

ORAL ARGUMENT NOT YET SCHEDULED

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 09-1322, and consolidated cases (Complex)

COALITION FOR RESPONSIBLE REGULATION, et al.,
Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND
LISA P. JACKSON, ADMINISTRATOR,
Respondents

ON CONSOLIDATED PETITIONS FOR REVIEW OF FINAL ACTIONS
BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**CORRECTED BRIEF FOR AMICI
AMERICA'S GREAT WATERS COALITION, UNION OF CONCERNED
SCIENTISTS, AND CLIENTEARTH**

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Glossary

ANPR	Advance Notice of Proposed Rulemaking
CFC	Chlorofluorocarbon
AR4	Fourth Assessment Report of the IPCC
EPA	Environmental Protection Agency
EU	The European Union
GHG	Greenhouse gas
Hadley CRU	Hadley Climatic Research Unit
IPCC	Intergovernmental Panel on Climate Change
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
RTC	Response to Comments
RTP	Response to Petitions to Reconsider Endangerment Finding
SAOD	Scientific Assessment of Ozone Depletion
TSD	Technical Support Document
UCS	Union of Concerned Scientists
WMO	World Meteorological Organization

INTEREST OF AMICUS CURIAE

Three non-profit environmental organizations have joined together to submit this brief amicus curiae in support of the Environmental Protection Agency's ("EPA") endangerment finding from three unique perspectives.

Amicus America's Great Waters Coalition is an alliance of over 30 national, regional, state, and local organizations working to protect, preserve, and restore America's Great Waters. From the Great Lakes to the Gulf of Mexico, from Puget Sound to Chesapeake Bay, from the Gulf of Maine to San Francisco Bay, America's Great Waters are the lifeblood of the nation, driving regional economies and shaping our daily lives. The coalition's mission is to unify ongoing efforts to restore water ecosystems that sustain people, wildlife, and the economy. Greenhouse gas ("GHG") emissions have proven especially harmful to America's key waterways, exacerbating the proliferation of harmful invasive species, introducing toxic chemicals, increasing the frequency of intense storm events, and irreversibly reducing water levels through accelerated evaporation. America's Great Waters Coalition thus has an abiding interest in the EPA's finding of endangerment for GHG pollutants under the Clean Air Act.

Amicus Union of Concerned Scientists ("UCS") is an alliance of more than 300,000 citizens and scientists and a U.S. non-profit organization dedicated to the use of science to foster a healthy environment and a safer world. UCS combines

independent scientific research and citizen action to develop innovative and practical solutions to pressing environmental and security problems and to secure responsible changes in government policy, corporate practices, and consumer choices. UCS has a keen interest in assuring that EPA uses the best and most advanced scientific analyses in determining whether air pollutants endanger public health and welfare.

Amicus ClientEarth is a non-profit, public interest corporation organized under the laws of the United Kingdom. ClientEarth focuses on transformational change to the European legal and legislative landscape, and brings together law, science, and policy to create pragmatic solutions to key environmental challenges. ClientEarth is interested in this case because it has substantial experience with European Union policies and actions that address climate change, mitigate GHG emissions, and promote a low-carbon economy. ClientEarth has worked with European Union institutions—including the European Parliament, the Council of the European Union, and the European Commission—on climate and energy legislation and policies. It has published analyses of European Union climate and energy policies, and the impacts of international commitments on these policies. Similar to the European Union, ClientEarth recognizes that climate change is not just an environmental issue, but also is an economic and security issue.

ARGUMENT

I. THE INDISPUTABLY HARMFUL IMPACTS OF GHG EMISSIONS ON AMERICA'S FRESHWATER LAKES AND RIVERS SUPPORT EPA'S ENDANGERMENT FINDING.

Of all the risks posed by GHG emissions, the EPA Administrator concluded that “[t]he evidence concerning adverse impacts in the areas of water resources and sea level rise and coastal areas provides the clearest and strongest support for an endangerment finding, both for current and future generations.” 74 Fed. Reg. 66,496, 66,498 (Dec. 15, 2009). The record demonstrates that the impact of GHG emissions on America’s inland (and coastal) water resources provides exceptionally strong justification for EPA’s Endangerment Finding. GHG emissions threaten America’s water supply and water quality, to the ongoing detriment of the public health and welfare. As GHG-induced climate change accelerates, the scope and scale of this threat will grow more pronounced, inflicting even greater environmental damage and economic costs. The Administrator’s Endangerment Finding is but the first step in addressing these profound consequences. It should not be further delayed.

The Administrator’s Endangerment Finding was supported, in part, by strong scientific evidence that GHG emissions are adversely affecting the nation’s water resources. There is inarguably a “rational connection” between the Administrator’s finding of endangerment and the overwhelming evidence EPA

weighed regarding the harmful effects of GHG emissions on America's (a) fresh water supply and (b) water quality. This rational connection is all the Administrator need demonstrate to satisfy the Court's "highly deferential" standard of review. Nat'l Ass'n of Clean Air Agencies v. EPA, 489 F.3d 1221, 1228 (D.C. Cir. 2007); Natural Res. Def. Council, Inc. v. EPA, 194 F.3d 130, 136 (D.C. Cir. 1999); see also Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc., 462 U.S. 87, 103 (1983).

A. The Administrator's Endangerment Finding Was Reasonable Because GHG Emissions Are Causing Diminishment of America's Water Supply.

The EPA Administrator concluded that "[w]ater resources across large areas of the country are at serious risk from climate change." 74 Fed. Reg. at 66,498. The reasons for this conclusion are clearly articulated in the record and are based on an extensive review of the scientific literature collected and summarized in the Technical Support Document, EPA HQ OAR 2009-0171011639 (JA XX-XX), that accompanied the Endangerment Finding. Relying on the work of Dr. Chris Field, the co-chair of the Nobel Peace Prize-winning IPCC, and others, the Administrator reasonably concluded that "[c]limate change will constrain North America's overallocated water resources" and that "[r]ising temperatures will diminish snowpack and increase evaporation, affecting seasonal availability of water." TSD at 110 (JA XX-XX) (citing Chris Field et al., North America, Climate Change

2007: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Fourth Assessment Report of the IPCC [hereinafter “IPCC AR4”] (Martin L. Parry et al. eds., 2007)).

The record contains ample scientific support for the Administrator’s conclusion that “climate change has already altered, and will likely continue to alter, the water cycle, affecting where, when, and how much water is available for all uses” as a result of increased evaporation, diminished snowpack, impaired groundwater absorption capacity, drought, and excess salinization. 74 Fed. Reg. at 66,532. For example:

(1) “[S]treamflow . . . has decreased by about 2% per decade in the central Rocky Mountain region over the last century.” TSD at 110 (JA XX-XX) (citing Field, supra);

(2) “Since 1950, stream discharge in both the Colorado and Columbia river basins has decreased.” Id. (citing Field, supra);

(3) “The fraction of annual precipitation falling as rain (rather than snow) increased at 74% of the weather stations studied in the western mountains of the United States from 1949 to 2004.” Id. at 111 (citing Field, supra);

(4) “Spring and summer snow cover has . . . decreased in the U.S. West.” Id. (citing Field, supra);

(5) “Over the past 50 years, there have been widespread temperature-related reductions in snowpack in the West” *Id.* (citing Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences. A Report by the Climate Change Science Program and Subcommittee on Global Change Research (Thomas R. Karl et al. eds., 2006)); and

(6) “Runoff in snowmelt-dominated areas is occurring up to 20 days earlier or more in the West, and up to 14 days earlier in the Northeast.” *Id.* (citing Karl, supra).

These drastic alterations in the nation’s fresh water systems will negatively affect public health and welfare. As the Administrator explained, “[e]arlier meltings, with increased runoff in the winter and early spring, increase flood concerns and also result in substantially diminished summer flows.” 74 Fed. Reg. at 66,532. Such changes in snowpack and flow regime patterns “pose very serious risks to major population regions, such as California, that rely on snowmelt-dominated watershed for their water supply.” 74 Fed. Reg. at 66,532. Similarly, “[w]armer temperatures and decreasing precipitation in other parts of the country, such as the Southwest, can sustain and amplify drought impacts.” *Id.* Water-related impacts from climate change will not be limited to arid western states: “Even areas of the country where an increase in water flow is projected could face water resource problems from the supply and water quality problems associated

with temperature increases and precipitation variability, as well as the increased risk of serious adverse effects from extreme events, such as floods and drought.” Id. at 66,498, 66,665. Moreover, “[t]he severity of risks and impacts is likely to increase over time with accumulating greenhouse gas concentrations and associated temperature increases and precipitation changes.” Id.

Such profound changes in the nation’s access to fresh water supplies clearly endanger the public health and public welfare as defined in the Clean Air Act. See 42 U.S.C. § 7602(h) (defining cognizable endangerments to welfare to include “effects on” “water,” “weather,” “and climate,” “as well as effects on economic values and on personal comfort and well-being”). Faced with “increasing demand for adequate water supplies and services for agricultural, municipal, and energy and industrial uses, and the current strains on this resource in many parts of the country,” 74 Fed. Reg. at 66,532, the Administrator reasonably concluded that GHG-induced diminishment of our water supply — and its accompanying negative impacts on agriculture production and drinking water — will undoubtedly affect “economic values and personal comfort and well-being.” See, e.g., Scott R. Loarie, et al., The Velocity of Climate Change, 462 *Nature* 1052 (2009) available at <http://www.nature.com/nature/journal/v462/n7276/full/nature08649.html>; Tim Barnett et al., Human-Induced Changes in the Hydrology of the Western United States, 319 *Science* 1080, 1080-82 (2008) available at

<http://tenaya.ucsd.edu/~dettinge/barnett08.pdf> (concluding as EPA had that GHG emissions threaten to leave California at the whims of seasonally changing river flow and without sufficient water supply for personal or agricultural consumption); see also Felicity Barringer, Groundwater Depletion Is Detected from Space, N.Y. Times, May 31, 2011, at D1 (describing a recent study showing that “from October 2003 to March 2010, aquifers under [California’s] Central Valley were drawn down by 25 million acre-feet—almost enough to fill Lake Mead, the nation’s largest reservoir”). Because the Administrator’s finding that GHG emissions endanger public health and welfare bears a rational connection to the evidence in the record concerning the impacts that GHG emissions are inflicting the nation’s water supply, that finding should not be disturbed by the Court.

B. The Administrator’s Endangerment Finding Was Reasonable Given the Evidence that GHG Emissions Are Degrading America’s Water Quality.

The Administrator also found that GHG-caused climate change is causing “water pollution” and dramatic “changes in water quality” throughout the United States and is expected, based on the scientific evidence, to continue adversely affecting water quality. 74 Fed. Reg. at 66,532. The Administrator explained that GHG emissions and climate change will cause increased water quality contamination and lead to a proliferation of warm-water-borne pathogens that change and degrade existing aquatic ecosystems. *Id.* at 66,533. For instance,

increased evaporation of potable water due to higher air temperatures “exacerbates many forms of water pollution” by increasing concentrations of pathogens, pesticides, salt, and other contaminants in excess of current water quality standards. Id. at 66,532-33. Adding to these impacts, “increased incidence of extreme weather and floods may also overwhelm or damage water treatment and management systems, resulting in water quality impairments.” Id. at 66,533.

These changes to water quality led the Administrator to conclude that “[the total scientific literature provides compelling support for finding that greenhouse gas air pollution endangers the water resources important for public welfare in the United States, both for current and future generations.” 74 Fed. Reg. at 66,533. Indeed, “[t]he IPCC concluded with high confidence that higher water temperatures, increased precipitation intensity, and longer periods of low flows exacerbate many forms of water pollution and can impact ecosystems, human health, and water system reliability and operating costs.” Id. at 66,532.

The Administrator based her conclusion that GHG emissions degrade the quality of precious fresh water resources and negatively impact our ability to achieve existing water quality standards upon an extensive review of scientific literature. See TSD at 111-15 (JA XX-XX). The Administrator reasonably concluded that, although “most water quality changes observed so far in the United States are likely attributable to causes other than climate change,” TSD at 113, as

global warming accelerates, the impact on water quality will grow more pronounced. In fact, “water quality is sensitive to both increased water temperatures and changes in precipitation,” id., and “current water management practices are very likely to be inadequate to reduce the negative impacts of climate change on water supply reliability, flood risk, and aquatic ecosystems.” TSD at 111 (citing a leading expert on global hydrology, Zbigniew Kundzewicz, et al. Freshwater Resources and Their Management). As more GHGs are emitted, the “[p]ollutants of concern particularly relevant to climate change effects include sediment, nutrients, organic matter, pathogens, pesticides, salt, and thermal pollution,” all of which are deteriorating and will degrade water quality. TSD at 113 (citing Kundzewicz et al., supra).

As examples of these threats, the record before the Administrator contained significant evidence of ongoing and projected harm to public health and welfare:

(1) “In coastal areas, the increased salinization from intrusion of salt water is projected to have negative effects on the supply of fresh water.” 74 Fed. Reg. 66,532; see TSD at 114 (JA XX-XX) (“The direct influence of sea level rise on freshwater resources comes principally from seawater intrusion into surface waters and coastal aquifers [which] can have significant impacts on coastal populations relying on surface water or coastal aquifers for drinking water.”);

(2) “Increasing water temperature affects the self-purification capacity of rivers by reducing the amount of dissolved oxygen available for biodegradation,” TSD at 113-4, and is “likely to produce adverse changes in water quality affecting human health, ecosystems, and water uses[,] [because] [e]levated surface water temperatures will promote algal blooms and increases in bacteria and fungi levels[,] [and] . . . can also make some contaminants, such as ammonia, more toxic for some species and foster the growth of microbial pathogens in sources of drinking water.” Id. at 114;

(3) The above-mentioned reductions in water supply make water quality issues even worse, as more contaminants taint smaller amounts of water. TSD at 110 (JA XX-XX) (“In the Great Lakes and major river systems, lower [water] levels are likely to exacerbate challenges relating to water quality”) (citing Field, supra); see also id. at 114 (“Water pollution problems are exacerbated during low flow conditions where small water quantities result in less dilution and greater concentrations of pollutants.”); id. (“Lowering of the water levels in rivers and lakes can lead to re-suspension of bottom sediments and liberating compounds, with negative effects on water supplies. . . . [and] greater occurrence of toxins.”); and

(4) When precipitation does occur, the “[i]ncreases in intense rain events result in the introduction of more sediment, nutrients, pathogens, and toxics into

water bodies from non-point sources.” TSD at 114; id. (“More intense rainfall will lead to increases in suspended solids (turbidity) and pollutant levels in water bodies due to soil erosion.”). For example, these “[c]hanges in precipitation may increase nitrogen loads from rivers in the Chesapeake and Delaware Bay regions by up to 50% by 2030.” Id. at 115.

The Administrator’s finding thus relies on substantial evidence that GHG emissions cause a decline in water quality due to seawater intrusion, higher temperatures and the accompanying proliferation of toxic organic matter, increased evaporation, and greater runoff. Such rapid deterioration in the quality of America’s potable water sources endangers the public health and public welfare, 42 U.S.C. § 7602(h), by threatening to harm Americans’ physical health, personal comfort, and well-being. See Zbigniew Kundzewicz, Climate Change and Water (2008) (detailing the threats climate change poses to water quality). Leading studies issued after the Administrator’s Endangerment Finding are consistent her conclusions about water quality impacts. See Nat’l Academy of Sci., Warming World: Impacts By Degree 28 (2011) available at http://dels.nas.edu/resources/static-assets/materials-based-on-reports/booklets/warming_world_final.pdf (“Intensified rainfall will challenge drainage systems and boost the risk of water contamination.”); Paul Whitehead et al., A Review of the Potential Impacts of Climate Change on Surface Water

Quality, 54 Hydrological Sciences Journal 101 (2009) available at
<http://www.jlakes.org/web/climatechange-vs-surfacewaterquality-hsj2009.pdf>

(explaining the dramatic and escalating consequences GHG emissions have on water quality). The Administrator's finding that GHG emissions endanger public health and welfare is well supported and bears far more than a rational connection to the evidence in the record.

II. THE EPA'S EVALUATION OF THE SCIENTIFIC RECORD WAS REASONABLE, ACCURATE, AND FULLY SUPPORTED BY CURRENT CLIMATE SCIENCE EVIDENCE

Petitioners' mischaracterization of the scientific record on climate change is a continuation of major GHG emitters' assault on science, and a troubling indication of the threat to scientific integrity in high-stakes policy making. The best environmental policy decisions have a basis in robust scientific evidence. Congress tasks such regulatory authority to a specialized agency like the EPA for precisely that purpose. Precautionary regulation based on scientific findings is even more important in the climate context: since the Earth's climate systems are non-linear, we must address human impacts as soon as possible. See National Academy of Sciences (NAS), *America's Climate Choices* 29-30 (2011), available at http://www.nap.edu/catalog.php?record_id=12781. Once climate change progresses to a point where predicted catastrophic effects take hold, the long term impact to the Earth's climate and human welfare may already be irreversible. See

Intergovernmental Panel on Climate Change (IPCC), Climate Change 2007: Synthesis Report 46 (2007) (JA XX-XX).

One of the great strengths of scientific knowledge is its ability to continually self-correct to better describe reality. No scientific conclusion is ever completely irrefutable, and scientific knowledge is continually debated and revised. However, lack of absolute certainty is not an excuse for overturning an agency finding. The nature of scientific inquiry rarely, if ever, eliminates all uncertainties. Petitioners systematic inflation of minor uncertainties that do not alter our understanding of the climate system should not obscure the core conclusions of the world's scientists. Nor should their claim that these uncertainties are a reason to abandon decades of scientific effort – especially when those scientific efforts systematically account for these uncertainties – be given credence. We cannot gamble our public health and welfare upon minor uncertainties that neither alter our understanding of the climate system nor undermine in any serious way EPA's determination.

The scientific consensus, simply put, is that the adverse impacts of climate change on public health and welfare are certain, predictable, and harmful, and that these impacts are expected to intensify as the Earth warms. America's Climate Choices at 15-24. Amici submit this brief to underscore the robustness of the scientific evidence on climate change and the consensus of the world's leading scientific bodies that anthropogenic GHGs are the chief driver of the observed

global warming that threatens to endanger public health and well-being, and the urgency with which we must act to prevent climate-related public harms.

A. The Scientific Evidence Relied On In The EPA's Endangerment Finding Is Robust

The allegations presented by Petitioners and supporting parties, taken individually or as a whole, do not succeed in undermining, or casting any doubt on the EPA findings. The Clean Air Act requires the EPA to prescribe standards for the emission of air pollutants from any class of new motor vehicles which, in the Administrator's judgment "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."¹ There is inarguably a "rational connection" between the Administrator's finding of endangerment and the overwhelming evidence EPA weighed regarding the harmful effects of GHG emissions on America's public health and welfare. See supra at p. 3-4.

The Petitioners seem to demand instead an impossible standard – requiring the EPA to provide a perfect and complete understanding of every aspect of the

¹ 42 U.S.C. § 7521(a). The 1977 Clean Air Act Amendments, changed this language from "will endanger" to "may reasonably be anticipated to endanger," explicitly to account for "the limitations on research resources and the fact that decisionmaking about the risks to public health from air pollution falls on 'the frontiers of scientific and medical knowledge.'" H.R. Rep. No. 95-294, at 50; 42 U.S.C. § 7521(a)(1) (amended by Pub. L. No. 95-95 § 401, 91 Stat. 685, 791 (1977)).

climate system and a detailed, exact specification of what damages will result from rising atmospheric concentrations of GHGs -- all with no uncertainty ranges. However, such a requirement “would compel EPA to leave hazardous pollutants unregulated unless and until it completely understands every risk they pose, thus thwarting the Clean Air Act’s requirement that the Agency err on the side of caution.” Am. Trucking Ass’ns, Inc. v. EPA, 283 F.3d 355, 370 (D.C. Cir. 2002). If this flawed approach had been followed by EPA in the past, EPA would not have achieved some of its most notable public health successes. See Section III, infra at p. 19-22.

EPA has been thorough in its consideration of the available scientific evidence making an informed, well documented judgment based on the best science available, and it examined the most comprehensive studies on climate change available: the Fourth IPCC Assessment Report, the USGCRP report Global Climate Change Impacts in the United States, NRC reports, as well as various other governmental sources. See 74 Fed. Reg. at 66,510.

B. Numerous Independent Scientific Analyses Have Corroborated That Global Temperatures Are Rising

EPA analyzed numerous sources of independent scientific inquiry that support its conclusion that global average surface temperature is rising, posing severe risks for public health and well-being. EPA based its decision on NASA,

NOAA, and Hadley CRU temperature records that each used different methodologies; and, all three datasets show consistent warming. RTP § 1.3.5 (JA XX-XX); TSD 23-44 (JA XX-XX). In addition, the data record concerns continually raised by Petitioners and supporting parties have already been thoroughly addressed by the TSD, the Response to Comments (RTC), and the Response to Petitions to Reconsider Endangerment Finding (RTP), including, e.g., the scientific validity of error corrections in raw temperature data from diverse data collection sites (RTP § 1.3, 1.4) (JA XX-XX), and the use of satellite temperature data (RTP § 1.5.7) (JA XX-XX).

Petitioners have failed to cast doubt on the EPA finding, and EPA has provided ample evidence supporting the warming trend. Weather balloon temperature data and satellite data provide corroborating temperature measurements. RTP § 1.3.5 (JA XX-XX). Moreover, warming of the Earth's oceans and rise of sea levels, TSD 35-37 (JA XX-XX), receding glaciers worldwide, reductions in polar ice cap area, *id.*, and major changes in the location and behavior of biological systems, TSD 38-41, all provide strong evidence of a warming planet.

C. The Scientific Framework Underlying EPA's Determination Is Well-Established

Petitioners also allege that current climate models are inaccurate, and that natural variability (such as variability in solar activity, volcanic activity, and global ocean current cycles such as El Niño) can account for the observed planetary warming. This is simply not the case. During the last 50 years, the solar and volcanic activity (to which Petitioners attribute observed warming) on the climate would likely (>66% probability) have produced, all else being equal, a net cooling effect.

While natural activities undoubtedly have an effect on global average temperatures, there is a clear detectable component in the global temperature record that is caused by anthropogenic GHGs. See TSD 47-54 (JA XX-XX). The IPCC and other survey assessments do in fact take into account the many anthropogenic and natural climate forcing components, such as solar forcings, the cloud and surface albedo effects, tropospheric and stratospheric ozone, etc. IPCC AR4 Synthesis Report at 39 (JA XX-XX). The Fourth IPCC Assessment report states that “Most of the observed increase in global average temperatures since the mid-20th century is very likely [>90% probability] due to the observed increase in anthropogenic GHG concentrations.” IPCC AR4 Synthesis Report at 27, 39 (JA XX-XX). The scientific knowledge gained since the Third IPCC Assessment

Report has only increased the IPCC's certainty. Id. Moreover, according to the NOAA, NASA, and Hadley CRU temperature records, the eight warmest years on record have occurred since 2001. RTP § 1.3.5 (JA XX-XX).

The EPA has concentrated on good science, relying on decades of epistemologically conservative, peer reviewed scientific studies to come to its decision. EPA has addressed every question raised by Petitioners in their myriad challenges, and none has undermined the robust physical understanding of the climate system that is nearly universally agreed upon by climate scientists and scientific organizations.

III. GOOD SCIENCE IS ESSENTIAL TO SOUND DECISION-MAKING AND EPA HAS ROUTINELY RELIED UPON INDEPENDENT SCIENTIFIC ANALYSIS.

Independent science has historically supported EPA's greatest regulatory successes. The Petitioners challenge EPA's reliance on independent scientific analyses such as those done by the IPCC. This criticism is misplaced. EPA has relied on credible independent scientific reports since its inception, and this reliance has helped EPA protect the public and fulfill its statutory mandates. Amici present below just one of the myriad instances where EPA has relied on such evidence: the elimination of ozone-depleting substances.

In 1993, EPA adopted a regulation to phase out production of certain ozone-depleting substances. See 58 Fed. Reg. 65,018 (Dec. 10, 1993). EPA relied, inter

alia, on a major report of an international scientific panel, the Scientific Assessment of Ozone Depletion (“SAOD”), produced under the auspices of the World Meteorological Organization (“WMO”) and United Nations Environment Program. The report presented evidence of increasing accumulation of chlorofluorocarbons (“CFCs”) in the stratosphere and predicted a nine percent reduction of the ozone layer after 2050. See WMO, Atmospheric Ozone 1985: Assessment of our Understanding of the Processes Controlling its Present Distribution and Change 786-87 (1985).

Relying in part on this international report, by 1987, the United States and other nations negotiated and signed the Montreal Protocol, which required all signatories to freeze and then reduce the production and consumption of a certain ozone-depleting substances. See Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, S. Treaty Doc. No. 100-10, 1522 U.N.T.S. 3 (entered into force Jan. 1, 1989). In 1990, the parties to the Montreal Protocol revised it to require a phase-out of ozone-depleting substances.

EPA phased out ozone-depleting substances on a faster timetable than mandated by the Montreal Protocol. See 58 Fed. Reg. 65,018 (Dec. 10, 1993). EPA acted upon available scientific evidence despite the fact that atmospheric ozone research is extraordinarily difficult to conduct: the ozone layer fluctuates seasonally and has differing chemical constituents in different concentrations

depending upon altitude and latitude. The 1985 SAOD report represented a scientific consensus regarding the cause of ozone depletion; yet skeptics remained, and scientists continued to refine their understanding of ozone depletion over time. Though the science remained unsettled on a variety of aspects of ozone depletion, by 1985 seasonal ozone loss had sharply accelerated to the point where a “hole” of significantly decreased ozone levels in the stratosphere had grown to cover an area the size of the United States. See WMO SAOD (2010).

Despite some scientific uncertainty, the Administrator exercised his judgment and—relying on the scientific consensus—regulated ozone depleting substances to protect public health. As the consensus view of the international scientific community continued to solidify, EPA required the phase-out of the production of certain ozone-depleting substances. President Bush announced that the United States would require a complete phase-out by January 1, 1996. See David E. Gushee, Congressional Research Service, Stratospheric Ozone Depletion: Regulatory Issues, available at <http://ncsconline.org/NLE/CRs/abstract.cfm?NLEid=1038>.

EPA properly exercised its judgment and regulatory authority —supported by research from the international scientific community— to respond to emerging and credible scientific evidence of a public health threat, despite remaining uncertainties and some contradictory evidence. Since EPA’s action, the dire

consequences associated with the ozone hole have been avoided. The most recent SAOD report observes that “The Montreal Protocol is working, and the ozone-layer depletion from the Protocol’s controlled substances is expected to begin to ameliorate within the next decade or so.” Executive Summary, SAOD, available at <ftp://ftp.nilu.no/pub/NILU/geir/assessment-2006/01%20FrontMatter.pdf>.

EPA’s actions regulating ozone-depleting substances demonstrate the normalcy, legitimacy and importance of relying on outside scientific bodies that represent the scientific consensus and uphold the highest standards of scientific integrity to regulate to protect the public health and welfare. This example also illustrates that EPA’s reliance on the research of the scientific community is essential to EPA’s fulfilling of its statutory mandates, and to protection of public health generally.² In this and many other areas where EPA has acted, the scientific discourse is not now—and will likely never be—completely settled on every point. It is the nature of the scientific process to evaluate skeptically and test even the most seemingly established or irrefutable premises, and no protections for public health and the environment could ever be put in place if certainty were a prerequisite. EPA’s actions here are supported by basic understandings about the

² Further examples of EPA’s reliance on independent science abound in EPA’s regulation of other air pollutants. See 40 C.F.R. §§ 50.4-50.12 (2009); 61 Fed. Reg. 25,567 (May 22, 1996); 71 Fed. Reg. 61,144 (Oct. 17, 2006); 69 Fed. Reg. 45,593 (July 30, 2004); 50 Fed. Reg. 37484 (Sept. 13, 1985).

nature and causes of climate change that have the support of an overwhelming scientific consensus.

IV. THE EUROPEAN UNION'S ANALYSIS AND REGULATION OF THE IMPACTS OF GREENHOUSE GASES MIRRORS AND SUPPORTS EPA'S ENDANGERMENT FINDING

The negative impacts of climate change are global. Europe's leading scientific authorities have reached conclusions that are similar to those underpinning the EPA's Endangerment Finding: GHG emissions cause detrimental impacts in Europe, including rising sea levels, ocean acidification, increases in severe storms and weather, and spread of disease. These international impacts exacerbate the impacts on the United States and strengthen the EPA's Endangerment Finding.

In counterpoint to the Petitioners' characterization of greenhouse gas regulations as "costly," "burdensome," and "onerous," the European Union ("EU"), the world's largest developed economy, has reduced its GHG emissions and adopted a program of continued regulations and reductions while maintaining the world's largest market economy. In fact, the EU views the transition to a reduced-carbon economy as a source of substantial economic growth.

A. The European Union And The United States.

The European Union is an economic and political association of 27 member nations from the continent of Europe.³ The EU functions as a common market, with a free flow of goods and services between its members pursuant to a common currency, the Euro.⁴ The EU and the United States have comparable economic systems and are historic allies on economic, security, and environmental matters.⁵

The EU and the United States are the world's largest developed economies. In 2010 the EU Gross Domestic Product (GDP) was approximately \$17.45 trillion; the United States GDP was \$15.22 trillion.⁶ The EU began regulating GHGs in 2005 pursuant to the Kyoto Protocol and its flagship climate policy, an emissions trading system.

³ European Union, Key Facts and Figures About Europe, at 5 (2007), available at http://ec.europa.eu/publications/booklets/eu_glance/66/en.pdf.

⁴ Id.

⁵ EU Focus, "The European Union and the United States: A Long-Standing Partnership" (Dec. 2010), available at <http://www.eurunion.org/eu/images/stories/eufocus-eu-usrels-dec-2010.pdf>.

⁶ International Monetary Fund, World Economic Outlook Database, April 2011 Edition, available at <http://www.imf.org/external/pubs/ft/weo/2011/01/weodata/index.aspx>.

The EU population is about 500 million people, third in the world behind China and India.⁷ The EU is the world's third largest emitter of carbon dioxide and other GHGs, behind China and the United States.⁸

Both the United States and the EU have ratified the United Nations Framework Convention on Climate Change.⁹ This Convention recognizes that the climate system is a shared resource whose stability can be affected by GHG emissions.¹⁰ At the most recent annual Conference of the Parties to promote the effective implementation of the Convention, held in December 2010, the Parties officially adopted the goal of limiting the increase in global average temperature to two degrees Celsius above pre-industrial levels (approximately 3.6 degrees Fahrenheit).¹¹

B. European Scientific Authorities Have Concluded That GHGS Cause Similar Detrimental Impacts On Europe Supporting EPA's Assessment Of Impacts And Its Endangerment Finding.

The United States National Academy of Sciences recently concluded that:

⁷ Key Facts and Figures About Europe, at 11.

⁸ International Energy Agency, CO2 Emissions From Fossil Fuel Combustion, Highlights, at 44, 46 (2010 ed.); National Academy of Science, Understanding and Responding to Climate Change, at 23, fig. 15 (2008).

⁹ UN Framework Convention on Climate Change, available at http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php.

¹⁰ Id.

¹¹ The Cancun Agreement, Section I, ¶ 4, available at http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf.

[a] strong, credible body of scientific evidence shows that climate change is occurring, is caused largely by human activities, and poses significant risks for a broad range of human and natural ecosystems.¹²

EPA relied on previous National Academy reports, as well as the IPCC and the U.S. Global Climate Research Program, in its finding that GHGs endanger human health and welfare. These conclusions also are supported by many eminent European scientific organizations, including the European Academy of Sciences and Arts, the European Science Foundation, and the Royal Society of the United Kingdom.¹³

For example, the Royal Society concluded:

There is strong evidence that changes in greenhouse gas concentrations due to human activity are the dominant cause of the global warming that has taken place over the last half century. This warming trend is expected to continue as are changes in precipitation over the long term in many regions. Further and more rapid increases in sea level are likely which will have profound implications for coastal communities and ecosystems.¹⁴

¹² National Research Council (NRC) (2010), Advancing the Science of Climate Change, National Academy Press, Washington, D.C., EPA HQ OAR-2009-0171-12091; 75 Fed. Reg. 49,556, 49,558 (Aug. 13, 2010).

¹³ European Academy of Sciences and Arts, Let's Be Honest, (March 3, 2007), available at <http://www.euro-acad.eu/downloads/memorandas/>; European Science Foundation, Impacts of Climate Change on the European Marine and Coastal Environment-Ecosystems Approach, (March 17, 2007), available at <http://www.esf.org/publications/>; Royal Society of the United Kingdom, Climate change: a summary of the science, (Sept. 2010), available at <http://royalsociety.org/climate-change-summary-of-science/>.

¹⁴ Climate Change: a summary of the science, at 13.

Similarly, the European Science Foundation has stated:

The scientific evidence is now overwhelming that climate change is a serious global threat which requires an urgent global response, and that climate change is driven by human activity.¹⁵

The U.S. National Academy noted that the Earth already is 1.4 degrees Fahrenheit warmer than it was 100 years ago, and that projections of future additional warming range from 2.0 to 11.5 degrees Fahrenheit.¹⁶ The negative impacts of increasing GHG concentrations and worldwide temperatures include melting ice caps, rising sea levels, increases in intense storms, more frequent and intense heat waves, ocean acidification, and spread of diseases.¹⁷

The EPA relied on these significant, detrimental impacts to human health and welfare to find that GHG pollution endangers human health and welfare in the United States, and considered international impacts as providing additional support for this finding. 74 Fed. Reg. 66,496, 66,497-98, 66,535 (Dec. 15, 2009). In particular, the EPA found that the evidence concerning adverse impacts in the United States in the areas of water resources, sea level rise, and coastal areas provided the “clearest and strongest” support for an endangerment finding, 74 Fed. Reg. at 66,498, and that impacts from ocean acidification and temperature

¹⁵ Impacts of Climate Change on the European Marine and Coastal Environment, at 6.

¹⁶ NAS, Advancing the Science of Climate Change, at 2.

¹⁷ Id. at 1-2.

increases, increased storms, and greater spread and rates of disease were all significant. *Id.* at 66,525, 66,534.

Leading scientific assessments of the impacts of climate change on Europe's approximately five hundred millions citizens are similar to and strengthen the EPA's assessments of these impacts on U.S. citizens.

Like Florida and New York City, several European nations and cities are acutely vulnerable to rising sea levels. Twenty-six percent of the Netherlands is below sea level, and one-half of this country lies within one meter of sea level.¹⁸ London is susceptible to flooding from tidal surges up the Thames River, and has built the massive Thames Barrier to minimize this risk. Climate change "will have a major impact on the tidal flooding threat" London faces because "[t]he rising sea levels will steadily reduce the level of protection the[se] defenses offer..."¹⁹

Second, like American coastal regions, fish and shellfish are staples of the European food supply from the Mediterranean to the North Sea, and the EU total

¹⁸ Netherlands Environmental Assessment Agency, Assessing the IPCC Assessment, at Annex C (2010), available at http://www2.lse.ac.uk/CATS/publications/papersPDFs/82_Petersen_IPCCreport.pdf.

¹⁹ London Regional Flood Risk Appraisal, at ¶ 46 (October 2009), available at <http://legacy.london.gov.uk/mayor/strategies/sds/docs/regional-flood-risk09.pdf>.

catch of seafood ranks third in world, slightly ahead of the United States.²⁰ Increased carbon dioxide concentrations in the atmosphere lead to increasingly acidic oceans that are deadly to sea life, thereby threatening this seafood bounty in Europe and throughout the world.²¹ Impacts of ocean acidification may be just as dramatic as those of global warming, and the combination of both is likely to exacerbate consequences, resulting in potentially profound changes throughout marine ecosystems, and the environmental and socio-economic services that they provide to humankind.²²

Finally, increased temperatures will adversely affect human health by bringing greater range and duration of insects such as mosquitoes and flies, food and water contamination, and more powerful storms. The negative effects of climate change on human health in Europe include increased summer heat-related

²⁰ European Community, Facts and Figures on the Common Fisheries Policy, at 13, 16 (2010 edition), available at http://ec.europa.eu/fisheries/documentation/publications/pcp_en.pdf.

²¹ European Science Foundation, Position Paper 37, Impacts of Ocean Acidification, at 1 (August 2009), available at <http://www.esf.org/publications/science-policy-briefings.html>.

²² Id. at 2.

mortality, increases in vector-borne, water-borne, and food-borne illnesses, and increased mortality from storms and floods.²³

The impacts of climate change are global. GHG emissions remain in the atmosphere for long timeframes, contribute to detrimental impacts far from their source, and exemplify transboundary environmental harm. The European impacts described above exacerbate the impacts on the United States due to the interconnections between natural systems and economies, and provide additional support for the EPA's assessments of impacts in the United States and its Endangerment Finding.²⁴

C. The European Union Has Regulated And Reduced GHG Emissions And Will Continue To Do So.

Contrary to the Petitioners' characterizations of GHG regulations as "burdensome," and "onerous," the EU has moved forward with GHG regulations

²³ European Community, Joint Research Centre Institute for Prospective Technical Studies, Climate Change Impacts in Europe, at 71 (2009), available at <http://ftp.jrc.es/EURdoc/JRC55391.pdf>.

²⁴ See generally, Sir Nicholas Stern, The Economics of Climate Change, review prepared for the Prime Minister and Chancellor of the Exchequer, executive summary (2006) (describing the interconnected global physical and economic impacts of climate change), available at <http://webarchive.nationalarchives.gov.uk/+https://www.hm-treasury.gov.uk/sternreview-index.htm>.

and reductions while maintaining the world's largest market economy.²⁵ The EU has ratified and executed the Kyoto Protocol, implemented an emissions trading system, and adopted a program of further emissions reductions and other actions known as the 20-20-20 plan.²⁶

The Kyoto Protocol required the EU to reduce its greenhouse gas emissions by 8% during the 2008-2012 period, compared to the base year of 1990.²⁷ The EU has implemented an emissions trading system that sets an annual cap for GHG emissions for major industries, and reduces that cap every year. The EU is on track to meet its Kyoto reduction commitments.²⁸

The EU also has adopted a program of further emissions reductions and other steps to address climate change during the period from 2013 to 2020.²⁹ This 20-20-20 program has three primary components:

²⁵ The EPA correctly did not consider economic issues in its Endangerment Finding, 74 Fed. Reg. at 66,515-516; the Petitioners' misguided attention to this issue is legally as well as factually erroneous.

²⁶ European Commission, EU Action Against Climate Change, at 9 (2009), available at http://ec.europa.eu/clima/publications/docs/post_2012_en.pdf.

²⁷ European Commission, Combating Climate Change, at 10 (2007), available at <http://ec.europa.eu/publications/booklets/move/70/en.pdf>.

²⁸ *Id.* at 10-12.

²⁹ European Commission, EU Action Against Climate Change, at 10.

- (1) reduce GHG emissions by 20%, compared to 1990 levels, including reduced emissions from motor vehicles, other transportation sources, and stationary sources such as power plants;
- (2) reduce energy consumption by 20%, mainly through greater energy efficiency; and
- (3) increase renewable energy to 20% of the energy market.³⁰

In adopting this 20-20-20 program, the EU determined that:

making the deep cuts necessary to avert dangerous climate change is fully compatible with continued economic growth and prosperity. . . The investment that the package requires will stimulate Europe's economy, jobs, and innovation in the short to medium term while laying the basis for a more sustainable, lower-carbon economy in the long run.³¹

As to whether GHG regulations and reductions are burdensome or onerous,

the EU has concluded:

The shift toward a low-carbon economy is a huge opportunity for business, especially in terms of technological innovation, which can drive economic growth and the creation of new jobs. . . Europe is determined to take full advantage of this opportunity.³²

In addition to jobs and "huge opportunities" for businesses, the EU has identified two further significant benefits from its reductions in GHG emissions.

³⁰ Id. at 9.

³¹ Id. at 10.

³² Id. at 8.

First, these actions increase the EU's energy security and economic competitiveness.³³ Second, reducing GHG emissions reduces other air pollution, which will reduce health care costs by at least 27 billion Euro per year (about \$36 billion), and reduce other pollution control costs by 11 billion Euro per year (about \$16.5 billion), for a total cost savings of over \$50 billion per year.³⁴

Finally, the EU has recognized that the costs of doing nothing to limit GHG emissions far outweigh any costs of GHG reductions. Multiple studies have concluded that, in addition to all of the impacts to public health and welfare, climate change could cut annual global GDP by 5% to 20% or more -- a severe impact on all of the world's, including the U.S. and the EU.³⁵ While there is inevitable uncertainty in such estimates, there is little doubt that the substantial impacts of climate change will impose huge global strains if the problem is permitted to build unabated. Thus, reducing GHG emissions is "the pro-growth strategy for the long-term,"³⁶ whereas doing nothing is a recipe for worldwide upheaval.

GHG pollution and climate change cause significant impacts to the United States, Europe, and all of the world's citizens. The impacts of climate change on

³³ *Id.* at 16.

³⁴ *Id.* at 17.

³⁵ *Id.* at 7.

³⁶ *Id.*

Europe are similar to the impacts on the United States, and Europe's leading scientific authorities have reached similar conclusions to those underpinning EPA's Endangerment Finding, thus supporting that Finding. The EU is regulating and reducing greenhouse gas emissions while maintaining the world's largest developed market economy, and has concluded that these regulations and reductions present huge opportunities for businesses and job creation.

CONCLUSION

For all of the foregoing reasons, the Petitions for Review should be denied.

Respectfully submitted,

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**AMICI'S CERTIFICATE OF COMPLIANCE WITH
WORD LIMITATION AND TYPEFACE REQUIREMENTS**

Amici America's Great Waters Coalition, Union of Concerned Scientists, and ClientEarth, hereby represent that this brief complies with the type-volume limitation of Fed. R. App. P. 32(a)(7)(B) and the briefing format adopted by the Court for this case because it contains 6,984 words, as counted by Microsoft Word, excluding the signature block and the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii), and that it complies with the typeface and type style requirements of Fed. R. App. P. 32(a)(5) and 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Word in Times New Roman 14-point type.

DATED: August 30, 2011

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**STATEMENT OF AUTHORSHIP AND
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No party's counsel authored this brief in whole or in part. No party or party's counsel contributed money that was intended to fund preparing or submitting this brief. No person, other than the amicus curiae, its members, or its counsel, contributed money that was intended to fund preparing or submitting this brief.

DATED: August 30, 2011 /s/ Susan Kraham
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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Corrected Brief for Amici have been served through the Court's CM/ECF system on all registered counsel this 30th day of August, 2011.

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