

**BEFORE THE ADMINISTRATOR OF THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY**

INTERNATIONAL CENTER FOR)
TECHNOLOGY ASSESSMENT,)
310 D Street, N.E.)
Washington, DC 20002, *et al.*,)
)
) *Petitioners,*)
)
) vs.)
) Docket No.)
)
HON. CAROL BROWNER,)
in her official capacity as,)
Administrator of the United States)
Environmental Protection Agency)
401 M Street, S.W.)
Room W1200)
Washington, DC 20460,)
)
)
) *Defendant.*)
_____)

**PETITION FOR RULEMAKING AND COLLATERAL RELIEF
SEEKING THE REGULATION OF GREENHOUSE GAS EMISSIONS
FROM NEW MOTOR VEHICLES UNDER
§ 202 OF THE CLEAN AIR ACT**

Pursuant to the Right to Petition Government Clause contained in the First Amendment of the United States Constitution,¹ the Administrative Procedure Act,² the Clean Air Act,³ and the Environmental Protection Agency (EPA) implementing regulations, petitioners file this Petition for Rulemaking and Collateral Relief with the Administrator and respectfully requests her to

undertake the following mandatory duties:

- (1). Regulate the emissions of carbon dioxide (CO₂) from new motor vehicles and new motor vehicle engines under ? 202(a)(1) of the Clean Air Act;
- (2). Regulate the emissions of methane (CH₄) from new motor vehicles and new motor vehicle engines under ? 202(a)(1) of the Clean Air Act;
- (3). Regulate the emissions of nitrous oxide (N₂O) from new motor vehicles and new motor vehicle engines under ? 202(a)(1) of the Clean Air Act;
- (4). Regulate the emissions of hydrofluorocarbons (HFCs) from new motor vehicles and new motor vehicle engines under ? 202(a)(1) of the Clean Air Act;

PETITIONERS

Petitioner *International Center for Technology Assessment*(CTA) is located at 310 D Street, N.E., Washington, DC 20002. Formed in 1994, CTA seeks to assist the public and policy makers in better understanding how technology affects society. CTA is a non-profit organization devoted to analyzing the economic, environmental, ethical, political and social impacts that can result from the application of technology or technological systems.

Petitioner *Alliance for Sustainable Communities* is located at 2041 Shore Drive, Edgewater, MD 21037. The Alliance was formed five years ago in order to bring together representatives of government at all levels, citizens and innovators to develop projects which express the primary relationship between people and the earth.

Petitioner *Applied Power Technologies, Inc.* (APT) is located at 357 Imperial Blvd., Cape Canaveral, FL 32920-4219. APT is a research & development concern bringing new energy conversion systems to the air-conditioning industry on

behalf of the natural gas industry. APT will advent the deregulation and decentralization of power production by producing nearly pollution-free air-conditioning, refrigeration and related appliances which will convert clean natural gas into electric offsetting heat energy on-site of actual end usage.

Petitioner *Bio Fuels America* is located at 28 Lorin Dee Drive, Westerlo, NY 12193. Bio Fuels America is a not for profit, self funded, advocacy group that promotes renewable energies such as wind, sun and biomass.

Petitioner *The California Solar Energy Industries Association* (CAL SEIA) is located at 23120 Alicia Parkway, Ste. 107, Mission Viejo, CA 92692. CAL SEIA is a solar industry trade association with 70 member companies who do business in California. CAL SEIA's members include manufacturers of both solar thermal and photovoltaic technologies, as well as distributors, contractors, architects, engineers and utilities.

Petitioner *Clements Environmental Corporation* is located at 3607 Seneca Avenue, Los Angeles, CA 90039. Clements Environmental Corp. is a small environmental engineering firm specializing in the conversion of Municipal Solid Waste and other waste organics to biofuels and biochemicals.

Petitioner *The Earth Day Network* is located at Earth Day Network, Earth Day 2000, 91 Marion Street, Seattle, WA 98104, USA The Earth Day Network is a global alliance of environmental organizations. Under the banner "Clean Energy Now!", EDN is promoting a dramatic increase in energy efficiency and a rapid transition to renewable energy and away from reliance on coal and oil. The organization intends to use Earth Day 2000 to marshal 500 million people around the world to support policies that improve the environment and reverse global warming.

Petitioner *Environmental Advocates* is located at 353 Hamilton Street, Albany, NY 12210. Environmental Advocates serves the people of New York as an effective and aggressive watchdog and advocate on virtually every important state environmental issue. Through advocacy, coalition building, citizen education and policy development, we work to safeguard public health and preserve our unique natural heritage. With thousands of individual supporters and over 130 organizational members, Environmental Advocates is truly the voice of New York's environmental community.

Petitioner *Environmental and Energy Study Institute (EESI)* is located at 122 C St. NW, Suite 700, Washington, D.C. 20001. EESI is a non-profit organization founded in 1982 by a bipartisan group of Members of Congress. EESI promotes public policy that sustains people, the environment and our natural resources. EESI's wide-ranging audience includes Congress and other national policymakers, as well as state and local officials, industry leaders, the public interest community, the media, and the general public. EESI draws together timely information, innovative public policy proposals, policymakers, and stakeholders to seek solutions to environmental and energy problems.

Petitioner *Friends of the Earth* is located at 1025 Vermont Ave., NW, Suite 300, Washington, DC 20005. Friends of the Earth is a national environmental organization dedicated to preserving the health and diversity of the planet for future generations. As the largest international environmental network in the world with affiliates in 63 countries, Friends of the Earth empowers citizens to have an influential voice in decisions affecting their environment.

Petitioner *Full Circle Energy Project, Inc.* is located at 6 Brooklawn Road, Wilbraham, MA 01095-2002. Full Circle Energy Project, Inc. is a non-profit organization founded to enable environmentally sensible and sustainable energy resources to supply at least 50% of the total energy used in the United States. Its primary focus is on reducing the amount of fossil fuels used by the transportation sector.

Petitioner *The Green Party of Rhode Island* is located in Providence, RI. The Green Party of RI is a part of the international Green Party movement. In Rhode Island it has run candidates for a variety of offices, always focusing on environmental issues as well as justice, non violence, and democracy issues.

Petitioner *Greenpeace USA* is located at 1436 U Street, NW, Washington, DC 20009. Greenpeace is one of the world's major environmental organizations with offices in 33 countries, including the United States of America, and over 3 million donating supporters worldwide. Greenpeace is a non-profit organization devoted to the protection of the environment with an emphasis on global environmental problems such as climate change and protection of the stratospheric ozone layer, prevention of nuclear, chemical and biological pollution, and defense of biodiversity.

Petitioner *National Environmental Trust (NET)* is located at 1200 18th Street, NW, 5th Floor, Washington, DC 20036. NET was established in 1994 to help move specific environmental issues, ripe for action, into the public spotlight. Through use of opinion research, media relations, a grassroots network and government relations, NET has helped to advance policies which protect the environment in each of its campaign areas: global warming, clean air, forests protection and children's environmental health.

Petitioner *Network for Environmental and Economic Responsibility of the United Church of Christ*, Washington Office, 1820 Sanford Road, Wheaton, MD 20902-4008. The Network for Environmental and Economic Responsibility (NEER) is a grassroots, volunteer movement committed to mobilizing UCC persons, networks and resources for a holistic ministry of learning, reflection, and action cognizant of the earth and its creatures. Network members believe that all living things on our planet are interdependent in a vast web of life.

Petitioner *New Jersey Environmental Watch* is located c/o St. John's Church, 61 Broad Street, Elizabeth, NJ 07201. New Jersey Environmental Watch is a church based organization in New Jersey that seeks better air in their area and elsewhere. Recently, it recorded 40 percent of our Sunday School children had been hospitalized for asthma. It is also in cancer alley and have greatly elevated cancer rates. The 14-lane New Jersey Turnpike passes through Elizabeth, NJ the bottom 40 percent of the Newark Airport is located there as well, and Elizabeth is immediately downwind of the huge Bayway Tosco refinery in Linden.

Petitioner *New Mexico Solar Energy Association (NMSEA)* is located at P.O. Box 8507 Santa Fe, NM 87505. NMSEA is an all volunteer organization working to further solar and related arts, sciences, and technologies with concern for the ecologic, social and economic fabric of the region. It serves to inform public, institutional and government bodies and seeks to raise the level of public awareness of these purposes.

Petitioner *Public Citizen* is located at 215 Pennsylvania Ave., SE, Washington, DC 20003. Public Citizen, founded by Ralph Nader in 1971, is a non-profit research, lobbying, and litigation organization based in Washington, DC. Public Citizen advocates for consumer protection and for government and

corporate accountability, and is supported by over 150,000 members throughout the United States.

Petitioner *Solar Energy Industries Association (SEIA)* is located at 1111 North 19th Street, Suite 260, Arlington, VA 22209. The Solar Energy industries Association (SEIA), founded in 1974, is the U.S. industry organization composed of over 150 solar-electric and solar thermal manufacturers, component suppliers, national distributors and project developers, and an additional 400 companies in the SEIA--affiliated state and regional chapters covering 35 states.

Petitioner *The SUN DAY Campaign* is located at 315 Circle Avenue, Suite #2, Takoma Park, MD 20912-4836. The SUN DAY Campaign is a non-profit network of 850+ businesses and organizations founded in 1991 to promote increased use of renewable energy and energy efficient technologies. Areas of work include research on sustainable energy technologies, electric utility restructuring, climate change, and the federal energy budget. Projects include publication of a weekly newsletter, an annual series of directories of sustainable energy organizations, and other studies.

STATEMENT OF LAW

Clean Air Act, Section 302(g), 42 U.S.C. ? 7602(g):

The term "air pollutant" means any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters ambient air. Such term includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term "air pollutant" is used.

Clean Air Act, Section 202(a)(1), 42 U.S.C. ? 7521(a)(1):

The Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant from any

class or classes of new motor vehicle or new motor vehicle engine, which in his judgment cause, or contribute to, air pollution which may be reasonably anticipated to endanger public health or welfare. Such standards shall be applicable to such vehicles and engines for the useful life . . . whether such vehicle or engines are designed as complete systems or incorporate to devices to prevent the control of such pollution.

U.S. Constitution, amendment I

Administrative Procedure Act, 5 U.S.C. § 551, *et seq.*

All other applicable statutes and regulations.

BRIEF STATEMENT OF FACT

The Earth's temperature is increasing. Scientists from the National Oceanic and Atmospheric Administration (NOAA), the U.S. Regional Climate Centers, and the World Meteorological Organization all agree that 1998 was the warmest year on record.⁴ The temperature increases recorded in 1998 represent a steady trend over the past twenty years of record breaking global surface temperatures.⁵ The United Nations Intergovernmental Panel on Climate Change (IPCC), an authoritative body of more than two thousand of the world's leading climate change scientists, stated that the emission of anthropogenic greenhouse gases, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and hydrofluorocarbons (HFCs) [hereinafter referred to collectively as "greenhouse gases"], are significantly accelerating this current warming trend.⁶ Human activities are increasing the concentration of heat trapping greenhouse gases in the atmosphere and the effect is called global warming. Due to these high fossil fuel emission levels, the IPCC warned that:

carbon dioxide remains the most important contributor to anthropogenic forcing of climate change; projections of future global mean temperature change and sea level rise confirm the potential for human activities to alter Earth's climate to extent unprecedented in human history.⁷

Approximately 90% of U.S. greenhouse gas emissions from anthropogenic sources occurs because of the combustion of fossil fuel.⁸ U.S. mobile sources are responsible for a significant amount of greenhouse gas emissions. In fact, in the United States, the fossil fuel CO₂ emissions from cars and light trucks are higher than the total nationwide CO₂ emissions from all but three other countries (China, Russia, and Japan).⁹

This anthropogenic forcing of climate change will affect not only the environment, but will also significantly impact human health. At a conference on Human Health and Global Climate Change, cosponsored by the National Science and Technology Council and the Institute of Medicine, Vice President Al Gore outlined the potential health risks caused by global warming and stated that measures must be taken to safeguard the American people.¹⁰ Additionally, the conference participants stated that the lack of complete data on this issue should not be used as an excuse for inaction.¹¹ Instead, the participants urged governments to apply the precautionary principle to its decision making concerning global warming.¹² Embodied in this request is an understanding that the tremendous potential risks to public health posed by global warming dictate that governments must act with precaution and take all prudent steps necessary to reduce the emission of anthropogenic greenhouse gases.

Within the context of United States governmental decision making, the

precautionary principle is embraced by the Clean Air Act (?CAA?), a statute allowing for the implementation of a regulatory framework mandating the reduction of greenhouse gases. Under the CAA, the Administrator is permitted to make a precautionary decision to regulate pollutants in order to protect public health and welfare.¹³

In addition to the precautionary nature of the CAA, the Administrator has a mandatory duty to regulate greenhouse gas emissions from new motor vehicles under ? 202(a)(1) of the CAA. Petitioners urge the Administrator to reduce the effects of global warming by regulating the emission of greenhouse gases from new motor vehicles.

ARGUMENT

I. GREENHOUSE GAS EMISSIONS FROM NEW MOTOR VEHICLES MUST BE REGULATED UNDER ? 202(a)(1) OF THE CLEAN AIR ACT.

Under ? 202(a)(1) of the Clean Air Act, 42 U.S.C. ? 7521(a)(1), the Administrator is directed to prescribe standards for the emission of greenhouse gases from new motor vehicles¹⁴ if she has determined that: (1) the emission of a greenhouse gas is an ?air pollutant? and is emitted from new motor vehicles; *and* (2) the emission causes or contributes to air pollution which may reasonably be anticipated to endanger public health or welfare. For the reasons contained herein, the Administrator has made such determinations for greenhouse gases, including CO₂, CH₄, N₂O, and HFCs, and petitioners request the Administrator to undertake her mandatory duty to regulate these as directed by ? 202(a)(1) of the CAA.

A. Greenhouse Gases Meet The Definition Of Air Pollutant Under The Clean Air Act And Are Emitted From New Motor Vehicles.

Pursuant to § 302(g), 42 U.S.C. § 7602(g), of the CAA, an "air pollutant" is defined as:

any air pollutant agent or combination of such agents including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters ambient air. Such term includes any precursors to the formation of any air pollutant, to the extent the Administrator had identified such precursors or precursors for the particular purpose for which the term "air pollutant" is used.

Courts have interpreted this definition in an extremely broad manner.¹⁵ The greenhouse gas emissions that the petitioners request the Administrator to regulate under § 202(a)(1) meet the CAA's broad statutory definition of "air pollutant" and are emitted from new motor vehicles.

(10 Emission of Carbon Dioxide

Carbon dioxide (CO₂) meets the § 302(g) definition. Over the last several decades, levels of CO₂ emissions have sharply risen causing the natural equilibrium of emissions and absorption to fall out of balance. Although CO₂ is a naturally occurring gas that is produced by living organisms and absorbed by oceans and trees, the extensive burning of fossil fuels has dramatically increased CO₂ levels and disrupted this natural equilibrium.¹⁶ In fact, the U.S. Climate Action Report's "Greenhouse Inventory," submitted under the United Nations Framework Convention on Climate Change, states that CO₂ is

considered the most significant greenhouse gas in the U.S. because it encompasses eighty-five percent of the total U.S. greenhouse gas emissions.¹⁷ Due to the global warming dangers connected with the high emissions of CO₂, this greenhouse gas satisfies the definition of "air pollutant" under the CAA.

Additionally, mobile sources emit significant amounts of CO₂. The transportation sector contributes over 30% of U.S. greenhouse gas CO₂ emissions from fossil fuel combustion.¹⁸ Almost two-thirds of the emissions come from automobiles and the remaining emissions come from trucks and aircraft.¹⁹ The greenhouse gas emissions from transportation sources are predicted to grow faster than any other emission source.²⁰

Finally, the agency has already made a legal determination that CO₂ meets the definition contained in "302(g). In an April 10, 1998, memorandum to the Administrator, EPA General Counsel Jonathan Z. Cannon found that the broad definition of "302(g) "states that "air pollutant" includes any physical, chemical biological, or radioactive substance or matter that is emitted into or otherwise enters ambient air. SO₂, NO_x, CO₂ and mercury from electric power generation are each a "physical [and] chemical . . . substance which is emitted into . . . the ambient air," and hence, each is an air pollutant within the meaning of the Clean Air Act."²¹ The memorandum further notes that Congress explicitly recognized CO₂ emissions as an "air pollutant" under "103(g) of the Clean Air Act."²² Recently, EPA again made this legal determination during hearings before Congress.²³

(10) ***Emission of Methane***

Methane (CH₄) should also be considered an "air pollutant" under § 302(g) of the CAA because of its contribution to global warming. The U.S. Climate Action Report indicates that CH₄ "is estimated to be twenty-one times more effective at trapping heat in the atmosphere than CO₂ over a 100-year time horizon."²⁴ During the past two centuries, CH₄ concentrations have more than doubled due to human activities.²⁵ Because CH₄ is a potent greenhouse gas, it satisfies the definition of "air pollutant" under the CAA. Furthermore, motor vehicles fueled by gasoline emit CH₄. The EPA's most recent inventory of greenhouse gas emissions indicates that in 1997 gasoline powered cars, trucks, and heavy-duty vehicles emitted 1.2 MMTCE of CH₄.²⁶

(10) ***Emission of Nitrous Oxide***

Nitrous oxide (N₂O) is a greenhouse gas that is produced naturally by biological sources in soil and water. However, over the past two centuries, N₂O levels have increased by eight percent due to human activities.²⁷ The U.S. Climate Action Report explains that "[w]hile N₂O emissions [sic] are much lower than CO₂ emissions, N₂O is approximately 310 times more powerful than CO₂ at trapping heat in the atmosphere over a 100-year horizon."²⁸ As a result, N₂O meets the CAA definition of "air pollutant."

This greenhouse gas is also emitted from motor vehicles during fossil fuel combustion.²⁹ Due to the installation of catalytic converters, a device

designed to reduce air pollution, the volume of N₂O emitted from motor vehicles has risen.³⁰

(10) ***Emission of Hydrofluorocarbons***

Hydrofluorocarbons (HFCs) is a powerful greenhouse gas that meets the definition of "air pollutant" under the CAA. HFCs were introduced as alternatives to chlorofluorocarbons, which are ozone depleting substance.³¹ Although these gases do not directly destroy ozone, they do contribute to global warming.³² HFCs impact the ambient air by contributing to global warming as much as 10,000 times that of CO₂.³³ The emissions of HFCs from motor vehicles have increased since 1993 due to the use of HFC-134a in mobile air conditioners.³⁴

As discussed above, the four greenhouse gases subject to this petition have been determined to accelerate global warming. Additionally, the agency has already made the determination that CO₂ is an "air pollutant" as defined under the CAA. Accordingly, similar determinations that the emissions of CH₄, N₂O, and HFCs from motor vehicles also meet the definition of "air pollutant" under "302(g) of the CAA follow.

B. *The Emission Of Greenhouse Gases Contributes To Pollution Which Is Reasonably Anticipated To Endanger Public Health And Welfare.*

Pursuant to the requirements of "202(a)(1), greenhouse gas emissions from new motor vehicles must also be regulated under the CAA because of

their endangerment to public health or welfare. When determining what constitutes an endangerment to public health and welfare, the CAA does not require proof of actual harm. Instead, the Administrator is permitted to make a precautionary decision to regulate a pollutant if it "may reasonably be anticipated" to endanger public health or welfare.³⁵ This requirement is confirmed by the CAA's legislative history. The House Report accompanying the 1977 Amendments states that one of the CAA's purposes is "[t]o emphasize the preventive or precautionary nature of the act, i.e., to assure that regulatory action can effectively prevent harm before it occurs; to emphasize the predominant value of protection of public health."³⁶ As enumerated below, the EPA and other federal agencies have already made numerous findings that greenhouse gas emissions from new motor vehicles are air pollutants reasonably anticipated to endanger public health and welfare. Therefore, the Administrator has the statutory obligation to regulate the emissions of air pollutants from new motor vehicles under "202(a)(1) in order to prevent future harm.

(1). *The Emission of Greenhouse Gases Will Endanger Public Health.*

The IPCC reports that greenhouse gas emissions are significantly accelerating current warming trends and estimates that by the year 2100, the Earth's temperature will have changed by two degrees Celsius.³⁷ As a result of increased temperatures, the EPA reports that certain infectious diseases may become more prevalent in geographic areas that were once free from the threat

of such diseases.³⁸ In particular, global warming may increase vector-borne diseases such as malaria, dengue fever, encephalitis, and hantavirus along with increasing water-borne diseases such as cholera, toxic algae, and cryptosporidiosis. Changing climate conditions will also increase the likelihood of direct effects on human health, including heat stress, skin cancer, cataracts, and immune suppression.

(a). Global Warming Increases the Threat of Infectious Diseases.

1. Increases in Vector-borne Diseases.

Infectious diseases kill over seventeen million people each year.³⁹ Vector-borne diseases, usually caused by a microbial, insect or small mammal vector, cause a large portion of those fatalities.⁴⁰ The spread of vector-borne diseases is a serious concern because disease vectors are sensitive to climate variations.⁴¹

Malaria is the most prevalent vector-borne disease. Although this disease generally occurs in the tropics and subtropics, the U.S. is not immune from this disease as indicated by the latest Center for Disease Control (?CDC?) report.⁴² The CDC reports a 15% increase in cases of malaria in the U.S from 1994 thru 1995.⁴³ Unseasonably warm weather increases the transmission of malaria. Consequently, the IPCC reports that more than one million additional fatalities from malaria is estimated to occur by the middle of the next century due to global warming.⁴⁴

Dengue and Dengue hemorrhagic fever is a painful flu-like illness

transmitted by a mosquito bite that is increasing not only in the tropics, but also in the Americas.⁴⁵ Warmer temperatures contribute to the spreading of this disease to higher latitudes and altitudes.⁴⁶ In fact, dengue was observed in Mexico at an unprecedented altitude of 1,700 meters during an unseasonably warm summer in 1988.⁴⁷ The IPCC report states that, when temperatures increase, more infectious mosquitos hatch resulting in more people being bitten.⁴⁸

Arboviral encephalitis is another vector-borne disease that is highly correlated to warm temperatures. Outbreaks of this disease have occurred in the U.S. after several days when the temperature exceeded eighty-five degrees Fahrenheit.⁴⁹ Heavy rainfall during winter months and drought during summer months is another predictor for this disease. The effect of global climate change predicted for the U.S. is warm, wet winters and hot, dry summers. These conditions foster an environment for the spread of arboviral encephalitis.⁵⁰

Hantavirus is a deadly infectious disease caused by infected deer mice or cotton rats.⁵¹ The CDC reported an outbreak of this illness in the southwest U.S in 1993.⁵² This epidemic occurred when six years of drought preceded heavy spring rains.⁵³ This ecological change resulted in an increase of the rodent population ten times its normal size and, consequently, caused the outbreak of hantavirus.⁵⁴ Reports of this disease have occurred in the western U.S. and in a few eastern states.⁵⁵

2. Increases in Water-borne Diseases.

During the past century, sea surface temperatures have increased 0.7 degrees Celsius.⁵⁶ Increased temperature and nutrient water promotes the growth of toxic algae.⁵⁷ Toxic algae is dangerous because it causes shell-fish poisoning which may harm humans, sea mammals, and sea birds.⁵⁸

Increased algae growth can also stimulate the incidence of cholera. Zooplankton feeds on algae and can serve as a reservoir for *Vibrio cholera*.⁵⁹ Increased algae blooms may increase the proliferation of a cholera epidemic. In Latin America, large coastal algae blooms are suspected to have perpetuated a cholera epidemic.⁶⁰ The IPCC reports that cholera may increase in the U.S. as sea temperatures increase.⁶¹

The most widespread waterborne disease in the U.S. is cryptosporidiosis.⁶² This disease occurs when floods, heavy rains, and snow melts cause run-off on agricultural dairy farms contaminating the water.⁶³ For example, in 1993, Milwaukee reported 403,000 cases of this disease after experiencing unusually heavy spring rains and melting snow.⁶⁴ Rising sea levels will also affect the spread of this disease because saline water extends the viability of this disease.⁶⁵

Thus, significant research has shown that climate change affects the spread of numerous and life-threatening vector-borne and water-borne diseases. To protect public health by reducing the threat and spread of these diseases, EPA must immediately regulate the emissions of greenhouse gases

from new motor vehicles under ? 202(a)(1).

(b). Global Warming Will Have Direct Effects on Human Health.

1. Increases in Heat Stress.

The EPA reports that ?the most direct effect of climate change would be the impacts of hotter temperatures.?⁶⁶ Hotter temperatures affect the young, the elderly, and people with heart problems and causes increased cases of heat exhaustion, respiratory problems, and even death.⁶⁷

The IPCC reports that the U.S. is expected to ?warm disproportionately more than tropical and subtropical zones.?⁶⁸ The effects from this temperature increase can be determined by reviewing data from past heat waves. The IPCC explains that data taken from Philadelphia during 1973 to 1988 shows that there is a relationship between temperature, humidity, and mortality.⁶⁹ Based on data taken from several North American cities, the IPCC predicts that ?the annual number of heat-related deaths would approximately double by 2020 and would increase several-fold by 2050.? ⁷⁰

2. Increases in Skin Cancer, Cataracts, and Immune Suppression.

Greenhouse gases prevent heat from entering the stratosphere. As a result, ice crystal formations increase in the upper stratosphere destroying the ozone layer.⁷¹ Ozone destruction increases the amount of ultraviolet-B radiation entering the earth?s surface, which impacts public health by directly contributing to skin cancer, cataracts, and immune suppression.

A CDC report indicates that most of the top ten cancers declined

between 1990 and 1995 except for incidence of skin cancer.⁷² Skin cancer is the most common cancer in the U.S and the incidence of melanoma has doubled since 1973.⁷³ The U.S. National Cancer Institute explains that "[n]early all skin cancers occur in fair-skinned individuals who have been exposed to the sun, x-rays, or ultraviolet light for prolonged periods."⁷⁴ The participants at the Conference on Human Health and Global Climate Change predict that skin cancer will increase two percent for every one percent decrease in stratospheric ozone.⁷⁵

Ultraviolet B-radiation is also associated with the development of cataracts. Half of the blindness in the world is attributed to cataracts.⁷⁶ IPCC predicts that a ten percent loss of stratospheric ozone will result in approximately 1.7 million additional cases of cataracts annually.⁷⁷

Immune suppression is also a direct effect from global warming. The IPCC report states that "UV light has been shown to cause immune suppression in both animal and human studies."⁷⁸ Immunosuppression decreases the strength of the human immune system.

Therefore, the human health effects of climate change will also be exacerbated by increasing humans' susceptibility to heat stress, skin cancer, and cataracts. These direct threats to public health immediately mandate the EPA to regulate the emissions of greenhouse gases from new motor vehicles under § 202(a)(1).

(2). *The Emission of Greenhouse Gases Will Endanger Public Welfare.*

In addition to endangering public health, the emission of greenhouse gases will also harm the public welfare. Under the CAA, public "welfare" is defined as:

All language referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being, whether caused by transformation, conversion, or combination with other air pollutants.⁷⁹

There have been numerous EPA findings that greenhouse gas emissions will endanger "public welfare" as defined by this section of the CAA. In fact, the EPA has researched the potential environmental impacts from climate change and reports that global warming will significantly harm the environment.

(a). Global Warming Will Harm Environmental Welfare.

The emission of greenhouse gases and the consequential effects of global warming will severely harm the quality of the United States environment. Global warming will harm, *inter alia*, water resources, rangelands, forests, non-tidal wetlands, fisheries and birds.

1. Harm to Water Resources.

Evaporation and precipitation is expected to increase due to global warming. The EPA predicts that "[l]ower river flows and lower lake levels could

impair navigation, hydroelectric power generation, and water quality, and reduce the supplies of water available for agriculture, residential, and industrial uses.⁸⁰ Furthermore, increased rainfall will likely result in flooding.⁸¹

2. Harm to Rangelands and Forests.

Global warming will likely harm grazing activities on both federal and private lands. The EPA predicts the decrease in the availability of water in these areas will harm the economic viability of grazing on rangelands.⁸²

As temperatures increase, many North American forests will shift to the north.⁸³ The distance that trees will have to migrate will depend on how fast temperatures increase.⁸⁴ As temperatures increase, the soil will become drier, which will escalate the likelihood of forest fires.⁸⁵ Also, changes in pest populations will negatively affect the survival of forests.⁸⁶ Furthermore, the EPA reports that wildlife that depend on the habitat of nature reserves may be vulnerable because these areas may no longer be located in a climate suitable for the survival of many species.⁸⁷

3. Harm to Non-tidal Wetlands.

Wetlands serve several purposes in protecting the environment. Wetlands provide a habitat for birds and fish and also prevent run-off pollution from farms and other sources from entering rivers, lakes, and streams.⁸⁸ The EPA explains that the impact on wetlands from changing climate is uncertain because it depends on the amount of rainfall received by wetlands.⁸⁹ If

wetland areas receive a decrease in rainfall, then the areas will become drier and significantly impair the wetland's function.⁹⁰ Dry land will force farmers to increase their use of irrigation which may further drain wetlands.⁹¹ If the wetland areas receive an increase in rainfall, then flooding will occur.⁹² Flooding will force people to move out of hazardous areas, which will benefit wetlands by allowing them to form. However, if people build dams in order to prevent flooding, which is likely, then the new structures, along with the decrease in flooding, will prevent wetlands from forming.⁹³

4. Harm to Fisheries.

The EPA reports that climate change may impact inland fisheries, coastal fisheries, and ocean fisheries.⁹⁴ Increased water temperatures may be too warm for some species of fish.⁹⁵ Global warming might also harm many species of fish by changing the chemical composition of the water by decreasing the amount of oxygen and increasing the pollution and salinity level.⁹⁶ Species that are dependent on wetlands for habitat and food would also be harmed if wetlands decrease.⁹⁷

5. Harm to Bird Populations.

Global warming may impact birds by altering their life cycles. The National Audubon Society's bird data reveals that, during warming years, birds do not fly as far south and during the summer months, birds fly farther north.⁹⁸ The EPA indicates that this change in migration may be harmful to birds because the vegetation and insects they rely upon may take decades to

synchronize with the birds? change in migration.⁹⁹

Additionally, habitat loss due to global warming will impact many bird species. Rising sea levels will decrease estuarine beaches, which are habitats for the least tern, an endangered species.¹⁰⁰ The loss of wetlands and decreasing shellfish levels will also impact many species.¹⁰¹

As discussed above, EPA recognizes that the environmental welfare of the United States is impacted by the emission of greenhouse gases and the effects of global warming. The impacts include, *inter alia*, direct harm to our water resources, rangelands, forests, non-tidal wetlands, fisheries, and birds. Although there may be some uncertainties concerning the extent of these impacts from global warming, EPA must exercise precaution and mitigate these impacts by regulating the emissions of greenhouse gases from new motor vehicles under ? 202(a)(1) of the CAA.

(b). Global Warming Will Harm Human Welfare.

The emission of greenhouse gases and resulting global warming will also severely harm the human welfare of the United States? population. Global warming will harm, *inter alia*, food production, nutritional health, weather patterns, sea-levels, water quality and quantity, and respiratory health.

1. Harm to Food Production and Nutritional Health.

Global warming is expected to change crop productivity.¹⁰² Agricultural productivity may increase in some regions initially but longer-term adaptation is not as likely due to changes in plant physiology and the questionable availability of an adequate water supply.¹⁰³ Global warming may adversely affect agricultural production by reducing soil moisture through evapotranspiration and through extreme weather such as droughts, flooding, and tropical storms.¹⁰⁴ The IPCC report explains that one of the long term effects of global warming will be altered plant diseases and pest infestations.¹⁰⁵ As a result of these climate change affects on agriculture, an estimated 40-300 million additional people worldwide may be at risk from hunger.¹⁰⁶

2. Weather Related Harm and Rising Sea Levels.

Extreme weather is predicted as a result of changing climate conditions.¹⁰⁷ More floods may occur due to the increased rain fall and more tropical cyclones are expected because of warmer sea surface temperatures.¹⁰⁸ Extreme weather will not only create physical harm and structural damage, but will also create breeding sites for insects and rodents carrying disease.¹⁰⁹ The IPCC anticipates that global warming will also encourage human dislocation from geographically vulnerable areas.¹¹⁰ Droughts in West Africa have already forced mass migrations.¹¹¹

Sea level rises are occurring rapidly in the U.S. The EPA estimates that along the Gulf and Atlantic coasts, a one foot (30 cm) rise in sea level is likely by 2050 and could occur as soon as 2025. In the next century, a two foot rise

is most likely, but a four foot rise is possible.¹¹² Developed areas will probably attempt to protect their property with bulkheads, dikes, and other structures, however, not all property will be protected and consequently, many people living in coastal areas will be forced to relocate.¹¹³

3. Harm to Water Quality and Quantity.

Rising sea levels will increase the salinity of surface and ground water.¹¹⁴ The EPA reports that New York, Philadelphia, and much of California's Central Valley will be susceptible to salty water during droughts if sea levels rise.¹¹⁵ Climate effects will also increase flooding and water shortages.¹¹⁶

4. Harm From Air Pollution and Allergens.

The industrial processes that produce greenhouse gases also produce air pollutants.¹¹⁷ In the U.S., air pollution causes 70,000 deaths and one million hospitalizations annually.¹¹⁸ The participants at the Conference on Human Health and Global Climate Change predict that as pollution from greenhouse gases increases, "the health effects of air pollution on a global scale could be staggering."¹¹⁹ Hotter temperatures and humidity may also lead to increased levels of plant pollen, which in turn would increase the cases of asthma and hay fever.¹²⁰

In sum, significant scientific research and numerous EPA findings conclude that greenhouse gases will adversely affect human health and welfare in the United States by causing global warming. Based on these determinations, EPA must regulate the emissions of greenhouse gases from

new motor vehicles under § 202(a)(1) of the CAA in order to mitigate the harmful impacts of global warming on both the environmental and human welfare.

II. IT IS TECHNICALLY FEASIBLE TO REDUCE GREENHOUSE GAS EMISSIONS FROM NEW MOTOR VEHICLES.

Agency action under § 202 will allow the EPA to implement a variety of regulatory standards to control greenhouse gas emissions. As contained in § 202, standards set under § 202 authority shall be applicable to such vehicles and engines for the useful life . . . whether such vehicle or engines are designed as complete systems or incorporate devices to prevent the control of such pollution. Accordingly, this language allows the EPA latitude to utilize a number of options to address new motor vehicle greenhouse gas emissions so long as the options require the incorporation of complete systems or devices that reduce such emissions. Major automakers have already introduced car and truck designs that significantly reduce vehicle-related CO₂ formation, and many of these are already available to consumers and institutional purchasers at competitive prices. These vehicles generally rely on one of two strategies for reducing CO₂ emissions: increasing fuel economy and/or eliminating tailpipe emissions altogether. Standards assuring their rapid market adoption of these vehicles are necessary increases in new vehicle greenhouse gas emissions.

A. Standards for Increased Corporate Average Fuel Economy.¹²¹

According to the U.S. Department of Energy, "[T]he fuel economy of a

vehicle is directly related to its emissions of carbon dioxide, the most important greenhouse gas. Furthermore, EPA added that:

[E]ven though today's new vehicles cause much less air pollution than in the past, their greenhouse gas emissions are as high as they were 15 years ago. A vehicle's greenhouse gas emissions are directly related to its fuel economy. Every gallon of gasoline that you use in a vehicle adds about 20 pounds of carbon dioxide to the atmosphere.¹²²

The Corporate Average Fuel Economy (CAFE) standard for 1999 is 27.5 mpg, though the actual average fuel economy is somewhat lower than this because automakers are permitted to employ credits generated through an averaging, banking, and trading program. Also, light trucks, which make up a growing segment of passenger vehicle sales, are subject to less stringent fuel economy standards. Complete vehicle systems and incorporated devices that would significantly reduce new vehicle CO₂ emissions are currently in development or on the road. For example, the Union of Concerned Scientists has developed a blueprint for a sport utility vehicle utilizing devices that would emit 32 percent less CO₂ than comparable models now for sale.¹²³

In addition, automakers have shown that the technology is available to support a more stringent CAFE standard. For the 1999 model year, a number of traditional, gasoline-powered cars achieve fuel economy ratings of at least 40 mpg on the highway. These include the Chevrolet Metro (1.0 liter/3 cylinder engine, 41 mpg city/47 mpg highway); Honda Civic HX (1.6/4, 35/43), Mitsubishi Mirage (1.5/4, 33/40), Saturn SL (1.9/4, 29/40), Suzuki Swift (1.3/4, 39/40), and Toyota Tercel (1.5/4, 32/40).¹²⁴

Even better fuel economy ratings are achievable. In 1991, the Congressional Office of Technology Assessment established a list of strategies for improving vehicle fuel economy. Many remain viable. These automotive technology and design improvements include: weight reduction, aerodynamic drag reduction, improved tires and lubricants, advanced engine friction reduction, two-stroke engines, and continuously variable transmissions that ensure optimal vehicle efficiency at all speeds.¹²⁵

B. *Increased Adoption of Hybrid and Non-Fossil Fuel Vehicles.*

The setting of standards under ? 202 will create the rapid market introduction of hybrid-electric and zero emission vehicles. By encouraging the development of this technology, the agency can effectively reduce greenhouse gas emissions from new vehicles.

Hybrid technologies utilize entirely new systems combining a gasoline-powered engine and a battery-powered electric motor. The energy used to charge the battery is typically generated by the gasoline engine. Toyota has sold nearly 30,000 of its hybrid-electric Prius in Japan since December 1997, and plans to release the model in the United States in 2000. In a recent 4,200-mile cross-continent trip, the Prius demonstrated a fuel economy of over 60 miles per gallon.¹²⁶ Other automakers are also working on hybrid models. Honda plans to begin selling the Insight hybrid-electric vehicle in the United States in December of this year. The company claims that the car will get 84

miles per gallon of gasoline. General Motors, Ford, and DaimlerChrysler are also developing hybrid-electric vehicles, which they may release for public sale as early as 2001.¹²⁷ The setting of new 202-based CAFE standards by the EPA would greatly enhance market penetration of these vehicles.

In addition, other new complete vehicle systems exist for reducing new vehicle greenhouse gas emissions. According to the California Air Resources Board, there are at least 16 zero-emission production vehicles now available to consumers in at least some states. These are electric vehicles (EVs) and include models of the Dodge Caravan, Ford Ranger pickup, General Motors S-10 pickup, and Plymouth Voyager. Recent technological advancements have dramatically increased the range of EVs. The General Motors EV-1 with a nickel metal hydride battery can travel up to 152 miles on a single charge, while the Toyota RAV 4 and Nissan Alta EVs also boast ranges exceeding 100 miles per charge.¹²⁸ EVs have no tailpipe emissions and carry the potential to reduce all automobile-related CO₂ emissions to near zero. The agency itself has found that, "[I]f power plants produce electricity using clean energy sources such as solar or hydro power, emissions are negligible."¹²⁹

Additionally, fuel cell vehicles may soon offer another zero-emissions option. A fuel cell combines hydrogen and oxygen in a chemical reaction that produces electricity. The exhaust of a fuel cell running on pure hydrogen consists of water and hot air. Ford has developed a research vehicle known as the P2000 HFC, which runs on a fuel cell and emits no CO₂ precursors. The company plans to begin testing about 45 fuel cell cars and buses in California over the next several years.¹³⁰ Other companies developing automotive fuel cell

technologies include Ballard Power Systems, DaimlerChrysler, and Toyota.

Unfortunately, the Agency's proposed Tier II standard has inadequately addressed the effects of greenhouse gas emissions, including CO₂ emissions, from new vehicles.¹³¹ Given the agency's intention of using the Tier II process to develop a regulatory framework that addresses future automobile pollution, petitioners believe that the authority provided under § 202 requires the agency to incorporate standards into its Tier 2 proposal that would combat global warming by limiting the amount of CO₂ pollution created by light duty vehicles. For example, establishing a declining NO_x fleet average in the proposed Tier II regulation would, in part, achieve such a goal by requiring manufacturers to increase the number of vehicles certified to the zero emission vehicles standards of proposed Bin 1.

Given the scope of authority granted to the Administrator under § 202 and the existence of the requisite technologies, the Administrator can set a number of new standards for devices incorporated into new vehicles that will reduce the emissions of greenhouse gas air pollutants.¹³²

III. THE ADMINISTRATOR HAS A MANDATORY DUTY TO REGULATE GREENHOUSE GASES UNDER THE CLEAN AIR ACT.

Having already made formal findings that the emission of air pollutants CO₂, CH₄, N₂O, and HFCs from mobile sources poses actual or potential harmful effects of the public health and welfare,¹³³ the Administrator must exercise her authority to regulate the emissions of CO₂, CH₄, N₂O, and HFCs,

from new motor vehicles under § 202(a)(1). Section 202(a) states that the Administrator “shall by regulation prescribe . . . standards applicable to any air pollutant from any . . . class or classes of new motor vehicles” (emphasis added). Prior court decisions have found that the use of “shall” in § 202 creates a mandatory duty to promulgate standards.¹³⁴ Accordingly, the Administrator must act to implement the standards requested by this petition.

Further, even should the agency believe that there are scientific uncertainties regarding the actual impacts from global warming, the precautionary purpose of the CAA supports actions regulating of these gases. In Lead Industries Assoc., Inc. v. EPA, the court explained that:

requiring EPA to wait until it can conclusively demonstrate that a particular effect is adverse to health before it acts is inconsistent with both the Act’s precautionary and preventive orientation and the nature of the Administrator’s statutory responsibilities . . . Congress directed the Administrator to err on the side of caution in making the necessary decisions.¹³⁵

The Administrator’s authority to use precaution when regulating air pollutants is also elaborated upon in Ethyl Corp. v. EPA.¹³⁶ In this case, the court stated that “[t]he Administrator may apply [her] expertise to draw conclusions from suspected, but not completely substantiated relationships between facts, from trends among facts, from theoretical projects from imperfect data, from probative preliminary data not yet certifiable as fact, and the like.”¹³⁷ Thus, the Administrator’s clear mandate to regulate greenhouse gases under § 202 cannot be excused by a post hoc rationalization of scientific uncertainty.

Based upon, *inter alia*, the evidence presented herein, the petitioners request the Administrator to immediately begin regulating the emissions of the greenhouse gases - CO₂, CH₄, N₂O, and HFCs - from new motor vehicles as required by § 202(a)(1). Should the Administrator not undertake this mandatory duty, her inaction can be subject to judicial review.

CONCLUSION

WHEREFORE, petitioners request that the Administrator:¹³⁸

- (1). Regulate the emissions of carbon dioxide (CO₂) from new motor vehicles and new motor vehicle engines under § 202(a)(1) of the Clean Air Act;
- (2). Regulate the emissions of methane (CH₄) from new motor vehicles and new motor vehicle engines under § 202(a)(1) of the Clean Air Act;
- (3). Regulate the emissions of nitrous oxide (N₂O) from new motor vehicles and new motor vehicle engines under § 202(a)(1) of the Clean Air Act;
- (4). Regulate the emissions of hydrofluorocarbons (HFCs) from new motor vehicles and new motor vehicle engines under § 202(a)(1) of the Clean Air Act;

As required by law, the EPA is required to give this petition prompt consideration. Additionally, under the Administrative Procedure Act "agency action" is defined to include "the whole or part of an agency rule, order, license, sanction, relief, or the equivalent denial thereof, *or failure to act.*" Therefore, petitioners are requesting a substantive response to this petition within one hundred eighty (180) calendar days.¹³⁹ In the absence of an affirmative response,

petitioners will be compelled to consider litigation in order to achieve the agency actions requested.¹⁴⁰

Respectfully submitted,

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¹ "Congress shall make no law . . . abridging . . . the right of the people . . . to petition Government for a redress of grievances." U.S. Const., amend. I. The right to petition for redress of grievances is among the most precious of the liberties safeguarded by the Bill of Rights. United Mine Workers of America, Dist. 12 v. Illinois State Bar Association, 389 U.S. 217, 222, 88 S. Ct. 353, 356, 19 L. Ed. 2d 426 (1967). It shares the "preferred place" accorded in our system of government to the First Amendment freedoms, and has a sanctity and a sanction not permitting dubious intrusions. Thomas v. Collins, 323 U.S. 516, 530, 65 S. Ct. 315, 322, 89 L. Ed. 430 (1945). "Any attempt to restrict those First Amendment liberties must be justified by clear public interest, threatened not doubtful or remotely, but by clear and present danger." Id. The Supreme Court has recognized that the right to petition is logically implicit in, and fundamental to, the very idea of a republican form of government. United States v. Cruikshank, 92 U.S. (2 Otto) 542, 552, 23 L. Ed. 588 (1875).

² 5 U.S.C. § 553(e) (1994).

³ 42 U.S.C. § 7401, *et seq.* (1994).

⁴ National Oceanic and Atmospheric Administration (January 12, 1999), <http://www.ncdc.noaa.gov/ol/climate/research/1998/ann/ann98.html>.

⁵ Id.

⁶ United Nations Environmental Programme (UNEP)/World Meteorological Organization (WMO), Climate Change 1995: The Science of Climate Change. Technical Summary of Working Group I of the Intergovernmental Panel on Climate Change [hereinafter Climate Change 1995, Pet. Ex. 1].

⁷ Id. at 3.

⁸ U.S. Department of Energy, TECHNOLOGY OPPORTUNITIES TO REDUCE U.S. GREENHOUSE GAS EMISSIONS, xiii (Oct. 1997).

⁹ John DeCicco and Martin Thomas, GREEN GUIDE TO CARS AND TRUCKS, 2 (1999).

¹⁰ The Conference on Human Health and Global Climate Change, September 11, 1995, at 4 [hereinafter Conference on Human Health and Global Climate Change, Pet. Ex. 2].

¹¹ Id. at 1.

¹² Id.; (The "precautionary principle" urges action to regulate activities which may be harmful to the environment *even* if conclusive scientific evidence of their harmfulness is not yet available. At its most profound, the precautionary principle dictates the institutionalization of precaution, which entails the shifting of the burden of proof from those opposing environmental degradation to those engaged in the challenged activity. See *e.g.*, Philippe Sands, ed., GREENING INTERNATIONAL LAW (New Press/1994) at 118.)

¹³ See H.R. Rep. No. 294, 95th Cong., 1st Sess. 49 (1977).

¹⁴ Section 202 applies to new motor vehicles and new motor vehicle engines. Hereinafter, petitioners' reference to "new motor vehicles" also applies to "new motor vehicle engines."

¹⁵ Alabama Power Co., v. Costle, 636 F.2d 323, 353 (D.C. Cir. 1979).

¹⁶ Greenhouse Gas Inventory, U.S. Climate Action Report 7 (1997) [hereinafter U.S. Climate Action Report, Ex. 3].

¹⁷ Id.

¹⁸ Department of Energy, Reducing Greenhouse Transportation Sector Emissions, <http://www.esd.ornl.gov/bfdp/biowin/reducing.html>.

¹⁹ U.S. Climate Action Report, Ex. 3 at. 8.

²⁰ Id.

²¹ Johnathan Z. Cannon, Memorandum to Carol M. Browner, Administrator, "EPA's Authority to Regulate Pollutants Emitted by Electric Power Generation Sources." (April 10, 1998).

22 Id.

23 Testimony of Gary S. Guzy, General Counsel, U.S. E.P.A., before a Joint Hearing of the Subcommittee on National Economic Growth, Natural Resources and Regulatory Affairs of the Committee on Government Reform and the Subcommittee on Energy and Environment of the Committee on Science, United States House of Representatives. (October 6, 1999).

24 Id. at 10.

25 Id.

26 EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-1997, 36 (Mar. 1999).

27 U.S. Climate Action Report, Ex. 3 at 13.

28 Id.

29 Id.

30 Id.

31 MSNBC, Greenhouse gases under review,
<http://www.msnbc.com/news/127171.asp>.

32 Id.

33 Id.

34 U.S. Climate Action Report, Ex. 3 at 16.

35 Engine Mfr. Ass'n v. EPA, 88 F.3d 1075, 1099 (D.C. Cir. 1996); *See also*, Lead Industries Assoc., 647 F.2d at 1156 (explaining that the 1977 CAA amendments made the threshold decision to regulate air pollutants precautionary in nature.).

36 H.R. Rep. No. 294, 95th Cong., 1st Sess. 49 (1977)(stating that Congress used the phrase "may reasonably be anticipated to endanger public health or welfare" to emphasize the precautionary nature of the CAA. This phrase is present in sections 108, 111, 112, 202,

211, and 231.)

³⁷ Jonathan A. Patz, Public Health Effects of Climate Change Synthesis of the IPCC Findings, 2 (1996) [hereinafter IPCC, Ex. 4].

³⁸ EPA, Global Warming, <http://www.epa.gov/globalwarming/impacts/health/index.html>.

³⁹ IPCC, Ex. 4 at 7

⁴⁰ Id.

⁴¹ Id. at Table 18-3 (data on the diseases that are likely to be affected by climate change).

⁴² Id. at 7.

⁴³ Malaria Surveillance ? United States, 1995, (citing 1,167 cases of malaria in the U.S. in 1995).

⁴⁴ IPCC, Ex. 4 at 8.

⁴⁵ Id.

⁴⁶ Id.

⁴⁷ Id.

⁴⁸ Id.

⁴⁹ Jonathan A. Patz and Paul R. Epstein, et al., Global Climate Change and Emerging Infectious Diseases, JAMA 219-220 (1996) [hereinafter JAMA].

⁵⁰ Id. at 220.

⁵¹ Center for Disease Control, Hantavirus, Public Information area, <http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/consumer.htm>.

⁵² JAMA, at 217.

⁵³ Id.

⁵⁴ Id.

55 Center for Disease Control, HPS Case Information,
<http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/whatsnew.htm>.

56 IPCC, Ex. 4 at 8.

57 JAMA at 220 (nutrient waters develop from fertilizer runoff and sewage releases).

58 Id. and IPCC, Ex. 4 at 12 (explaining that a species of toxic algae that was previously confined to the Gulf of Mexico traveled north after "a parcel of warm gulf stream water" rose up the east coast and the result was human shellfish poisonings and substantial fishkills).

59 IPCC, Ex. 4 at 8.

60 Id.

61 Id. at 12.

62 Id.

63 Id.

64 IPCC, Ex. 4 at 12.

65 Id.

66 EPA, global warming, <http://www.epa.gov/globalwarming/impacts/health/index.html>.

67 Id. (explaining that higher temperatures increase ozone at ground level which can cause respiratory problems) and see Conference on Human Health and Global Climate Change, Ex. 2 at 9 (reporting that 726 people died in 1995 during a heatwave in Chicago).

68 IPCC, Ex. 4 at 11.

69 Id.

70 Id.

71 Id. at 10.

72 Center for Disease Control, 1998 News Release,

73 American Cancer Society, Skin Cancer - Melanoma,

74 Id.

75 Conference on Human Health and Global Climate Change, Ex. 2 at 12.

76 IPCC, Ex. 4 at 10.

77 Id.

78 Id.

79 42 U.S.C. § 7602(h)(emphasis added); See, Engine Mfr. Ass'n, 88 F.3d at 1099
(Reaffirming the broad authority of the Administrator to make this determination).

80 EPA, Global Warming, <http://www.epa.gov/globalwarming/impacts/water/index.html>.

81 Id.

82 Id. at <http://www.epa.gov/globalwarming/impacts/rangelands/index.html>.

83 Id. at <http://www.epa.gov/globalwarming/impacts/forests/index.html>.

84 Id. (EPA recognizes the uncertainties that exist pertaining to changing climate and migrating forests).

85 EPA, Global Warming, <http://www.epa.gov/globalwarming/impacts/forests/index.html>

86 Id.

87 Id.

88 Id. at <http://www.epa.gov/globalwarming/impacts/wetlands/index.html>.

89 Id.

90 EPA, Global Warming,
<http://www.epa.gov/globalwarming/impacts/wetlands/index.html>

91 Id.

92 Id.

93 Id.

94 EPA, Global Warming,
<http://www.epa.gov/globalwarming/impacts/fisheries/index.html>.

95 Id.

96 Id.

97 Id.

98 EPA, Global Warming, <http://www.epa.gov/globalwarming/impacts/birds/index.html>.

99 Id.

100 Id. at <http://www.epa.gov/globalwarming/impacts/birds/index.html>.

101 Id.

102 *See generally*, International Rice Research Institute and American Association for the Advancement of Science, "Climate and Food Security" 1989.

103 Jonathan A. Patz, MD, MPH, "Public Health Effects of Climate Change: Synthesis of the IPCC Findings" Statement Prepared for a Roundtable Discussion of Senator Lieberman, 8 (June 11, 1996).

104 IPCC, Ex. 4 at 8.

105 Id.

106 Id.

107 IPCC, Ex. 4 at 9.

108 Id.

109 Id.

110 Id.

111 Id.

112 EPA, Global Warming, <http://www.epa.gov/globalwarming/impacts/coastal/index.html>.

113 Id.

114 Id. at <http://www.epa.gov/globalwarming/impacts/coastal/index.html>.

115 Id. (some aquifers that are currently recharged by fresh water will become salty due to rising sea levels).

116 IPCC, Ex. 4 at 9.

117 Conference on Human Health and Global Climate Change, Ex. 2 at 13.

118 Id.

119 Id. at 14.

120 Id.

121 Petitioners assert that Section 202 provides the EPA with the authority to implement a corporate average fuel-economy based standard.

122 U.S. DOE, "Model Year 1999 Fuel Economy Guide," DOE/EE-0178, (Washington, DC: October 1998) at 2.

123 David Welch, "Fuel-Efficient Sport-Utility Is Envisioned," *Detroit News*, July 16, 1999, at E15.

124 Id.

125 U.S. Congress, Office of Technology Assessment, *Improving Automobile Fuel Economy: New Standards, New Approaches*, OTA-E-504 (Washington, DC: U.S. Government Printing Office, October 1991) at 4.

126 "Environmental Adventurers First to Cross the U.S. in a Hybrid-Electric Car," PR Newswire, July 9, 1999.

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- 127 ?Honda Unveils Fuel Efficient Car,? Associated Press, July 6, 1999.
- 128 California Air Resources Board, ?Buyer?s Guide to Cleaner Cars,? updated March 8, 1999, <<http://www.arb.ca.gov/msprog/ccbg/ccbg.htm>>.
- 129 U.S. Environmental Protection Agency, ?Electric Vehicles,? Fact Sheet OMS-10, EPA 400-f-92-012, August 1994.
- 130 Ford Motor Co., ?Ford Motor Company Fuel Cell Program Delivers Zero-Emission Family Vehicle,? company press release, July 22, 1999.
- 131 *See generally*, The International Center for Technology Assessment?s Comments on the U.S. Environmental Protection Agency?s Tier 2 Proposal (Public Docket No. A-97-10), August 2, 1999.
- 132 For example, such standards could even include such things as tire efficiency standards.
- 133 See *supra*, Argument I (a) & (b).

134 NRDC v. Reilly, 983 F.2d 259, 266-67 (D.C. Cir. 1993) (finding that use of ?shall? in ? 202(a)(6) mandated promulgation of standards requiring new light duty vehicles be equipped with onboard refueling vapor recovery systems); See also, Hewitt v. Helms, 459 U.S. 460, 471, 74 L.Ed.2d 675, 103 S.Ct. 864 (1983)(?shall? is ?language of an unmistakably mandatory character?); Her Majesty the Queen v. EPA, 912 F.2d 1525, 1533 (D.C. Cir. 1990) (?shall? signals mandatory action).

135 647 F.2d 1130, 1155 (D.C. Cir. 1980).

136 541 F.2d 1 (D.C. Cir.) (en banc), *cert. denied*, 426 U.S. 941 (1976).

137 Id. at 28.

138 Rulemaking undertaken pursuant to this petition must comply with the requirements contained in ? 307(d), 42 U.S.C. ? 7607(d).

139 Petitioners note that a response period of 180 days is reasonable under the APA. See, 42 U.S.C. ? 7604(a) requiring notice of 180 days prior to commence of an action for unreasonable delay. See also, 21 C.F.R. ?10.30(e)(2) (1998) (FDA?s implementation of the Administrative Procedure Act?s petitioning provisions).

140 Petitioners also assert that through the filing of this petition they have complied with citizen suit notice requirements established in ? 304, 42 U.S.C. ? 7604..