

# PETITION TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Petition for Listing and Rulemaking Under Section 112 of the Clean Air Act to Establish Greenhouse Gases as Hazard Air Pollutants and to Set National Emission Standards for Hazardous Air Pollutant Emissions ) Submitted via U.S. Mail and ) E-mail to the Administrator and ) Assistant Administrator of the ) Office of Air and Radiation, ) U.S. Environmental Protection ) Agency

April 3, 2019

## EPA MUST LIST GREENHOUSE GASES AS CLEAN AIR ACT SECTION 112 HAZARDOUS AIR POLLUTANTS AND SET NATIONAL AIR TOXICS STANDARDS TO PROTECT PUBLIC HEALTH AND THE AMBIENT ENVIRONMENT

### EXECUTIVE SUMMARY

In accordance with 42 U.S.C. §7412(b)(3), Food & Water Watch (“FWW”) submits this petition on behalf of petitioner organizations listed herein who are concerned about the health effects and adverse environmental impacts of unregulated carbon dioxide, methane and other climate impact emissions (collectively “greenhouse gases” or “GHGs”) released by industries throughout the nation. This petition requests that the U.S. Environmental Protection Agency (“EPA” or “Agency”) fulfill its statutory requirement to regulate a mix of six long-lived and directly-emitted greenhouse gases – carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>) (collectively “GHGs”), the primary gases responsible for observed and future global climate change – as Hazardous Air Pollutants (“HAPs”). This is especially necessary given that EPA has previously declared that such emissions pose a threat to human health and its mandate to regulate GHGs as a pollutant that has been firmly established by the U.S. Judiciary.<sup>1</sup>

The United Nations Intergovernmental Panel on Climate Change (“IPCC”) and the U.S. Global Change Research Program (“USGCRP”)<sup>2</sup> have stated unequivocally that emissions of GHGs are the primary driver of potentially catastrophic global climate change which threatens human health, ecosystem integrity, and the very underpinnings of human civilization, the effects of which we are beginning to see across the planet.<sup>3</sup> Petitioners request the listing of GHGs under § 112 of the Clean Air Act (“CAA”) as the Agency, based upon a voluminous body of scientific research, has established in other proceedings that these six well-mixed long-lasting

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<sup>1</sup> *Massachusetts v. EPA*, 549 U.S. 497 (2007); *Coalition for Responsible Regulation, et al. v. EPA*, 684 F.3d 102 (D.C. Cir. 2012); *Util. Air Regulatory Group v. EPA*, 573 U.S. 302 (2014).

<sup>2</sup> A government wide research initiative consisting of the EPA and 12 other federal agencies.

<sup>3</sup> USGCRP (2017) *Climate Science Special Report: Fourth National Climate Assessment, Volume I*; USGCRP (2018) *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*; IPCC (2013-2014) *Fifth Assessment Report of the Intergovernmental Panel on Climate Change (2013-2014)*.

GHGs cause or contribute to the endangerment of public health and welfare.<sup>4</sup> Such a finding, along with the voluminous evidence of the dire impacts of GHGs cited herein and elsewhere, has demonstrated that GHGs meet the statutory definition of a HAP under the Act. EPA must, therefore, list GHGs as HAPs under § 112 of the Act and immediately begin to take steps to establish strong emissions standards as required by these provisions.

## LEGAL HISTORY OF U.S. GHG REGULATION

Recognizing the imminent threat that unregulated emissions of GHGs poses to human health and the continued habitability of the planet, a coalition of nineteen organizations filed a rulemaking petition in 1999 requesting EPA regulate GHG emissions from new motor vehicles under § 202 of the CAA.<sup>5</sup> Relying upon a 1998 legal opinion from EPA's General Counsel which stated that CO<sub>2</sub> emissions clearly met the definition of "air pollutant" under § 302(g) of the CAA, Petitioners argued that GHG emissions threatened public health and that it was technically feasible to reduce GHG emissions from light-duty vehicles; as such EPA must regulate GHG emissions.

After four years of consideration and public comment, on September 8, 2003, EPA published a notice denying the petition for rulemaking.<sup>6</sup> Within its denial, EPA asserted that the CAA did not authorize regulation of GHGs to deal with global climate change, and even if GHG regulation were permissible, the Agency had a number of policy reasons why it did not believe regulation of GHG emissions under the CAA was appropriate. Almost immediately following this denial, fourteen environmental organizations, twelve states, three cities and one U.S. territory filed a petition for review with the U.S. Court of Appeals on October 18, 2003. On July 15, 2005, the D.C. Circuit issued a split decision upholding EPA's denial of the petition. This decision was appealed to the U.S. Supreme Court.

On April 2, 2007, the Supreme Court issued its opinion in *Massachusetts v. EPA*, which held in a 5-4 vote that the appellants had standing, that EPA had authority to regulate GHG emissions from new motor vehicles under the Clean Air Act, that the reasons EPA gave for not regulating these emissions were "divorced from the statutory text" and that the EPA acted in an arbitrary and capricious manner in denying the 1999 Petition.<sup>7</sup> The Court stated that the CAA contained a "sweeping definition" of what constitutes an air pollutant that "embraces all airborne compounds of whatever stripe," and CO<sub>2</sub> and other GHGs "without a doubt" fit the statutory definition of "air pollutant" in the Act.<sup>8</sup> The decision further held that EPA "must ground its reasons for action or inaction in the statute," however, EPA had only provided "a laundry list of reasons not to regulate . . . [and] it is evident they have nothing to do with whether [GHG] emissions contribute to climate change."<sup>9</sup> EPA was strictly limited to determining whether GHG

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<sup>4</sup> U.S. EPA, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (hereinafter "Endangerment Finding").

<sup>5</sup> Specifically, the petition sought regulation of emissions of carbon dioxide, methane, nitrous oxide and hydrofluorocarbons.

<sup>6</sup> EPA, *Control of Emissions from New Highway Vehicles and Engines*, 68 Federal Register 52922, Sept. 8, 2003.

<sup>7</sup> 549 U.S. 497 (2007).

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

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

emissions contribute to climate change and whether sufficient information existed to make a finding that climate change “may reasonably be anticipated to endanger public health and welfare,” as provided in CAA § 202(a)(1).<sup>10</sup> These same restrictions on EPA discretion stand today for its determinations related to the listing of GHGs as HAPs.

Following the adverse Supreme Court ruling and a prolonged period of public comment, EPA, through issuance of its December 2009 Endangerment Finding, determined that GHGs endanger both the public health and the public welfare of current and future generations. This finding was based upon a significant body of scientific literature that existed at the time. Research in the decade since that finding has established broad scientific consensus and agreement that communities and economies need to decarbonize within the next two decades to arrest global warming at 1.5°C, as a global average.<sup>11</sup> Warming has already reached 1.0°C since pre-industrial times.<sup>12</sup>

Within the Agency’s 2009 Endangerment Finding, the EPA stated that “[t]he Administrator finds that elevated concentrations of greenhouse gases in the atmosphere *may reasonably be anticipated to endanger the public health and to endanger the public welfare of current and future generations*. The Administrator is making this finding specifically with regard to six key directly-emitted, long-lived and well-mixed greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.”<sup>13</sup>

Under EPA’s interpretation of the CAA, once GHGs became a regulated pollutant under the Act, then Prevention of Significant Deterioration (“PSD”) and Title V permitting provisions immediately apply to GHG emissions from stationary sources.<sup>14</sup> As a result, given that the statutory emissions limits for when a stationary source would require permitting were significantly lower than the large volume of GHGs emitted by regulated industries, EPA issued a series of regulations to address these issues – the “Timing Rule” which extended compliance times and the “Tailoring Rule” which raised the statutory threshold for when a major source would require permitting. These regulations were promptly challenged by many industry petitioners. However, on June 26, 2012, the U.S. Court of Appeals for the D.C. Circuit issued a consolidated opinion rejecting all challenges and upholding all of EPA’s GHG regulations.<sup>15</sup> The court concluded that the Endangerment Finding was neither arbitrary nor capricious and that EPA had correctly interpreted the applicable CAA provisions. Petitioners promptly sought a Writ of Certiorari with the U.S. Supreme Court; this appeal was rejected in 2013.

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<sup>10</sup> *Id.*

<sup>11</sup> See IPCC (2018) *Global Warming of 1.5°C*, Chapter 2 at 2-5. Pathways not inconsistent with 1.5°C (using tightest budget in parentheses) must have net-zero emissions within 25 +/- 15-20 years. More localized warming varies considerably across seasons and regions, globally and within the United States; see Figure Annex 1.A.1; see also Appendix A attached.

<sup>12</sup> See IPCC (2018) *Global Warming of 1.5°C*.

<sup>13</sup> Endangerment Finding at 66,516. (emphasis added)

<sup>14</sup> EPA’s PSD regulations define a regulated New Source Review pollutant to include “[a]ny pollutant that otherwise is subject to regulation under the Act” and requires Best Available Control Technology (“BACT”) for “each regulated NSR pollutant,” 40 C.F.R. 52.21(b)(50) and (j). The Clean Air Act requires BACT for “each pollutant subject to regulation under this [Act],” CAA §§ 165(a)(4) and 169.

<sup>15</sup> *Coalition for Responsible Regulation v. EPA*, 684 F.3d 102 (2012).

However, in October 2013, the Supreme Court consolidated a number of GHG-related challenges into one proceeding and issued its opinion in *Util. Air Regulatory Group v. EPA* on June 23, 2014, which upheld in part and reversed in part the June 2012 holding of the D.C. Circuit in *Coalition for Responsible Regulation*.<sup>16</sup> This decision ultimately upheld EPA's mandate to regulate GHG emissions, but narrowed the scope of PSD permitting on GHGs and vacated the "Tailoring Rule". While holding that the CAA's statutory emissions limits were unambiguous, the Supreme Court held that the CAA neither compelled nor permitted EPA's interpretation that a source might be required to obtain a permit under the PSD program and Title V of the CAA on the sole basis of its potential GHG emissions above the statutory threshold for these air pollutants. However, the court continued, EPA reasonably interpreted the Act to require best available control technology ("BACT") for GHGs emitted by sources that were otherwise subject to PSD review because of their emission of other more conventional pollutants.

Following this series of cases and having already established regulations for mobile sources of GHGs under § 202 of the CAA, EPA turned its attention towards reducing emissions within the bulk electric grid. The Clean Power Plan was announced by President Obama in a speech at the White House on August 3, 2015 and published on October 23, 2015; it was meant to serve as the first standard aimed at cutting carbon emissions from the power sector – the second largest source of U.S. emissions after the transportation sector.<sup>17</sup>

However, this regulation was immediately met with litigation by industry and a number of states. On February 9, 2016, the U.S. Supreme Court ordered the EPA to halt enforcement of the plan until a lower court ruled in the lawsuit against the plan – an unusual move by the Court and the first time the Supreme Court had ever stayed a regulation before a judgment by the lower Court of Appeals.<sup>18</sup> Currently, the D.C. Circuit Court case<sup>19</sup> is held in abeyance, pending repeal and replacement of the Clean Power Plan by the Agency in accordance with an Executive Order directing EPA to review the rule while considering certain new policies.<sup>20</sup> Shortly thereafter, Administrator Scott Pruitt announced EPA's review of the Rule in accordance with the Executive Order.<sup>21</sup> Following this review, on October 16, 2017, EPA issued a proposed rule that would repeal the Clean Power Plan.<sup>22</sup>

Despite the proposed repeal, to this date, the Clean Power Plan has not been repealed by the EPA. The Agency has continually sought for legal challenges to the rule be held in abeyance while it develops a replacement rather than a straight repeal of the policy.<sup>23</sup> To serve as a replacement of the Clean Power Plan, EPA has recently proposed the Affordable Clean Energy

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<sup>16</sup> 573 U.S. 302 (2014)

<sup>17</sup> EPA, *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, 80 Fed. Reg. 64,661, Dec. 22, 2015. (hereafter "Clean Power Plan")

<sup>18</sup> *Chamber of Commerce, et al. v. EPA, et al.*, 136 S.Ct. 999 (2016).

<sup>19</sup> D.C. Dist. Case No. 15-cv-1363.

<sup>20</sup> Executive Office of the President, *Promoting Energy Independence and Economic Growth*, 82 Fed. Reg. 16,093, 16,095 (March 28, 2017); E.O. 13783 of Mar 28, 2017.

<sup>21</sup> EPA, *Review of the Clean Power Plan*, 82 Fed. Reg. 16,329 (Apr. 4, 2017).

<sup>22</sup> EPA, *Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, 82 Fed. Reg. 48035 (Oct. 16, 2017).

<sup>23</sup> *State of West. Va. v. U.S. EPA*, D.C. Cir., No. 15-1363, Doc. #1756867, Oct. 24, 2018.

(“ACE”) Rule for public comment.<sup>24</sup> Whereas the Clean Power Plan sought to cut emissions from the electricity sector by an estimated 32 percent below 2005 levels by 2030 — a tremendously modest first step<sup>25</sup> – the ACE Rule proposes to reduce emissions by 2030 to only 1.5% less than if there *were no Clean Power Plan at all*.

The ACE Rule essentially amounts to codifying the status quo as a means of preventing coal plant retirements despite calls by the UN’s IPCC and the USGCRP for the nation to drastically reduce its emissions by 2030 to prevent the worst effects of climate change. This is particularly significant given that the U.N. Environment Programme has recently released a report stating that there is a significant gap between necessary emissions reductions to avoid the worst effects of global climate change and the achieved reductions by member nations,<sup>26</sup> a gap that would only be widened by EPA’s adoption of the ACE Rule, since the proposed emissions initiative is severely lacking the necessary efforts needed to prevent the worst effects of a changing climate.

## **EPA IS REQUIRED TO REGULATE THE EMISSIONS OF GREENHOUSE GASES AS HAZARDOUS AIR POLLUTANTS.**

Through a series of court cases,<sup>27</sup> an endangerment finding,<sup>28</sup> and subsequent EPA regulations,<sup>29</sup> it has been clearly established that (1) GHGs pose a clear and imminent threat to human health and adverse environmental effects, (2) EPA is mandated to regulate GHGs as a pollutant under the CAA, and (3) that EPA must list GHGs as HAPs in accordance with the definition of such within § 112(b) of the Clean Air Act, 42 U.S.C. § 7412(b).

Under CAA § 112(b), the EPA “Administrator shall periodically review” the HAP list and “where appropriate, revise such list by rule, adding pollutants which present, or may present, through inhalation *or other routes of exposure*, a threat of adverse human health effects... or *adverse environmental effects* whether through ambient concentrations, bioaccumulation, deposition, or otherwise...” (emphasis added). By employing the verb “shall,” Congress vested a

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<sup>24</sup> EPA, *Emission Guidelines for Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guideline Implementing Regulations; Revisions to New Source Review Program*, 83 Fed. Reg. 44746 (Aug. 31, 2018).

<sup>25</sup> According to the IPCC, limiting global warming to 1.5°C would require “rapid and far-reaching” transitions in land, energy, industry, buildings, transport, and cities. Global net human-caused emissions of carbon dioxide (CO<sub>2</sub>) would need to fall by about 45 percent from 2010 levels by 2030, reaching ‘net zero’ around 2050. This means that any remaining emissions would need to be balanced by removing CO<sub>2</sub> from the air. This is something the ACE rule fails to facilitate by a tremendous margin. Intergovernmental Panel on Climate Change (“IPCC”) (2018) *Global Warming of 1.5°C*, IPCC, Switzerland. Available at [http://www.ipcc.ch/pdf/special-reports/sr15/sr15\\_spm\\_final.pdf](http://www.ipcc.ch/pdf/special-reports/sr15/sr15_spm_final.pdf)

<sup>26</sup> UNEP (2018) *The Emissions Gap Report 2018*. United Nations Environment Programme, Nairobi. <https://www.unenvironment.org/resources/emissions-gap-report-2018>

<sup>27</sup> *Massachusetts v. EPA*, 549 U.S. 497 (2007); *Coalition for Responsible Regulation, et al. v. EPA*, 684 F.3d 102 (D.C. Cir. 2012); *Util. Air Regulatory Group v. EPA*, 573 U.S. 302 (2014)

<sup>28</sup> U.S. EPA, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (hereafter “Endangerment Finding”).

<sup>29</sup> EPA, *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, 80 Fed. Reg. 64,661, Dec. 22, 2015; EPA, NHSTA, *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 77 Fed. Reg. 62624, Oct. 15, 2012.

non-discretionary duty in EPA, requiring the Agency, where appropriate, to revise its list of HAPs and add air pollutants that endanger public health and threaten adverse environmental effects.<sup>30</sup>

This is significant because the CAA further defines an “adverse environmental effect” as “any significant and widespread adverse effect, which may reasonably be anticipated, *to wildlife, aquatic life, or other natural resources*, including adverse impacts on *populations of endangered or threatened species or significant degradation of environmental quality over broad areas.*”<sup>31</sup> It is evident through the Endangerment Finding, and an overwhelming and undisputable body of scientific literature,<sup>32</sup> that GHGs pose a significant and widespread threat of adverse effects to human health, wildlife, aquatic life, natural resources, and global ecological systems over broad areas. As such, the EPA is charged with a non-discretionary duty to list GHGs as HAPs under § 112 of the CAA.

### **1. GHGs pose a clear and imminent threat to human health and adverse environmental effects, per 42 U.S.C. §7412(b)**

Several CAA provisions authorize or require action if EPA finds that air pollutants from a specific type or category of sources cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare and cause adverse environmental effects.<sup>33</sup> As the EPA has admitted itself in its Advanced Notice of Proposed Rulemaking for its Endangerment Finding, an “endangerment finding for GHG emissions under one provision of the Act could have a significant and direct impact on decisions under other CAA sections containing similar endangerment language.”<sup>34</sup> It is evident from the EPA’s own Endangerment Finding and the compiled scientific literature that GHGs meet the statutory definition of a HAP since the unregulated emission of these gases present the threat of adverse human health and environmental effects.

As demonstrated in Figures 1, 2, and 3, historical data obtained through ice core samples and modern air sampling from around the world show that current atmospheric concentrations of the two most important directly emitted, long-lived greenhouse gases (carbon dioxide and methane) are well above the natural range of atmospheric concentrations compared to at least the last 650,000 years.<sup>35</sup> Such an elevated concentration of heat trapping gases in the atmosphere has never been seen by anatomically modern *Homo sapiens*.<sup>36</sup> These concentrations continue to grow

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<sup>30</sup> *Sierra Club v. Jackson*, 648 F.3d 848, 856 (D.C. Cir. 2011) (“As we have repeatedly noted, ‘shall’ is usually interpreted as ‘the language of command.’”).

<sup>31</sup> 42 U.S.C. § 7412(a)(7) (emphasis added).

<sup>32</sup> See Appendix A.

<sup>33</sup> 42 U.S.C. §§ 7408, 7411, 7412, 7521

<sup>34</sup> EPA, *Regulating Greenhouse Gas Emission Under the Clean Air Act*, 73 Fed. Reg. 44354, 44420, July 30, 2008.

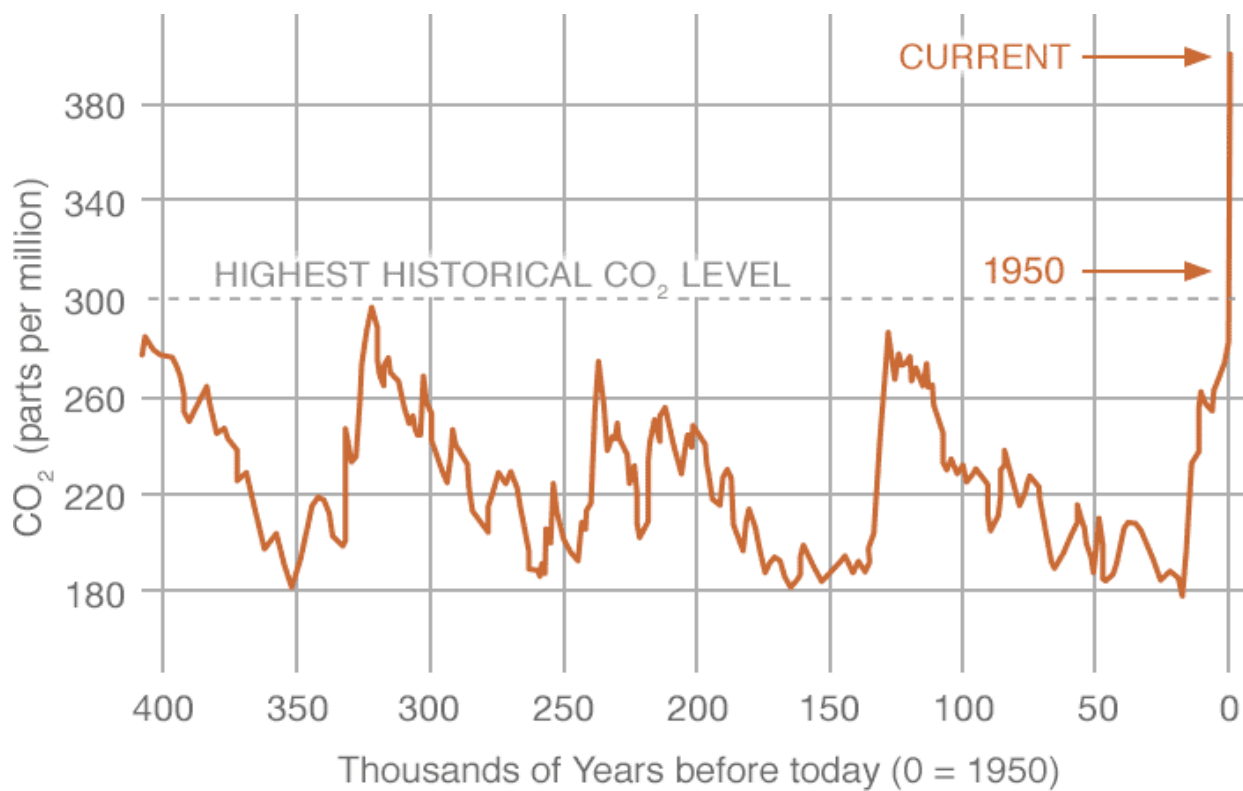
<sup>35</sup> Cook J, et al. (2016) *Consensus on consensus: a synthesis of consensus estimates on human-caused global warming*, Environmental Research Letters, Vol. 11 No. 4. DOI:10.1088/1748-9326/11/4/048002; Dlugokencky E J, Steele LP, Lang PM, Masarie KA (1994), *The growth rate and distribution of atmospheric methane*, J. Geophys. Res., Vol. 99, pp. 17021– 17043. <https://doi.org/10.1029/94JD01245>.

<sup>36</sup> Smithsonian National Museum of Natural History, *The Age of Humans: Evolutionary Perspectives on the Anthropocene*. [http://humanorigins.si.edu/research/age-humans-evolutionary-perspectives-anthropocene#footnotev\\_12ch4o0](http://humanorigins.si.edu/research/age-humans-evolutionary-perspectives-anthropocene#footnotev_12ch4o0)

at a significant pace due to the fact that anthropogenic emissions are outpacing the rate at which greenhouse gases are removed from the atmosphere by natural processes over timescales of decades to centuries.<sup>37</sup> Furthermore, EPA has definitively found that “these high atmospheric concentrations of greenhouse gases are the unambiguous result of human activities”<sup>38</sup> with the EPA further stating that “almost all of this increase [in carbon dioxide and methane] is due to human activities.”<sup>39</sup> If drastic action is not taken promptly, IPCC projections estimate a mean surface temperature increase of 3.7°C to 4.8°C by 2100<sup>40</sup> – which is hotter than Earth has been since the Miocene, over 14 million years ago.<sup>41</sup>

**Figure 1**<sup>42</sup>

NOAA data shows that anatomically modern *Homo sapiens* have never seen CO<sub>2</sub> concentrations at this level. Present CO<sub>2</sub> levels fall outside of normal geologic fluctuation.



<sup>37</sup> Endangerment Finding at 66,517

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

<sup>39</sup> EPA, *Climate Change Indicators: Atmospheric Concentrations of Greenhouse Gases*.

<sup>40</sup> IPCC. “Summary for Policymakers.” *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. (2014)

<sup>41</sup> Millennium Alliance for Humanity and Biosphere (2013) *Scientific Consensus on Maintaining Humanity’s Life Support Systems in the 21st Century Information for Policy Makers*.

<sup>42</sup> Data source: Reconstruction from ice cores. Credit: NOAA. Available at <https://climate.nasa.gov/vital-signs/carbon-dioxide/>

Figure 2<sup>43</sup>

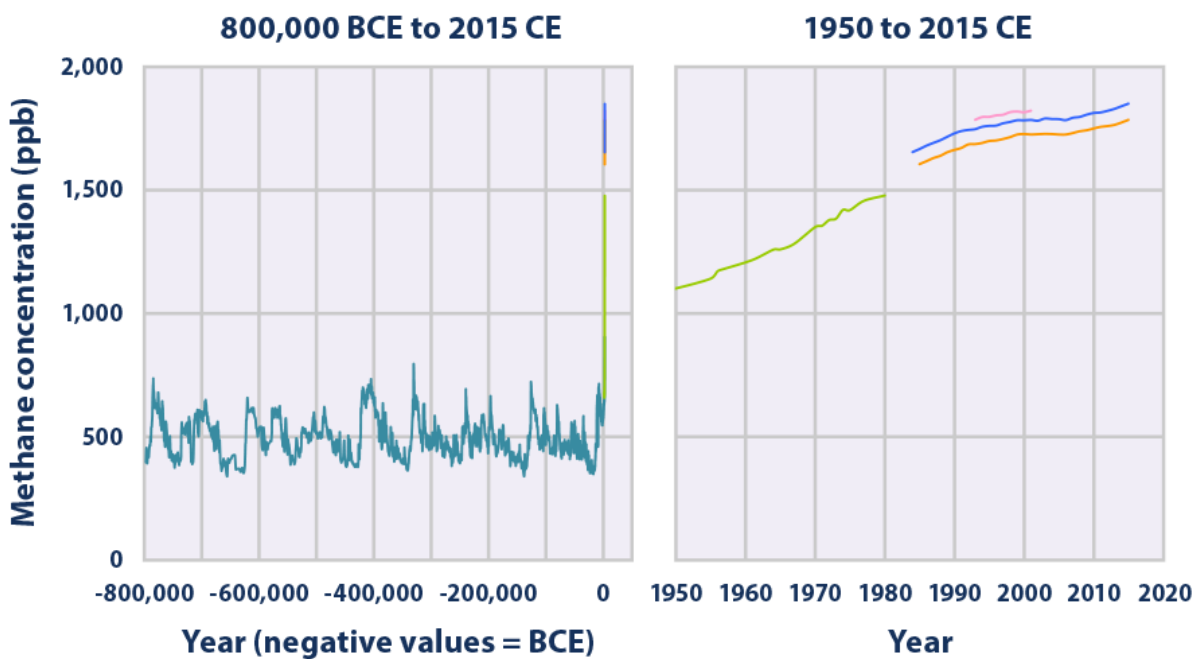
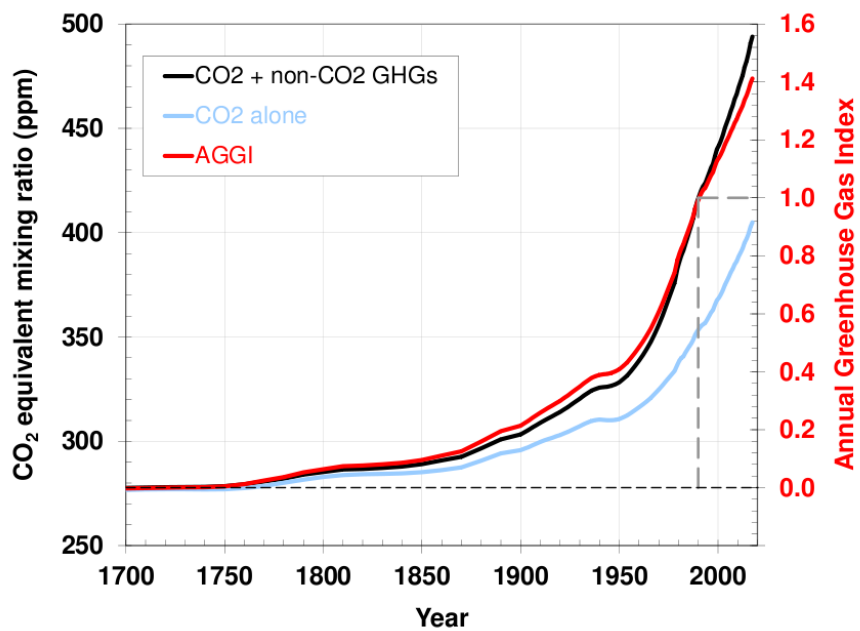


Figure 3<sup>44</sup>



<sup>43</sup> This figure shows concentrations of methane in the atmosphere from 800,000 years ago through 2015, measured in parts per billion (ppb). The data come from a variety of historical ice core studies and recent air monitoring sites around the world. EPA, *Global Atmospheric Concentrations of Methane Over Time*, available at <https://www.epa.gov/climate-indicators/climate-change-indicators-atmospheric-concentrations-greenhouse-gases#ref6>.

<sup>44</sup> NOAA data shows that GHG emissions directly coincide with global industrialization. See NOAA, Annual Greenhouse Gas Inventory, <https://www.esrl.noaa.gov/gmd/aggi/>.



This exponential rise in GHG emissions since the dawn of the industrial revolution poses an existential threat to human civilization and the continued existence of numerous species and ecosystems.<sup>45</sup> Moreover, EPA has already acknowledged that the unregulated emission of GHGs into the atmosphere poses a direct and imminent threat to human health and the environment, stating that “[a]fter compiling and considering a considerable body of scientific evidence”, research clearly demonstrates that greenhouse gases trap heat on earth that would otherwise dissipate into space and that the “root cause” of the recently observed climate change is “very likely” the observed increase in anthropogenic greenhouse gas emissions.<sup>46</sup> Moreover, EPA found that the “emissions of these [GHGs] contribute to the total greenhouse gas air pollution, and thus to the climate change problem, which is reasonably anticipated to endanger public health and welfare.”<sup>47</sup>

These EPA findings have been echoed by the USGCRP, a collaborative effort of 13 federal agencies which includes EPA, stating that “[t]he global warming of the past 50 years is due primarily to human-induced increases in heat-trapping gases [GHGs]. Human ‘fingerprints’ also have been identified in many other aspects of the climate system, including changes in ocean heat content, precipitation, atmospheric moisture, and Arctic sea ice.”<sup>48</sup> The findings of these many agency scientists and experts in climate science counter, and render meaningless, recent comments by former EPA Administrator Scott Pruitt baselessly refuting the scientific consensus of anthropogenic climate change. To date, the Agency has not produced any scientific evidence to support his, or anyone’s, contention that climate change is not impacted by anthropogenic GHG emissions.<sup>49</sup>

In light of the dangers posed by the emission of GHGs, in 2009 EPA found that “the changes taking place in our atmosphere as a result of the well-documented buildup of greenhouse gases due to human activities are changing the climate at a pace and in a way that *threatens human health, society, and the natural environment.*”<sup>50</sup> The EPA did not make this finding of endangerment lightly, as it relied upon “a very large and comprehensive base of scientific information that has been developed over many years through a global consensus process involving numerous scientists from many countries and representing many disciplines.”<sup>51</sup> Moreover, since EPA made its Endangerment Finding in 2009, additional scientific evidence has continued to improve our understanding of climate change and its impacts, and has further reinforced the EPA’s conclusion that GHG emissions pose a grave danger to current and future generations.<sup>52</sup>

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<sup>45</sup> IPCC (2018) *Global Warming of 1.5°C*. [http://report.ipcc.ch/sr15/pdf/sr15\\_spm\\_final.pdf](http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)

<sup>46</sup> *Coalition for Responsible Regulation, et al. v. EPA*, 684 F.3d 102 (D.C. Cir. 2012), *citing* Endangerment Finding at 66,518.

<sup>47</sup> Endangerment Finding at 66,499.

<sup>48</sup> USGCRP (2009) *Global Climate Change Impacts in the United States*, available at <https://downloads.globalchange.gov/usimpacts/pdfs/climate-impacts-report.pdf>.

<sup>49</sup> Miranda Green, *EPA: Pruitt didn’t rely on science when making comment about climate change*, The Hill, August 7, 2018, <https://thehill.com/policy/energy-environment/400707-epa-admits-pruitt-didnt-rely-on-science-when-making-comment-about>

<sup>50</sup> Endangerment Finding at 66,499. [emphasis added]

<sup>51</sup> *Id.* at 66,506.

<sup>52</sup> “Our understanding of how global warming influences the odds of heat waves, droughts, heavy precipitation, storm surge flooding, and wildfires has increased dramatically in the last decade, as has our understanding of the

The EPA, on its own and as part of a broader federal initiative, has already concluded that greenhouse gas pollution endangers the public welfare, which includes the basic infrastructure of a developed human civilization. The environmental and welfare effects demonstrating this endangerment include:<sup>53</sup>

- Food production and forestry: Climate change impacts—including increased temperatures, droughts and precipitation patterns, and extreme storms and unseasonable events—are causing adverse effects on U.S. agriculture. Climate change further endangers U.S. forestry by increasing the size and frequency of wildfires, insect outbreaks, migration of climate-sensitive species, and tree mortality, and will continue to contribute to these effects.
- Access to water: Climate change is reducing snowpack and precipitation, which threatens the adequacy of water supplies across large areas of the United States, particularly in the arid West. Rising water temperatures and more frequent flood events exacerbate water pollution events, like algal blooms in water supplies, increasing risks to public health and ecosystems.
- Sea level rise: The sea level along much of the U.S. coast is rising, and the rate of change is expected to increase. Sea level rise increases the risk of storm surge and flooding and causes erosion and loss of wetlands, threatening coastal communities. Sea level rise is also already threatening the U.S. Naval Station in Norfolk, Virginia.<sup>54</sup>
- Energy and infrastructure: Climate change is expected to affect energy demand for cooling and adversely impact energy production that relies on water for cooling capacity and hydropower generation.<sup>55</sup> U.S. infrastructure—including energy transmission, water infrastructure, roads, bridges, airports, and homes—is vulnerable to extreme weather events, permafrost melt, sea level rise, and coastal erosion associated with climate change.
- Ecosystems and wildlife: Climate change is already affecting natural environments by causing changes in plant life cycles and shifting the habitat ranges and migration patterns of animals. These changes will fundamentally alter U.S. and global ecosystems, resulting in collapsing global biodiversity and devastating the ecosystem goods and services on which current and future generations depend.

The public health effects supporting this determination include:<sup>56</sup>

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related impacts, such as how hot conditions affect mental health, violence, and economic productivity.” Woods Hole Research Center, *New study says scientific basis for EPA’s Endangerment Finding is stronger than ever*. Phys.org, Dec. 13, 2018. <https://phys.org/news/2018-12-scientific-basis-epa-endangerment-stronger.html>. See also Duffy PB, Field CB, Diffenbaugh, et al. (2018) *Strengthened scientific support for the Endangerment Finding for atmospheric greenhouse gases*. Science, Pub. Online. <http://doi.org/10.1126/science.aat5982>. See also Appendix A.

<sup>53</sup> See Appendix A.

<sup>54</sup> Union of Concerned Scientists, *The US Military on the Front Lines of Rising Seas: Exposure to Coastal Flooding at Naval Station Norfolk, Virginia*, July 2017. Available at <https://www.ucsusa.org/sites/default/files/attach/2016/07/front-lines-of-rising-seas-naval-station-norfolk.pdf>

<sup>55</sup> U.S. EPA, *Climate Impacts on Energy*, <https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-energy.html>

<sup>56</sup> See Appendix A.

- Direct temperature effects: Extremely hot days and heat waves are becoming more frequent, and are projected to intensify. Heat causes the most weather-related deaths in the United States, and projected warming is expected to increase heat-related mortality.
- Air quality effects: There is consistent evidence that climate change will increase ground-level ozone pollution (*i.e.*, smog), which causes respiratory illnesses and aggravates asthma.
- Extreme weather events: Heavy precipitation events and severe storms are expected to become more frequent and intense. The resulting flooding and storm surge will put more people at risk of death or injury and increase risks of infectious diseases.
- Pathogenic and allergenic effects: Warmer temperatures are likely to increase the spread of food- and waterborne illnesses and insect-borne diseases. Climate change may also affect the prevalence and severity of allergy symptoms by increasing pollen and altering the distribution of aeroallergens and the plants that produce them.

Most recently, the USGCRP released the second volume of its Fourth National Climate Assessment on November 23, 2018. Whereas the first volume of this report concluded that there is “no convincing alternative explanation” for the changing climate other than “human activities, especially emissions of greenhouse gases”,<sup>57</sup> the second volume delved deeper into the financial and public health effects of projected climate change.<sup>58</sup> The report stated that “[s]cientists have understood the fundamental physics of climate change for almost 200 years” and that “observations collected around the world provide significant, clear, and compelling evidence that global average temperature is much higher, and is rising more rapidly, than anything modern civilization has experienced, with widespread and growing impacts.”<sup>59</sup>

These growing impacts include threats to aquatic life, with the USGCRP stating that the shellfish industry may expect to lose \$230 million by the end of the century due to ocean acidification, which is already killing off shellfish and corals.<sup>60</sup> Algal blooms that deplete dissolved oxygen which can lead to large-scale fish die-offs, cities cutting off water to residents, or states having to close fisheries – like those that triggered a state of emergency in Florida in August 2018 and led to a “do not drink advisory” in Toledo, Ohio in 2014<sup>61</sup> – will become more frequent due to climate change.<sup>62</sup> Along the US coasts, public infrastructure and \$1 trillion in national wealth held in real estate are threatened by rising sea levels, flooding, and storm

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<sup>57</sup> U.S. Global Change Research Program (2017) *Climate Science Special Report: Fourth National Climate Assessment, Volume I* [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., <https://doi.org/10.7930/J0J964J6>

<sup>58</sup> USGCRP (2018) *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA4.2018.CH1>.

<sup>59</sup> *Id.* at Ch. 1: Overview

<sup>60</sup> *Id.* at Ch. 2: Our Changing Climate; Ch. 3: Water; Ch. 9: Oceans and Marine Resources; Ch. 11: Built Environment, Urban Systems, and Cities.

<sup>61</sup> Tryggvi Adalbjornsson and Melissa Gomez, *A Toxic Tide Is Killing Florida Wildlife*, The New York Times, July 30, 2018, <https://www.nytimes.com/2018/07/30/climate/florida-red-tide-algae.html>; Jane J. Lee, *Driven by Climate Change, Algae Blooms Behind Ohio Water Scare Are New Normal*, National Geographic, August 6, 2014. <https://news.nationalgeographic.com/news/2014/08/140804-harmful-algal-bloom-lake-erie-climate-change-science/>

<sup>62</sup> USGCRP (2018) *Impacts, Risks, and Adaptation in the United States*, at Ch. 9: Oceans and Marine Resources; Ch. 14: Human Health.

surges.<sup>63</sup> Moreover, “many impacts, including losses of unique coral reef and sea ice ecosystems, can only be avoided by significantly reducing global emissions of carbon dioxide and other greenhouse gases.”<sup>64</sup>

Meanwhile land impacts loom large as the number of days over 100°F are expected to multiply; Chicago, where these days are currently rare, could start to resemble Phoenix or Las Vegas, with up to 60 days of these dangerous temperatures annually.<sup>65</sup> This in turn will impact U.S. agricultural production, as farms in parts of the Midwest will be able to produce less than 75% of the corn they produce today, and the southern part of the region could lose more than 25% of its soybean yield.<sup>66</sup> This heat will also further exacerbate the wildfire season, which could consume up to six times more forested area annually by 2050 in some parts of the U.S.<sup>67</sup>

The increased frequency and scale of wildfires and the rise in average temperatures will “increase the risk of unhealthy air quality in the future across the Nation in the absence of further air pollution control efforts.”<sup>68</sup> However, the increase in air pollution is not unavoidable, as the USGCRP states that “[c]ontrolling these common [GHG] emission sources would both mitigate climate change and have immediate benefits for air quality and human health.”<sup>69</sup> This is “because methane is both a [GHG] and an ozone precursor,” as such “reductions of methane emissions have the potential to simultaneously mitigate climate change and improve air quality.”<sup>70</sup> Moreover, “mitigating GHGs can lower emissions of PM [particulate matter], ozone and PM precursors, and other hazardous pollutants, reducing the risks to human health from air pollution.”<sup>71</sup>

It is made glaringly clear by the findings of the USGCRP and through the attached scientific research<sup>72</sup> that climate change caused by human GHG emissions “threat[ens]... adverse human health effects... [and] adverse environmental effects”, which cause include “significant and widespread adverse effect[s]... to wildlife, aquatic life, or other natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas.”<sup>73</sup> Given the extensive body of evidence demonstrating the existential threat GHG emissions pose to human health, welfare, environmental quality and even the basic underpinnings of human civilization, it is *imperative* that EPA adopt this rulemaking petition.

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<sup>63</sup> *Id.* at Ch. 8: Coastal Effects.

<sup>64</sup> *Id.* at Ch. 7: Ecosystems and Ecosystem Services.

<sup>65</sup> *Id.* at Ch. 21: Midwest

<sup>66</sup> *Id.* at Ch. 10: Agriculture and Rural Communities

<sup>67</sup> *Id.* at Ch. 6: Forests.

<sup>68</sup> *Id.* at Ch. 13: Air Quality

<sup>69</sup> *Ibid.*

<sup>70</sup> *Ibid.*

<sup>71</sup> *Ibid.*

<sup>72</sup> See Appendix A

<sup>73</sup> 42 U.S.C. § 7412(a)(7); 42 U.S.C. § 7412(b).

## 2. EPA has a mandate to regulate GHGs under §112 of the Clean Air Act

The U.S. Supreme Court held in *Massachusetts v. EPA* that EPA had a “statutory obligation” to regulate harmful GHG emissions as an air pollutant if they were determined to endanger human health.<sup>74</sup> “Under the clear terms of the Clean Air Act,” the Court concluded, “EPA can avoid taking further action only if it determines that greenhouse gases *do not* contribute to climate change or if it provides some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether they do.”<sup>75</sup> In this instance, EPA, both by itself and jointly with the USGCRP, has fully established that GHGs contribute to climate change and that such change poses a direct threat to human health and the environment, therefore they must regulate said emissions.

Moreover, the Supreme Court observed that “[w]hile the Congresses that drafted [the Clean Air Act] might not have appreciated the possibility that burning fossil fuels could lead to global warming,<sup>76</sup> they did understand that without regulatory flexibility, changing circumstances and scientific developments would soon render the Clean Air Act obsolete.” As such, the Court found that the broad language within the Act “reflects an intentional effort to confer the flexibility necessary to forestall such obsolescence.”<sup>77</sup>

In direct response to the Supreme Court’s directive, EPA quickly began working with the Department of Energy and the Department of Agriculture to draft proposed regulations that would reduce GHGs emitted from motor vehicles. Shortly thereafter, the Agencies issued an Advanced Notice of Proposed Rulemaking Endangerment Finding for GHGs which noted that if the EPA issued a finding of endangerment under § 202(a) of the CAA, then “language similarities of various sections of the CAA likely would require EPA also to regulate GHG emissions from stationary sources.”<sup>78</sup> One such regulatory avenue acknowledged by the Agencies was listing GHGs as HAPs under § 112 of the CAA.<sup>79</sup> While the Agencies felt that regulation of GHGs under §112 would be overly burdensome on industry, the D.C. Circuit Court of Appeals has held that the plain language of the CAA “does not leave room for EPA to consider as part of the endangerment inquiry the stationary-source regulation triggered by an endangerment finding, even if the degree of regulation triggered might at a later stage be characterized as ‘absurd.’”<sup>80</sup> Given that the determination of whether GHGs meet the statutory definition of HAPs would constitute a finding of endangerment, EPA may not consider the resulting regulatory burdens within its listing determination.

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<sup>74</sup> 549 U.S. 497, 534 (2007).

<sup>75</sup> *Id.* at 533. (emphasis added)

<sup>76</sup> Despite the Court’s statement, every U.S. President since 1961 has been warned about the potential harm of climate change. For example, in 1965 President Johnson was told that “[c]arbon dioxide is being added to the earth’s atmosphere by the burning of coal, oil and natural gas at the rate of 6 billion tons a year... This will modify the heat balance of the atmosphere to such an extent that marked changes in climate, not controllable through local or even national efforts, could occur.” See Benjamin Hulac, *Every president since 1961 was warned about climate change*, E&E News, Nov. 6, 2018; see also White House, President Johnson’s Science Advisory Committee (1965) *Restoring the Quality of Our Environment*, pp 112-127.

<sup>77</sup> 549 U.S. at 532.

<sup>78</sup> EPA, *Regulating Greenhouse Gas Emissions Under the Clean Air Act; Advanced Notice of Proposed Rulemaking*, 73 Fed. Reg. 44367 (July 30, 2008).

<sup>79</sup> *Ibid.*

<sup>80</sup> *Coalition for Responsible Regulation, et al. v. EPA*, 684 F.3d 102, 119 (D.C. Cir. 2012), quoting *Mass. v. EPA*.

The EPA's statutory mandate to regulate GHGs was only further solidified by the D.C. Circuit's opinion in *Coalition for Responsible Regulation, et al. v. EPA*, an industry challenge to EPA's regulation of GHGs under § 202 of the CAA. Given that permitting of major emitters of GHGs was required under the Title V requirements and the PSD program when the Agency issued its 2009 Endangerment Finding, the Court went on to state that "Congress made perfectly clear that the PSD program was meant to protect against precisely the types of harms caused by greenhouse gases."<sup>81</sup> The Court found this to be the case because the PSD "Congressional declaration of purpose" provision provides, in relevant part, that the purpose of this section is "to protect public health and welfare from any actual or potential adverse effect which in the Administrator's judgment may reasonably be anticipated to occur from air pollution."<sup>82</sup> The CAA further provides that "[a]ll language referring to effects on welfare includes, but is not limited to, *effects on ... weather ... and climate*."<sup>83</sup> The D.C. Circuit further concluded that EPA had properly employed its agency expertise in declaring that "anthropogenically induced climate change" was likely to threaten the public welfare through, among other things, "extreme weather events."<sup>84</sup> Thus, one express purpose of the program is to protect against the harms caused by GHGs.

While the Supreme Court has vacated certain permitting provisions for GHG regulations at issue in *Coalition for Responsible Regulation*, EPA's mandate to regulate GHG emissions pursuant to the PSD program and Title V of the CAA still stands and was reinforced by the Court's decision in *Util. Air Regulatory Group v. EPA*.<sup>85</sup>

Therefore, given that GHGs meet the statutory definition of a HAP and EPA has the explicit requirement to regulate GHGs, for EPA to deny this petition would be to intentionally disregard non-discretionary language within the CAA, ignore judicial decrees to address such air pollution, and would be in direct contravention of Congressional intent.

### **3. EPA must list GHGs as HAPs in accordance with §112 of the Clean Air Act**

Under CAA § 112, "the Administrator *shall*<sup>86</sup> periodically review the list" of HAPs and "where appropriate, revise such list by rule, adding pollutants which present, or may present, through inhalation *or other routes of exposure*, a threat of adverse human health effects ... or *adverse environmental effects* whether through ambient concentrations, bioaccumulation, deposition, or otherwise[.]"<sup>87</sup> The statute further allows for any member of the public to petition for listing of new pollutants to the list of HAPs by presenting a "showing ... that there is adequate data on the health or environmental defects of the pollutant or other evidence adequate to support the petition."<sup>88</sup> Upon receipt of this petition, the Administrator has 18 months to

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<sup>81</sup> *Id.* at 135.

<sup>82</sup> *Id.* at 135-6, citing 42 U.S.C. § 7470(1).

<sup>83</sup> *Ibid.*, citing 42 U.S.C. § 7602(h) (emphasis added).

<sup>84</sup> *Ibid.*

<sup>85</sup> 573 U.S. 302 (2014).

<sup>86</sup> By using the word "shall", Congress intended this to be a non-discretionary duty of the Administrator. See *Sierra Club v. Jackson*, 648 F.3d 848, 856 (D.C. Cir. 2011).

<sup>87</sup> 42 U.S.C. §7412(b)(2) (emphasis added).

<sup>88</sup> 42 U.S.C. §7412(b)(3)(A).

review the science supporting this petition, and “shall either grant or deny the petition by publishing a written explanation of the reasons for the Administrator’s decision.”<sup>89</sup> Moreover, “EPA must ground its reasons for action or inaction in the statute rather than on reasoning divorced from the statutory text.”<sup>90</sup>

“The Administrator may not deny a petition solely on the basis of inadequate resources or time for review.”<sup>91</sup> Upon review of the body of evidence, “[t]he Administrator shall add a substance to the list upon a showing by the petitioner . . . that the substance is an air pollutant and that emissions, ambient concentrations, bioaccumulation or deposition of the substance *are known to cause or may reasonably be anticipated to cause adverse effects to human health or adverse environmental effects.*”<sup>92</sup>

To meet this statutory requirement, Petitioners have attached an exhaustive list of research produced by the EPA itself, the United Nations, the USGCRP, the U.S. Dep’t of Defense, the National Academy of Sciences, the Center for Climate and Security, the Environment and Security Initiative, University of Cambridge’s Centre for Risk Studies, the U.K.’s HM Treasury, and numerous scientific researchers in a plethora of disciplines from around the world detailing the adverse human health and environmental effects of climate change and GHGs. Moreover, the USGCRP has found that “[r]educing greenhouse gas emissions would benefit the health of Americans in the near and long term. By the end of this century, thousands of American lives could be saved and hundreds of billions of dollars in health-related economic benefits gained each year under a pathway of lower greenhouse gas emissions.”<sup>93</sup> Listing and regulating GHGs, substances that very clearly meet the statutory definition of HAPs, is that pathway to lower GHG emissions. We hereby incorporate the contents and findings of these research papers into this Petition by reference.

According to the Supreme Court, the only legally permissible way for EPA to avoid listing emissions of GHGs as regulated air pollutants would be to show “scientific uncertainty . . . so profound that it precludes EPA from making a reasoned judgment as to whether greenhouse gases contribute to global warming.” However, given the determination of the 2009 Endangerment Finding and the Agency’s efforts as part of the USGCRP, and the vast body of scientific research establishing the impacts of GHG’s on the planet, such uncertainty simply does not exist. Furthermore, a broad global consensus of scientific professionals – over 97% of actively publishing climate scientists – agree that climate-warming trends over the past century are due to human activities, primarily through the emissions of GHGs.<sup>94</sup> Moreover, in response to a FOIA request seeking all EPA research that showed that human activity was *not* the primary driver of global climate change, EPA was unable to produce *any* evidence contrary to the consensus of the scientific community, the United Nations, and the USGCRP.<sup>95</sup>

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<sup>89</sup> 42 U.S.C. §7412(b)(2).

<sup>90</sup> *Util. Air Regulatory Group v. EPA*, 573 at 391 (citations omitted).

<sup>91</sup> 42 U.S.C. §7412(b)(3)(A).

<sup>92</sup> 42 U.S.C. §7412(b)(3)(B) (emphasis added).

<sup>93</sup> USGCRP, *Volume II*, at Ch. 14: Human Health.

<sup>94</sup> NASA, *Scientific consensus: Earth’s climate is warming*, <https://climate.nasa.gov/scientific-consensus/>

<sup>95</sup> Charles S. Clark, *EPA Search for Pruitt-Cited Climate Studies Comes Up Dry*, Government Executive, Oct. 11, 2018, <https://www.govexec.com/management/2018/10/epa-search-pruitt-cited-climate-studies-comes-dry/151956/?oref=river>.

In 2003, EPA rejected a rulemaking petition to regulate GHGs on grounds that have since been ruled illegal by the Supreme Court, a decision upheld in subsequent challenges.<sup>96</sup> As EPA has previously been found to have improperly denied meritorious attempts to compel the Agency to regulate GHG emissions, it must look only to whether GHGs meet the plain language statutory definition of a HAP – something that the Agency’s own research, both individually and in conjunction with the USGCRP, has clearly demonstrated. The overwhelming body of scientific literature clearly demonstrates that GHGs meet the CAA § 112 definition of HAPs, especially since insertion of White House policy considerations are impermissible in EPA’s decision-making process on the listing of GHGs as HAPs.<sup>97</sup> For these reasons, and those further addressed below, EPA must list GHGs as HAPs per the statutory definition.

### **REGULATORY BURDENS OR WHITE HOUSE POLICY DIRECTIVES MAY NOT BE CONSIDERED IN EPA’S DECISION TO LIST GHGs AS HAPs.**

While EPA has previously cited to Executive Order 13783,<sup>98</sup> which establishes the official White House policy of “American energy dominance”,<sup>99</sup> such policy considerations cannot be included within EPA’s assessment of the endangerment of the public by GHGs. EPA has already unsuccessfully attempted to base its decision not to regulate GHGs upon political considerations; this approach was squarely rejected by the Supreme Court in *Massachusetts v. EPA*, where it clearly indicated that the Administrator’s decision must be a “scientific judgment” and not based upon any policy or industry consideration.<sup>100</sup> The EPA Administrator “must base her decision about endangerment on the science, and not on policy considerations about the repercussions or impact of such a finding.”<sup>101</sup> This strictly scientific review policy has been upheld by the Supreme Court as recently as 2014.<sup>102</sup>

In the Supreme Court’s view, EPA’s policy-based explanations in the past have contained “no reasoned explanation for [EPA’s] refusal to decide” the key part of the endangerment inquiry: “whether greenhouse gases cause or contribute to climate change.”<sup>103</sup> Moreover, the Court has noted that EPA’s previous “policy judgments . . . have nothing to do with whether greenhouse gas emissions contribute to climate change. Still less do they amount to a reasoned justification for declining to form a scientific judgment.”<sup>104</sup>

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<sup>96</sup> See U.S. EPA, *Control of Emissions From New Highway Vehicles and Engines: Notice of Denial of Petition for Rulemaking*, 68 Fed. Reg. 52,922 (Sept. 8, 2003); see also FN 1.

<sup>97</sup> *Massachusetts v. EPA*, 549 U.S. at 534.

<sup>98</sup> See U.S. EPA, *Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units*, 82 Fed. Reg. 48035, 48037 (Oct. 16, 2017).

<sup>99</sup> Executive Office of the President, *Promoting Energy Independence and Economic Growth*, 82 Fed. Reg. 16,093, 16,095 (March 28, 2017); E.O. 13783 of Mar 28, 2017; Tom DiChristopher, *Trump wants America to be ‘energy dominant.’ Here’s what that means.*, CNBC, June 28, 2017, <https://www.cnbc.com/2017/06/28/trump-america-energy-dominant-policy.html>.

<sup>100</sup> 549 U.S. at 534.

<sup>101</sup> Endangerment Finding at 66515.

<sup>102</sup> “EPA must ground its reasons for action or inaction in the statute rather than on reasoning divorced from the statutory text.” *Util. Air Regulatory Group v. EPA*, 573 at 391 (citations omitted).

<sup>103</sup> *Id.* at 534.

<sup>104</sup> 549 U.S. at 533–34.



Nor does the plain language of the CAA leave room for EPA to consider, as part of the HAP listing inquiry, the stationary-source regulation triggered by an endangerment finding, even if the degree of regulation triggered might at a later stage be characterized as “absurd.”<sup>105</sup> Given that the Agency has already made a scientific determination based upon the established science of climate change that GHGs endanger the public health and welfare, it is impermissible for EPA to deny this petition based upon any reason outside the concrete data and evidence that supported the Agency’s previous 2009 Endangerment Finding that GHGs cause global climate change and that such climate change poses a significant threat to human health, welfare, and the environment. As of this date, the Agency has been unable to produce any documentation to counter this evidence in response to public requests for said data.<sup>106</sup>

Furthermore, the Supreme Court has rejected the argument made by EPA that it should consider compliance costs in setting the NAAQS because many more factors than air pollution might affect public health.<sup>107</sup> To be sure, the language in CAA § 109(b) applicable to the setting of a NAAQS is different than that in CAA § 112 regarding endangerment, however the concepts are similar—the NAAQS are about setting standards at a level requisite to protect public health (with an adequate margin of safety) and public welfare, whereas endangerment is about whether the current or projected future levels may reasonably be anticipated to endanger public health or welfare. In other words, both decisions essentially are based on assessing the harm associated with a certain level of air pollution and as such, compliance costs cannot be considered in determining whether GHGs meet the clear statutory definition of a HAP.<sup>108</sup>

Given this similarity in purpose, as well as the Court’s instructions in *Massachusetts v. EPA* that the Administrator’s decision must be solely based upon the scientific evidence of risk, EPA has historically interpreted the statutory endangerment language to be analogous to setting the NAAQS.<sup>109</sup> Therefore, it is reasonable to interpret the HAP listing process under § 112 as not requiring the consideration of the impacts of implementing the permitting and regulation in the event of a HAP listing as part of the decision-making process itself, much as EPA did within its Endangerment Finding in 2009.

Of note, industry and the EPA itself have a history of stating that a plethora of adverse effects will result from additional regulation of pollutants found to endanger public health and welfare which have ultimately turned out to not come to pass.<sup>110</sup> Moreover, EPA has established

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<sup>105</sup> *Coalition for Responsible Regulation, et al. v. EPA*, 684 F.3d 102 (D.C. Cir. 2012).

<sup>106</sup> Charles S. Clark, *EPA Search for Pruitt-Cited Climate Studies Comes Up Dry*, Government Executive, Oct. 11, 2018, <https://www.govexec.com/management/2018/10/epa-search-pruitt-cited-climate-studies-comes-dry/151956/?oref=river>

<sup>107</sup> *Whitman v. ATA*, 531 U.S. 466, 457 (2001).

<sup>108</sup> See Endangerment at 66516.

<sup>109</sup> *Ibid.*

<sup>110</sup> See NYTimes, “E.P.A. Orders 90 Percent Cut in Lead Content of Gasoline by 1986”, March 5, 1985. <https://www.nytimes.com/1985/03/05/us/epa-orders-90-percent-cut-in-lead-content-of-gasoline-by-1986.html>. The American Petroleum Institute argued that the lead reduction initiatives of the Agency “will create a substantial problem for the refining industry in providing motorists with adequate quantities of high-quality gasoline at reasonable costs.” The average U.S. gas price in 1985 was \$2.62 in 2018 dollars; compare to the average gas price of Nov. 26, 2018 – \$2.53. Energy Information Administration, *Gasoline and Diesel Fuel Update*, Nov. 26, 2018. <https://www.eia.gov/petroleum/gasdiesel/>

within its Endangerment Finding that the Agency does not believe the impact of regulation under the CAA as a whole, let alone that which will result from its GHG endangerment finding, would lead to the panoply of adverse consequences that commenters predicted. EPA has already stated that it has the ability to fashion a reasonable and common-sense approach to address greenhouse gas emissions and climate change under the CAA.<sup>111</sup>

Moreover, the Supreme Court has noted in its *Util. Air Regulatory Group v. EPA* decision that requiring permits for sources based solely on their emission of greenhouse gases at the 100- and 250-tons per-year levels set forth in the CAA would be incompatible with the substance of Congress's regulatory scheme. The PSD program and Title V are designed to apply to, and cannot rationally be extended beyond, a relative handful of large sources capable of shouldering heavy substantive and procedural burdens, as such any regulatory burden will be manageable.<sup>112</sup>

Therefore, it is overwhelmingly clear that White House and EPA policy may not be considered when assessing whether GHGs meet the statutory definition of a HAP; evidenced by the Supreme Court's rejection of EPA's reliance upon administration policy in denying regulation of GHGs under §202 of the CAA. As such, the Agency may not weigh White House policy objectives concerning "energy dominance" as stated in Executive Order 13783. Rather, the Agency must only look objectively at the weighty body of scientific evidence before it which establishes that GHGs and their resultant global climate change pose a clear and present danger to human health and welfare and adverse environmental effects in deciding whether GHGs meet the statutory definition of HAPs under § 112(b)(3)(B) of the CAA.

## **LISTING GHGs AS HAPs WILL NOT HAMPER GRID RELIABILITY OR ENERGY SECURITY**

One factor often recited by industry commenters on GHG regulations is that regulation of GHG emissions will result in the endangerment of electric grid reliability and threaten U.S. energy security. However, the USGCRP has stated that the climate change caused by release of GHGs by fossil fuel power plants, like coal and natural gas facilities, threatens the very integrity of the U.S. electric grid itself. Due to climate change, "the petroleum, natural gas, and electrical infrastructure along the East and Gulf Coasts are at increased risk of damage from rising sea levels and hurricanes of greater intensity."<sup>113</sup> Moreover, climate change and extreme weather events are "increasingly... affecting the [fossil fuel] energy system (including all components related to the production, conversion, delivery, and use of energy), threatening more frequent and longer-lasting power outages and fuel shortages. Such events can have cascading impacts on other critical sectors and potentially affect the Nation's economic and national security."<sup>114</sup> Additionally, "higher temperatures reduce the thermal efficiency and generating capacity of thermoelectric power plants [*i.e.*, coal, nuclear, and natural gas] and reduce the efficiency and

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<sup>111</sup> See Endangerment at 66,516

<sup>112</sup> *Util. Air Regulatory Group v. EPA*, 573 at 393.

<sup>113</sup> USGCRP, Volume II, at Ch. 4: Energy Supply, Delivery, and Demand

<sup>114</sup> *Ibid.*

current-carrying capacity of transmission and distribution lines.”<sup>115</sup> Furthermore, droughts caused by climate change “will likely threaten fuel production, such as fracking for natural gas and shale oil; enhanced oil recovery in the Northeast, Midwest, Southwest, and Northern and Southern Great Plains; oil refining; and thermoelectric power generation that relies on surface water for cooling.”<sup>116</sup>

These challenges can be seen in ISO New England’s recent FERC filing, where it states that “the most significant resilience challenge is fuel security – or the assurance that power plants will have or be able to obtain the fuel they need to run, particularly in winter...” The ISO goes on to further state that “[m]ore renewable resources can help lessen the region’s fuel-security risk depending on the type and quantity.”<sup>117</sup> Such resiliency issues will continue to pressure the bulk electric grid unless prompt changes are made to “develop[] and deploy[] new innovative energy technologies that increase resilience and reduce emissions” like wind and solar generation.<sup>118</sup>

Integration of carbon-free technology into the bulk electric grid is vital to the continued resiliency and security of the American energy chain and the regulation of GHGs will only foster a transition to a safer and more reliable grid in the future. Researchers from the Karlsruhe Institute of Technology in Germany, the South African Council for Scientific and Industrial Research, Lappeenranta University of Technology in Finland, Delft University of Technology, Netherlands, and Aalborg University, Denmark have done a comprehensive scientific review of the technical feasibility of integrating 100% renewable energy into global electric grids and have demonstrated that such a goal is feasible and technical hurdles can be cleared at low-cost.<sup>119</sup>

Moreover, Australia, another advanced economy dependent upon fossil fuel infrastructure, has shown that battery technology paired with renewable generation is capable of providing frequency stability in the immediate aftermath of a coal plant failure. In April 2018, Australia’s largest generator, a 750 MW coal plant, tripped and ceased operating. Power balances were reestablished by other generators, but the frequency control (provided by the spinning of the turbine) went away. So, the frequency of that alternating current delivering the power went below 49.85 cycles per second (*i.e.*, Hertz), a level at which appliances such as refrigerators can be damaged. Recently integrated distributed renewables and battery storage provided immediate frequency control, and grid stability, to avoid such damage to consumer appliances.<sup>120</sup>

The U.S. government’s own National Renewable Energy Laboratory has found that “[r]enewable electricity generation from technologies *that are commercially available today*

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<sup>115</sup> *Ibid.*

<sup>116</sup> *Ibid.*

<sup>117</sup> ISO New England, *AD18-7-000 ISO-NE Response to Grid Resilience Order*, March 9, 2018. [https://www.iso-ne.com/static-assets/documents/2018/03/ad18-7\\_iso\\_response\\_to\\_grid\\_resilience.pdf](https://www.iso-ne.com/static-assets/documents/2018/03/ad18-7_iso_response_to_grid_resilience.pdf)

<sup>118</sup> USGCRP, Volume II, at Ch. 4: Energy Supply, Delivery, and Demand.

<sup>119</sup> Brown TW, Bischof-Niemz T, Blok K, et al. (2018) *Response to ‘Burden of Proof: A comprehensive review of the feasibility of 100% renewable-electricity systems.’* Renewable and Sustainable Energy Reviews, Vol. 92, pp. 834-847. <https://doi.org/10.1016/j.rser.2018.04.113>

<sup>120</sup> Mike Leonard, *Households can hold grid together when big coal units fail*, Renew Economy, April 24, 2018 <https://reneweconomy.com.au/households-can-hold-grid-together-when-big-coal-units-fail-69737/>; Australian Energy Market Operator, *Initial operation of the Hornsdale Power Reserve Battery Energy Storage System*, April 2018 at [https://www.aemo.com.au/-/media/Files/Media\\_Centre/2018/Initial-operation-of-the-Hornsdale-Power-Reserve.pdf](https://www.aemo.com.au/-/media/Files/Media_Centre/2018/Initial-operation-of-the-Hornsdale-Power-Reserve.pdf)

[2012] [are] more than adequate to supply 80% of total U.S. electricity generation in 2050 while meeting electricity demand on an hourly basis in every region of the country.”<sup>121</sup>

While such considerations are irrelevant to the HAP listing review protocols prescribed by CAA § 112, it is important to note that the removal of facilities from the grid that cannot meet strict emissions standards for GHG emissions will not pose a threat to system resiliency until near total system penetration of currently commercially-available renewable generation technology.

## CONCLUSION

Ultimately, the EPA is faced with a decision based upon clear statutory language and overwhelming scientific consensus. This leaves little room for the Agency to deny this petition on defensible grounds given that GHGs pose a clear and imminent threat to human health and adverse environmental effects, EPA has an express mandate to regulate GHGs as a pollutant under the CAA, and a non-discretionary duty to list HAPs that pose a threat to the public. As such Petitioners request that EPA list GHGs as HAPs in accordance with the statutory definition within § 112(b) of the Clean Air Act, 42 U.S.C. § 7412(b).

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## APPENDIX OF PERTINANT SCIENCE

Under § 112(b) of the Clean Air Act, 42 U.S.C. §7412(b), the EPA Administrator is required to revise the listing of Hazardous Air Pollutants to include “pollutants which present, or may present, through inhalation *or other routes of exposure*, a threat of adverse human health effects... or ***adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition...***”

The Clean Air Act defines “adverse environmental effect” as “any significant and widespread adverse effect, which may reasonably be anticipated, to wildlife, aquatic life, or other natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas.” 42 U.S.C. § 7412(a)(7).

Given that GHGs, which fuel global climate change, have been found to have a plethora of adverse environmental effects, Petitioners have provided a compendium of relevant research for EPA review in deciding that GHGs meet the statutory definition of a Hazardous Air Pollutant.

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