 2016).

<sup>195</sup> U.S. Interagency Working Group on Social Cost of Carbon, "Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866," at 3, 13 (May 2013, Revised July 2015) available at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-tds-final-july-2015.pdf> (last visited July 8, 2016).

<sup>196</sup> Trivers, R.L. 1972. Parental Investment and Sexual Selection. In B. Campbell, ed. *Sexual Selection and the Descent of Man, 1871-1971*, Aldine-Atherton, Chicago, pp. 136-179, at [http://roberttrivers.com/Publications\\_files/Trivers%201972.pdf](http://roberttrivers.com/Publications_files/Trivers%201972.pdf) (last visited July 20, 2016) (defining parental investment as "any investment by the parent in an individual offspring that increases the offspring's chance of surviving (and hence reproductive success) at the cost of the parent's ability to invest in other offspring.").

<sup>197</sup> EPA, EPA Fact Sheet, "The Social Cost of Carbon," at 1 (Dec. 2015) available at <https://www3.epa.gov/climatechange/Downloads/EPAactivities/social-cost-carbon.pdf> (last visited July 11, 2016).

<sup>198</sup> *Id.*

<sup>199</sup> *Id.* at 2

discount rates “because the literature shows that the [SCC] is highly sensitive to the discount rate and because no consensus exists on the appropriate rate to use for analyses spanning multiple generations.”<sup>200</sup> The 2.5% discount rate is not, as Ecology suggests, the most appropriate discount rate and the SCC values derived from a 2.5% discount rate should not be valued as the most likely SCC.<sup>201</sup> Rather, the range of costs produced by the SCC are simply meant to cover a range of future damage estimates. The 2.5% discount rate applied by Ecology is too high and, therefore, inappropriate for use in its cost-benefit analysis.

iii. Ecology’s Estimates Improperly “Discount” Children & Future Generations

Agencies using the SCC developed by the U.S. Interagency Working Group rely on estimates that do not adequately represent the costs of climate change to children and future generations.

According to the 2010 Technical Support Document of the Interagency Group:

With respect to the pure rate of time preference, most papers in the climate change literature adopt values for  $\rho$  [discount rate] in the range of 0 to 3 percent per year. The very low rates tend to follow from moral judgments involving intergenerational neutrality. Some have argued that to use any value other than  $\rho = 0$  would unjustly discriminate against future generations (e.g., Arrow et al. 1996, Stern et al. 2006). However, even in an inter-generational setting, it may make sense to use a small positive pure rate of time preference because of the small probability of unforeseen cataclysmic events (Stern et al. 2006).<sup>202</sup>

Nevertheless, although estimates for appropriate discount rates of future generations ranged from 1% to 3%,<sup>203</sup> the Working Group chose 3% as the central value. The Working Group “consistently chose relatively high discount rates available, without explaining its rejection of alternative lower ones.”<sup>204</sup> Of the four major uncertainties that exist in applying economics to future climate change impacts, the Interagency Working Group selected “the option[s] that minimize[] estimates of climate risks and damages.”<sup>205</sup>

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<sup>200</sup> *Id.*

<sup>201</sup> AIR QUALITY PROGRAM, WASHINGTON STATE DEPARTMENT OF ECOLOGY, PRELIMINARY COST-BENEFIT AND LEAST-BURDENSOME ALTERNATIVE ANALYSIS, CHAPTER 173-442 WAC, 1, 12, 60 (2016) at <https://fortress.wa.gov/ecy/publications/SummaryPages/1602008.html> (last visited July 19, 2016).

<sup>202</sup> U.S. Interagency Working Group on Social Cost of Carbon, “Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866” at 21 (February 2010) available at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>

<sup>203</sup> *Id.* at 21

<sup>204</sup> Laurie T. Johnson and Chris Hope, *J Environ Stud Sci*, “The social cost of carbon in U.S. regulatory impact analyses: an introduction and critique,” at 8 (Sept. 2012) available at <http://www.ourenergypolicy.org/wp-content/uploads/2012/09/fulltext.pdf> (last visited July 11, 2016).

<sup>205</sup> Frank Ackerman and Elizabeth A. Stanton, “Climate Risks and Carbon Prices: Revising the Social Cost of Carbon,” at 6 (2011) available at [http://sei-us.org/Publications\\_PDF/SEI-Climate-Risks-Carbon-Prices-2011-full.pdf](http://sei-us.org/Publications_PDF/SEI-Climate-Risks-Carbon-Prices-2011-full.pdf) (last visited July 11, 2016).

By selecting these lower-risk options, the Working Group ignores “increasingly ominous scientific evidence about climate risks [that] impl[y] much greater losses at higher temperatures.”<sup>206</sup> These risks must be considered when determining the SCC because “[b]y the time we know what climate sensitivity and higher temperature damages turn out to be, it will be much too late to do anything about it.”<sup>207</sup>

The EPA acknowledges that current SCC modeling does not account for all important damages.<sup>208</sup> There is a noted absence in the models of many physical, ecological, and economic impacts predicted by current climate science.<sup>209</sup> In responding to comments on the development of the SCC, the Interagency Working Group acknowledged that two of the three models used to derive an average SCC do not account for variability in the climate that could affect agriculture.<sup>210</sup> Additionally, the models used in the SCC do not accurately, or at all, account for feedback loops such as ocean circulation patterns, forest diebacks, sea ice melt, and permafrost melt.<sup>211</sup> Experts with the Natural Resources Defense Council found the models “likely to understate impacts by excluding a large number of factors that would increase it while excluding only a very small number of countervailing forces.”<sup>212</sup> Moreover, the models used to develop the SCC omit climate change damages to fisheries, forests, and resource scarcity due to migration.<sup>213</sup> A 2014 study found that the SCC should be no lower than \$125 per metric ton based on an aggregate of studies using high and low discount rates, and even this value, which is marginally larger than federal estimates, was considered “realistic and conservative.”<sup>214</sup> Further, some studies find *negative* discount rates may be more appropriate for estimating the SCC.<sup>215</sup>

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<sup>206</sup> *Id.* at 13

<sup>207</sup> *Id.* at 19

<sup>208</sup> EPA, “The Social Cost of Carbon,” (Last updated Feb. 23, 2016) available at <https://www3.epa.gov/climatechange/EPAactivities/economics/scc.html> (last visited July 7, 2016).

<sup>209</sup> *Id.*

<sup>210</sup> Interagency Working Group on Social Cost of Carbon, United States Government, “Response to Comments: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866, at 15 (July 2015) available at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc-response-to-comments-final-july-2015.pdf> (last visited July 11, 2016).

<sup>211</sup> *Id.*

<sup>212</sup> Johnson and Hope at 3 (Sept. 2012) available at <http://www.ourenergypolicy.org/wp-content/uploads/2012/09/fulltext.pdf> (last visited July 11, 2016).

<sup>213</sup> Environmental Defense Fund, Institute for Policy Integrity, Natural Resources Defense Council, “Social Cost of Carbon Pollution Fact Sheet,” (April 2014) available at [http://costofcarbon.org/files/Cost\\_of\\_Carbon\\_Fact\\_Sheet.pdf](http://costofcarbon.org/files/Cost_of_Carbon_Fact_Sheet.pdf) (last visited July 19, 2016); *See also* U.S. Interagency Working Group on Social Cost of Carbon, “Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866,” 1, 11 (Feb. 2010) available at <https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf> (last visited July 19, 2016).

<sup>214</sup> Jacobson et al., *Energy Environ. Sci.*, “100% clean and renewable wind, water, and sunlight (WWS) all-sector energy roadmaps for the 50 United States,” Supplement at 26 (2015) available at <https://web.stanford.edu/group/efmh/jacobson/Articles/I/USStatesWWS.pdf> (last visited July 11, 2016).

<sup>215</sup> *See, e.g.*, Fleurbaey, Marc and Zuber, Stephane, “Climate policies deserve a negative discount rate,” *Chicago Journal of International Law*: Vol. 13: No. 2, Article 14, 565, 592 (2013) available at <http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1381&context=cjil> (last visited July 15, 2016).



Ecology estimates the present value of avoided GHG emissions under the proposed rule over a 20-year period as \$14.5 billion, which is a vast underestimate.<sup>216</sup> Governor Inslee stated in Executive Order 14-04 that “the effects of climate change on water supplies, public health, coastal and storm damage, wildfires, and other impacts, will cost Washington almost \$10 billion per year after 2020” based on a study by the University of Oregon.<sup>217</sup> Governor Inslee also stated that “studies conducted for the Western Climate Initiative indicated that a program to limit carbon emissions, implemented through market mechanisms, would result in a net increase of 19,300 jobs and increased economic output of \$3.3 billion in Washington by 2020.”<sup>218</sup>

Another indicator that Ecology’s estimate of the benefits of the rule is underestimated is its failure to take into account the Social Cost of Methane (SCM).<sup>219</sup> Estimates of the SCM range from roughly \$490 to \$1500/MT in 2015 (in 2012 dollars) at discount rates of 5% and 2.5% respectively.<sup>220</sup> The SCM has been adopted by EPA in recent regulatory impact analyses.<sup>221</sup> In its cost-benefit analysis, Ecology failed to account for methane’s much greater impact on climate and its much higher social cost. According to the Washington GHG Inventory, methane emissions were estimated from the natural gas and wood products sectors at .9 MMTCO<sub>2e</sub>, roughly 1% of total GHG emissions. As noted above, methane is highly likely to be emitted by other sectors and we expect actual methane emissions to be significantly higher than those reported in the Inventory. If roughly half of the methane emissions reported in the Inventory were eliminated by the CAR, it would add roughly \$32 million to the benefits under the rule.

Furthermore, Governor Gregoire, in Executive Order 12-07 stated:

Washington is the country’s top provider of farmed oysters, clams, and mussels. Our shellfish growers employ directly and indirectly more than 3,200 people around the state and provide an annual total economic contribution of \$270 million statewide. The increasing levels of acidification in Washington’s marine waters pose serious and immediate threats to our shellfish resources, and the revenue and jobs supported by the shellfish industry.<sup>222</sup>

The UW Climate Impact Group reports that “[b]y the end of the century, ocean

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<sup>216</sup> AIR QUALITY PROGRAM, WASHINGTON STATE DEPARTMENT OF ECOLOGY, PRELIMINARY COST-BENEFIT AND LEAST-BURDENSOME ALTERNATIVE ANALYSIS, CHAPTER 173-442 WAC, at 39.

<sup>217</sup> Exec. Order No. 14-04: Washington Carbon Pollution Reduction and Clean Energy Action, 1 (2014) available at [http://www.governor.wa.gov/sites/default/files/execute\\_order/eo\\_14-04.pdf](http://www.governor.wa.gov/sites/default/files/execute_order/eo_14-04.pdf) (last visited July 19, 2016).

<sup>218</sup> *Id.* at 2

<sup>219</sup> Marten *et al.*, Incremental CH<sub>4</sub> and N<sub>2</sub>O mitigation benefits consistent with the U.S. Government’s SC-CO<sub>2</sub> estimates, *Climate Policy*, 15:2, 272-298 (2015).

<sup>220</sup> Regulatory Impact Analysis of the Proposed Emission Standards for New and Modified Sources in the Oil and Natural Gas Sector, US Environmental Protection Agency, 2015 at 4-14. Available at [https://www3.epa.gov/airquality/oilandgas/pdfs/og\\_prop\\_ria\\_081815.pdf](https://www3.epa.gov/airquality/oilandgas/pdfs/og_prop_ria_081815.pdf)

<sup>221</sup> *Id.*

<sup>222</sup> Executive Order No. 12-07 (Nov. 27, 2012), at [http://www.ecy.wa.gov/water/marine/oa/MRAC\\_ExecutiveOrder\\_12-07.pdf](http://www.ecy.wa.gov/water/marine/oa/MRAC_ExecutiveOrder_12-07.pdf) (last visited July 20, 2016).



acidification is projected to result in a 40% reduction, globally, in the rate at which mollusks (e.g., mussels and oysters) for shells, as well as a 17% decline in growth, and a 34% decline in survival.”<sup>223</sup> These numbers serve as examples that the estimated \$14.5 billion in avoided costs is much lower than the actual avoided costs of climate change. Many other Washington-specific costs (e.g. loss of forest land due to wildfires, loss of tidelands due to sea level rise, etc.), are incorrectly omitted from this equation.

Finally, the “pure discounting” approach taken by the federal government values harm and death to future generations as only a fraction of the value of harm and death to the present generation.<sup>224</sup> Discounting has been criticized as violating intergenerational neutrality, favoring the present generation over future generations.<sup>225</sup> Applying higher discount rates in determining the SCC diminishes future generations’ rights to life, liberty, due process, and equal protection. Thus, a social cost of carbon analysis that applies a discount rate to the lives of future generations is manifestly unconstitutional and will lead to unconstitutional policies that lock in dangerous levels of warming, such as the proposed Clean Air Rule in its current form.

#### iv. Ecology’s Estimates Are Inadequate

Ecology estimates the SCC for present and future generations of Washingtonians based on the SCC developed by the federal government, but many assumptions and parameters used in Ecology’s estimates equate to grossly inadequate values. First, Ecology is basing the SCC on a 20-year timeframe. This timeframe is not only shorter than that utilized by the federal government, but the most severe climatic damage will occur beyond the 20-year mark. Second, Ecology fails to account for many important damages that climate change will bring, including physical, ecological, and economic impacts on both the local and global scale. Last, as stated above, evidence suggests that the discount rate used by the federal government favors the present generation over future generations and that the actual SCC is much higher than current SCC estimates. While we support Ecology’s use of the SCC in its economic analysis, it requires revision for the reasons set forth above.

#### VI. THE RULE ARBITRARILY EMULATES CAP & TRADE PROGRAMS IN OTHER JURISDICTIONS THAT ARE NOT WORKING & FAILS TO DIRECTLY REGULATE EMITTERS AND SAFEGUARD AGAINST LEAKAGE AND MARKET INSTABILITY

The ERU system, the centerpiece of Ecology's Proposed Clean Air Rule, is modeled on cap-and-trade programs, such as California's, that do not adequately reduce emissions and, if pursued, must be accompanied by strong, direct regulation of emission

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<sup>223</sup> UW Climate Impacts Group, State of the Knowledge Report – Climate Change Impacts & Adaptation in Washington State: Technical Summaries for Decision Makers (2013), at <https://cig.uw.edu/resources/special-reports/wa-sok/> (last visited July 20, 2016) at 8-4.

<sup>224</sup> John E. Davidson, Amicus Curiae Brief, *Juliana v. United States*, at 29 (Feb. 24, 2016)

<sup>225</sup> David A. Weisbach & Cass R. Sunstein, "Climate Change and Discounting the Future: A Guide for the Perplexed," 27 Yale Law and Policy Review 433, 435 (2009).

sources. The Proposed Rule relies upon a market based system that will fail to result in anything near the reductions needed; an approach that actually risks market instability. To remedy this, Ecology must ensure that rule requires actual, on-site emission reductions, coupled with a cap-and-trade approach that incorporates safeguards not currently in place in this Proposed Rule's ERU program.

(a) Cap-and-trade programs alone do not result in the emissions reductions necessary to address the risks of climate change

Ecology's exclusive reliance on a cap-and-trade model as the primary component of its emissions reduction program ignores the fact that other jurisdictions, such as California, have not achieved clear emissions reductions from these types of programs. For example, while California's cap-and-trade program has been portrayed as the centerpiece of efforts to halt climate change, it only accounts for a small proportion of targeted emission reductions.<sup>226</sup> In fact, to this point, it has not resulted in any measurable reductions in emissions.<sup>227</sup> This is consistent with the results of other market-based programs, which tend to be aimed more at assuaging business concerns rather than actually reducing GHG emissions. We understand that corporations feel they need to continue to profit at the expense of young people and future generations, but Ecology's Proposed Rule is a giant corporate giveaway that does not make the covered parties pay into the ERU trading system created by the rule.

(b) Existing Cap-and-Trade Programs Suffer from Leakage

Ecology's Proposed Rule, in allowing offsets and failing to include safeguards, risks leakage and the negation of any real emissions reductions, as well as market instability. To protect against these issue, Ecology must include safeguards in the rule, such as tighter restrictions on offsets. Leakage occurs when the actual total amount of emissions are not reduced, but are rather shifted so as to make it appear that an entity has reduced emissions.<sup>228</sup> Broadly allowing offsets risks, as the Proposed Rule does, risks widespread leakage and a failure to produce any reduction in emissions. To protect against this catastrophe, Ecology should review the language in AB32 in California which aimed to ensure leakage was minimal.<sup>229</sup> Ecology must, however, avoid California's, subsequent mistake, where negotiations with industry resulted in a series of exemptions that now allow for carbon leakage that potentially matches the quantity of carbon in the market.<sup>230</sup> Not only does this negate any positive impact of California's

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<sup>226</sup> See, e.g., California Carbon Dashboard. *Cap and Trade*. <http://calcarbondash.org/>. Last accessed 007/21/16. Noting California Cap-and-Trade aims to result in 22% of the programs total emission reductions).

<sup>227</sup> See, e.g., Food and Water Watch Comment Letter (July 22, 2016) at ¶ 11.

<sup>228</sup> David Roberts. *California's Carbon Market is Leaking*. Grist. (Oct. 30, 2014).

<sup>229</sup> *Id.* See California Health and Safety Code (2014: §§ 35852(b), (b)(8)).

<sup>230</sup> *Id.* See, also, Danny Cullenward. *How California's Carbon Market Actually Works*. 70 Bulletin of the Atomic Scientists 35, 39 (2015).

cap-and-trade program, it may be, in part, responsible for the reduction in demand for carbon credits in May's auction.<sup>231</sup>

Recently, California's carbon credit auction resulted in only 10% of credits available being purchased. Analysts suggest that the causes of this dismal auction outcome involved three primary issues, two of which are issues specific to California's tax structure and statutory guidelines.<sup>232</sup> The third, however, overproduction of credits, results from leakage and emissions shuffling. Ecology's Proposed Rule must be modified to ensure that its ERU program does not suffer from the same sort of leakage that California's rule does. To do so, it must further limit reliance on offsets and ensure that the ERUs are allocated for true emission reductions and not as a result of shuffling or other activities that mask an industry's continued emissions.<sup>233</sup>

Ecology's proposed rule emulates aspects of the California cap-and-trade approach, without the additional regulations needed to reduce emissions and without sufficient safeguards, such as tight controls on offsets, to reduce leakage. It therefore fails to adequately cap emissions while risking instability greater than that that has occurred in California. In promulgating this rule, Ecology not only ensures that Washington's attempt to combat climate change is minimal and unlawful, but that this state will not lead in the effort to reduce emissions as envisioned by the Legislature and Governor Inslee. In addition, the destabilization and failure of the ERU program will result in and reinforce anxiety in other states about the risks of diverse approaches to emissions reduction. By creating a rule that directly acts to reduce emissions at the source and, for any cap-and-trade component of that rule, taking into considerations the lessons offered by California and other jurisdictions, Ecology has the opportunity to remedy this before this Proposed Rule becomes cemented as active regulation.

## VII. ECOLOGY HAS THE LEGAL TOOLS IT NEEDS TO REDUCE WASHINGTON'S SHARE OF EMISSIONS ON A PATH TARGETED TO 350 PPM BY THE END OF THE CENTURY

In addition to Ecology's Constitutional obligation to protect public trust resources, Ecology has ample legal authority to require more stringent emission reductions targeted to achieving 350 ppm by the end of the century. Ecology has been entrusted with protecting Washingtonians' health and safety<sup>234</sup> through the management

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<sup>231</sup> See, Danny Cullenward and Andy Coghlan. *Structural Oversupply and Credibility in California's Carbon Market*. 29, *The Electricity Journal* 7, 14 (2016).

<sup>232</sup> Commentators believe the current legal challenge, based on Proposition 13's requirement that new taxes be supported by a two-third vote of the legislature, will not be successful. While the original statutory authority to initiate the cap-and-trade program possibly ends 2020, the legislature recently released a series of amendment's that would continue the program through 2030. See Dan Walters, *Could California's 'cap-and-trade' auction meltdown happen again?* *The Sacramento Bee*. (June 13, 2016). <http://www.sacbee.com/news/politics-government/politics-columns-blogs/dan-walters/article83098292.html> Last accessed July 19, 2016.

<sup>233</sup> See, e.g., Wara Comment Letter on Proposed Clean Air Rule ¶¶ 5, 6.

<sup>234</sup> Wash. Rev. Code § 43.21A.010 (1970); Wash. Rev. Code § 70.94.011 (1991); Wash. Rev. Code § 34.05.328 notes (1995).

of air and water resources.<sup>235</sup> Moreover, it must do its part to stabilize global climate levels.<sup>236</sup> In order to achieve these goals, and comply with its other statutory obligations described above, Ecology has rulemaking authority to adopt rules and regulations that protect Washingtonians’ “fundamental and inalienable right . . . to live in a healthful and pleasant environment.”<sup>237</sup> In addition, Ecology has a specific mandate to promulgate rules “establishing air quality objectives and air quality standards.”<sup>238</sup> The department must fulfill its duties by managing and developing air and water resources,<sup>239</sup> providing sound science to facilitate development of state electric power resources,<sup>240</sup> limiting GHG emissions by complying with state law and regularly providing scientifically-informed recommendations to the Legislature,<sup>241</sup> and mitigate harmful pollution and ocean acidification impacts to Washington’s waters.<sup>242</sup> Additionally, Ecology has been entrusted with the protection of air quality for current and future generations and securing air quality levels to protect Washingtonians’ health and safety.<sup>243</sup> The department must adopt rules and emission standards<sup>244</sup> “as expeditiously as possible”<sup>245</sup> to ensure air quality contaminant levels do not reach levels that endanger human health and the environment.<sup>246</sup> Ecology must leverage their current authority to implement policies to ensure Washington is on track to achieve an annual 8% GHG emissions reduction.

(a) 100% Renewable Energy System By 2050

A 100% renewable U.S. energy system can be achieved within the next thirty-five years without acquiring carbon credits from other countries. In other words, actual physical emissions of CO<sub>2</sub> from fossil fuels can be eliminated with technologies that are now available or reasonably foreseeable. This can be done at a reasonable cost by eliminating fossil fuel subsidies and creating annual and long-term CO<sub>2</sub> reduction targets. Net U.S. oil imports can be eliminated in about 25 years, possibly less. The result will also include large ancillary health benefits from the significant reduction of most regional and local air pollution, such as high ozone and particulate levels in cities, which is mainly due to fossil fuel combustion.<sup>247</sup> Experts have:

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<sup>235</sup> RCW § 43.21A.020.

<sup>236</sup> RCW § 70.235.020 (1)(a)(iii).

<sup>237</sup> RCW § 43.21A.010.

<sup>238</sup> RCW 70.94.011(2)(a).

<sup>239</sup> RCW § 43.21A.020.

<sup>240</sup> RCW § 43.21A.600 (2009).

<sup>241</sup> RCW § 70.235.020; RCW § 70.235.040.

<sup>242</sup> Wash. Rev. Code § 43.27A.90(8) (1988); Wash. Rev. Code § 90.48.30 (1987); Wash. Rev. Code § 90.48.80 (1987).

<sup>243</sup> RCW § 70.94.011.

<sup>244</sup> Wash. Rev. Code § 70.94.331(2)(a)-(c) (1991).

<sup>245</sup> RCW § 70.94.011.

<sup>246</sup> *Id.*

<sup>247</sup> See Mark Z. Jacobson et al., *100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for the 50 United States*, 8 Energy & Env'tl. Sci. 2093 (2015) (for plans on how the United States and over 100 other countries can transition to a 100% renewable energy economy see [www.thesolutionsproject.org](http://www.thesolutionsproject.org)); Arjun Makhijani, Carbon-Free, Nuclear-Free: A Roadmap for U.S. Energy Policy (2007); see generally Mark Z. Jacobson declaration, attached hereto as Exhibit P.

found transitioning by 2050 to be economically feasible for every state. Importantly, states on schedule to transition to 100% renewable energy by 2050 will also reduce their emissions on the “350 by 2100”-trajectory, the pace needed to return atmospheric CO<sub>2</sub> levels to 350 parts/million by the year 2100, in line with the prescription stated by Dr. James Hansen and other expert climatologists.<sup>248</sup>

Experts state that approaches to transition to a renewable energy system and to phase out fossil fuels by about 2050 include: A cap on fossil fuel use that declines to zero by 2050 or a gradually rising carbon tax with revenues used to promote a zero-CO<sub>2</sub> emissions energy system and to mitigate adverse income-distribution effects; increasingly stringent efficiency standards; elimination of direct and indirect subsidies and other incentives for fossil fuel extraction, transportation, and combustion; investment in a vigorous and diverse research, development and demonstration program; banning new coal-fired power plants and phasing out existing coal-fired power plants; adoption of a policy that would aim to have essentially carbon-free state and local governments, including almost all of their buildings and vehicles by 2030; and adoption of a gradually increasing renewable portfolio standard for electricity until it reaches 100% by about 2050.<sup>249</sup> Products and services already exist for building or remodeling buildings to have zero GHG emissions; for generating sufficient electricity with zero carbon dioxide emissions; for zero-emission transportation and industrial processes; and agricultural and forest processes that can also decrease GHG emissions and increase CO<sub>2</sub> sequestration. Governments around the world, including Washington, must fully consider and implement these measures in achieving their own annual emissions reduction measures to transition off of fossil fuels.

Furthermore, experts have already prepared plans for U.S. states, including Washington, as well as for over 100 countries that demonstrate the technological and economic feasibility of transitioning off of fossil fuels toward 100% of energy, for all energy sectors, from clean and renewable energy sources: wind, water, and sunlight by 2050. It is time to put these plans into action.

(b) Transitioning to 100% Clean and Renewable Energy by 2050 in Washington Is Possible & Necessary

Ecology can lead and facilitate Washington’s transition to 100% clean and renewable energy by 2050. Expert-prepared plans are already available to ensure Washington can meet emission reductions required by the best climate science. All that is missing is a comprehensive regulatory program by Ecology to facilitate and compel the transition. Reforming the energy system (in all sectors, including transportation) is technically and economically feasible, and in fact will be beneficial to Washingtonians and the state economy. Mark Jacobson, of Stanford University, is an expert who has

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<sup>248</sup> Jacobson Decl. at ¶ 5.

<sup>249</sup> *See id.*

prepared a detailed plan for Washington and has offered a declaration in support of these comments on behalf of youth and future generations.<sup>250</sup> The plan outlines the means by which solar, hydro and geothermal energy can take over the service now provided by fossil and bio-fuels across Washington State. See Figure 1. Additionally, the plan outlines policy measures needed to ensure Washington can transition to 100% renewable energy by 2050.

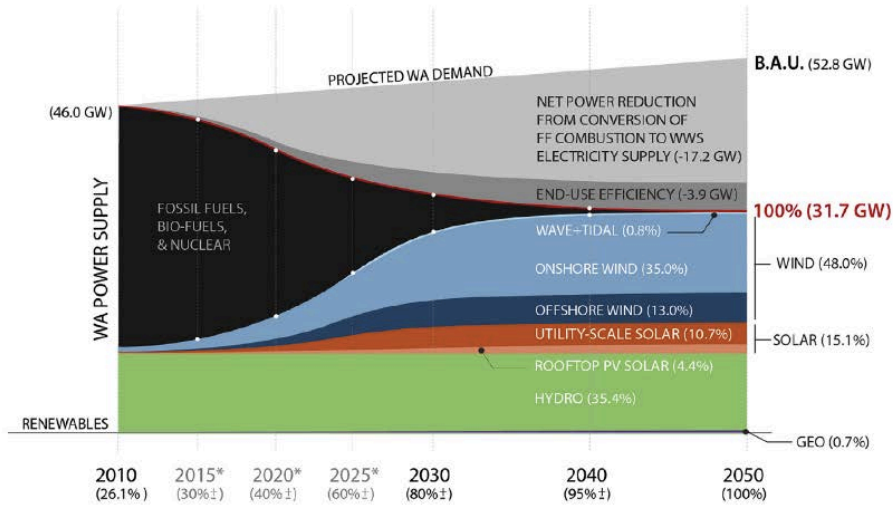


Fig. 4. Change in Washington State end-use all-purpose (electricity, transportation, heating/cooling, and industry) supply and demand over time with business as usual (BAU) versus WWS. Total power demand decreases upon conversion to WWS due to the efficiency of electricity over combustion and end-use energy efficiency measures. The 100% demarcation in 2050 indicates that 100% of all-purpose power is provided by WWS technologies by 2050, and the power demand by that time has decreased. The numbers in parentheses are values in 2050. The percent conversions assumed in the figure are 30% by 2015, 40% by 2020, 80% by 2030, 95% by 2040, and 100% by 2050. Karl Burkart (personal communication).

### (i) Other Policy Options for Ecology

A wide array of emissions reduction policy options are available for Ecology to implement using its existing legal authority. We recognize the challenges the state has faced in light of our legislature’s recalcitrance to address climate change. But fortunately previous legislators, who took their job seriously as trustees of the state’s natural resources, gave us the tools we need to resolve this crisis. By implementing a combination of policies, instead of solely relying on the flawed Clean Air Rule, Ecology can more effectively and efficiently reduce Washington’s emissions. Furthermore, it is in both Ecology’s and the public interest for Ecology to collaborate with as many Executive agencies as possible and serve as a leader on the issue of climate change. An interdepartmental approach to climate change will result in the most robust and lasting change.

Much work has been done in regards to the policy measures that should be implemented to allow the state to reduce its GHG emissions.<sup>251</sup> What is missing from Ecology, however, is the implementation and enforcement of the recommended policies.

<sup>250</sup> Mark Z. Robinson Declaration, attached as Exhibit P.

<sup>251</sup> See, e.g., Ecology, Path to a Low-Carbon Economy: An Interim Plan to Address Washington’s Greenhouse Gas Emissions, Ecology Publication No. 10-01-011 (December 2010); Leidos, Evaluation of Approaches to Reduce Greenhouse Gas Emissions in Washington State – Final Report (October 14, 2013).

Ecology has the legal tools it needs to both require science-based emission reductions and to achieve them by setting emissions standards and implementing a wide array of complementary policies that when implemented will put Washington on a path to do its part to address global climate change and ocean acidification. Given the breadth of Ecology's authority under the Clean Air Act, it can regulate all sources of pollution in the state by establishing air emission standards and limitations for those sources, including the electricity sector, building sector, transportation sector, industrial sector, agricultural sector, consumption sector, etc. Ecology will need to work in tandem with and collaboratively with other agencies and authorities as well in order to shift the systemic reliance on a fossil fuel-based energy system in all sectors, towards a renewable-based energy system. But to be clear, only Ecology is specifically charged with regulating emissions and setting standards and limits for those emissions. It cannot evade that statutory mandate simply because other agencies have overlapping authority that also affect emission levels. Ecology must lead, as mandated by the legislature. Climate change cannot be somebody else's problem.

As examples, Ecology has the authority to implement all of the following policies and should thoroughly consider, evaluate and disclose the emission reduction potential of each of these policy mechanisms in its analysis of the proposed Clean Air Rule. Ultimately, it is up to Ecology to determine the appropriate policy make-up to achieve science-based emission reductions on track with the 350 ppm prescription. However, Ecology has not demonstrated that its current policy proposal, the Clean Air Rule, will be able to achieve emission reductions and thus these alternatives need to be considered. Thus, the following panoply should be considered:

1. Clean Energy Fund

Ecology should develop a Clean Energy Fund to offset costs of transitioning to renewable and clean energy and to administer a comprehensive regulatory scheme to reduce state emissions according to the best science and Ecology's legal mandate. Clean Energy Funds are typically comprised of fees from consumer electricity bills or from electric utilities.<sup>252</sup> Here however, the Fund could include fees charged to industries that emit GHGs, such as the petroleum refinery, production, or fuel distribution sector. These funds can be used in research and development of clean energy technologies and training, infrastructure upgrades, as well as sponsoring energy efficiency programs. For example, Clean Energy Fund fees may be collected by charging electricity consumers or by collecting or charging contributions from electric utility companies or other companies responsible for GHG emissions.<sup>253</sup>

Any regulatory fee should be directly linked to the social costs associated with emissions, achieving appropriate science-based levels of emissions reductions, and

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<sup>252</sup> See Public Benefit Funds, Center for Climate and Energy Solutions, <http://www.c2es.org/us-states-regions/policy-maps/public-benefit-funds> (last visited July 5, 2016); U.S. Dept. of Energy, <http://energy.gov/savings/public-benefits-funds-renewables-and-efficiency> (last visited July 21, 2016); Open Energy Information, [http://en.openei.org/wiki/Public\\_Benefits\\_Fund](http://en.openei.org/wiki/Public_Benefits_Fund) (last visited July 21, 2016).

<sup>253</sup> *Id.*

funding the regulatory program. Based on a report from Oregon, a fee on carbon of \$150 a ton would only get Oregon about halfway to its (scientifically-inadequate) goal of reducing GHG emissions to 75% below 1990 levels.<sup>254</sup> Even a regulatory fee on carbon of \$150 per metric ton is well below the estimated cost to remove one metric ton of carbon from the atmosphere, which is around \$600 per ton.<sup>255</sup> Therefore, a regulatory fee on carbon is not likely to be sufficient on its own to meet Washington's required GHG emission reductions, but coupled with other efforts, is an important policy option for Ecology to consider.<sup>256</sup>

The Washington Clean Air Act, administered by Ecology, directs state and local agencies to “lessen the negative environmental impact of . . . project[s] on all environmental media, including air, water, and land” when choosing air pollution control strategies.<sup>257</sup> Furthermore, the Act directs 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.”<sup>258</sup> In accordance with the Act’s policy to “safeguard the public interest,” the Washington Clean Air Act, administered by Ecology, “provide[s] for the use of all known, available, and reasonable methods to reduce, prevent, and control air pollution.”<sup>259</sup> The Department is “authorized to adopt such rules and regulations as are necessary and appropriate to carry out the provisions of this Chapter,” RCWA 43.21A.80, and as to the development of electric power resources, the Director “may represent the state and aid and assist the public utilities therein to the end that its resources shall be properly developed in the public interest insofar as they affect electric power . . . .”<sup>260</sup> Ecology has full authority to impose regulatory fees in administering a comprehensive program to reduce GHG emissions without infringing on the taxation power of the legislature.<sup>261</sup> Accordingly, Ecology should do the following:

- Impose regulatory fees on electric utilities and other industries directly emitting or responsible for emissions from the sale of their products

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<sup>254</sup> Oregon Legislative Revenue Office, *Economic and Emissions Impacts of a Clean Air Tax or Fee in Oregon (SB306)* 5 (Dec. 2014), available at <http://www.pdx.edu/nerc/sites/www.pdx.edu/nerc/files/carbontax2014.pdf>.

<sup>255</sup> Earth Challenge, *The Implications of Demonstrating the Economic Removal of Carbon Dioxide* (Nov. 4, 2015), <http://www.pdx.edu/nerc/sites/www.pdx.edu/nerc/files/carbontax2014.pdf>.

<sup>256</sup> The passage of a carbon tax (e.g. Initiative 732) can also be used to facilitate the transition to clean energy and reduce the amount needed to be charged by a regulatory fee. Because that requires the passage of new law, we have not included a carbon tax on the list of policy options Ecology can and should implement.

<sup>257</sup> RCW § 70.94.011.

<sup>258</sup> *Id.*

<sup>259</sup> RCWA 70.94.011.

<sup>260</sup> RCWA 43.21A.605.

<sup>261</sup> In Washington, a regulatory fee is distinguished from a tax if the following conditions are met 1) the primary purpose of the fee “is to pay for a regulatory scheme, a particular benefit conferred, or mitigation of the burden created;” 2) “the money allocated [is] only to an authorized purpose;” and 3) “there is a direct relationship between the fee charged and the service received by those who pay the fee or between the fee charged and the burden produced by the fee.” *Storedahl Properties, LLC v. Clark County*, 178 P.3d 377, 382-5 (Wash.App. Div. 2, 2008). The Clean Energy Fund and its fees would clearly meet the test and qualify as a regulatory fee.



greater than 10,000 mtC, where the funds go into a Clean Energy Fund and are used for energy efficiency and clean energy projects.

- Provide permits to emit that include costs for GHG emissions, which feed into the Clean Energy Fund.
- Develop funding projects that allow utilities, property owners, businesses, and individuals access to Clean Energy Fund funds to assist their emission reduction efforts, with special consideration to low-income and disadvantaged communities.

## 2. New Building Emission Reductions and Green Building

Residential, commercial, and industrial greenhouse gas emissions represent 22% of Washington’s GHG emissions.<sup>262</sup> As discussed earlier, Ecology must establish emissions standards for new or retrofitted buildings to ensure an expansion of energy efficiency measures. Additionally, technology already exists to implement Zero Energy Building (ZEB) standards. A ZEB is defined as “an energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.”<sup>263</sup> Thus, Ecology should consider the following in its proposed rule:

- Establish building emissions standards for new construction or retrofits to ensure expansion of energy efficiency measures that result in 100% carbon neutral buildings.
- Require all non-permitted businesses, including landlords, to do a carbon footprint audit that results in energy efficiency recommendations and make the Clean Energy Fund available for qualified projects.
- Provide support to the State Building Code Council, as needed, to ensure building codes are consistent with new emission standards and the legislature’s goal that by at least the year 2031, new homes and buildings will have zero fossil-fuel emissions.<sup>264</sup> The legislature has found that energy efficiency is the “cheapest, quickest, and cleanest way to meet rising energy needs, confront climate change, and boost our economy.”<sup>265</sup>

## 3. Electricity Sector Emission Reductions

The electricity sector represents 20% of Washington’s GHG emissions. Direct electricity production emissions can be addressed through the transition from fossil fuels to renewable energy. Washington’s electricity sector must eliminate coal, petroleum, and natural gas and transition to a 100% wind, water, and solar energy plan. In order to do

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<sup>262</sup> See Department of Ecology, Climate Change, Frequently asked questions about the Washington Clean Air Rule (July 21, 2016), at <http://www.ecy.wa.gov/climatechange/CarbonRuleFAQ.html>.

<sup>263</sup> See United States Department of Energy, *A Common Definition for Zero Energy Buildings* (September 2015) at 4, available at [http://energy.gov/sites/prod/files/2015/09/f26/bto\\_common\\_definition\\_zero\\_energy\\_buildings\\_093015.pdf](http://energy.gov/sites/prod/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf).

<sup>264</sup> RCW § 19.27A.020.

<sup>265</sup> RCW § 19.27A.130.

this, utilities must enhance the current infrastructure to more efficiently generate, store, and distribute renewable energy electricity. These efforts can be facilitated by a Clean Energy Fund, which can provide funds for projects to increase generation capacity and storage and to ensure the most efficient electricity transmission. Ecology has the authority to establish a fund, to set emissions standards, and to provide guidance to utilities in transitioning to a 100% renewable energy system.

### *Renewable Portfolio Standard*

Washington currently has a Renewable Portfolio Standard that “requires large utilities to obtain fifteen percent of their electricity from new renewable resources.”<sup>266</sup> The current statutory renewable energy targets are nine percent by 2016 and fifteen percent by 2020.<sup>267</sup> Ecology does not need to wait for the Legislature to enact new statutory targets. Rather, the department must utilize its existing authority to expand the standard to require utilities incorporate 80% renewable energy by 2030 and 100% renewables by 2050, which are technically and economically feasible.<sup>268</sup> Accordingly, Ecology must do the following:

- Expand Washington’s Renewable Portfolio Standard to require large utilities to obtain 80% of their electricity from new renewable resources by 2030 and 100% by 2050.

### *Renewable Energy Funding Projects*

In order to efficiently transition to a 100% renewable energy sector, systems must be in place to create a robust energy infrastructure. The Clean Energy Fund provides a way for Ecology to offset the costs associated with transitioning to renewable energy. Ecology should develop multiple avenues for utilities, property owners, businesses, and individuals (especially from low-income areas and with special consideration of communities of color who are facing environmental injustice issues) to access funds to support renewable energy projects. Energy project funds may support energy efficiency improvements, sequestration activities, transitioning to 100% renewable energy sources, the elimination of diesel and gas backup generators, and other projects that reduce GHG emissions. Ecology should consider establishing the following funding projects:

- Develop a Property Assessed Clean Energy Program (PACE) that uses Clean Energy Fund funds to provide energy efficiency improvements loans for residential, commercial, and industrial facilities that are transferable to subsequent property owners.

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<sup>266</sup> RCW § 19.285.010.

<sup>267</sup> Wash. Rev. Code § 19.285.040(2)(a)(ii)-(iii) (2014).

<sup>268</sup> See Jacobson Decl.; Mark Z. Jacobson et al., *A 100% Wind, Water, Sunlight (WWS) All-sector Energy Plan for Washington State*, Renewable Energy 86 (2016) 75, 86.

- PACE programs are administered by local governments and provide loans to property owners for energy improvements.<sup>269</sup> The financing mechanism allows owners to repay the loan with a 20-year term property tax-like assessment.<sup>270</sup> If the property owner sells their property before the end of the loan term, the loan can be paid off or transferred to the new property owner.<sup>271</sup>
  - Develop a fund specific to land use that allows landowners to apply for grants and incentives for sequestration activities and avoiding conversion.
    - Sequestration activities may include but are not limited to programs to encourage reforestation, improve forest management, reduce deforestation, conservation, and manage agricultural soils.<sup>272</sup>
  - Develop an environmental justice fund to assist non-homeowners in low-income and disadvantaged communities to make their homes more efficient and lower their energy costs.
  - Develop a fund for utilities transitioning to 100% renewable energy sources.
    - Increase the capacity factor of existing hydropower.<sup>273274</sup>
    - Encourage the use of heat pumps and constant energy use.<sup>275</sup>
    - Infrastructure upgrades.
  - Develop plan to implement home and community energy storage and eliminate diesel and gas backup generators by 2030.<sup>276</sup>
  - Develop incentive and rebate programs, including but not limited to energy efficiency measures in buildings, including appliances and processes; weatherization; landlord efficiency investment;<sup>277</sup> efficient city street and building lighting; commercial and personal electric vehicles;

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<sup>269</sup> See State of Washington, Climate Legislative and Executive Workgroup, *Evaluation of Approaches to Reduce Greenhouse Gas Emissions in Washington State - Final Report* (October 14, 2013) (“Evaluation”) at 35, available at [http://www.governor.wa.gov/sites/default/files/documents/Task\\_4\\_Final\\_Report\\_10-13-2013.pdf](http://www.governor.wa.gov/sites/default/files/documents/Task_4_Final_Report_10-13-2013.pdf).

<sup>270</sup> *Id.*

<sup>271</sup> *Id.*

<sup>272</sup> Managed agricultural soils have the potential store and reduce GHG emissions. Ecology should develop a grant program that encourages landowners to adopt recommended farming practices that result in GHG sequestration. Several of the recommended agricultural processes, including land application of biosolids and compost, have high accompanying costs. A grant program can help offset these costs to encourage better land practices while reducing overall GHG emissions. See Department of Ecology, *Soil Organic Carbon Storage (Sequestration) Principles and Management: Potential Role for Recycled Materials in Agricultural Soils of Washington State*, at vi (January 2015) available at vi, 68-9 <https://fortress.wa.gov/ecy/publications/publications/1507005.pdf>.

<sup>273</sup> Washington produces more hydropower than any other state. Currently, there is an oversupply of energy from other sources, causing hydropower to operate at less than its maximum capacity. Washington does not need to install any new hydropower plants. Instead, it must increase the capacity to utilize all current energy waste. *Id.* at 79-80

<sup>274</sup> *Id.*

<sup>275</sup> *Id.*

<sup>276</sup> See Jacobsen et al. at 86.

<sup>277</sup> *Id.*

alternative and public transportation; and the development of hydrogen fuel vehicle fleets.

*Work with the Washington Utilities and Transportation Commission (UTC)*

Ecology has the authority to aid and assist the public utilities to ensure that its resources are developed in the public interest.<sup>278</sup> The health, environmental, and economic benefits of clean energy are in the public's interest. Ecology should work with UTC to adjust electricity rate schedules, remote long-term renewable energy contracts, eliminate coal and natural gas from electricity sector, reduce overall power production, upgrade electricity transmission lines, streamline renewable energy permitting, and develop other actions that will lead to a 100% renewable energy system by 2050. As such, Ecology should aid and assist the UTC with the following:

- Adjust the rate schedule to encourage energy use when wind, water, and solar power generation is abundant or during traditionally low-use times.<sup>279</sup>
- Require long-term, feed-in-tariff (FIT) contracts with providers of renewable energy at levelized rates for generation with optimal project siting requirements.
  - FITs are long-term fixed price renewable energy contracts between utilities and energy producers. They provide certainty to energy producers, and thus encourage the use of renewable energy. Currently, Washington utilizes a combination of net metering and a tax incentive mechanism. These policies can be replaced with a FIT.<sup>280</sup>
- Eliminate coal and natural gas from the electricity sector, including both in-state generation and electricity purchased from out-of-state.
- Require new permits from fossil fuel burning power plants that collectively result in a net power reduction of 17.2 GW by 2050.<sup>281</sup>
- Collaborate with the Western Interconnection states to develop plan to transition power lines to high-voltage direct current (HVDC) lines.
  - The current electricity transmission system utilizes high-voltage alternating current (HVAC) lines.<sup>282</sup> HVDC lines are more efficient and less expensive.<sup>283</sup> A network of HVDC lines reduces dependence on costly storage technologies to manage the intermittency of renewable energies.<sup>284</sup>

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<sup>278</sup> RCW § 43.21A.605

<sup>279</sup> *Id* at 87.

<sup>280</sup> *See* Evaluation at 36-7.

<sup>281</sup> Jacobson Decl, Exhibit P at 87.

<sup>282</sup> *See* A. Kalair et al., *Comparative Study of HVAC and HVDC Transmission Systems*, *Renewable and Sustainable Energy Reviews* 59 (2016) 1653-1675.

<sup>283</sup> *See* Alexander E. MacDonald et al., *Future Cost-competitive Electricity Systems and their Impact on US CO<sub>2</sub> Emissions*, *Nature Clim.* 6 (2016) 526-531, 527.

<sup>284</sup> *Id* at 526.

- Develop plan to streamline renewable energy permitting that will prioritize and fast track wind, water, and solar power generation and transmission lines permit applications;<sup>285</sup> incorporate environmental review process in permit process; and establish a fund from Clean Energy Fund funds for easy small scale solar and wind permitting.

#### 4. Transportation

Transportation emissions represent 44% of overall GHG emissions in Washington.<sup>286</sup> Ecology must establish new transportation emissions standards to ensure the reduction of transportation emissions. Ecology can create a schedule to phase out fossil fuel vehicles and transition to 100% zero emissions by 2050. In the interim, Ecology should implement a program that encourages the use of low-carbon clean fuels. Additionally, Ecology should develop a plan to transition all public transportation fleets to 100% zero emissions by 2050. In an effort to slash transportation emissions, Ecology should consider the following:

- Implement a zero emissions vehicles (ZEV) goal that requires 50% of all vehicles sold by 2025 to be electric (zero-tailpipe emissions) with the elimination of fossil fuel-vehicle sales by 2050.<sup>287</sup>
- Implement a low carbon fuel standard, which includes a low-carbon full lifecycle analysis (LCFS)<sup>288</sup> to encourage the use of low-carbon clean fuels until fossil fuel vehicles are completely phased out.
  - A LCFS regulates fuel producers and importers selling gasoline and diesel fuel. It generates credits for lower carbon intensive transportation fuels, including ethanol, natural and bio-based gases, biodiesel, and electricity.<sup>289</sup>
- Enhance public transportation fleets and infrastructure:
  - Develop a plan to transition to 50% land and water electric vehicle fleets by 2025 and 100% by 2050
  - Provide assistance to local planning departments to develop a more robust and efficient public transportation infrastructure that encourages the use of public and alternative transportation.

#### (ii) Policies Ecology Should Recommend to the Legislature to Reduce the Burden on Ecology

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<sup>285</sup> *Id* at 85.

<sup>286</sup> See Department of Ecology, *Washington Greenhouse Gas Emission Reduction Limits: Report prepared under RCW 70.235.040*, at 8 available at <https://fortress.wa.gov/ecy/publications/documents/1401006.pdf>.

<sup>287</sup> See Evaluation at 31-2.

<sup>288</sup> See Department of Ecology, *Path to a Low-carbon Economy: An Interim Plan to Address Washington's Greenhouse Gas Emissions* (December 2010) at 15, available at <https://fortress.wa.gov/ecy/publications/publications/1001011.pdf>.

<sup>289</sup> In 2010, Ecology analyzed the effectiveness of a LCFS and found that it “would reduce covered transportation GHG emissions by up to 12 percent above the policies the state currently has in place” and “provide a clear, long-term market for biofuels, electricity, and other alternative fuels in the state and promote investment in the infrastructure to deliver the low-carbon fuels of the future to Washington consumers.”*Id.*

Ecology has a mandate to act now to reduce state GHG emissions. Ecology must do all it can to ensure the reduction of atmospheric CO<sub>2</sub> levels and ensure the protection of current and future generations. All of the policies listed in the previous section can be accomplished without additional Legislative approval. However, it may benefit the agency to make legislative recommendations, which, if enacted, could facilitate state efforts in mitigating the harmful effects of climate change. Regardless, the agency must act urgently and not wait for the Legislature to respond to recommendations. In an effort to collaboratively address climate change, Ecology should recommend the Legislature do the following:

### 1. Tax Credits

- Implement a carbon tax, and use funds for clean energy transition incentives and rebates programs, environmental justice programs, forest and soil protection programs and adaptation plans.<sup>290</sup>
  - Carbon taxes can help policymakers, individuals, and firms prepare for GHG emissions costs by providing price certainty to the market.<sup>291</sup>
- Create tax credits for emission reduction initiatives, including but not limited to green building initiatives, solar production projects, and industrial on-site wind, water, solar electricity generation.
- Provide state funding to support on-site industrial wind, water, and solar electricity generation.

### 2. Greenhouse Gas Emission Limits and Renewable Energy Standard Targets based upon best available science.

- Increase renewable energy targets for all sectors under RCW 19.285.040 to 80% by 2030 and 100% by 2050.<sup>292</sup>

### 3. Green Building Standards

- Mandate that all new construction meet green building standards.
  - Washington Revised Code 39.35D currently mandates that projects receiving state funding must meet green building standards. The statute extends to all of Ecology's building projects. Ecology should recommend that this statute be expanded to all new construction.<sup>293</sup>
- Provide tax exemptions for landlords' energy efficiency projects in rental properties.

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<sup>290</sup> See Evaluation at 29-30.

<sup>291</sup> *Id.*

<sup>292</sup> See Mark Z. Jacobson et al., *A 100% Wind, Water, Sunlight (WWS) All-sector Energy Plan for Washington State*, *Renewable Energy* 86 (2016) 75, 86.

<sup>293</sup> Wash. Rev. Code § 39.35D.030 (2011).

#### 4. Electricity Sector

- Require energy grid storage of 1.3 GWh by 2020.<sup>294</sup>
- Impose fines for excess wind, water, and solar energy bleeding.

#### 5. Incentives and Rebates

- Pass enabling legislation to remove barriers to local Property Assessed Clean Energy (PACE)<sup>295</sup> programs administration that support energy conservation and renewable energy.<sup>296</sup>
- Establish a fund for electric utilities, property owners, industries, and individuals to incorporate renewable energy technologies into electric sector. Projects may include but are not limited to heat pump utilization, solar panels, and electric vehicles.

There are many other policy options that Ecology can and should implement in order to reduce GHG emissions in a manner that protects the rights of young people and future generations.

### VIII. CONCLUSION

We recognize that Ecology is currently under court order to finalize the Clean Air Rule by the end of the year. That order is in place in light of the urgency of the climate crisis and Ecology's historic inability to take regulatory action to reduce the state's GHG emissions. In light of the significant flaws in the existing draft of the Clean Air Rule that have been described above, we encourage you to work with us, as petitioners in the *Foster* case, on developing a rule that is based upon science, not politics.

We hereby incorporate by reference all hyperlinked and cited documents throughout these comments into the administrative record for this project. They are all publicly available. If you require PDF or hard copies of any of the hyperlinked or cited documents, please let us know and we will supply them; otherwise we will assume that Ecology can access them via the internet and will include them in the administrative record.

Respectfully Submitted,

*s/ Andrea K. Rodgers*

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Attorney

*s/ Julia Olson*

Julia Olson  
Executive Director & Chief Legal Counsel

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<sup>294</sup> See Jacobson et al. at 86.

<sup>295</sup> See State of Washington, Climate Legislative and Executive Workgroup, *Evaluation of Approaches to Reduce Greenhouse Gas Emissions in Washington State - Final Report* (October 14, 2013) ("Evaluation") at 35, available at [http://www.governor.wa.gov/sites/default/files/documents/Task\\_4\\_Final\\_Report\\_10-13-2013.pdf](http://www.governor.wa.gov/sites/default/files/documents/Task_4_Final_Report_10-13-2013.pdf).

<sup>296</sup> *Id.*

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## EXHIBITS:

- A. List of people and organizations that these comments are also submitted on behalf of
- B. Petition for Rulemaking (June 17, 2014)
- C. Ecology's Denial of Petition for Rulemaking (August 14, 2014)
- D. *Foster, et al. v. Ecology*, No. 14-2-25295-1 SEA (King County Superior Court) (Order Affirming the Department of Ecology's Denial of Petition for Rulemaking) (Nov. 19, 2015)
- E. *Foster, et al. v. Ecology*, No. 14-2-25295-1 SEA (King County Superior Court) (Order on Petitioners' Motion for Relief Under CR 60(b)) (May 16, 2016)
- F. Washington Executive Order 14-04 (April 29, 2014)
- G. Ecology December 2014 Report
- H. Center for Biological Diversity, Petition to EPA for Additional Water Quality Criteria & Guidance Under Section 304 of the Clean Water Act, 33 U.S.C. § 1314, to Address Ocean Acidification (April 17, 2013)
- I. Center for Biological Diversity Petition to EPA for Revised State Water Quality Standards for Marine pH Under the Clean Water Act, 33 U.S.C. § 1313(c)(4) (October 18, 2012)
- J. *Svitak, et al. v. State*, King County Superior Court No. 69710-2-I (Amended Complaint) (filed May 18, 2011)
- K. *Foster, et al. v. Ecology*, King County Superior Court No. 14-2-25295-1 (Department of Ecology's Response to June 23, 2015 Court Order) (filed August 7, 2015)
- L. Dec. of Dr. Richard H. Gammon, *Foster v. Wash. Dep't of Ecology*, No. 14-2-25295-1 SEA 1 (Wash. Super. Ct. Aug. 24, 2015)
- M. Dec. of Dr. Ove Hoegh-Guldberg, *Foster v. Wash. Dep't of Ecology*, No. 14-2-25295-1 SEA, 1 (Wash. Super. Ct. Aug. 24, 2015)
- N. Declaration of Thomas Crowther, Ph.D.
- O. Declaration of Dr. James Hansen
- P. Declaration of Mark Jacobson
- Q. Washington Emissions Data Compared to Science-Based Emissions Reductions