



June 23, 2009

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**Re: Regulating Greenhouse Gases Under the Clean Air Act
Docket ID: EPA-HQ-OAR-2009-0171**

The American Energy Alliance submits these comments in response to EPA's Proposed Endangerment Finding for Greenhouse Gases under the Clean Air Act (Docket ID # EPA-HQ-OAR-2009-0171).

These comments demonstrate that using the Clean Air Act to regulate greenhouse gas emissions is unwarranted and would greatly harm human public and welfare.

I. Introduction

To craft a coherent global warming policy, EPA must consider a few important facts about global warming and greenhouse gases:

- 1. Eighty-four percent of the energy used in the United States comes from fossil fuels.**¹ The regulation of greenhouse gases is the regulation of 84% of energy use in the U.S.
- 2. Contrary to the projections of the global climate models,² global temperature as measured by satellites has not increased a**

¹ Energy Information Administration, Monthly Energy Review, May 2009, Table 1.3, http://www.eia.doe.gov/emeu/mer/pdf/pages/sec1_7.pdf

² According to the satellite measurement of temperatures of the lower troposphere, the global climate models are overestimating the amount of warming since 2000. According to the data from Remote Sensing System, the discrepancy between the models and the data is great enough to reject the hypothesis (and IPCC assumption) that we should see 2 degree C of warming per century. Lucia Liljegren, *May RSS Drops Down to UAH April Value*, THE BLACKBOARD (June 11, 2009), <http://rankexploits.com/musings/2009/may-rss-drops-down-to-uah-april-value/>.

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statistically significant amount since at least 2000.³ This lack of temperature increase occurred even though carbon dioxide emissions from the burning of fossil fuels and making cement increased by 26% from 2000 to 2007.⁴

3. **China is the world's largest emitter of carbon dioxide and the U.S. will emit a smaller and smaller share of the world's total greenhouse gas emissions.**⁵ If the U.S. were to completely cease using fossil fuels, the increase from the rest of the world would replace U.S. emissions in less than eight.⁶ If we reduced the carbon dioxide emissions from the transportation sector to zero, the rest of the world would replace those emissions in less than 2 years.⁷
4. **The costs of greenhouse gas regulation under the Clean Air Act total almost \$7 trillion for the first 20 years alone.**⁸ The U.S. would be forced to bear these costs and would receive infinitesimally small benefits in return because of the world's increase in greenhouse gas emissions.

³ The Intergovernmental Panel on Climate Change (IPCC) projected that temperature should increase by about 2 degrees Celsius per century because of greenhouse gas concentrations and temperatures should increase linearly. So far this century temperatures have not increased.
<http://rankexploits.com/musings/2008/ipcc-central-tendency-of-2ccentury-still-rejected/>. The lack of warming is especially evident in the satellite temperature record. Data from Remote Sensing Systems here:
http://www.remss.com/data/msu/monthly_time_series/RSS_Monthly_MSU_AMSU_Channel_TLT_Anomalies_Land_and_Ocean_v03_2.txt. Data from the University of Alabama at Huntsville is here:
<http://vortex.nsstc.uah.edu/public/msu/t2lt/uahncdc.lt>.

⁴ Increase calculated from data from the Global Carbon Project. According to their data, in 2000 the world emitted 6745 TgC and in 2007 emissions were 8471 TgC.

⁵ According to the Global Carbon project in 2007 China emitted 21% of the world's carbon equivalent and the U.S. emitted 19%.

⁶ Calculated using the emission data from the Global Carbon Project. According to these data, the U.S. emitted 1,586,213 GgC in 2007. Without the U.S., the world's emissions were 5,203,987 GgC in 2000, increasing to 6,884,787 GgC in 2007, an increase of 1,680,800 GgC.

⁷ Calculated using the emission data from the Global Carbon Project. According to EPA, the GHG emissions from the transportation sector total 28% of total U.S. emissions. Environmental Protection Agency, *Regulating Greenhouse Gas Emissions Under the Clean Air Act; Proposed Rule*, 73 Fed. Reg. 44354, 44403 (July, 30, 2008). Twenty eight percent of the U.S.'s 2006 carbon dioxide emissions are 436,141 GgC. From 2005 to 2007, the world's emissions, without the emissions from the U.S., grew by 476,324 GgC.

⁸ David Kreutzer & Karen Campbell, *CO2-Emission Cuts: The Economic Costs of the EPA's ANPR Regulations*, <http://www.heritage.org/Research/EnergyandEnvironment/cda08-10.cfm> (Oct. 29, 2008).

These are a few key facts that greatly influence the effectiveness of U.S. global warming policy. Failure to integrate these facts into policy decisions will result in ineffective policy and end up harming public health and welfare.

The threshold question for EPA is whether greenhouse gas emissions from motor vehicles endanger public health and welfare.⁹ One way to answer this question is to look at history. Over the past 100 years, temperature and greenhouse gas concentrations have both increased. In spite of that (or maybe because of it) global GDP has increased 18 fold, average life span has doubled, and per capita food supplies have increased even as global population has quadrupled. These improvements have been fueled by energy use. But the regulation of greenhouse gases is the regulation of energy use.

EPA argues the Clean Air Act is precautionary in nature and that the Administrator should reasonably project into the future and weigh risks.¹⁰ This is undoubtedly true and it should be stated that the *weighing* of risks is very important. EPA should consider the harm to public health and welfare that is imposed by expensive regulations, such as the regulation of greenhouse gases promises to be. As Lutter, Viscusi, and Morrell argue in their 1999 paper,¹¹ every additional \$15 million in regulatory costs (\$19.39 million in 2008 dollars)¹² leads to an additional statistical death. This is because regulatory costs impose costs on society that reduce income and in turn reduce expenditures on health and safety.

Using the Heritage Foundation's and Lutter et al.'s figures, if EPA's regulation creates an additional \$6.9 trillion in regulatory costs, it leads to over 355,000 additional statistical deaths. This would be a catastrophic harm to public health and welfare. Unlike the very visible disasters that are (possibly erroneously) attributed to "climate change," these additional deaths from regulatory costs would not be blamed on the EPA. And yet, if someone dies in a car accident because he didn't have the money to afford a safer (yet more expensive) vehicle, he is still just as dead. This is why this regulation is so important.

⁹ See Clean Air Act § 202.

¹⁰ Environmental Protection Agency, *Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 FED. REG. 18886, 18890-91 (Apr. 24, 2009).

¹¹ Randall Lutter et al., *The Cost-Per-Life-Saved Cutoff for Safety-Enhancing Regulations*, 37 ECONOMIC INQUIRY 599 (Oct. 1999).

¹² This is adjusted for inflation using The Bureau of Labor Statistics *CPI Inflation Calculator*. http://www.bls.gov/data/inflation_calculator.htm.

II. Background

On April 2, 2007, the Supreme Court handed down their decision in *Massachusetts v. EPA*.¹³ In a 5-4 decision, the Court's opinion had three main holdings:

1. States have standing to sue EPA based on alleged injuries brought about by climate change.¹⁴
2. EPA has the authority to regulate greenhouse gases as a "pollutant" under § 202 of the Clean Air Act (§ 202 regulates emissions of new motor vehicles).¹⁵
3. Because, according to the Court, greenhouse gases are pollutants under the Clean Air Act, EPA must justify its decision not to regulate them.¹⁶

For EPA to justify its previous decision not to regulate greenhouse gases, there are two options:

Option 1: Find, under § 202 of the Clean Air Act, that greenhouse gases do not "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."¹⁷

Option 2: "Provide[] some reasonable explanation as to why [EPA] cannot or will not exercise its discretion to determine whether" greenhouse gases endanger public health and welfare.¹⁸

EPA should decline to regulate greenhouse gases using both options 1 and 2. First, the Supreme Court's definition of "air pollution" in *Massachusetts v. EPA* is fatally flawed as described below. Second, the incredible costs associated with using the inflexible regulatory structure of the Clean Air Act will harm public health and welfare.

EPA should exercise its discretion and find that greenhouse gases do not endanger public health and welfare because once EPA makes an endangerment finding under §202, it will be forced to regulate greenhouse gases under a number of other sections of the Act, resulting in regulatory chaos. This outcome was not contemplated by the Supreme Court.

¹³ *Massachusetts v. EPA*, 127 S.Ct. 1438 (2007).

¹⁴ *Id.* at 1454-55.

¹⁵ *Id.* at 1462.

¹⁶ *Id.* at 1462.

¹⁷ *Id.* at 1462 citing 42 U.S.C. §7521(a)(1).

¹⁸ *Id.* at 1462.

Another reason EPA should exercise its discretion is because the “scientific uncertainty [concerning global warming] is so profound that it precludes EPA from making a reasoned judgment”.¹⁹

III. The Legal Reasons why EPA Should Not Make An Endangerment Finding Under § 202

A. The Supreme Court’s definition of “air pollution” in Massachusetts v. EPA is fatally flawed

As noted above, one of the key holdings in *Massachusetts v. EPA* is that under § 202 of the Clean Air Act, greenhouse gases are an “air pollutant.”²⁰ The Supreme Court’s reasoning on this point is unambiguously flawed.

Section 202 gives EPA the authority to regulate air pollution from motor vehicles. The Clean Air Act states that:

The Administrator shall by regulation prescribe . . . standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.

The regulatory scope of § 202 depends on the definition of “air pollutant” because the EPA Administrator must address “the emissions of any air pollutant.” Neither § 202 nor the rest of Title II of the Clean Air Act provides a definition of “air pollutant.” Instead, the Court looks to §302 of the Clean Air Act. According to §302:

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 the ambient air.

Unfortunately, this section of the Clean Air Act is not well drafted because the definition of air pollution is somewhat circular, defining “air pollutant” as “any air pollution agent or combination of such agents.” What is clear from the definition is

¹⁹ *Id.* at 1463. The full quotation from Court is, “If the scientific uncertainty is so profound that it precludes EPA from making a reasoned judgment as to whether greenhouse gases contribute to global warming, EPA must say so.” This is a slight misstatement of the applicable law. The real question is, as the Court later states, “whether sufficient information exists to make an endangerment finding.” *Id.* The question is not whether greenhouse gases contribute to “global warming” because this is not found in the statute and as the Supreme Court held, “EPA must ground its reasons for action or inaction in the statute.” *Id.*

²⁰ *Id.* at 1462.

that air pollution is different from merely “air” and “air pollution” is made of “air pollution agents.”

But contrary to this common sense interpretation, in the *Massachusetts v. EPA*, the Supreme Court wrote the words “pollutant” and “pollution agent” out of the statute. They came to the obviously wrong conclusion that air pollution is *anything* emitted into the ambient air. Here’s the Supreme Court’s analysis:

The Clean Air Act’s sweeping definition of “air pollutant” includes “*any* air pollution agent or combination of such agents, including *any* physical, chemical ... substance or matter which is emitted into or otherwise enters the ambient air” § 7602(g) (emphasis added). On its face, the definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word “any.” Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt “physical [and] chemical ... substance [s] which [are] emitted into ... the ambient air.” The statute is unambiguous.²¹

The Supreme Court’s analysis renders air pollution as “all airborne compounds of whatever stripe.”²² In other words, anything emitted into the air is an “air pollutant.” This is nonsensical. The Supreme Court is unambiguously wrong on this point because this definition of air pollution writes the term “pollution” out of the statute.

Section 202 does not give EPA the authority to regulate “any emissions” or “any air emissions” from motor vehicles. Instead, § 202 gives EPA the authority to regulate “any air pollutant” and §302 defines air pollution as an “air pollution agent.” Section 302 is not artfully drafted, but it does not provide the regulatory authority to regulate *anything emitted into the air* as the Supreme Court argues. Following this definition of “air pollution” there is no clean air because everything emitted into the air is “air pollution.” Congress did not intend this absurd result.

B. EPA’s Proposed Definition of “Air Pollution” for Greenhouse Gases is Arbitrary

In the proposed endangerment finding, EPA proposes to define “air pollution” as “the mix of six key directly emitted and long-lived greenhouse gases: Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).”²³ This is an arbitrary definition and inconsistent with the pollutants described in the Clean Air Act. For

²¹ *Massachusetts v. EPA*, 127 S.Ct. 1438, 1460 (2007)

²² *Id.*

²³ *Proposed Endangerment Finding* at 18888.

example, *any* sulfur dioxide, nitrogen oxides, particulate matter, carbon monoxide, lead, or ozone is pollution. Carbon dioxide and methane are not, in and of themselves, are not pollutants. Just one molecule of sulfur dioxide is pollution. But just one molecule of carbon dioxide is not pollution.

Carbon dioxide and methane are components of perfectly clean air.²⁴ In the past, carbon dioxide levels were much higher than they are today and the air was not polluted by anthropogenic emissions.

Defining “air pollution” as greenhouse gases is not a coherent definition. EPA should not use this definition. It is impossible for EPA to coherently define greenhouse gases by relying on the Supreme Court’s decision in *Massachusetts v. EPA*. The Court’s definition of air pollution is unhelpful because it defines air pollution as “any air emissions.” That is not a supportable position.

C. Regulating Greenhouse Gases Under § 202 Would Lead To “Extreme Measures” Unforeseen by the Supreme Court

EPA argued in its brief before the Supreme Court in *Massachusetts v. EPA* that Congress did not delegate to EPA the regulation of greenhouse gases. Citing *FDA v. Brown & Williamson Tobacco Corp.*²⁵ EPA argued that Congress “does not, one might say, hide elephants in mouseholes.”²⁶ In other words, Congress did not hide the elephant of greenhouse gas regulation in the mousehole of §202.

FDA v. Brown & Williamson Tobacco Corp., dealt with an attempt to regulate and effectively ban tobacco products by regulating them using the Food, Drug and Cosmetic Act. In its decision in *Massachusetts v. EPA*, the Supreme Court distinguished the banning of tobacco with the regulation of greenhouse gas stating that “EPA jurisdiction [to regulate greenhouse gases] would lead to no such extreme measures. EPA would only *regulate* emissions.”²⁷

While EPA might only *regulate* greenhouse gas emissions, this regulation under the Clean Air Act would certainly lead to extreme measures unforeseen by the Supreme Court. The Court was persuaded by assurances from the petitioners that other sections of the Clean Air Act would not be triggered if EPA regulated greenhouse gases under §202. For example, petitioners argued that the National Ambient Air Quality Standards (NAAQS) is “an entirely separate program from the mobile source

²⁴ The lower troposphere is composed of 78% nitrogen, 21% oxygen, 0.9% argon, 0.3–0.4% water vapor, 0.04% carbon dioxide, and 0.0001745% methane.

²⁵ 529 U.S. 120 (2000).

²⁶ Brief of the Federal Respondent, *Massachusetts v. EPA* (05-1120), at 22.

²⁷ *Massachusetts v. EPA*, 127 S.Ct. at 1461.

program at issue in this case.”²⁸

The petitioners’ statement is completely true, but it omits the vital fact that when EPA makes an endangerment finding under § 202, it will almost certainly trigger the regulation of greenhouse gases with other sections of the Clean Air Act including NAAQS because the regulatory language is the same. For example, § 202 state that the EPA Administrator shall regulate emissions “which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.” By way of comparison, Section 108 (NAAQS) states, that the Administration shall regulate “emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.”

While §202’s regulation of mobile sources is separate from other sections of the Act, these disparate sections are inextricably tied together because substantially the same language is used to define pollution in various sections of the Clean Air Act.

As a result of the Clean Air Act using the same regulatory language in various sections as in §202, regulating greenhouse gases under § 202 will indeed cause “extreme measures.” An endangerment finding under § 202 will lead to the direct regulation of 84% of the energy use in the U.S., and even the regulation of greenhouse gas emissions from livestock. Congress surely didn’t hide a \$7 trillion regulatory elephant in the mousehole of §202.

D. The regulation of greenhouse gases under § 202 will almost certainly lead to regulation under other sections of the Clean Air Act.

As noted above, § 202 of the Clean Air Act requires EPA to regulate air pollution from new motor vehicles which “endangers public health or welfare.” A number of other regulatory programs in the Clean Air Act have regulatory triggers that are almost identical to the language of §202. Once EPA declares that greenhouse gases endanger public health and welfare under §202, EPA will be forced to regulate greenhouse gases using other sections of the Clean Air Act.

1. Section 108—National Ambient Air Quality Standards

Section 108 of the Clean Air Act creates the National Ambient Air Quality Standards (NAAQS). This section requires EPA to regulate “air pollution which may reasonably be anticipated to endanger public health or welfare” by setting an ambient air quality standard for each air pollutant. If EPA were to make an endangerment finding under §202, this would trigger NAAQS because the regulatory trigger is the

²⁸ Petitioners’ Brief on the Merits at 28, *Massachusetts v. EPA* (No. 05-1120) http://supreme.lp.findlaw.com/supreme_court/briefs/05-1120/05-1120.mer.pet.pdf.

same.

But setting a permissible level of greenhouse gases in the atmosphere is nearly nonsensical. Greenhouse gases are “well-mixed” gases and spread globally. The greenhouse gas levels in Dubuque, Iowa are more a function of Chinese emissions than the greenhouse gas emissions in Dubuque. Yet because NAAQS was established to regulate regional air pollutants Dubuque would be legally required to reduce global ambient levels of greenhouse gases in order to comply with the NAAQS.

To further complicate matters for EPA, a NAAQS is set at a level to allow “an adequate margin of safety” to protect public health.²⁹ This means the entire U.S. would be out of attainment for the NAAQS and it would be impossible for the U.S. alone to meet the standard. If the U.S. were to completely cease using fossil fuels, the increase in carbon dioxide emissions from the rest of the world would replace U.S. emissions in less than eight years.³⁰ The U.S. could cease all greenhouse gas emissions and still not meet a NAAQS for greenhouse gases.

2. Section 111—New Source Performance Standards

Section 111 of the Clean Air Act creates the New Source Performance Standards (NSPS). This requires the EPA Administrator to regulate stationary sources if in “his judgment [the stationary emissions source] causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.”³¹ Because this language is very similar to § 202 and an endangerment finding under § 202 would trigger the NSPS requirements.

NSPS requires EPA to develop a standard known as “best demonstrated technology” for new or modified pollution sources and to implement and enforce this pollution standard. This would require the “the functional equivalent of a NEPA impact statement” for pollution sources.³² If a NSPS for greenhouse gases generates as much litigation as contentious NEPA documents, it will become very costly to build anything that emits greenhouse gases.

Previously in the ANPR, EPA stated that it “has taken the position that [the terms of

²⁹ Clean Air Act §109(b)(1).

³⁰ Calculated using the emission data from the Global Carbon Project. According to these data, the U.S. emitted 1,586,213 GgC in 2007. Without the U.S., the world’s emissions were 5,203,987 GgC in 2000, increasing to 6,884,787 GgC in 2007.

³¹ Clean Air Act §111(b)(1)(A).

³² *Sierra Club v. Costle*, 657 F.2d 298, 331 (D.C. Cir. 1981).

§111] authorizes a cap-and-trade program under certain circumstances.”³³ EPA made these statements prior to the D.C. Circuit’s decision in *North Carolina v. EPA*.³⁴ In that case, the D.C. Circuit invalidates EPA’s attempt to stretch the statutory language of the Clean Air Act to permit a cap-and-trade program. It is unlikely the court will allow EPA to shoehorn a cap-and-trade system into the Clean Air Act.

3. Prevention of Significant Deterioration (PSD)

The PSD program was established to ensure that areas of the country that are in attainment for criteria pollutants maintain their “clean” air status. The PSD program is not discretionary and must be applied to any pollutant regulated under any Clean Air Act program.

PSD applies to “major emitting facilities.”³⁵ A major emitting facility is defined as a stationary source that either (a) emits more than 100 tons “of any air pollutant” if the stationary source falls within one of the 28 sources listed in §169 of the Clean Air Act, or (b) emits 250 tons or more “of any air pollutant” if the source does not fall within the categories listed.

If greenhouse gases are declared an “air pollutant” for purposes of motor vehicles in § 202, they will certainly be an “air pollutant” in § 169 and PSD will apply.

PSD requires preconstruction permits for any new “major” source of air pollution. These permits require the source to use the “best available control technology.” PSD also applies if a major stationary source is modified.

Currently EPA only issues PSD permits for 200-300 entities because 100 or 250 tons per year is a substantial amount of a traditional pollutant. But unlike traditional pollutants, greenhouse gases are ubiquitous. The 250 tons per year threshold would be met if a business uses \$70,000 in natural gas in a year. This would lead EPA to regulate over 1 million currently unregulated buildings, including but not limited to:³⁶

- 260,000 office buildings
- 150,000 warehouses
- 100,000 schools

³³ Environmental Protection Agency, *Regulating Greenhouse Gas Emissions Under the Clean Air Act; Proposed Rule*, 73 Fed. Reg. 44354, 44411 (July 30, 2008) [hereinafter ANPR].

³⁴ 531 F.3d 896 (D.C. Cir. 2008).

³⁵ Clean Air Act §165(a).

³⁶ Portia M.E. Mills & Mark P. Mills, *A Regulatory Burden: The Compliance Dimension of Regulation CO2 as a Pollutant*, http://www.uschamber.com/assets/env/regulatory_burden0809.pdf (Sept. 2008).

- 92,000 health care facilities
- 58,000 food service buildings
- 37,000 churches and buildings of religious worship
- 26,000 places of public assembly
- 17,000 farms

Besides regulating over one million currently un-regulated buildings, the PSD permit process is very expensive. According to EPA data, the average PSD permit costs about \$125,000.³⁷ PSD permits require the case-by-case application of “best available control technology” and involves a five-step process with substantial work required by the regulated entity and EPA. According to calculations by the U.S. Chamber of Commerce based on EPA data, if only 40,000 sources were forced to obtain PSD permits for greenhouse gases, it would cost state and local agencies over \$900 million in administrative costs besides the \$5 billion it would cost businesses.³⁸

These are crushing regulatory costs. Environmental attorney Peter Glaser amplified on this point when he testified before Congress:

If CO₂ were deemed to be a regulated CAA pollutant now, then just the administrative burden alone—putting aside any BACT or other requirements that would result from the permitting process—would create an overwhelming and unprecedented roadblock to new investment for a host of previously unregulated buildings and facilities. Because these buildings and facilities are such relatively small CO₂ emitters, all of this economic pain would be created for very little environmental gain.³⁹

In the ANPR, EPA noted that the regulation of greenhouse gases would “dramatically expand the number of sources required to obtain PSD permits”⁴⁰ and proposes some

³⁷ Carrie Wheeler, EPA, *Information Collection Request for Prevention of Significant Deterioration and Nonattainment New Source Review (40 CFR Part 51 And 52)*, at 14 (\$35,233,000 divided by 282 application prepared by industry). Available at <http://www.regulations.gov/fdmspublic/ContentViewer?objectId=09000064806b25d1&disposition=attachment&contentType=pdf>.

³⁸ U.S. Chamber of Commerce, *Re: Regulating Greenhouse Gases Under the Clean Air Act: Responding to Massachusetts v. EPA*, (Nov. 19, 2008).

³⁹ Peter Glaser & John Cline, *Testimony of Peter Glaser and John Cline on EPA’s Approach to Addressing Greenhouse Gases in the Wake of the Supreme Court’s Decision in Massachusetts v. EPA*, House Committee on Oversight and Government Reform (Nov. 8, 2007).

⁴⁰ ANPR at 44500. EPA greatly understates the number of PSD permits it would have to issue every year. EPA states more than 2000–3000 permits a year would have to be issued. This is significantly lower than the one million permits cited above. The difference occurs for a number of reasons: 1) EPA does not count the modification of buildings, only new buildings, 2) it only includes actual

legal theories to try to limit the extent of the program. None of EPA's legal theories in the ANPR pass muster. One EPA proposal to circumvent the Clean Air Act's onerous PSD regulations is to redefine the 100 or 250 ton per year threshold to be something higher than 100 or 250 tons per year. For example, EPA opines:

One conceptual approach might be to identify the number of sources and modifications affected by various cutoffs, calculate the costs and benefits of a PSD program for that universe of affected sources, and select a cutoff that optimizes the benefit-cost ratio.⁴¹

Using cost-benefit analysis would be a novel approach, but the statutory language of § 169 is clear—100 or 250 tons. There is no statutory support for using cost-benefit analysis to raise the threshold. The statute clearly says 100 or 250 tons.

Another proposal in the ANPR was an “emissions scaling approach.”⁴² EPA's description of this plan is not clear, but anything not based on the clear statutory limit of 100 or 250 tons per year is legally suspect.

EPA also proposed in the ANPR to base “the major source size on a scientific determination of a level below which an individual source would have a *de minimis* contribution” to climate change impacts.⁴³ Again, there is no statutory support for this proposal. The emission level is 100 or 250 tons. There are no exemptions for *de minimis* impacts.

EPA proposed in the ANPR to implement PSD as a part of harmonization with other programs such as DOE's 1605(b) program with a threshold of 10,000 metric tons.⁴⁴ Again, this fails because §169's statutory language is clear—100 or 250 tons per year. There is no statutory support for a higher threshold.

EPA also proposed to use the metric of “Carbon Equivalent” (CE) instead of actual emissions to increase the PSD program's statutory trigger.⁴⁵ The problem with this approach is that CE is a metric. As EPA itself states on page 44505 of the ANPR, CE is

emissions, not the actual “potential to emit” as required by §169 of the Clean Air Act, and 3) EPA does not include “non-combustion” sources of carbon dioxide such as brewers, bakers, and the manufactures of carbonated beverages and fugitive emissions from agriculture. *See ANPR* at 44499.

⁴¹ *ANPR* at 44505.

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

a metric that “allows the impact of emissions of different GHGs to be compared.”⁴⁶ A metric of global warming impact is not a measure in tons per year. The PSD program regulates the emissions of “of any air pollutant” expressed in tons per year.⁴⁷ Defining emissions in CE to avoid the 100 or 250 tons per year threshold will not pass muster.

EPA noted in the ANPR that Congress did not “envision that PSD would cover the large numbers of smaller sources within that inventory.”⁴⁸ This is an accurate statement, but if EPA wants to make this argument, it has to be taken to its logical conclusion. Congress did not intend to subject smaller sources to PSD because Congress did not intend to *regulate greenhouse gases as pollutants* under the Clean Air Act. EPA avoids all of the difficulties of applying PSD to greenhouse gas emissions, by not making an endangerment finding under § 202. But once EPA makes an endangerment finding, the rest of the Clean Air Act’s regulations must be followed. Alleged Congressional intent can only be followed if a statute is ambiguous and there is nothing ambiguous about the PSD program’s 100 or 250 tons per year threshold.

Lastly, EPA notes that it may be able to set “significance levels” in an effort to “alleviate severe administrative burdens.”⁴⁹ EPA helpfully cites the very case that rejects this type of proposal. In *Alabama Power Co. v. Costle*, EPA attempted this approach with 2,400 PSD applications but the court rejected EPA’s approach stating that the “exemption falls well beyond the agency’s exemption authority.”⁵⁰

The proper method for EPA to use to alleviate its administrative burden is to not make an endangerment finding under §202. The administrative burdens will become immense if EPA starts regulating greenhouse gases. These large administrative burdens are not a fault with the Clean Air Act, it is the result of attempting to shoehorn greenhouse gas regulation into the Clean Air Act.

Environmentalists have offered a few flawed proposals to limit the applicability of PSD. For example, David Bookbinder of the Sierra Club wrote in testimony before Congress:

EPA should state that it has no intent of requiring Prevention of Serious Deterioration (“PSD”) permits for sources emitting less than

⁴⁶ *Id.*

⁴⁷ See Clean Air Act §169.

⁴⁸ ANPR at 44506.

⁴⁹ *Id.* at 44507.

⁵⁰ 636 F.2d 323, 356 (D.C. Cir. 1979).

5,000-10,000 tons per year (“tpy”) of CO₂. No one—not industry, not the environmental community, not EPA, not the state air agencies—believes that those sources should be regulated.⁵¹

Mr. Bookbinder’s testimony is misleading. EPA’s stated intent does not control the Clean Air Act’s clear language. EPA could state it has no intention of using PSD to regulate new sources, but such a statement would be without legal effect. Mr. Bookbinder’s organization, the Sierra Club, is already involved in litigation to expand the applicability of PSD with respect to greenhouse gases to new sources.⁵² The national Sierra Club might keep Mr. Bookbinder’s word and not sue small sources, but certainly other groups, or even state Sierra Clubs, will sue to stop a new office building, big box store, hospital, or sports arena, by requiring a PSD permit. Groups looking to stop development will use all of the tools at their disposal and requiring a PSD permit would be a powerful tool.

The PSD program was not intended to regulate greenhouse gases because the Clean Air Act was not intended to regulate greenhouse gases. EPA cannot regulate around the clear language of the Clean Air Act. Instead of attempting to circumvent this language, EPA should not regulate greenhouse gases under the Clean Air Act.

4. Title V Permits

Unlike PSD, Title V of the Clean Air Act does not add any pollution control measures, but instead imposes paperwork requirements and a permit fee. Title V requires permits from entities that emit 100 tons of pollution per year. The Department of Agriculture explains how onerous this requirement is:

Even very small agricultural operations would meet a 100-tons-per-year emissions threshold. For example, dairy facilities with over 25 cows, beef cattle operations of over 50 cattle, swine operations with over 200 hogs, and farms with over 500 acres of corn may need to get a Title V permit.⁵³

The Farm Bureau further explains how extensive these permit requirements will be. “USDA statistics for 2007 indicate that these thresholds would cover about 99

⁵¹ David Bookbinder, *Testimony of David Bookbinder, Chief Climate Counsel, Sierra Club Before the Senate Committee on Environment and Public Works, Hearing on Regulation of Greenhouse Gases Under the Clean Air Act* (Sept. 23, 2008) http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=bf5c538e-7fe8-498c-9d31-0396a465b673.

⁵² Sierra Club, *Ruling: Coal Plants Must Limit CO₂*, http://action.sierraclub.org/site/MessageViewer?em_id=78902.0 (Nov. 13, 2008).

⁵³ ANPR at 44377.

percent of total dairy production, over 90 percent of beef production, and over 95 percent of all hog production in the United States.”⁵⁴ EPA’s presumptive minimum rate of \$43.75 per ton for the Title V permit fee translates to \$175 per cow per year, \$87 per beef cow per year, and \$20 per hog per year.⁵⁵ In practice this Title V permit fee will be little more than a carbon tax.

In the ANPR, EPA attempted to explain how it would increase the statutorily-defined threshold of 100 tons per year.⁵⁶ For the same reasons as with the PSD program, EPA’s arguments to increase the threshold through regulation are without merit. One hundred tons per year is not an ambiguous term. The Clean Air Act is clear.

Besides regulating the million plus stationary sources of the PSD program and essentially imposing a carbon tax, Title V has citizen suit provisions where citizens have 60 days to petition EPA to object to the issuance of a Title V permit.⁵⁷ Activists will likely use this program to slow or halt projects.

E. Conclusions of Legal Arguments

The Supreme Court’s definition of “air pollution” in *Massachusetts v. EPA* is fatally flawed. As a result, EPA’s proposed definition of “air pollution” is also flawed. Furthermore, the Supreme Court was misled about the impact of regulating greenhouse gases as “air pollution” under §202, believing that “EPA would regulate emissions” from only mobile sources. This is will not the case.

Once an endangerment finding is made under §202, it will trigger NAAQs, NSPS, PSD, and Title V among other sections of the Clean Air Act. The Supreme Court in *Massachusetts v. EPA* gave EPA the ability to *not* regulate greenhouse gases by “provid[ing] some reasonable explanation as to why [EPA] cannot or will not exercise its discretion to determine whether” greenhouse gases endanger public health and welfare.⁵⁸ The foregoing provides some reasonable explanations why EPA should not regulate greenhouse gases. As noted above, surely Congress did not hide a \$7 trillion regulatory elephant in the mousehole of §202’s regulation of mobile sources.

⁵⁴ Farm Bureau comment on EPA on the ANPR, p. 2.

⁵⁵ *Id.*

⁵⁶ ANPR at 44413.

⁵⁷ Clean Air Act §505(b)(2).

⁵⁸ *Massachusetts v. EPA*, 127 S.Ct. at 1462.

IV. The Scientific Reasons why EPA Should Not Make an Endangerment Finding Under §202

There is profound scientific uncertainty concerning the impact of increasing greenhouse gas levels on public health and welfare. The Proposed Endangerment Finding and the Technical Support document (TSD)⁵⁹ significantly overstate the certainty of current climate science and knowledge. These documents also fail to include pertinent information about greenhouse gas emissions and global warming.

A. Omissions in the Proposed Endangerment Finding and TSD

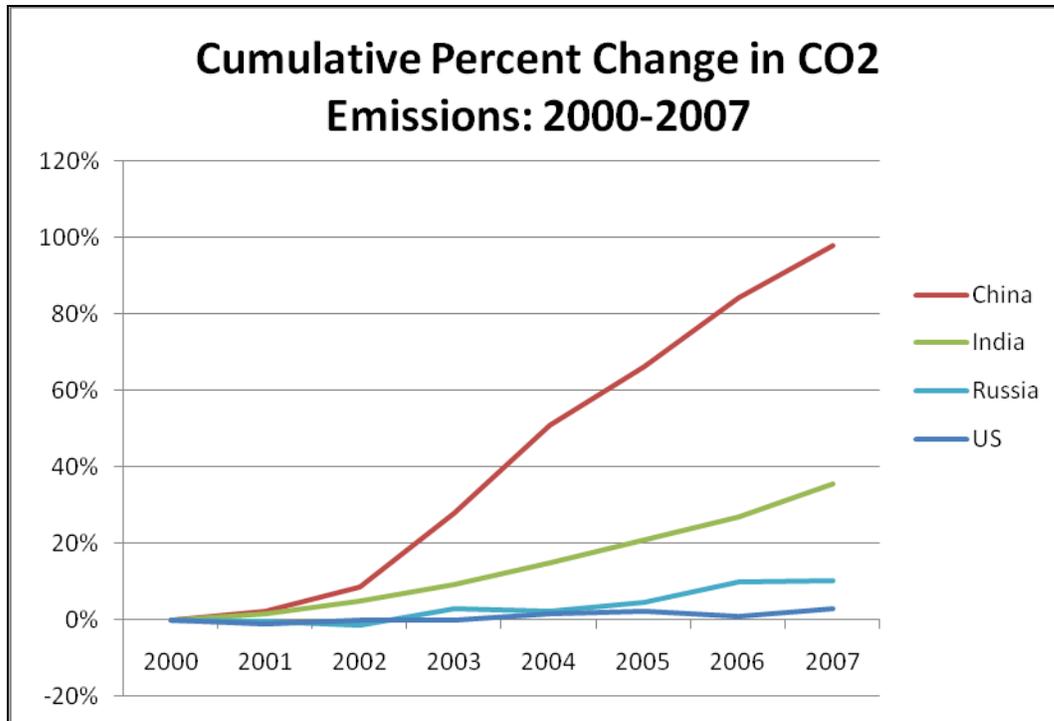
1. The Rate of Growth of Carbon Dioxide Emissions Will Swamp U.S. Emissions Cuts

The ANPR and the Sixth Order Draft TSD⁶⁰ of the ANPR omitted the fact that China's carbon dioxide emissions had surpassed the U.S.'s. This omission has been corrected in the Proposed Endangerment Finding. EPA, however, still does not provide context or a complete picture of global carbon dioxide emissions because it fails to describe how quickly emissions are increasing from the developing world.

The following graph shows the percent change in carbon dioxide from select countries from 2000 through 2007.

⁵⁹ Environmental Protection Agency, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*, (Apr. 17, 2009).

⁶⁰ Environmental Protection Agency, *Sixth Order Draft of the Technical Support Document for Endangerment Analysis for Greenhouse Gas Emissions under the Clean Air Act*, June 21, 2008 [hereinafter Sixth Order Draft TSD].

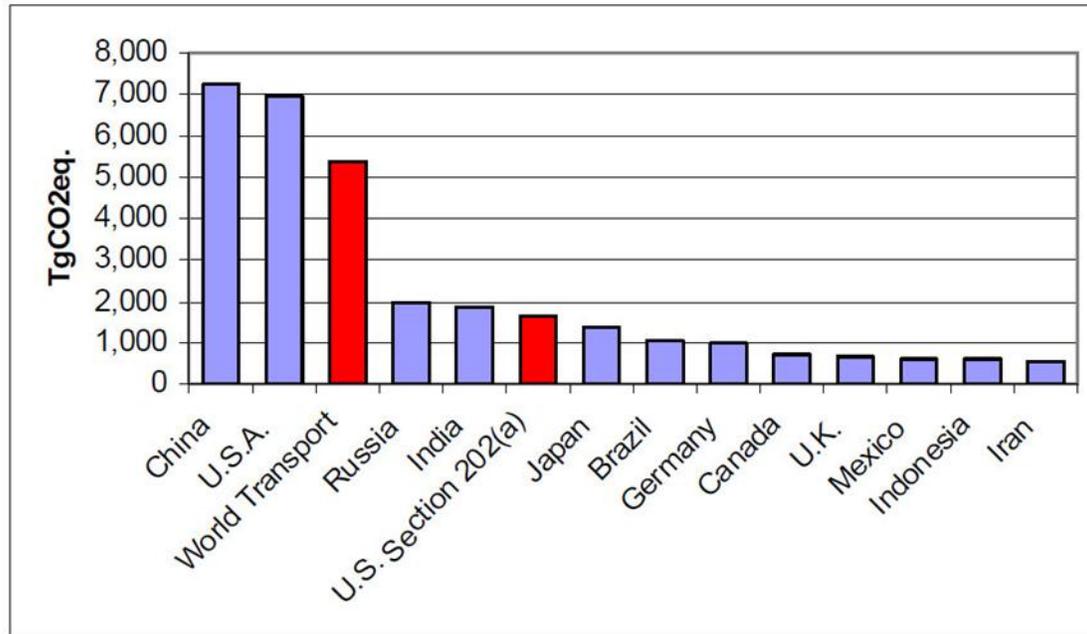


According to data from the Global Carbon Project, from 2000 through 2007, China's carbon dioxide emissions increased 98%, India's increased 36%, the global total increased 26%, Russia's increased 10%, the U.S.'s increased 3%.

The latest TSD provides the following graphic to show greenhouse gas emissions from China, the U.S., and U.S. transportation emissions.⁶¹

⁶¹ TSD at 12.

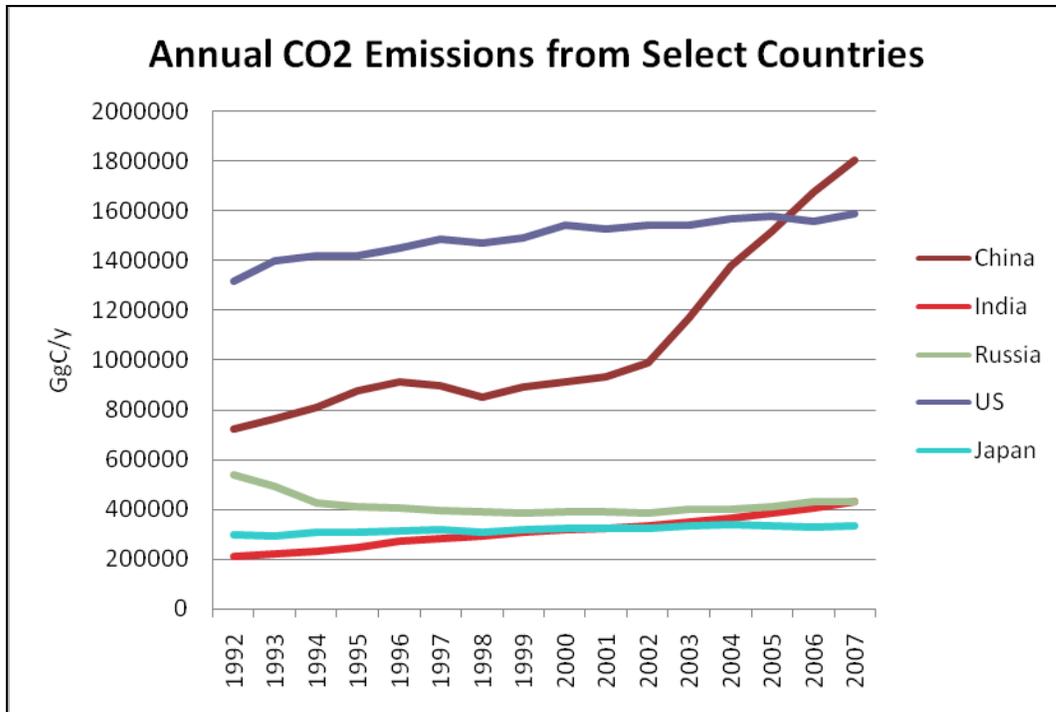
Figure 2.3: Total GHG Emissions for the Year 2005 by Country and for U.S. Section 202a Source Categories



Source: WRI Climate Analysis and Indicators Tool. Available at <http://cait.wri.org/>. Excludes land use, land-use change and forestry, and international bunker fuels. More recent emissions data are available for the U.S. and other individual countries, but 2000 is the most recent year for which data for all countries and all gases are available. Data accessed February 20, 2009.

This graph is more accurate and up-to-date than previously, but it fails to provide context for the rate of growth of greenhouse gas emissions from developing countries such as China. The following graphic shows the annual carbon dioxide emissions from a few select countries.⁶²

⁶² Data for the graphic was provided by the Global Carbon Project.



Led by the developing world and especially China, the world’s greenhouse gas emissions are increasing dramatically. In Figure 2.3 of the new TSD, EPA shows that U.S. transportation emissions are significant. EPA however, fails to note that if the U.S. reduced the carbon dioxide emissions from the transportation sector to zero, the rest of the world would replace those emissions in less than 2 years at the current rate of growth.⁶³ Furthermore, if the U.S. were to completely cease using fossil fuels, the increase from the rest of the world would replace U.S. carbon dioxide emissions in less than eight years.⁶⁴

For EPA to make thoughtful policy decisions, it is important to consider the big picture of global greenhouse gas emissions and trends that are missing in the Proposed Endangerment Finding.

2. Since 2000, the Global Average Temperature Has Not Increased

Another interesting fact about global warming is that global temperatures have not increased since 2000. Global carbon dioxide emissions increased by 26% from

⁶³ Calculated using the emission data from the Global Carbon Project. According to the ANPR, the GHG emissions from the transportation sector total 28% of total U.S. emissions. ANPR at 44403. Twenty eight percent of the U.S.’s 2006 carbon dioxide emissions are 436,141 GgC. From 2005 to 2007, the world’s emissions, with the emissions from the U.S., grew by 476,324 GgC.

⁶⁴ Calculated using the emission data from the Global Carbon Project. According to these data, the U.S. emitted 1,586,213 GgC in 2007. Without the U.S., the world’s emissions were 5,203,987 GgC in 2000, increasing to 6,884,787 GgC in 2007.

2000 to 2007⁶⁵ and yet there has not been an increase in global temperature. In fact, instead of an increase in global temperature, as predicted by the global climate models, there has not been a statistically significant increase in temperature.⁶⁶

This leveling-off of global temperatures was not predicted by the global climate models⁶⁷ and should therefore give us pause before relying on the models to make decisions that will cost Americans trillions of dollars. Before EPA approvingly cites the projections from global climate models, the projections should agree with actual temperature data. Currently the global climate models over-project global temperatures.⁶⁸

The lack of temperature increase calls into question the skill of global climate models and whether they bear a relation to the real world.

Consider the following statistical analysis by Lucia Liljegren which compares the projection from the IPCC using the SRES A1Ba scenario and observations (blending the temperature data from the Hadley Center, GISS, and NOAA).⁶⁹ Currently, the IPCC's global climate models are about 0.2° C hotter than observations.

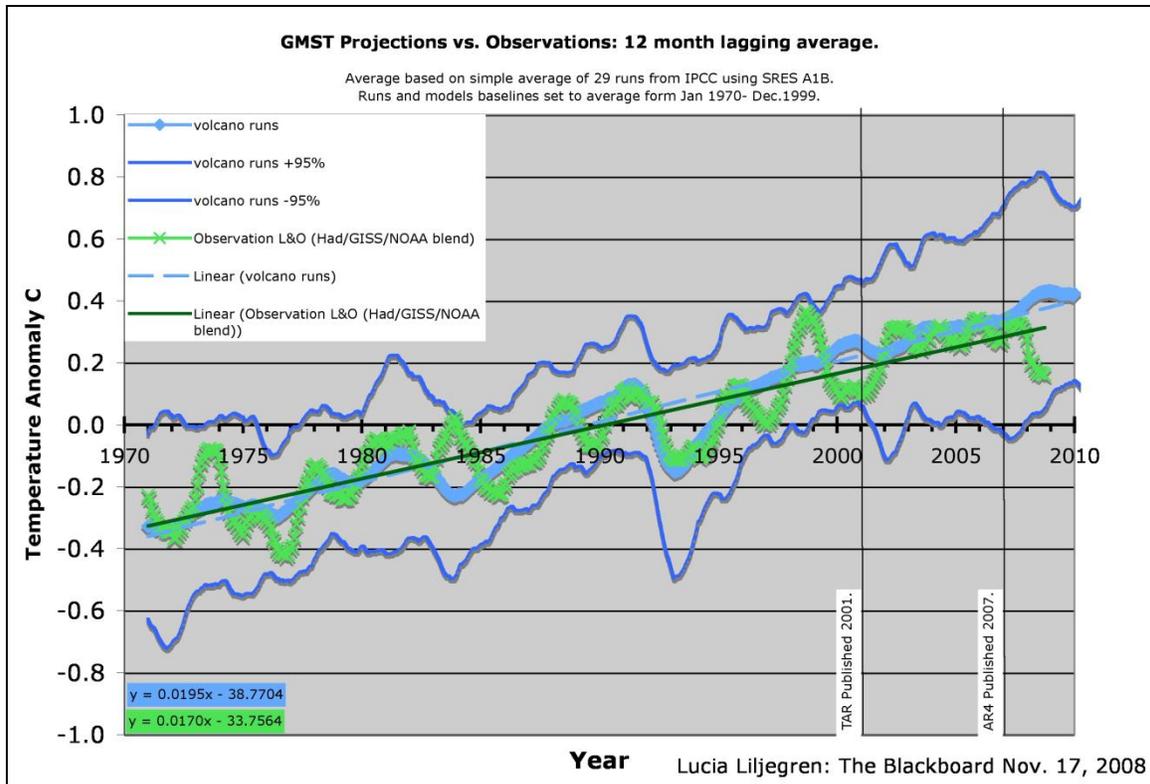
⁶⁵ Increase calculated from data from the Global Carbon Project. According to their data, in 2000 the world emitted 6745 TgC and in 2007 emissions were 8471 TgC.

⁶⁶ The Intergovernmental Panel on Climate Change (IPCC) projected that temperature should increase by about 2 degrees Celsius per century. So far this century, temperatures have not increased. <http://rankexploits.com/musings/2008/ipcc-central-tendency-of-2ccentury-still-rejected/>. The lack of warming is especially evident in the satellite temperature record. This is not to say that global warming has "stopped" or that temperatures will not increase in the future. We are only noting that so far this century, temperatures have not increased.

⁶⁷ According to the satellite measurement of temperatures of the lower troposphere, the global climate models are overestimating the amount of warming since 2000. According to the data from Remote Sensing System, the discrepancy between the models and the data is great enough to reject the hypothesis (and IPCC assumption) that we should see 2 degree C of warming per century. Lucia Liljegren, *May RSS Drops Down to UAH April Value*, THE BLACKBOARD (June 11, 2009), <http://rankexploits.com/musings/2009/may-rss-drops-down-to-uah-april-value/>.

⁶⁸ *Id.*

⁶⁹ See Lucia Liljegren, *Comparison of 12 Month Running Averages*, <http://rankexploits.com/musings/2008/comparison-of-12-month-running-averages/> (Nov. 17, 2008).



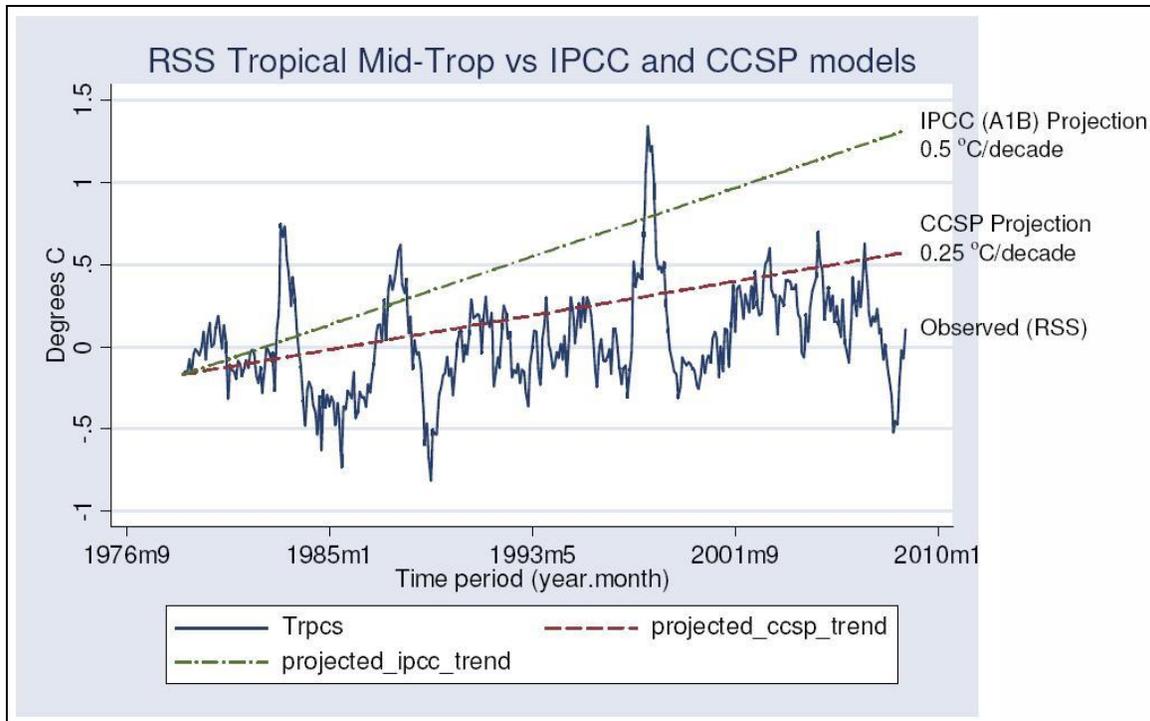
There is a striking similarity between the projections and actual temperature observations between the release of IPCC's Third Assessment Report and Fourth Assessment Report. This is to be expected because modelers can tweak their models until the models agree with past observations. The real test of a model is how well they forecast the future. So far, the models have not done a good job of forecasting the surface temperatures after the release of IPCC's Fourth Assessment Report. If the disparity between observations and models is this great one year after the release of the Fourth Assessment Report, it should give EPA pause when relying on the IPCC's global climate models.

The problem reconciling global climate models and observations is not limited to surface temperatures and temperatures in the lower troposphere (as measured by the satellites), but also temperatures in the mid-troposphere.

IPCC's global climate models predict warming of about 0.5° C/decade in the tropical mid-troposphere.⁷⁰ But in contrast to the IPCC's predictions, there has not been significant warming in the mid-troposphere above the tropics as the following graph using RSS data shows:⁷¹

⁷⁰ See Ross McKittrick, *Response to Chairman Dingell*, p. 6, <http://ross.mckittrick.googlepages.com/Response.to.Dingell.EAQ.pdf>.

⁷¹ *Id.*



The result is the same using data from UAH.⁷² The balloon record of the mid-troposphere also shows no overall warming pattern in the tropical mid-troposphere.⁷³

These examples show that IPCC's global climate models do not skillfully predict global climate. Ross McKittrick, explained in testimony to Congress:⁷⁴

if greenhouse gases dominate the climate, the troposphere over the tropics and over both poles should be warming; the tropical troposphere should be warming two to three times faster than the polar tropospheric regions, namely at a rate of about 0.25 to 0.5 °C/decade, and the polar warming should be strongest at the surface. The data, however, do not support any of these hypotheses. They show, at most, a trend of about 0.1°C/decade in the tropical mid-troposphere, it is statistically insignificant and recently the annual mean temperature has fallen below the level observed in the early 1980s, despite an overall 14% increase in the atmospheric CO₂ content since that time. The trend observed in the tropics over the past 30 years is less than half that observed over the North Pole, and the troposphere over the South Pole is cooling, not warming. The

⁷² *Id.* at 7.

⁷³ *Id.*

⁷⁴ *Id.* at 10.

enhanced trend over the North Pole has been attributed to variations in atmospheric heat transport, and the vertical structure is inconsistent with the pattern predicted in models as an amplified response to greenhouse gases.

One of my biggest concerns about cap-and-trade systems is that they ask the people of the US to commit to permanently higher energy costs based [on] global warming forecasts from models that appear systematically to overestimate climate sensitivity to greenhouse gases and hence the environmental costs of emissions.

If EPA uses predictive models, the models must be analytically sound. In the words of the D.C. Circuit, “model assumptions must have a rational relationship with the real world.”⁷⁵ These observations raise serious concerns about the analytical soundness of the models upon which EPA wishes to rely and whether they have a rational relationship to the real world.

B. Questionable Scientific Claims in the Proposed Endangerment Finding and the TSD

1. Increased Heat Waves and Possibly Increased Mortality and Morbidity?

EPA states that severe heat waves are projected to occur increasing “heat-related morbidity and mortality are projected to increase globally (including in the U.S.) compared to a future with no climate change.”⁷⁶ This is conjecture that is inconsistent with the historical trends.

EPA acknowledges that studies show that the “populations in the U.S. became less sensitive to high temperatures over the period 1964 to 1988, in part” because of acclimatization and adaptation but suggests these trends change.⁷⁷ This conclusion is doubtful when we examine the data.

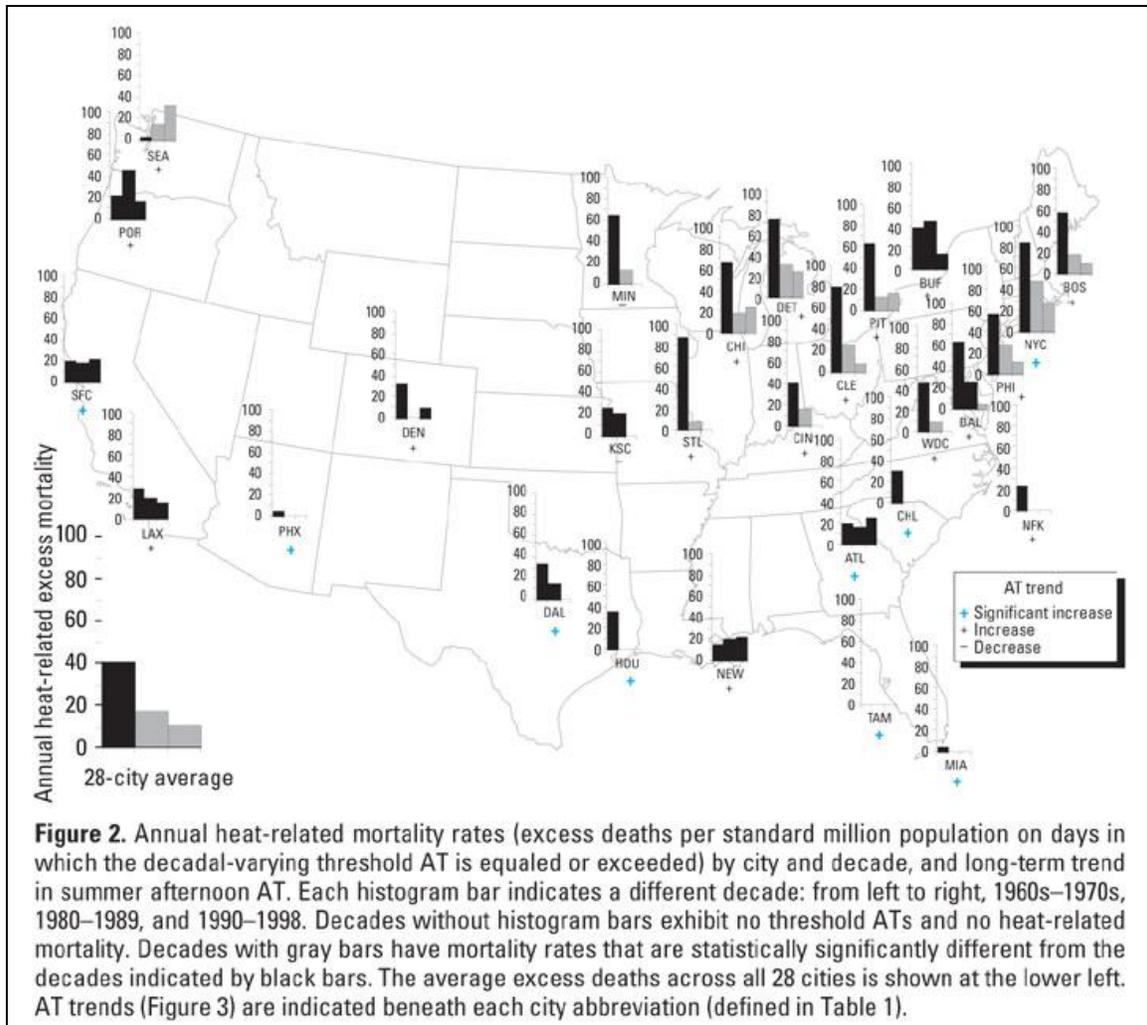
The following chart demonstrates what has occurred with heat-related mortality since the 1960s in the United States.⁷⁸ The histograms show annual heat-related mortality rates.

⁷⁵ *West Virginia v. EPA*, 362 F.3d. 861, 866–67 (D.C. Cir. 2004).

⁷⁶ TSD at 70.

⁷⁷ *Id.* at 70.

⁷⁸ Robert E. Davis et. al., *Changing heat-related mortality in the United States*, 111 *Environmental Health Perspectives* 1712 (2003). An electronic version of the paper is available here: <http://www.ehponline.org/members/2003/6336/6336.html>.



As the shrinking histogram bars show, heat-related mortality is decreasing in almost all major U.S. cities. This has occurred even as greenhouse gas levels and temperatures have increased. Heat-related mortality has declined because of economic and health-related improvements. America has grown richer and people use their money to protect themselves from heat, whether people live in Dallas or Boston. It is implausible that these trends will reverse themselves. History is a better predictor of the future than models.

Global warming could lead to more heat wave related mortality, but less cold related deaths. The TSD states there is a paucity of recent literature comparing heat and cold related deaths. But one observational study from Europe shows that if temperatures were to increase by 3.6°F “any increases in mortality due to increased

temperatures would be outweighed by much larger short term declines in cold related mortalities.”⁷⁹

2. Will Hurricanes Become More Intense?

The TSD claims, “it is likely that hurricanes will become more intense, with stronger peak winds and more heavy precipitation associated with ongoing increases of tropical sea surface temperatures.”⁸⁰ This is an overstatement of the current science on tropical cyclones.

Over the past few years, two papers using different methods have found that global warming will lead to fewer and less powerful hurricanes, not strong hurricanes. The first paper was produced by Gabriel Vecchi and Brian Soden. Vecchi and Soden used climate models to predict the effects of global warming on hurricanes. Their work found that global warming should increase vertical wind shear which in turn should inhibit the intensity of hurricanes.⁸¹

Vecchi and Soden’s work was complemented by another paper which used observational data to arrive at the same conclusions. Chunzai Wang and Sang-Ki Lee recently published a paper in *Geophysical Research Letters* which shows that “the attribution of the recent increase in Atlantic hurricane activity to global warming is premature and that global warming may decrease the likelihood of hurricanes making landfall in the United States.”⁸² Their data also demonstrate that global warming is associated with increased vertical wind shear, which should inhibit the formation of hurricanes.⁸³ They also find that major hurricanes decreased in the Atlantic from the 1760s through the 1990s and “the recent increase is not unusual compared to other periods of high hurricane activity.”⁸⁴

This is just a sampling of the recent science on global warming and hurricanes. The point is not that global warming will necessarily lead to fewer or less intense

⁷⁹ Keatinge et. al., *Heat Related Mortality in Warm and Cold Regions of Europe: Observational Study*, 321 British Medical Journal 670 (2000). Available here: <http://www.bmj.com/cgi/content/full/321/7262/670>.

⁸⁰ TSD at ES-4.

⁸¹ Gabriel A. Vecchi & Brian J. Soden, *Increased tropical Atlantic wind shear in model projections of global warming*, 34 *Geophysical Research Letters* L08702 (2007). www.gfdl.noaa.gov/reference/bibliography/2007/gav0701.pdf.

⁸² Chunzai Wang & Sang Ki-Lee, *Global warming and United States landfalling hurricanes*, 35 *Geophysical Research Letters* L02708 (2008). http://www.aoml.noaa.gov%2Fphod%2Fdocs%2FWang_Lee_GRL_2008.pdf&ei=jlQrScWINZvCeun4tLwE&usg=AFQjCNGlO5vfV93RSxcIMZKfVhH13ETDOQ&sig2=c40Aau-LMLZ0MhA-Bn8f7g.

⁸³ *Id.*

⁸⁴ *Id.* at L02708, 3.

hurricanes, but that the science of global warming and hurricanes is definitely not settled.

In 2005, the following summary of the science appeared in the Bulletin of the American Meteorological Society:

the state of the peer-reviewed knowledge today is such that there are good reasons to expect that any conclusive connection between global warming and hurricanes or their impacts will not be made in the near term.⁸⁵

The lack of a conclusion about global warming and hurricanes was as true in 2005 as it today.

C. There is Profound Scientific Uncertainty Concerning the Impact of Increasing Greenhouse Gas Levels on Public Health and Welfare

The current generation of global climate models is not accurately predicting the current climate situation. This may change in the long run, but regulating greenhouse gases using the Clean Air Act will cost Americans trillions of dollars. Therefore, we ought to have confidence in the models.

It is also a concern that the Proposed Endangerment Finding does not adequately discuss the current state of global emissions. China is the world's #1 emitter of carbon dioxide, but more important is the rate of emissions growth of the developing world versus the rate of growth of emissions in the U.S. Climate policy that does not consider that the vast majority of future emissions growth will come from the developing world will not be rational or effective.

The discussion of heat-related mortality and air quality in the Proposed Endangerment Finding is better than the discussion in the ANPR, but significant care should be used when referencing the IPCC's conclusions on this subject. The IPCC's assumptions of increased heat-related mortality and decreased air quality might work somewhere in the world, but they do not fit the situation in the U.S. Lastly, extreme weather events like hurricanes make good news copy, but the current state of the science does not support claims that hurricanes are going to increase.

In *Massachusetts v. EPA* the Supreme Court stated that EPA can avoid making an endangerment finding if "scientific uncertainty is so profound that it precludes EPA from making a reasoned judgment".⁸⁶ This indeed is the case.

⁸⁵ Roger A. Pielke, Jr. et. al., *Hurricanes and Global Warming*, 85 Bulletin of the American Meteorological Society 1571 (2005).

⁸⁶ *Massachusetts v. EPA*, 127 S.Ct. at 1463.

VI. Conclusion

EPA should not regulate greenhouse gases using the Clean Air Act. The regulatory costs of this action would be so immense it would seriously harm public health and welfare as discussed above. Also, there are a large number of challenges in attempting to square the Clean Air Act's regulations with the reality of greenhouse gas emissions. These problems are not limited to legal questions. Serious questions exist about EPA's use of global climate models and the lack of discussion of current emissions from China and the developing world. Also, many of the alleged harms to public health and welfare from a warmer world do not stand up to an examination when compared to actual trends.

Appendix

Carbon Dioxide Emissions

Source: Global Carbon Project

| | Total | China | India | Russia | US | Japan |
|------|-------|---------|--------|--------|---------|--------|
| 1992 | 6147 | 721435 | 211233 | 541525 | 1317873 | 302855 |
| 1993 | 6155 | 760580 | 220126 | 494155 | 1399445 | 295432 |
| 1994 | 6273 | 807460 | 233805 | 427256 | 1419342 | 309814 |
| 1995 | 6400 | 872842 | 248823 | 410380 | 1419412 | 309548 |
| 1996 | 6525 | 911600 | 271171 | 407569 | 1447943 | 318297 |
| 1997 | 6633 | 897615 | 282753 | 396266 | 1485033 | 319257 |
| 1998 | 6591 | 848091 | 290387 | 389328 | 1471464 | 309091 |
| 1999 | 6573 | 888516 | 309269 | 387844 | 1492015 | 322071 |
| 2000 | 6745 | 910950 | 316804 | 391652 | 1541013 | 328623 |
| 2001 | 6924 | 933382 | 321666 | 389982 | 1525322 | 324043 |
| 2002 | 6971 | 989704 | 332594 | 386662 | 1541328 | 328081 |
| 2003 | 7306 | 1164997 | 346022 | 403185 | 1538122 | 334668 |
| 2004 | 7692 | 1374810 | 364755 | 401650 | 1563923 | 342008 |
| 2005 | 7985 | 1514126 | 382740 | 410290 | 1576537 | 335706 |
| 2006 | 8229 | 1676298 | 401690 | 431349 | 1557649 | 332221 |
| 2007 | 8471 | 1801932 | 429601 | 432486 | 1586213 | 337364 |

CO₂-MtC/year (TgC/y) for global total and ktC per year (GgC/y) for countries.

Tons are metric tons.