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Environmental Protection Agency
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1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

By electronic delivery to: GHG-Endangerment-Docket@epa.gov

Re: Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, Docket ID No. EPA-HQ-OAR-2009-0171

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The Competitive Enterprise Institute (CEI), a non-profit, free-market public policy group specializing in regulatory issues, is pleased to submit this comment on EPA's *Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*.[1]

[1] EPA, Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, *Federal Register*, Vol. 74, No. 78, April 24, 2009, pp. 18886-18910; hereafter cited as Endangerment Proposal.

I. Summary

EPA should not find endangerment with regard to greenhouse gas (GHG)-related "air pollution" for the following scientific and legal/constitutional reasons:

- EPA has not exercised its judgment with regard to the fundamental scientific issues: detection, attribution, and climate sensitivity. Instead, EPA uncritically defers to the judgment of a self-appointed scientific "consensus." This is not the analysis required by §202 of the Clean Air Act (CAA or Act).
- EPA has ignored a significant and growing body of "skeptical" assessments of both the fundamental scientific issues and potential climate change impacts. Thus, the public can have little confidence in EPA's conclusion that endangerment of public health and welfare is reasonably anticipated.
- An endangerment finding would set the stage for multiple policy disasters no Congress would ever approve.
- An endangerment finding would create a constitutional crisis by empowering litigants and courts to usurp Congress's authority to determine the basic direction of public policy. In addition, the only way EPA could regulate GHGs under the CAA without risk of administrative chaos and economic devastation is to flout statutory language, play lawmaker, and effectively amend the Act, violating the separation of powers.

II. Introduction

This comment is divided into two main parts. The first part addresses the scientific basis of the Endangerment Proposal as discussed in EPA's proposed rule and the related Technical Support Document (TSD).[2] The second part addresses the legal basis and regulatory implications of the Endangerment Proposal, drawing upon EPA's July 2008 Advanced Notice of Proposed Rulemaking, *Regulating Greenhouse Gases under the Clean Air Act*.[3]

CEI advises EPA not to adopt its Endangerment Proposal as a final rule. The science presented in the proposal and TSD is highly selective, ignoring the research, arguments, and assessments of so-called climate skeptics. EPA may regard the skeptics as quibblers or worse, but ignoring an argument does not refute it. Absent a serious consideration of opposing viewpoints, the public cannot have confidence in EPA's conclusions.

To state the problem another way, §202 of the CAA requires the Administrator to exercise her "judgment." Yet in every instance, the Endangerment Proposal and TSD simply defer to the judgment of the self-proclaimed scientific "consensus" represented by

[2] EPA, Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202 of the Clean Air Act, April 17, 2009; hereafter cited as TSD.
[3] EPA, Regulating Greenhouse Gas Emissions under the Clean Air Act, Advanced Notice of Proposed Rulemaking, *Federal Register*, Vol. 3, No. 147, July 30, 2008; hereafter cited as ANPR.

the UN Intergovernmental Panel on Climate Change (IPCC) and the U.S. Climate Science Change Program (CSCP).

Most critically, EPA does not apply its judgment to the core scientific issue—climate sensitivity. If climate sensitivity is low, as investigations by Dr. Richard Linden (Massachusetts Institute of Technology), Dr. William Gray (Colorado State University), and Dr. Roy Spencer (University of Alabama Huntsville) suggest, then 21st century warming is likely to be below the low-end (1.8ºC) IPCC "best estimate,"[4] and endangerment of public health and welfare is not "reasonably anticipated."

Statutory and constitutional reasons also counsel EPA not to finalize the Endangerment Proposal. An endangerment finding will trigger a regulatory cascade with potentially devastating economic impacts that Congress never intended or approved when it enacted §202. Regulatory litigation rather than legislative deliberation will determine the direction of public policy and the extent of the burdens imposed on the private sector, vitiating our democratic system. We could end up with a Mega-Kyoto system without the people's elected representatives ever casting a vote. Moreover, the only way EPA can regulate greenhouse gases under the CAA without risk of administrative chaos and economic disaster is to flout statutory language, play lawmaker, and effectively "amend" the statute, violating the separation of powers.

Had the Justices known what the ANPR and other analyses have brought to light about the regulatory ramifications of establishing greenhouse gas emission standards under §202, they might well have decided *Mass. v. EPA* differently. Few if any of the Justices would have openly and directly ordered EPA to undertake the kinds of extreme measures to which an endangerment finding logically leads.

Such measures include subjecting tens of thousands of previously unregulated buildings and facilities to Prevention of Significant Deterioration (PSD) pre-construction permitting requirements, and establishing National Ambient Air Quality Standards (NAAQS) for greenhouse gases that even outright de-industrialization would be insufficient to attain.

Thus, for both scientific and legal/constitutional reasons, the Endangerment Proposal should be rejected.

III. Scientific Issues

Skeptical assessments of the science underpinning EPA's Endangerment Proposal have been widely available for years. Recent books of skeptical bent include *Climate of Extremes* by Drs. Patrick Michaels and Robert Balling, *Climate Confusion* by Dr. Roy Spencer, *Unstoppable Global Warming* by Drs. Fred Singer and Dennis Avery, and *The*

[4] Intergovernmental Panel on Climate Change, *Fourth Assessment Report, Working Group I Report "The Physical Science Basis,"* Summary for Policymakers, p. 13; hereafter referred to as IPCC AR4.

Improving State of the World by Dr. Indur Goklany.[5] EPA and the general public also have easy access to skeptical perspectives on climate science via Web-based commentary. WorldClimateReport.Com, edited by Dr. Patrick Michaels and Paul C. Knappenberger, provides timely comment on climate change studies, issues, and controversies. CO2Science.Org, edited by Dr. Craig Idso, Chairman of the Center for the Study of Carbon Dioxide and Global Change, reviews hundreds of scientific papers each year, organizes these reviews into literature summaries covering hundreds of topics, and maintains the world's most complete archives of studies on the Medieval Warm Period and plant physiological responses to atmospheric carbon dioxide (CO_2) enrichment.

It is inappropriate for the EPA to ignore this material and similar assessments by qualified researchers. Doing so prevents EPA from impartially assessing the dangerousness of "air pollution" related to greenhouse gas emissions. Automatic agreement with IPCC and CSPC assessments conflicts with EPA's §202 obligation to exercise its "judgment."

Before finalizing the Endangerment Proposal, EPA should make a good faith effort to examine skeptical assessments of climate change science and global warming impacts. Fortunately, the Heartland Institute has just published *Climate Change Reconsidered*, a report by the Nongovernmental International Panel on Climate Change (NIPCC).[6] Written by two lead authors (Drs. Craig Idso and S. Fred Singer) with 35 contributors and reviewers, the 730-plus page NIPCC report provides literature reviews on nine main topics (global climate models and their limitations; feedback factors and radiative forcing; observations: temperature records; observations: glaciers, sea ice, precipitation, and sea level; solar variability and climate cycles; observations: extreme weather; biological effects of carbon dioxide enrichment; species extinction; human health effects) and 60 sub-topics. Although concise, the literature reviews quote extensively from the underlying studies, enhancing the reader's confidence in the accuracy of the reviews.

The following sections of this comment draw freely from the NIPCC report and other sources presenting skeptical assessments not addressed in EPA's Endangerment Proposal and TSD. The discussion will focus on issues of detection, attribution, and climate sensitivity rather than the scores of adverse health and welfare impacts EPA believes are "reasonably anticipated" from the ongoing increase in GHG concentrations. The comment will also discuss briefly the Endangerment Proposal's perspective on "extreme events" and "private adaptation.

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[5] Patrick J. Michaels and Robert C. Balling, Jr., Climate of Extremes: Global Warming Science They Don't Want You to Know (Washington, D.C.: Cato Institute, 2009); Roy Spencer, *Climate Confusion: How Global Warming Hysteria Leads to Bad Science, Pandering Politicians and Misguided Policies that Hurt the Poor* (New York: Encounter Books, 2008); S. Fred Singer and Dennis T. Avery, *Unstoppable Global Warming: Every 1,500 Years*, Updated and Expanded (Maryland: Roman & Littlefield, 2008); Indur M. Goklany, *The Improving State of the World: Why We're Living Longer, Healthier, More Comfortable Lives on a Cleaner Planet* (Washington, D.C.: Cato Institute, 2007).

[6] Craig Idso and S. Fred Singer, *Climate Change Reconsidered: 2009 Report of the Nongovernmental Panel on Climate Change* (NIPCC), Chicago, IL: The Heartland Institute, 2009; hereafter cited as NIPCC).

My reason for proceeding in this way is twofold. First, detection, attribution, and climate sensitivity are the most fundamental scientific issues. Climate change impact assessments largely derive from climate sensitivity assumptions, for example. Second, it would require a work nearly as long as the TSD to comment on all the impacts EPA anticipates with regard to human health, air quality, forestry, agriculture, water resources, coastal areas, energy infrastructure, ecosystems, and international stability. Fortunately, the NIPCC report contains literature summaries on nearly all of those topics, and it is my understanding that Dr. Idso and Dr. Singer will be filing comments on the Endangerment Proposal and TSD.

1. Data Quality: U.S. and IPCC temperature records are not reliable.

Obviously, temperature data are the starting point of any analysis of global warming. Data contaminated by false (local) warming biases create a distorted picture of climate sensitivity, potentially leading to unrealistic estimates of future warming and climate change impacts. The TSD states, "Likewise, urban heat island effects are real but local, and have not biased large-scale trends (Trenberth et al. 2007)."[7] This statement is incorrect. The U.S. land surface temperature record is reputed to be the best in the world. Yet, ongoing research by the Surface Stations Project, headed by retired meteorologist Anthony Watts, shows that the U.S. temperature record is "unreliable." The U.S. surface temperature record is riddled with warming biases not only from heat island effects but, even more seriously, from improper placement and management of temperature sensing equipment at U.S. weather stations.

Watts and a team of more than 650 volunteers have visually inspected and photographically documented more than 860 of the 1,221 climate monitoring stations overseen by the U.S. Weather Service (i.e., more than 70% of all stations). In *Is the U.S. Temperature Record Reliable?* Watts presents the results of this research project to date.[8] "We were shocked by what we found," he writes:

> We found stations located next to the exhaust fans of air conditioning units, surrounded by asphalt parking lots and roads, on blistering-hot rooftops, and near sidewalks and buildings that absorb and radiate heat. We found 68 stations located at wastewater treatment plants, where the process of waste digestion causes temperatures to be higher than in surrounding areas.
>
> In fact, we found that 89 percent of the stations—nearly 9 of every 10—fail to meet the National Weather Service's own siting requirements that stations must be 30 meters (about 100 feet) or more away from an artificial heating or radiating/reflecting heat source.

[7] TSD, p. 22.
[8] Anthony Watts, *Is the U.S. Temperature Record Reliable? How do we know global warming is a problem if we can't trust the U.S. temperature record? Heartland Institute*, Surface Stations.Org, 2009, http://www.heartland.org/books/PDFs/SurfaceStations.pdf.

In other words, 9 of every 10 stations are likely reporting higher or rising temperatures because they are badly sited.

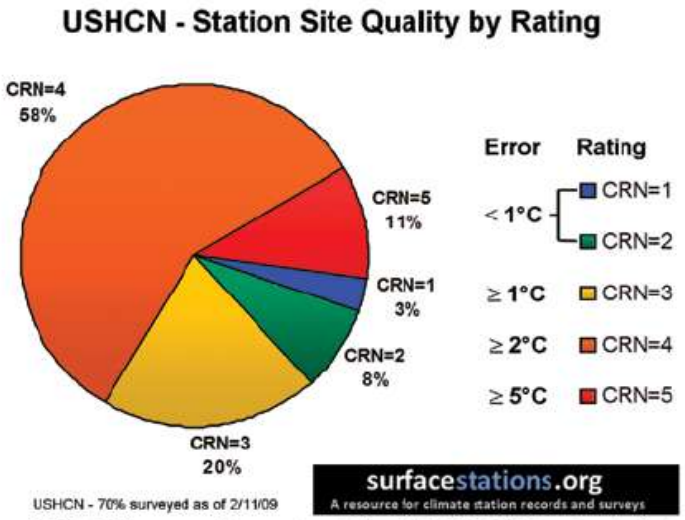

Figure 27. Most of the surveyed temperature stations in the U.S. fall into categories that mean they are unreliable. Only stations in CRN=1 and CRN=2 – 11 percent of all stations – are reliable.

Source: Anthony Watts

"It gets worse," Watts continues.

> We observed that changes in the technology of temperature stations over time also have caused them to report a false warming trend. We found major gaps in the data record that were filled in with data from nearby sites, a practice that propagates and compounds errors. We found that adjustments to the data by both NOAA and another government agency, NASA, cause recent temperatures to look even higher.
>
> The conclusion is inescapable: The U.S. temperature record is unreliable.[9]

How big a problem is this? According to Watts, "The errors in the record exceed by a wide margin the purported rise in temperature of 0.7°C (about 1.2°F) during the twentieth century." Specifically, Watts estimates that 23% of stations have an expected error of 1°C, 58% have an expected error of 2°C, and 11% have an expected error greater than 5°C.[10]

Watts concludes that, "this record should not be cited as evidence of any trend in temperature that may have occurred across the U.S. during the past century." He further concludes: "Since the U.S. record is thought to be 'the best in the world,' it follows that the global database is likely similarly compromised and unreliable."

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[9] Watts, *Is the U.S. Temperature Record Reliable?* p. 1.
[10] Watts, *Is the U.S. Temperature Record Reliable?* p. 16

Nowhere do the Endangerment Proposal and TSD address these problems, although the Surface Stations Project launched its Web site and began building its photo-documentary record in the summer of 2007.

EPA Administrator Lisa Jackson has pledged to base agency decisions on "the best available science." But what if the best available temperature data are biased and unreliable? Good science cannot be based on bad data. As the Heartland Institute asks on its Web site: How do we know if global warming is a problem if we can't trust the temperature record? An endangerment finding that assumes the reliability of demonstrably unreliable data will be vulnerable to legal challenge.

The NIPCC reviews more than 40 studies on urban heat islands and their potential to bias long-term surface temperature records.[11] The NIPCC concludes:

> It appears almost certain that surface-based temperature histories of the globe contain a significant warming bias introduced by insufficient corrections for the *non*-greenhouse-gas-induced urban heat island effect. Furthermore, it may well be next to impossible to make proper corrections for the deficiency, as the urban heat island of even small towns *dwarfs* any concomitant augmented greenhouse effect that may be present. (Emphasis in original)[12]

Just two of the many studies reviewed by the NIPCC should induce EPA to doubt that the IPCC surface temperature record has been adequately corrected to filter out local warming biases. McKitrick and Michaels (2004) found significant spatial correlations between the IPCC surface air temperature record and indicators of local economic activity such as income, gross domestic product growth rates, and coal use.[13] These "socioeconomic effects," in the words of the two researchers, "add up to a net warming bias," although they say, "precise estimation of its magnitude will require further work."

To get a sense of the magnitude of such socioeconomic effects, the NIPCC cites Oke (1973), "who measured the urban heat island strength of 10 settlements in the St. Lawrence Lowlands of Canada that had populations ranging from approximately 1,000 to 2,000,000 people, after which he compared his results with those obtained for a number of cities in North America, as well as Europe."[14] The NIPCC summarizes:

> Over the population range studied, Oke found that the magnitude of the urban heat island was linearly correlated with the logarithm of population; this relationship indicated that at the lowest population value encountered, i.e., 1,000 inhabitants, there was an urban heat island effect of 2°C to 2.5°C, which warming is more than twice as great as the increase in mean global air temperature believed to have occurred since the end of the Little Ice Age. It should be abundantly clear

[11] NIPCC, pp. 96-106.
[12] NIPCC, pp. 96-97.
[13] McKitrick, R. and Michaels, P.J. 2004. A test of corrections for extraneous signals in gridded surface temperature data. *Climate Research* 26: 159-173.
[14] Oke, T.R. 1973. City size and the urban heat island. *Atmospheric Environment* 7: 769-779.

> there is ample opportunity for large errors to occur in thermometer-derived surface air temperature histories of the twentieth century, and that error is probably best described as a large and growing warming bias.[15]

In short, the Watts and NIPCC reports provide abundant evidence that the U.S. and IPCC surface air temperature records are biased and unreliable. Yet those records are foundational to the endangerment finding that EPA wants to make. If EPA is determined to make an endangerment finding, it must do one of two things. It must either (1) refute the Watts and NIPCC reports, explaining why the U.S. and IPCC surface temperature records are reliable; or (2) explain why endangerment is "reasonably anticipated" even if U.S. and IPCC surface temperature records are unreliable and may significantly exaggerate the warming of recent decades. So far, EPA has done neither.

2. Climate Change Attribution: IPCC exaggerates the likelihood that most recent warming is anthropogenic.

The TSD, following the IPCC, claims that, "Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."[16] How does the IPCC know this? The IPCC offers three main reasons.

First, according to the IPCC, "Paleoclimate reconstructions show that the second half of the 20th century was likely the warmest 50-year period in the Northern Hemisphere in the past 1300 years."[17] The warmth of recent decades coincided with a rapid increase in GHG concentrations. Therefore, the IPCC concludes, most of the recent warming is likely due to anthropogenic GHG emissions.

This argument falls apart if the warming of recent decades is not unusual or unprecedented in the past 1300 years. As it happens, numerous studies indicate that the Medieval Warm Period (MWP)—roughly the period from AD 800 to 1300, with peak warmth occurring about AD 1050—was as warm as or warmer than the Current Warm Period (CWP).

The Center for the Study of Carbon Dioxide and Global Change has analyzed more than 200 peer-reviewed MWP studies produced by more than 660 individual scientists working in 385 separate institutions from 40 different countries. The Center divides these studies into three categories—those with quantitative data enabling one to infer the degree to which the peak of the MWP differs from the peak of the CWP (Level 1), those with qualitative data enabling one to infer which period was warmer (Level 2), although not by how much, and those with data enabling one to infer the existence of a MWP in the region studied (Level 3). See Figure 3.2.2 below.

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[15] NIPCC, p. 96.
[16] TSD, p. 39.
[17] IPCC, Fourth Assessment Report, Report of Working Group I Report "The Physical Science Basis," Chapter 9: Understanding and Attributing Climate Change, p. 702; hereafter cited as IPCC AR4.

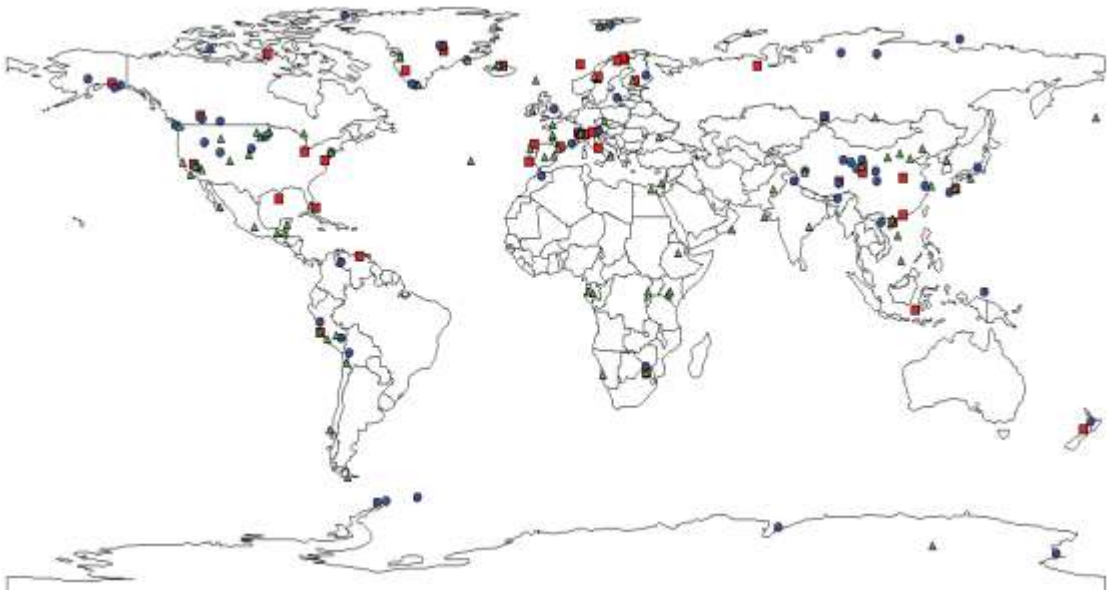
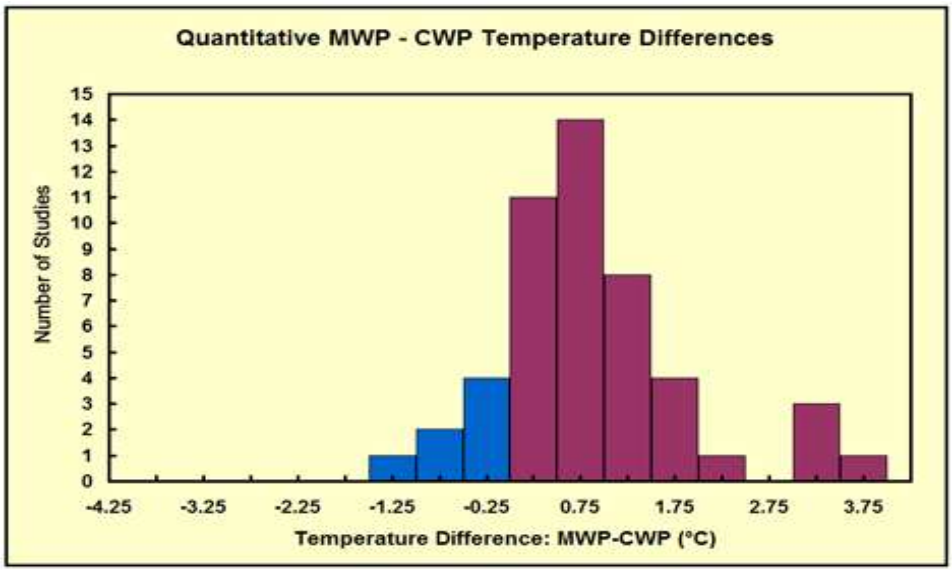


Figure 3.2.2. Plot of the locations of proxy climate studies for which (a) quantitative determinations of the temperature difference between the MWP and CWP can be made (squares), (b) qualitative determinations of the temperature difference between the MWP and CWP can be made (circles), and (c) neither quantitative nor qualitative determinations can be made, with the studies simply indicating that the Medieval Warm Period did indeed occur in the studied region (triangles).[18]

Only a few Level 1 studies determined the MWP to have been cooler than the CWP; the vast majority indicates a warmer MWP. On average, the studies indicate that the MWP was 1.01°C warmer than the CWP, the NIPCC reports.[19] See figure below.



[18] NIPCC, p. 70.
[19] NIPCC, p. 70.

Figure Description: The distribution, in 0.5°C increments, of Level 1 Studies that allow one to identify the degree by which peak Medieval Warm Period temperatures either exceeded (positive values, red) or fell short of (negative values, blue) peak Current Warm Period temperatures.[20]

Similarly, the vast majority of Level 2 studies show a warmer MWP:

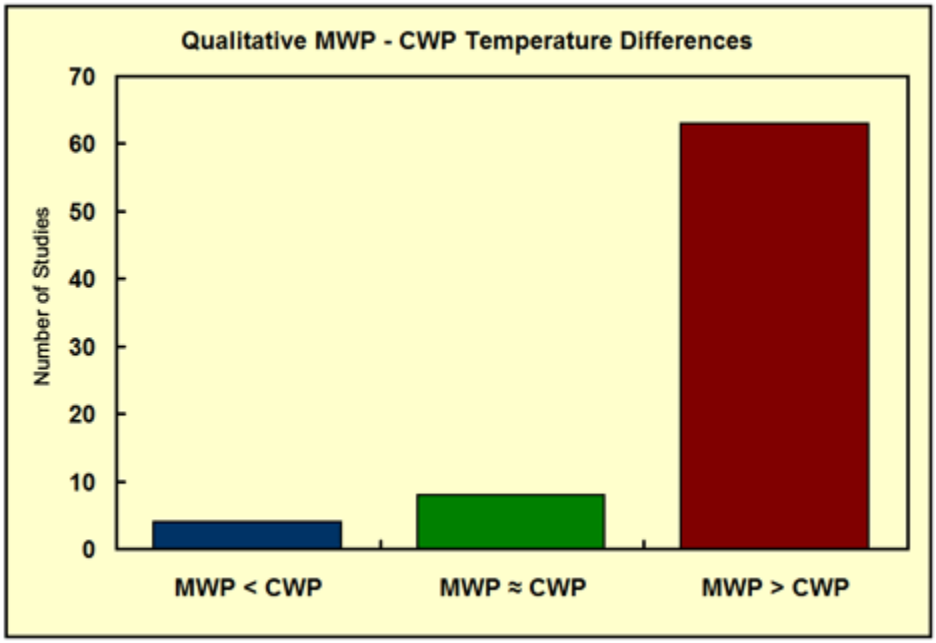


Figure Description: The distribution of Level 2 Studies that allow one to determine whether peak Medieval Warm Period temperatures were warmer than (red), equivalent to (green), or cooler than (blue), peak Current Warm Period temperatures.[21]

The IPCC's second main reason for attributing most recent warming to the increase in GHG concentrations is that climate models "cannot reproduce the rapid warming observed in recent decades when they only take into account variations in solar output and volcanic activity. However . . . models are able to simulate observed 20th century changes in temperatures when they include all of the most important external factors, including human influences from sources such as greenhouse gases and natural external factors."[22] This would be decisive if today's climate models accurately simulate all important modes of natural variability. In fact, models do not accurately simulate the behavior of clouds and ocean cycles. They may also ignore important interactions between the Sun, cosmic rays, cloud formation, and sea surface temperatures.[23] It is

[20] Center for the Study of Carbon Dioxide and Global Change, MWP-CWP Quantitative Temperature Differentials, http://co2science.org/data/mwp/quantitative.php.
[21] Center for the Study of Carbon Dioxide and Global Change, MWP-CWP Qualitative Temperature Differentials, http://co2science.org/data/mwp/qualitative.php.
[22] IPCC, AR4, Chapter 9, "Understanding and Attributing Climate Change," p. 702.
[23] NIPCC, pp. 207-278.

illegitimate to assume that whatever the models cannot explain in terms of natural variability must be due to Man.

Richard Lindzen spoke to this point at the Heartland Institute's recent (June 2, 2009) Third International Conference on Climate Change:

> What was done [by the IPCC], was to take a large number of models that could not reasonably simulate known patterns of natural behavior (such as ENSO, the Pacific Decadal Oscillation, the Atlantic Multi-decadal Oscillation), claim that such models nonetheless adequately depicted natural internal climate variability, and use the fact that models could not replicate the warming episode from the mid seventies through the mid nineties, to argue that forcing was necessary and that the forcing must have been due to man. The argument makes arguments in support of intelligent design seem rigorous by comparison.[24]

"Fingerprint" studies are the third basis on which the IPCC attributes most recent warming to anthropogenic greenhouse gases. Climate models project a specific pattern of warming through the vertical profile of the atmosphere—a greenhouse "fingerprint." If the observed warming pattern matches the model-projected fingerprint, then that would be strong evidence that recent warming is anthropogenic. Conversely, notes the NIPCC, "A mismatch would argue strongly against any significant contribution from greenhouse gas (GHG) forcing and support the conclusion that the observed warming is mostly of natural origin."[25]

As the TSD acknowledges, "an important inconsistency may have been identified in the tropics. In the tropics, most observational data sets show more warming at the surface than in the troposphere, while almost all model simulations have larger warming aloft than at the surface. A possible explanation for this inconsistency is error in the observations, but the issue is still under investigation (Karl et. al., 2006)."[26]

This discussion is incomplete and misleading. The main contribution to the ongoing "investigation" is Douglass et al. (2007), yet the TSD does not mention this study in either the text or references section.

The observed pattern is based on three compilations of surface temperature records, four balloon-based records of the surface and lower troposphere, and three satellite-based records of various atmospheric layers—10 independent data sets in all. Why assume, then, that the mismatch is due to observational error rather than modeling error?

The mismatch between the model-predicted greenhouse fingerprint and the observed pattern is profound, as Douglass et al. (2007) explain: "Model results and

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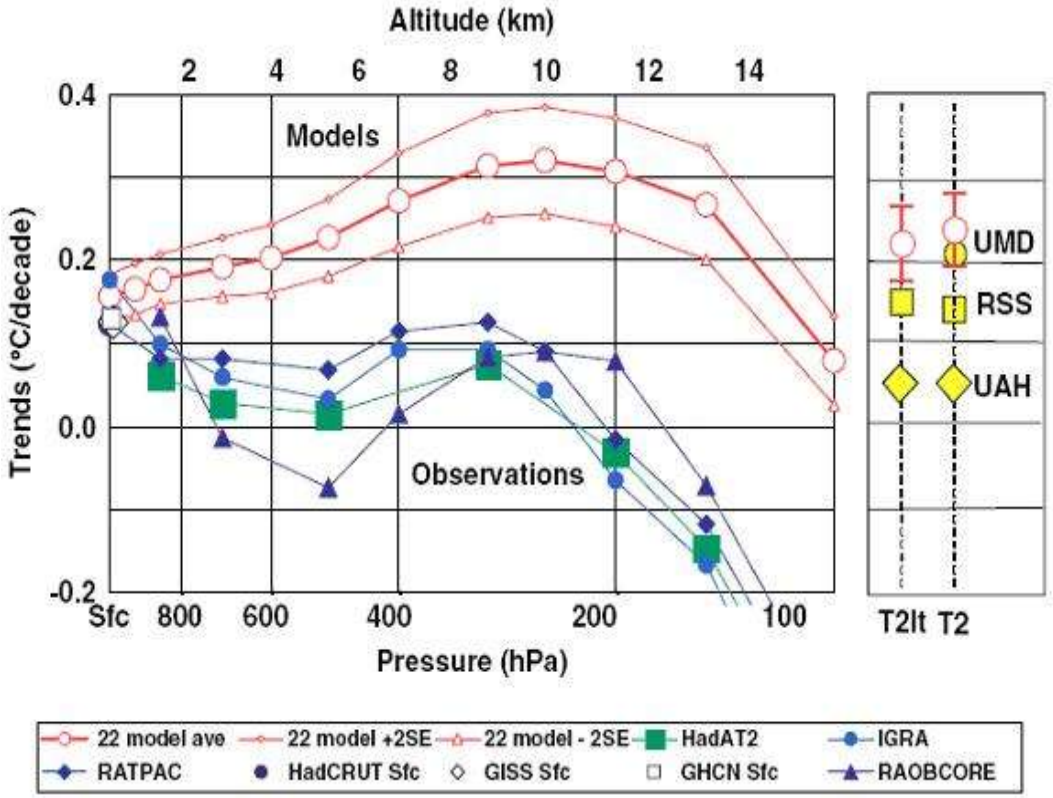
[24] Richard S. Lindzen, Global Warming – Sensibilities and Science, p. 2, June 2, 2009, http://www.heartland.org/events/WashingtonDC09/PDFs/Lindzen.pdf
[25] NIPCC, p. 106.
[26] TSD, p. 41.

observed temperature trends are in disagreement in most of the tropical troposphere, being separated by more than twice the uncertainty of the model mean. In layers near 5 km, the modeled trend is 100 to 300% higher than observed, and, above 8 km, modeled and observed trends have opposite signs."[27]



Source: Douglass et al. (2007) Temperature trends for the satellite era (°C/decade). HadCRUT, GHCN and GISS are various compilations of surface temperature observations. IGRA, RATPAC, HadAT2, and RAOBCORE are all balloon-based observations of the surface and lower troposphere. UAH, RSS, UMD are satellite-based data for various levels of the atmosphere. The 22-model average comes from an ensemble of 22 model simulations from the most widely used models from throughout the world. The light red lines are the +2 and -2 standard errors of the mean from the 22 models.

The figures below are from Karl et al. (2006). Figure 3.4.2 is the greenhouse fingerprint predicted by climate models. Figure 3.4.3 is the balloon-observed temperature profile of the vertical atmosphere.

[27] Douglass, D.H. Christy, J.R., Pearson, B.P. and Singer, S.F. 2007. A comparison of tropical temperature trends with model predictions. *International Journal of Climatology* (Royal Meteorol Soc). DOI:10.1002/joc.1651.

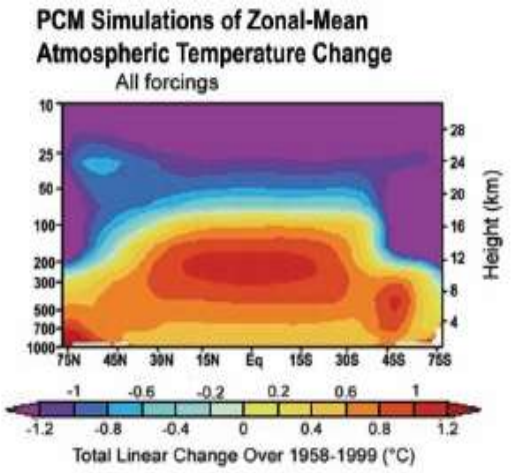


Figure 3.4.2. Greenhouse-model-predicted temperature trends versus latitude and altitude; this is figure 1.3F from CCSP 2006, p. 25. Note the increased temperature trends in the tropical mid troposphere, in agreement also with the IPCC result (IPCC-AR4 2007, p. 675).

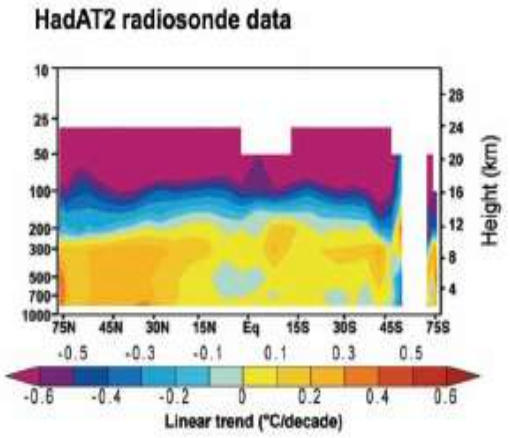


Figure 3.4.3. By contrast, observed temperature trends versus latitude and altitude; this is figure 5.7E from CCSP 2006, p. 116. These trends are based on the analysis of radiosonde data by the Hadley Centre and are in good agreement with the corresponding U.S. analyses. Notice the absence of increased temperature trends in the tropical mid-troposphere.

A greenhouse fingerprint is clearly missing in Figure 3.4.3. "While all greenhouse models show an increasing warming trend with altitude, peaking around 10 km at roughly two times the surface value," observes the NIPCC, "the temperature data from balloons give the opposite result; no increasing warming, but rather a slight cooling with altitude in the tropical zone."[28]

According to the NIPCC, "This mismatch of observed and calculated fingerprints clearly falsifies the hypothesis of anthropogenic global warming (AGW)."[29] If EPA disagrees with that conclusion, then it should explain why. At a minimum, the IPCC claim of 90 to 99% probability that "most" recent warming is anthropogenic should be considered a boast rather than a balanced assessment of the evidence. An endangerment finding should be based on something more solid than a boast.

To sum up, the TSD assumes that: (1) the recent warming is unprecedented during the past millennium or longer and therefore is likely due to anthropogenic factors not present in previous centuries; (2) climate models simulate natural variability accurately enough to rule out natural factors as the cause of recent climatic warmth; and (3) the observed pattern of atmospheric warmth matches climate model projections of a greenhouse fingerprint. EPA should not find endangerment if it cannot convincingly rebut the evidence and assessments that contradict those assumptions.

[28] NIPCC, p. 107.
[29] NIPCC, p. 108.

3. Climate Sensitivity: Satellite observations are inconsistent with IPCC model assumptions.

Whether or not endangerment of public health and welfare is reasonably anticipated largely depends on how much warming is reasonably anticipated. Warming projections, in turn, chiefly depend on assumptions about climate sensitivity.

Climate sensitivity is typically defined as the global average surface warming following a doubling of CO_2 concentrations above pre-industrial levels. The TSD quotes the IPCC estimate that a CO_2 doubling is "likely" to produce warming "in the range of 2ºC to 4.5ºC (3.6°F to 8.1°F)," with a "most likely value of about 3°C (5.4°F)."[30] The IPCC estimates a range rather than a specific value because of uncertainties regarding the strength (and in some cases even the sign—positive or negative) of various forcings and feedbacks.

In a hypothetical climate with no feedbacks, positive or negative, a CO_2 doubling would produce 1.2°C of warming.[31] In most climate models, the dominant feedbacks are positive, meaning that the warmth from rising CO_2 levels causes other changes (in water vapor concentrations, cloud coverage, or surface reflectivity, for example) that either increase the retention of outgoing long-wave radiation (OLR) or decrease the reflection of incoming short-wave radiation (SWR).

At the recent Heartland Institute conference, MIT Professor Richard Lindzen summarized his research on climate sensitivity.[32] Lindzen argues that climate feedbacks and sensitivity can be inferred from observed changes in OLR and SWR in response to observed changes in sea-surface temperatures. For fluctuations in OLR and SWR, Lindzen and his colleagues used the 16-year record (1985-1999) from the Earth Radiation Budget Experiment (ERBE), as corrected for altitude variations associated with satellite orbital decay. For sea surface temperatures, they used data from the National Centers for Environmental Prediction. For climate model simulations, they used 11 IPCC models forced with the observed sea-surface temperatures.

The results are striking. All 11 IPCC models show positive feedback, "while ERBE unambiguously shows a strong negative feedback." See Figures 3 and 4, below. Lindzen adds: "This clearly illustrates the fallacy of assuming that when all models agree, they are correct." The ERBE data indicate that the sensitivity of the actual climate system "is narrowly constrained to about 0.5°C." If Lindzen's assessment is correct, then endangerment of public health and welfare is not "reasonably anticipated."

If EPA disagrees with Lindzen's argument, then it should explain its reasons. EPA's obligation is to consider the best "available" science, which includes credible

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[30] TSD, p. 55.
[31] IPCC, Fourth Assessment Report, Report of Working Group I Report "The Physical Science Basis," Chapter 8: Climate Models and their Evaluation, p. 631; hereafter cited as IPCC AR4.
[32] Richard S. Lindzen, Global Warming – Sensibilities and Science, June 2, 2009, http://www.heartland.org/events/WashingtonDC09/PDFs/Lindzen.pdf.

dissenting views. Please note that an appeal to the authority of the IPCC would not suffice as a rebuttal to Lindzen, because the issue in dispute is precisely whether IPCC sensitivity assessments are consistent with actual data.

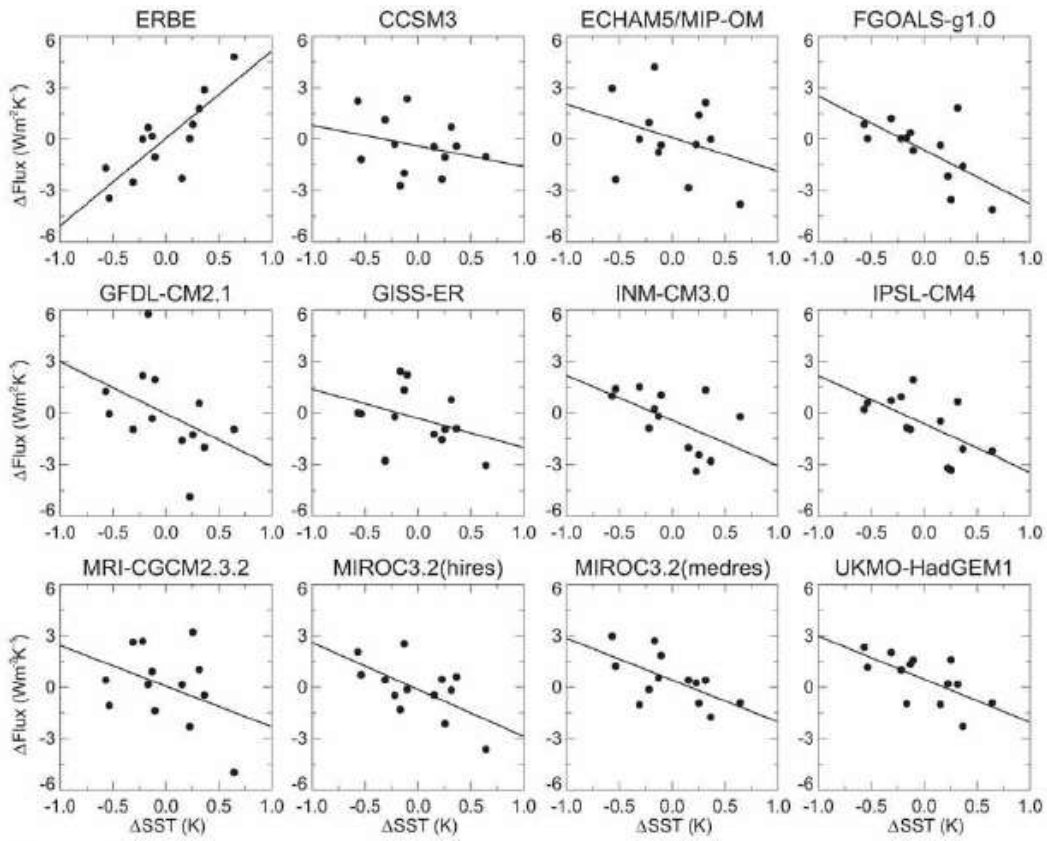


Figure 3

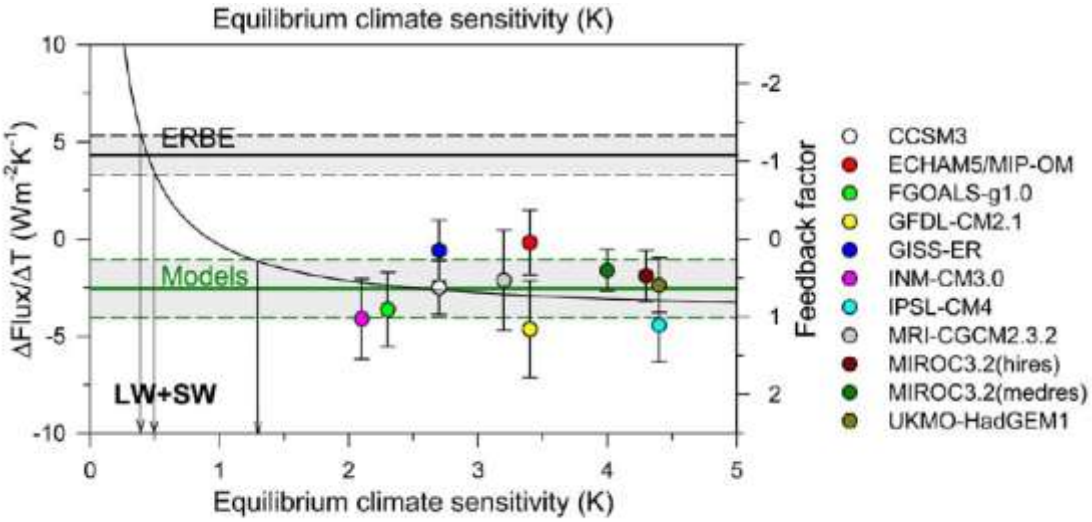


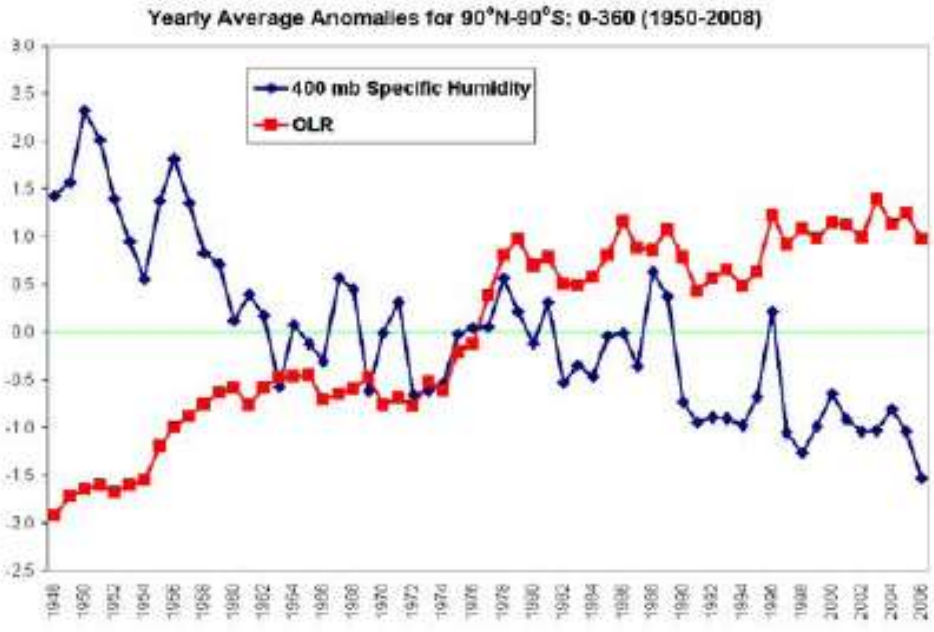
Figure 4

At the Heartland Institute's Second International Conference on Climate Change (March 2009), Dr. William Gray of Colorado State University presented satellite-based research that may explain the low climate sensitivity that the Lindzen team infers from the ERBE data.[33]

The IPCC climate models assume that CO_2-induced warming significantly increases upper-level troposphere clouds and water vapor, trapping still more OLR that would otherwise escape into outer space. Most of the projected warming in the models comes from this positive water vapor/cloud feedback, not from the CO_2. Satellite observations do not support this hypothesis. Gray explains:

> Observations of upper tropospheric water vapor over the last 3-4 decades from the National Centers of Environmental Prediction/National Center for Atmospheric Research (NCEP/NCAR) reanalysis data and the International Satellite Cloud Climatology Project (ISCCP) data show that upper tropospheric water vapor appears to undergo a small decrease while Outgoing Longwave Radiation (OLR) undergoes a small decrease. This is the opposite of what has been programmed into the GCMs [General Circulation Models] due to water vapor feedback.

The figure below comes from the NCEP/NCAR reanalysis of upper-level troposphere water vapor and OLR.



[33] William M. Gray, *Climate Change: Driven by the Ocean not Human Activity*, March 2009, http://tropical.atmos.colostate.edu.

Figure 6. NCEP/NCAR reanalysis of standardized anomalies of 400 mb (~7.5 km altitude) water vapor content (i.e. specific humidity – in blue) and Outgoing Longwave Radiation (OLR) from 1950-2008. Note the downward trend in moisture and the upward trend in OLR.

Gray comments:

> Most geophysical systems react to forced imbalances by developing responses which oppose and weaken the initial forced imbalance; hence, a negative feedback response. Recent GCM global warming scenarios go counter to the foregoing in hypothesizing a positive feedback response. Observations indicate that specific humidity and relative humidity of the middle and upper troposphere have been going down over the last 4-5 decades (Figure 6). The assumed positive water vapor increase with temperature as programmed into the GCMs does occur however at the surface and the lower atmosphere. But this simultaneous increase of temperature and water vapor is not found in the upper atmosphere near the radiation emission level. It is not the total precipitable water which is most important (measurements show this goes up with temperature) but rather the amount of water vapor near the upper tropospheric emission level which is important. This more closely specifies the amount of OLR.

Gray's paper deals with water vapor in the upper troposphere. What about high-altitude cirrus clouds, which climate models also predict will increase and trap more OLR as CO_2 concentrations increase?

Spencer et al. (2007) found a strong negative cirrus cloud feedback mechanism in the tropical troposphere. Instead of steadily building up as the tropical oceans warm, cirrus cloud cover suddenly contracts, allowing more heat from the surface to escape into space.[34] Dr. Roy Spencer of the University of Alabama in Huntsville, who directed the study, reckons that if this mechanism operates on decadal time scales, it would reduce model estimates of global warming by 75%.[35]

A 2008 study Spencer and colleague William D. Braswell examine the issue of climate feedbacks related to low-level clouds. Lower-Troposphere clouds tend to cool the Earth by reflecting incoming SWR. Observations indicate that warmer years have less cloud cover compared to cooler years. Modelers have interpreted this correlation as a positive feedback effect in which warming reduces low-level cloud cover, which then produces more warming.

Spencer and Braswell found that climate modelers could be mixing up cause and effect. Random variations in cloudiness can cause substantial decadal variations in ocean temperatures. So it is equally possible that the causality runs the other way, and increases in sea-surface temperature are an effect of natural cloud variations. If so, then climate

[34] R. Spencer et al. 2007. Cloud and radiation budget changes associated with tropical intra-seasonal variations. *Geophysical Research Letters* Vol. 34, No. 15, L15707.
[35] "Cirrus Disappearance: Warming Might Thin Heat-Trapping Clouds," UAHuntsville News Center, 8/9/2007, http://www.uah.edu/news/newsread.php?newsID=875.

models forecast too much warming.[36] As Spencer explains the issue on his Web site, "This is important because if decreasing cloud cover caused warming, and this has been mistakenly interpreted as warming causing a decrease in cloud cover, then positive feedback will have been inferred even if the true feedback in the climate system is negative."[37] EPA should address this research and its implications before finalizing its endangerment analysis.

In a study now in peer review for possible publication in the *Journal of Geophysical Research*, Spencer and his colleagues analyzed 7.5 years of NASA's latest and best satellite data and "discovered," as he reports on his Web site, "that, when the effect of clouds-causing-temperature-change is accounted for, cloud feedbacks in the real climate system are strongly negative." "In fact," he continues, "the resulting net negative feedback was so strong that, if it exists on the long time scales associated with global warming, it would result in only 0.6 deg. C of warming by late in this century."[38]

In related ongoing satellite research, Spencer finds new evidence that "most" warming of the past century "could be the result of a natural cycle in cloud cover forced by a well-known mode of natural climate variability: the Pacific Decadal Oscillation (PDO)."[39]

Whether or not the PDO proves to be a major player in climate change, Spencer has identified a potentially serious error in all IPCC modeling efforts:

> Even though they never say so, the IPCC has simply assumed that the average cloud cover of the Earth does not change, century after century. This is a totally arbitrary assumption, and given the chaotic variations that the ocean and atmosphere circulations are capable of, it is probably wrong. Little more than a 1% change in cloud cover up or down, and sustained over many decades, could cause events such as the Medieval Warm Period or the Little Ice Age.
>
> As far as I know, the IPCC has never discussed their assumption that global average cloud cover always stays the same. The climate change issue is so complex that most experts have probably not even thought about it. But we meteorologists by training have a gut feeling that things like this do indeed happen. In my experience, a majority of meteorologists do not believe that mankind is mostly to blame for global warming. Meteorologists appreciate how complex cloud behavior is, and most tend to believe that climate change is largely natural.

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[36] R. Spencer and W.D. Brasell. 2008. Potential Biases in Feedback Diagnoses from Observational Data: A Simple Model Demonstration. *Journal of Climate* Vol. 21, Issue 21, 5624-5628.

[37] Roy W. Spencer, "A Layman's Explanation of Why Global Warming Predictions of Climate Models Are Wrong," May 29, 2009 (updated 1 June 2009 for clarity), http://www.drroyspencer.com/2009/05/a-layman%E2%80%99s-explanation-of-why-global-warming-predictions-by-climate-models-are-wrong/.

[38] Roy W. Spencer, "A Layman's Explanation."

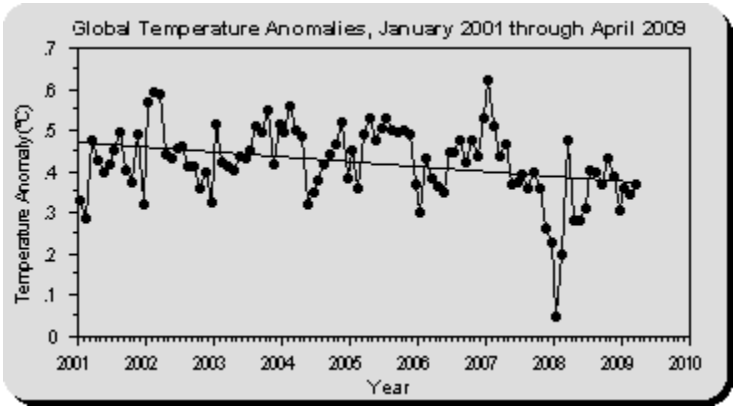
[39] Roy W. Spencer, "Global Warming as a Natural Response to Cloud Changes Associated with the Pacific Decadal Oscillation (PDO)," October 20, 2008 (updated December 29, 2008), http://www.drroyspencer.com/research-articles/global-warming-as-a-natural-response/.

> Our research has taken this gut feeling and demonstrated with both satellite data and a simple climate model, in the language that climate modelers speak, how potentially serious this issue is for global warming theory.[40]

CEI recommends that before finalizing the Endangerment Proposal, EPA invite Drs. Spencer, Gray, and Lindzen to brief agency experts about their research on climate feedbacks and sensitivity.

4. Climate Sensitivity: Climate model projections are inconsistent with recent temperature data.

Recent temperature history also suggests that most climate models are too "hot." Carbon dioxide emissions and concentrations are increasing at an accelerating rate.[41] Yet there has been no net warming since 2001 and no year was as warm as 1998.



Source: Paul C. Knappenberger: Observed monthly global temperature anomalies, January 2001 through April 2009 as compiled by the Climate Research Unit[42]

Paul C. Knappenberger, a research associate of Dr. Patrick Michaels, quite reasonably wonders, "[H]ow long a period of no warming can be tolerated before the forecasts of the total warming by century's end have to be lowered?" After all, he notes, "We're already into our ninth year of the 100 year forecast period and we have no global warming to speak of …"[43] It is instructive to compare these data with climate model projections.

A good place to start is with the model projections that NASA scientist James Hansen presented in his 1988 congressional testimony, which launched the modern global warming movement. The figure below, from recent congressional testimony by University of Alabama Huntsville atmospheric scientist John Christy, shows how

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[40] Roy W. Spencer, "A Layman's Explanation."
[41] J.G. Canadell et al. 2007. Contributions to accelerating atmospheric CO_2 growth from economic activity, carbon intensity, and efficiency of natural sinks. *PNAS* November 20, 2007 vol. 104, no. 47: 18866-70.
[42] Climate Research Unit, http://www.cru.uea.ac.uk/cru/data/temperature/hadcrut3vgl.txt.
[43] Paul C. Knappenberger, The New MIT Climate Study: A Real World Inversion? MasterResource, May 28, 2009, http://masterresource.org/?p=2977#more-2977.

Hansen's 1988 models and reality diverge.[44] The red, orange, and purple lines are Hansen's model forecasts of global temperatures under different emission scenarios. The green and blue lines are actual temperatures from two independent satellite records.

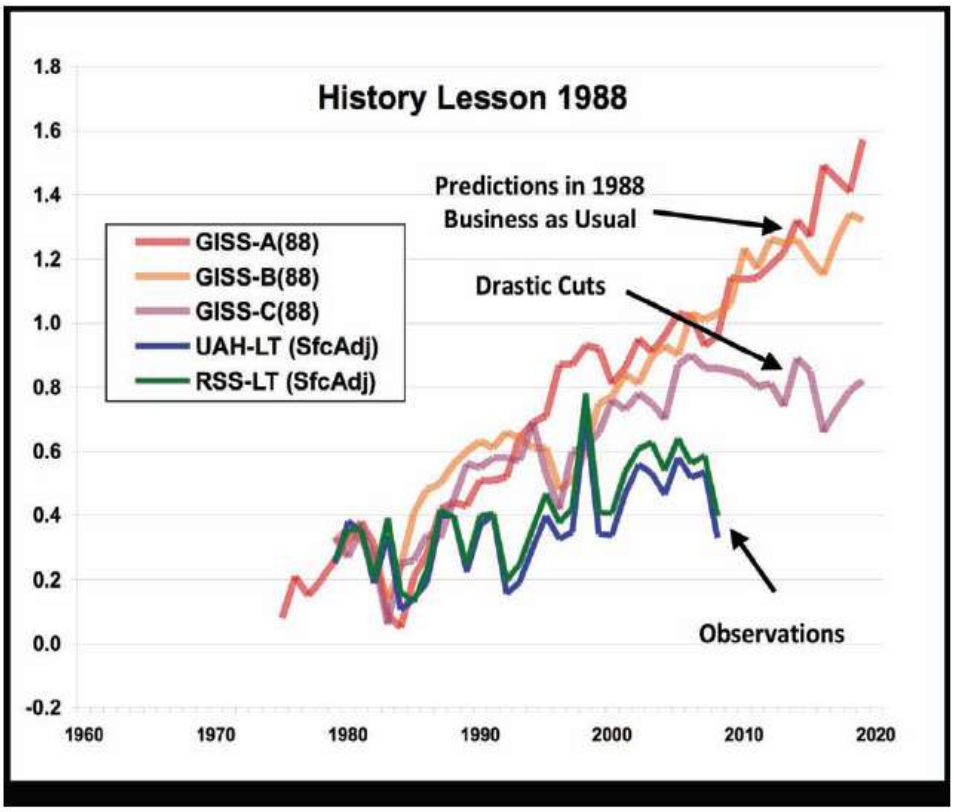


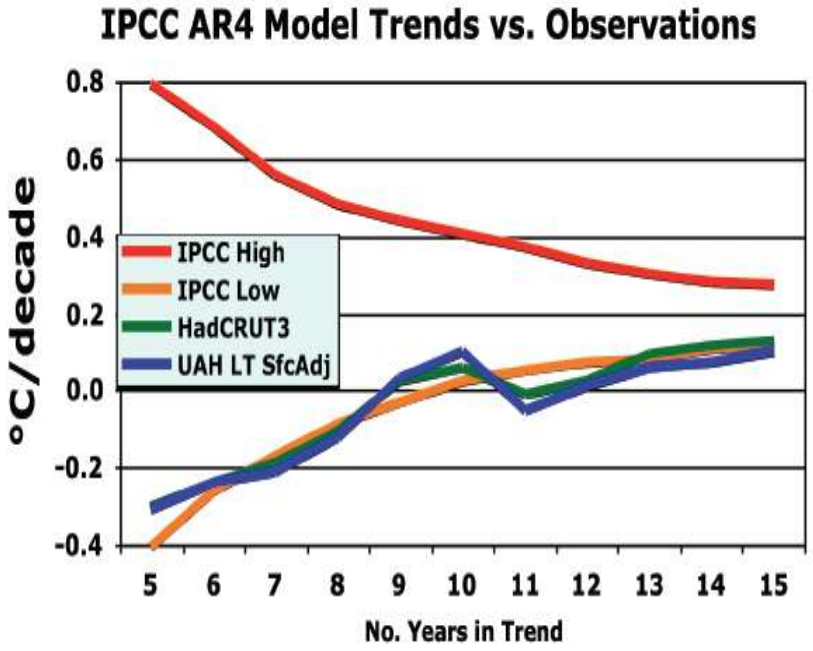
Figure 3.5.1. Actual temperature changes from UAH and RSS satellite data, adjusted to mimic surface temperatures, compared to predictions made by James Hansen to Congress in 1988. Source: Christy, J.R. 2009. Written testimony to House Ways and Means Committee. 25 February. http://waysandmeans.house.gov/media/pdf/111/ctest.pdf, last accessed May 10, 2009

Source: John Christy

"All model projections show high sensitivity to CO_2 while the actual atmosphere does not," Christy notes. "It is noteworthy," he continues, "that the model projection for drastic CO_2 cuts still overshot the observations. This would be considered a failed hypothesis test for the models from 1988."

What about the models used by the IPCC in its 2007 Fourth Assessment Report—how well are they replicating recent global temperatures?

[44] John R. Christy, Written Testimony, House Ways and Means Committee, 25 February 2009, http://waysandmeans.house.gov/media/pdf/111/ctest.pdf.



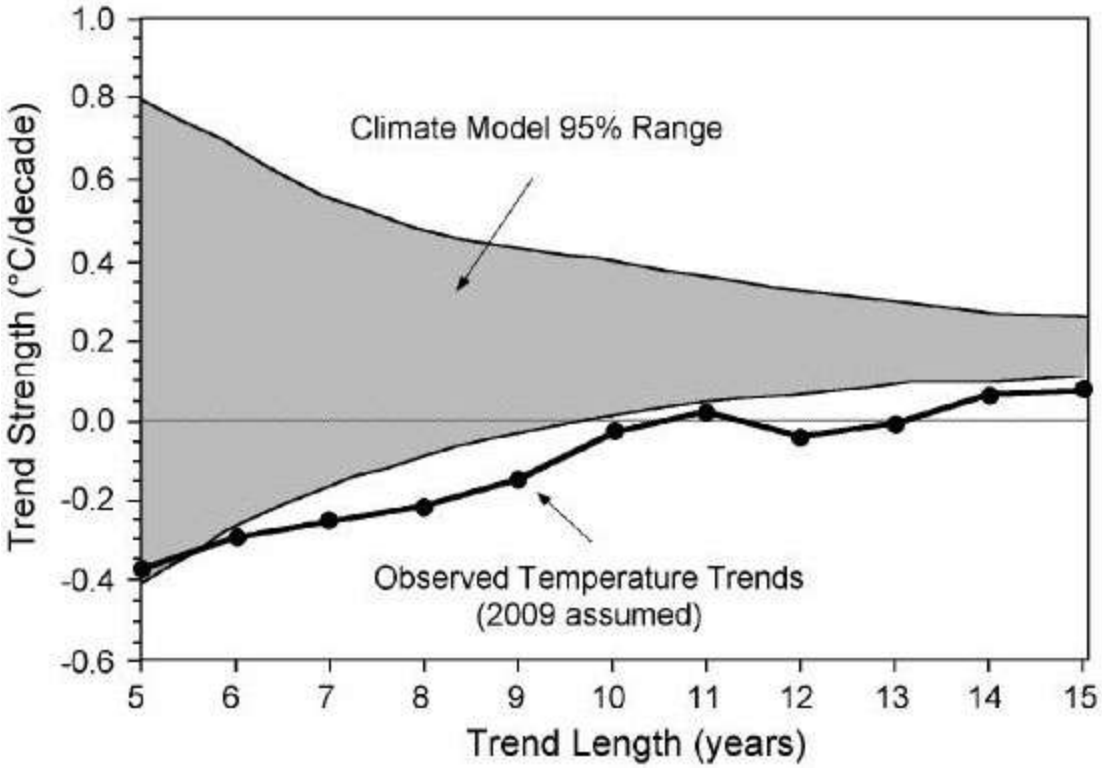
Source: John Christy

This figure, also from Christy's testimony, is adapted from Dr. Patrick Michaels's congressional testimony of 12 February 2009.[45] The red and orange lines show the upper and lower significant range (95% of model runs are between those lines) of global temperature trends calculated by 21 IPCC AR4 models for multi-year segments ending in 2020. The blue and green lines show observed temperatures ending in 2008 from satellite (University of Alabama in Huntsville) and surface (Hadley Center for Climate Change) records. Christy comments:

> The two main points here are (1) the observations are much cooler than the mid-range of the model spread and are at the minimum of the model simulations and (2) the satellite adjustment for surface comparisons is exceptionally good. The implication of (1) is that the best estimates of the IPCC models are too warm, or that they are too sensitive to CO_2 emissions.

Michaels, in his testimony, shows that if year 2008 temperatures persist through 2009, then the observed temperature trend will fall below the 95% confidence range of model projections:

[45] Patrick Michaels, Written Testimony, Climate Crisis: National Security, Economic and Public Health Threats, House Energy and Commerce Subcommittee on Energy and Environment, 12 February 2009, http://www.cato.org/testimony/ct-pm-20090212.html.



Source: Patrick Michaels

Although the IPCC models have not failed yet, they are, in Michaels's words, "in the process of failing," and the longer the current temperature regime persists, "the worse the models fail."

Another few years time will almost certainly tell us whether the IPCC models have failed or not. The notion that the world will come to an end if EPA does not finalize an endangerment finding this year is silly. However, the risk (discussed below) that an endangerment finding will trigger a regulatory cascade with economy-chilling repercussions is all too real. EPA would be well within its rights under *Mass v. EPA* to defer final judgment until the IPCC climate models do a better job of forecasting observed global temperatures.

5. Extreme Events: EPA should not take catastrophe scenarios into account when determining endangerment.

The Endangerment Proposal notes that when exercising her judgment, the Administrator "balances the likelihood and severity of the effects." On this basis EPA concludes that, "If the harm would be catastrophic, the Administrator is permitted to find endangerment even if the likelihood is small. In the context of climate change, for example, the Administrator would take account of the most catastrophic scenarios and their probabilities."[46]

[46] Endangerment Proposal, p. 18890.

This framework predetermines the outcome of an endangerment analysis. Because no one can prove from physical principles that rapid disintegration of the Greenland Ice Sheet or collapse of the West Antarctic Ice Sheet could never happen, these events, although utterly implausible in the 21st century or even the next several centuries, suddenly become "probabilities" that must be taken into account. The verdict—global warming endangers public health and welfare and, indeed, "threatens the survival of civilization and the habitability of the Earth,"[47] as Vice President Gore puts it—becomes a foregone conclusion prior to doing the analysis. This is not how science is done.

EPA should not base an endangerment determination on scientifically implausible doomsday scenarios, such as those popularized by former Vice President Al Gore in *An Inconvenient Truth*.

One example must here suffice. Gore warns that half the Greenland Ice Sheet (GIS) and half the West Antarctic Ice Sheet (WAIS) could melt or break off and slide into the sea, raising sea levels 20 feet—all in our lifetimes or those of our children.[48] That is nonsense. The WAIS is more stable than scientists had previously assumed.[49] Antarctica as a whole is expected to remain too cold for widespread surface melting during the 21st century and to gain ice mass overall due to increased snowfall.[50] Basel lubrication by "moulins" (cracks transporting melt water from the surface to the bottom of the ice sheet) has little effect on Greenland's main outlet glaciers and poses no known threat to ice sheet stability.[51] The IPCC projects a 21st century sea-level rise of 7 to 23 inches—not 20 feet.[52]

6. Private Adaptation: Public health and welfare are reasonably anticipated to improve in a warming world.

The Endangerment Proposal states:

> The Administrator also believes it is inappropriate, in considering whether greenhouse gases endanger public health or welfare, to consider potential private behavior aimed at alleviating some of the effects of climate change. Just as the

[47] Testimony of the Honorable Albert Gore, Jr., Senate Environment & Public Works Committee, March 21, 2007, http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=e060b5ca-6df7-495d-afde-9bb98c9b4d41.

[48] Gore envisions a catastrophe in which 20 million people in Beijing would "have to be evacuated"; 40 million in Shanghai would be "forced to move"; and 60 million in Calcutta and Bangladesh would "be displaced." Al Gore, *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do about It?* New York: Rodale (2006), pp. 196, 204-206. Hereafter cited as AIT.

[49] Sridhar Anandakrishnan et al. 2007. Discovery of Till Deposition at the Grounding Line of the Whillans Ice Stream. *Science* 315: 1835; William B. Alley et al. 2007. Effect of Sedimentation on Ice-Sheet Grounding-Line Stability. *Science* 315: 1838; John B. Anderson. 2007. "Ice Sheet Stability and Sea-Level Rise," *Science* 315: 1803.

[50] IPCC AR4*,"* Summary for Policymakers, p. 17.

[51] Jan Joughin et al. 2008. Seasonal Speedup Along the Western Flank of the Greenland Ice Sheet. Science 320: 781; Richard Kerr. 2008. "Greenland Ice Slipping Away but Not All That Quickly," *Science* 320: 301.

[52] IPCC, AR4, Summary for Policymakers, p. 13.

> Administrator would not consider, for example, the availability of asthma medication in determining whether criteria air pollutants endanger public health, so the Administrator will not consider private behavior in the endangerment determination at hand. On the contrary, ameliorative steps of this kind would attest to the fact of endangerment.[53]

The argument may have merit in the case of asthma inhalers but eerily resembles a Catch-22. If people are reasonably anticipated to be worse off, that's endangerment, but if people are reasonably anticipated to be better off, albeit due to adaptation, that's also endangerment.

This reasoning is dubious on several counts. It guarantees an endangerment finding regardless of the risks people actually face. It ignores the fact that *climate per se* endangers public health and welfare if people do not adapt to it. There are, for example, very few places on Earth where people can be healthy and thrive without clothing, shelter, and agriculture—all forms of private adaptation. Does that mean we are all endangered, all the time? Finally, EPA's adaptation-proves-endangerment argument ignores the fact that people in free societies constantly adapt (innovate, experiment, modify private behavior and public policy) to improve their health and welfare. The most reasonable expectation is that public health and welfare will continue to improve, even in a warming world.[54]

Consider the mortality risks related to extreme weather. Global temperatures increased during the 20th century. Yet death rates and aggregate deaths related to extreme weather declined dramatically.

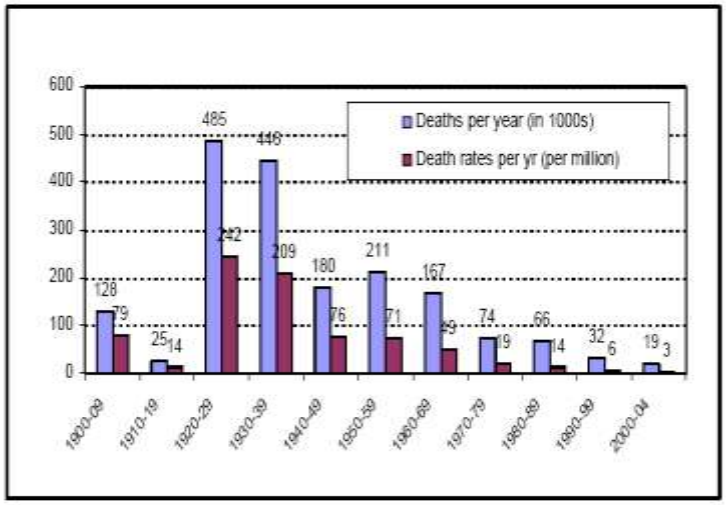


Figure 1: Global Death and Death Rates Due to Extreme Events, 1900-2004. Note that data for the last period are averaged over five years worth of data. Sources: EM-DAT (2005); McEvedy and Jones (1978); WRI (2005).

Source: Indur Goklany

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[53] Endangerment Proposal, 18894.

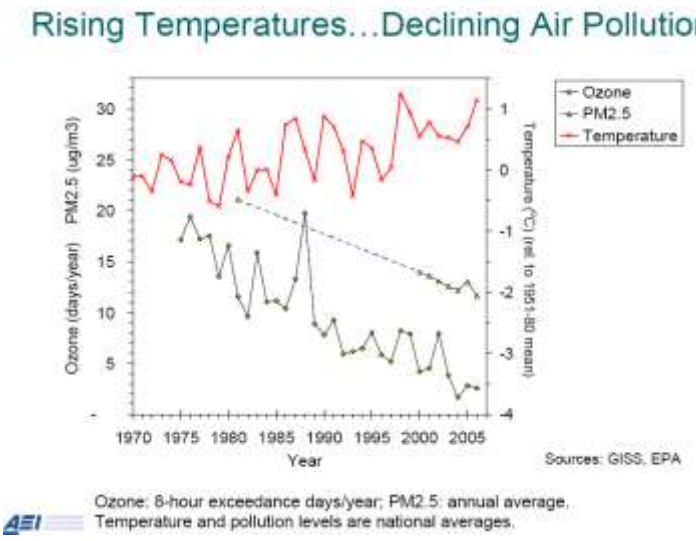
[54] Indur M. Goklany, *The Improving State of the World: Why We're Living Longer, Healthier, More Comfortable Lives on a Cleaner Planet* (Washington, D.C.: Cato Institute, 2007).

As economist Indur Goklany explains:

> Globally, mortality and mortality rates have declined by 95% or more since the 1920s. The largest improvements came from declines in mortality due to droughts and floods, which apparently were responsible for 95% of all deaths caused by extreme events during the 20th century. For windstorms, which contributed most of the remaining 5% of fatalities, mortality rates were also lower today but there are no clear trends for mortality. Cumulatively, the declines more than compensated for increases due to the 2003 [European] heat wave. With regard to the U.S., current mortality and mortality rates due to extreme temperatures, tornadoes, lightning, floods and hurricanes are also below their peak levels of a few decades ago. The declines for the last four categories range from 55 to 95%.[55]

The huge decline in aggregate deaths related to extreme weather is particularly remarkable considering that global population has roughly tripled since the 1920s. A reversal of these trends is not "reasonably anticipated," even if one assumes that global warming will affect extreme weather.

The TSD cites the IPCC claim that global warming will increase "regional ozone pollution" in U.S. cities, leading to increased respiratory illness and death.[56] This claim flies in the face of history and public policy reality.



Source: Joel Schwartz

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[55] I. M. Goklany. *Death and Death Rates Due to Extreme Weather Events: Global and U.S. Trends, 1900-2004*, June 6, 2006, prepared for the proceedings of the Climate Change & Disaster Losses Workshop, Hohenkammer, Germany, May 25–26, 2006, http://members.cox.net/igoklany/.

[56] TSD, 75.

As air quality analyst Joel Schwartz documents, air quality in U.S. cities has improved steadily over the past three decades as urban air temperatures have increased.[57] Air quality improved despite increasing urban temperatures because polluting emissions declined dramatically.

Nobody should know this better than EPA, because EPA deserves much of the credit and regularly publishes the relevant data. From 1980 to 2006, emissions of the six criteria pollutants fell by the following amounts: lead, 97%; oxides of nitrogen, 33%; volatile organic compounds, 52%; sulfur dioxide, 47%; carbon monoxide, 50%; PM_{10}, 28%; and $PM_{2.5}$, 31%.[58] As a consequence, ambient concentrations of polluting emissions have also declined. From 1980 to 2007, air pollution levels fell by the following amounts: nitrogen dioxide, 43%; sulfur dioxide, 68%; ground-level ozone, 21%.[59]

More importantly, under existing regulatory requirements, air pollution emissions and concentrations will continue to decline despite potential climate change. Schwartz explains:

> EPA's Clean Air Interstate Rule (CAIR) requires power plant SO_2 and NO_X emissions to decline more than 70% and 60%, respectively, during the next two decades, when compared with 2003 emissions. This is a cap on total emissions from power plants that remains in place independent of growth in electricity demand.[60]
>
> Recently implemented requirements for new automobiles and diesel trucks, and upcoming standards for new off-road diesel equipment will eliminate more than 80% of their VOC, NO_X, and soot emissions during the next few decades, even after accounting for growth in total driving. Dozens of other federal and state requirements will eliminate most remaining emissions from other sources of air pollution.[61]

We may "reasonably anticipate" that in 20 years most U.S. air pollution problems will have been solved, and that by mid-century significant air pollution will exist only in history books.

The TSD comes close to admitting that declining air quality is not reasonably anticipated when it notes that, "most studies to date that have examined potential future climate change impacts on air quality isolate the climate effect by holding precursor

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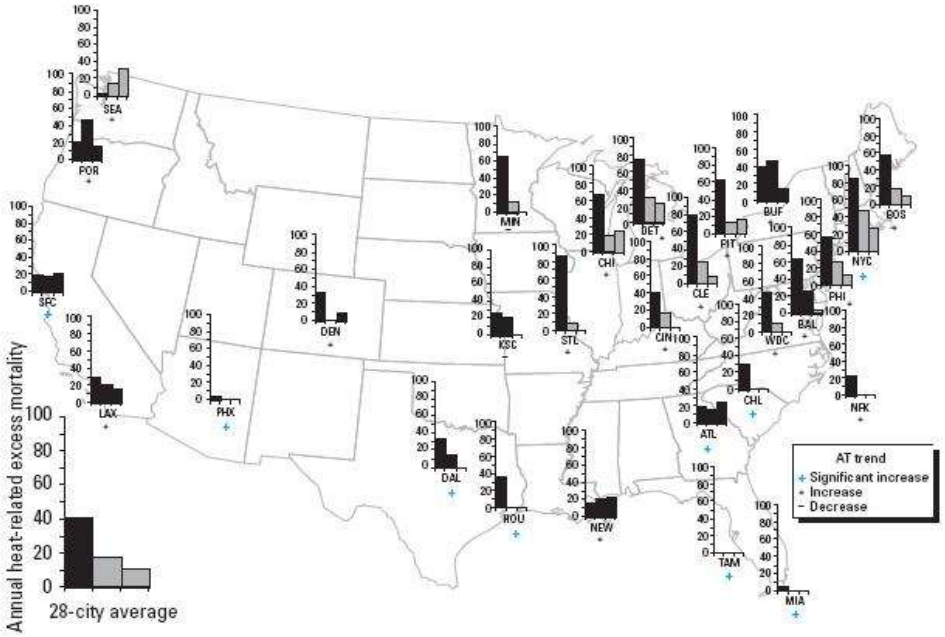
[57] Joel Schwartz, *Climate Activism in a Scientific Guise: Air Pollution as a Case Study*, Heartland Institute Climate Conference, New York City, March 3, 2008, slide 2.
[58] EPA, Latest Findings on National Air Quality: Status and Trends through 2006, p. 6, http://www.epa.gov/air/airtrends/2007/report/trends_report_full.pdf.
[59] EPA, Air Trends, http://www.epa.gov/airtrends/.
[60] The D.C. Circuit Court of Appeals vacated CAIR after Schwartz's column appeared. However, whatever EPA puts in CAIR's place is likely to be even more stringent.
[61] Joel Schwartz, "Future Air Pollution Levels and Climate Change: A Step Towards Realism," World Climate Report, August 10, 2007, http://www.worldclimatereport.com/index.php/2007/08/10/future-air-pollution-levels-and-climate-change-a-step-toward-realism/.

pollutant emissions constant over time."[62] EPA gives those studies too much credit. The only accurate way to isolate the "global warming effect" on ozone pollution would be to compare ozone levels in warming and non-warming scenarios based on realistic projections of precursor emissions in the 2020s, 2050s, and 2080s. EPA would not pay any attention to climate change scenarios that assume 1996 CO_2 emission levels in 2020, 2050, or 2080. So why put any credence in climate impact scenarios that assume 1996 ozone precursor emission levels in perpetuity even though today's emissions are already significantly below 1996 levels? By the 2050s and 2080s, the "global warming effect," if any, on ozone formation will likely be negligible. The studies EPA cites are useful not for assessing endangerment but for scaring people.[63]

In a warming world, heat waves are likely to become more intense, more frequent, and longer lasting, EPA observes.[64] History suggests, however, that this will not lead to higher heat-related mortality.



Source: Davis et al. (2003). Figure: Population-adjusted heat-related mortality for 28 major cities across the United States. Each bar of the histogram for each city represents a different 10-yr period. The left bar represents the heat-related mortality in the 1960s/70s, the middle bar represents the 1980s, and the right-hand bar is the 1990s. No bar at all means that there was no statistically distinguishable heat-related mortality during that decade.

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[62] TSD, p. 78.

[63] Joel Schwartz and George Taylor, *Air Quality False Alarm: An Analysis of the Natural Resource Defense Council's Heat Advisory Report*, United for Jobs, The Buckeye Institute for Public Policy Solutions, Commonwealth Foundation for Public Policy Alternatives, The John Locke Foundation, Pacific Research Institute, 2005, http://www.joelschwartz.com/pdfs/AIR_QUALITY_FALSE_ALARM.pdf.

[64] TSD, p. 70.

As urban air temperatures have increased, chiefly because urban heat islands expand as cities grow, heat-related mortality in U.S. urban centers has gone down. Cities where hot weather is most common—places like Tampa and Phoenix, which have large elderly populations—have practically no heat-related mortality.[65]

There is a very simple explanation for this. People aren't dumb. Where hot weather is frequent, they adapt. Heat-related mortality should continue to decline unless carbon-suppression policies reduce incomes and drive up electricity costs, discouraging poor households from running their air conditioners.

IV. Legal/Constitutional Issues

1. *Massachusetts v. EPA*: A skeptical assessment of the Court majority's opinion.

EPA briefly discusses *Massachusetts v EPA* (April 2, 2007) in the Endangerment Proposal and more extensively in the July 2008 ANPR. The ANPR appropriately begins by reviewing the case. This comment does so as well, but chiefly to reassess the Court majority's reasoning in light of the regulatory consequences to which it could lead. As the ANPR repeatedly reveals, although never explicitly acknowledges, *Massachusetts* has set the stage for unreasonable and destructive policies that Congress never intended or approved. Had the Justices known in 2006 and early 2007 what the ANPR, several congressional testimonies by attorney Peter Glaser,[66] and the U.S. Chamber of Commerce's compliance burden report[67] have since brought to light, they might have decided *Massachusetts* differently.

In *Massachusetts*, a majority of five Justices held that the CAA authorizes EPA to regulate carbon dioxide (CO_2) and other GHGs as "air pollutants." The majority further held that CAA §202 obligates EPA to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or else provide statutory reasons why the agency cannot or will not make such a determination.[68] If EPA finds that GHG emissions

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[65] R.E. Davis et al. 2003. Changing heat-related mortality in the United States. *Environmental Health Perspectives* 111: 1712-1718.

[66] Testimony of Peter Glaser and John Cline, "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, November 8, 2007; Testimony of Peter Glaser, "The U.S. Environmental Protection Agency's Response to the Supreme Court's Decision in *Massachusetts v. EPA*," House Select Committee on Energy Independence and Global Warming, March 13, 2008; Testimony of Peter Glaser, "Strengths and Weaknesses of Regulating Greenhouse Gas Emissions Under Existing Clean Air Act Authorities," Subcommittee on Energy and Air Quality of the House Committee on Energy and Commerce, April 10, 2008; Peter Glaser, "Responses to Questions of the Select Committee on Global Warming," September 4, 2008.

[67] Mark and Portia Mills, *A Regulatory Burden: The Compliance Dimension of Regulating CO2 as a Pollutant*, U.S. Chamber of Commerce, September 2008. Hereafter cited as *Regulatory Burden*.

[68] The Court majority concluded: "We need not and do not reach the question whether on remand EPA must make an endangerment finding, or whether policy concerns may inform EPA's actions in the event

endanger public health or welfare, then §202 requires EPA to establish GHG emission standards for new motor vehicles.

When *Massachusetts* was being litigated, petitioners claimed that the case posed no risks to the U.S. economy. For example, they assured the Court that, "The NAAQS program is an entirely separate program from the mobile source program at issue in this case."[69] Yes, they acknowledged, setting GHG emission standards for new motor vehicles could have the effect of tightening new-car fuel economy standards. But, they noted, §202 requires EPA to consider compliance costs and the lead times automakers need to commercialize new technologies. Thus, petitioners said, concerns voiced by the business community and others about slippery slopes and potentially devastating economic impacts were alarmist.

Persuaded by these assurances, the Court majority rejected respondent EPA's argument, based on *FDA v Brown & Williamson Tobacco Corp*, 529 U.S. 120 (2000), that GHG regulation was a policy decision of "such economic and political magnitude" that Congress would not delegate it to an administrative agency, especially in "so cryptic a fashion." Following petitioners, the Court majority held that CAA §202 "would lead to no such extreme measures [as banning cigarette sales or advertising]. EPA would only *regulate* emissions [from new motor vehicles], and even then, it would have to delay any action 'to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance,' § 7521(a)(2)."

The opinion that regulating GHG emissions under §202 could not lead to "extreme measures" or to policy decisions of enormous "economic and political magnitude" is no longer tenable. Thanks to the aforementioned Glaser testimonies, the ANPR, and the U.S. Chamber study, it is clear that setting GHG emission standards under CAA §202 could trigger a regulatory cascade throughout the CAA. GHG sources potentially subject to CAA regulation include not only new motor vehicles but also power plants,[70] refineries,[71] cement kilns,[72] and, indeed, virtually all energy-consuming equipment or processes such as lawnmowers,[73] aircraft takeoffs and landings,[74] factory

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that it makes such a finding [ref. omitted]. We hold only that EPA must ground its reasons for action or inaction in the statute."

[69] Initial Brief: Appellant-Petitioner at 28, *Massachusetts v. EPA*, 549 U.S. 497 (2007) (No. 05-1120). This statement ignored two key facts: (1) an endangerment finding under §202 could compel EPA to set NAAQS for GHGs; (2) GHG regulation under §202 would automatically trigger GHG regulation of stationary sources under an essential adjunct of the NAAQS program—the Prevention of Significant Deterioration (PSD) program.

[70] ANPR, p. 44439.

[71] ANPR, p. 44439.

[72] ANPR, p. 44487.

[73] ANPR, p. 44461.

[74] ANPR, p. 44471.

work practices,[75] diesel truck cruising speeds,[76] marine vessel coatings,[77] and even household furnaces.[78]

Tens of thousands of previously unregulated buildings and facilities could face new regulation, monitoring, controls, penalties, and litigation under the Prevention of Significant Deterioration (PSD) program; hundreds of thousands could face pointless paperwork burdens under the Title V program; millions could face onerous yet inscrutable technology requirements under the Hazardous Air Pollutant (HAP) program. The administrative and financial pain would vastly outweigh any environmental gain. In addition, EPA could be compelled to set GHG National Ambient Air Quality Standards (NAAQS) that even outright de-industrialization would be insufficient to attain.

Few Members of Congress would vote to regulate GHGs under the PSD, Title V, NAAQS, or HAP programs, especially in these perilous economic times. More importantly, neither the 90th Congress, which enacted §202 in 1970, nor the 95th Congress, which amended §202 in 1977, authorized any such course of action. This is easily demonstrated.

First, global warming regulation was not on the agenda of either the 90th or 95th Congress. Second, Congress never intended for §202, which deals solely with a subset of mobile sources, to jump-start an unprecedented expansion of stationary source regulation, impose a de facto moratorium on new construction, or bog down environmental agencies in a morass of paperwork. Yet applying PSD requirements to GHGs could produce all those undesirable consequences. Third, Congress never intended for §202, which requires EPA to consider compliance costs when setting emission standards, to leverage money-is-no-object regulation under the NAAQS program. Yet, the endangerment finding prerequisite to setting GHG emission standards for new motor vehicles could compel EPA to initiate the most expensive NAAQS rulemaking in history.

The proposition that the CAA authorizes EPA to regulate CO_2 emissions was always dubious, which is why four Justices dissented in *Massachusetts*. To begin with, when Congress wants EPA to regulate particular types of substances for particular purposes, it has no trouble making its intent clear. No one disputes whether EPA has authority to regulate ambient air pollutants, hazardous air pollutants, acid rain-forming substances, visibility-impairing haze, or ozone-depleting substances. A glance at the CAA table of contents dispels any possible doubt about EPA's authority to regulate those substances. In stark contrast, there is no climate protection title, part, or subpart in the CAA—nothing remotely resembling the NAAQS program, the HAP program, the acid rain control program, the regional haze program, or the stratospheric ozone protection program.

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[75] ANPR, p. 44491.
[76] ANPR, p. 44456.
[77] ANPR, p. 44467.
[78] ANPR, p. 44494.

In fact, the CAA is virtually silent about global warming. The terms "greenhouse gas" and "greenhouse effect" appear nowhere in the Act. The terms "carbon dioxide" and "global warming potential" do appear, but only once, each time in the context of a non-regulatory provision, and in each instance followed by a caveat admonishing EPA not to infer authority for "pollution control requirements" [§103(g)] or "additional regulation" [§602(e)]. These admonitions would be pointless if, as the Court majority held, authority to regulate CO_2 for global warming mitigation purposes is already contained in the Act's most general provision—the definition of "air pollutant" [§302(g)].

It may seem strange that the CAA, the nation's flagship environmental law, says next to nothing about an issue widely regarded as the biggest environmental challenge in human history. Yet the Act's reticence about global warming actually makes perfect sense, because climate policy is an issue of *unresolved* controversy. Congressional support for regulatory climate policy is certainly much stronger today than it was in 1970 and 1977, when Congress enacted and amended §202. Yet in June 2008, the Senate rejected the Lieberman-Warner bill, and as of this writing, the House has never voted on a cap-and-trade bill.

The climate policy stalemate long predates the Bush Presidency. Vice President Al Gore negotiated the Kyoto Protocol, and President Clinton signed it, yet Clinton did not see fit to submit the treaty to the Senate for a debate and vote on ratification. Going back further, during deliberation on the 1990 CAA Amendments, the Senate rejected a committee proposal to establish CO_2 emission standards for new motor vehicles.[79] Although the rejected proposal was much like the policy sought by petitioners in *Massachusetts*, the Court majority belittled this legislative history, arguing that "post-enactment congressional deliberations and actions" cannot curtail EPA's "pre-existing" authority under §202. Well, of course it can't. Nobody ever said that it could. The point, rather, is that it is nonsensical to pretend that in 1970 or 1977—years before Al Gore held his first congressional hearing on global warming—Congress authorized EPA to adopt regulatory climate policies that lawmakers in future Congresses tried but failed to enact.

EPA's regulatory practice over three decades also counsels against the view that Congress in 1970 or 1977 authorized EPA to regulate CO_2 emissions from new motor vehicles as "air pollution." Ponder for a moment the function of those mainstays of mobile emissions control, catalytic converters and oxygenate fuel additives. Since 1970, the overarching objective of §202 regulation was to ensure that automobile engines burn so cleanly that, ultimately, nothing comes out of the tailpipe except two greenhouse gases: carbon dioxide and water vapor.[80] Are catalytic converters "air pollution sources"?

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[79] As originally introduced on September 14, 1989, the Senate draft version of the 1990 CAA Amendments (S. 1630) contained a provision (§216) requiring EPA to promulgate CO_2 emission standards for new motor vehicles during model years 1995 through 2003.

[80] 40CFR85.2122: "Catalytic Converter" means a device installed in the exhaust system of an internal combustion engine that utilizes catalytic action to oxidize hydrocarbon (HC) and carbon monoxide (CO) emissions to carbon dioxide (CO2) and water (H2O).

Maybe so in the minds of climate campaigners today, but surely not in the minds of those who enacted and amended §202.

To reach the conclusion that CO_2 is an "air pollutant" for regulatory purposes, the Court majority had to withhold *Chevron* deference from respondent EPA's reasonable reading of §302(g). EPA argued that emitted substances are "air pollutants" only if they are "air pollution agents." The majority, following petitioners, held that anything emitted per se is an "air pollutant." This was in fact the lynchpin of petitioners' argument. Obviously, if *anything* "emitted into" the ambient air is ipso facto an "air pollutant," then GHGs are within EPA's regulatory reach. But to affirm this conclusion, the majority had to read §302(g) selectively—no mean feat, since the provision is only two sentences long. Here it is, in full:

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

If Congress had meant that any substance emitted into the air is an "air pollutant," it could have easily said so. Instead, the text says that any "air pollution agent or combination of such agents" emitted into the air is an "air pollutant." The text does not define "agent," but that's because it does not have to. An agent is something that causes or contributes to an effect. To be an air pollution agent, a substance must cause or contribute to *air pollution*—it must dirty, foul, or otherwise pollute the air. This plain English meaning of "air pollutant" is reflected in the very title of the law: *Clean Air* Act. Carbon dioxide does not make air unclean. It is not an "air pollution agent." Hence, it is not an "air pollutant."

The Court majority read "air pollution agent" as a synonym for "air pollutant" rather than as a criterion for distinguishing pollutants from non-pollutants. This reading makes the first sentence of §302(g) hopelessly circular. It might as well say: "The term 'air pollutant' means any air pollutant or combination of such pollutants…" This is not what Congress wrote and it could not be what Congress meant, because circular definitions define nothing.

Worse, treating "air pollutant" and "air pollution agent" as interchangeable terms turns the first sentence into a formalism whereby a thing can be an "air pollutant" even if it does cause or contribute to air pollution. As Justice Scalia quipped in dissent, the majority effectively held that "anything airborne, from Frisbees to flatulence, qualifies as an 'air pollutant.'" Indeed, under the majority's reading, even completely clean air—air that is entirely pollution-free—is as an "air pollutant" if it is "emitted" or "otherwise enters." That is absurd.

The majority not only gave short shrift to "air pollution agent," a key term in the first sentence, they totally ignored the second sentence. The second sentence of §302(g) says that a "precursor" of a previously designated air pollutant is also an air pollutant. This sentence would be utterly superfluous if, as the majority held, anything emitted into the air is automatically an "air pollutant," because precursors are also emitted. Courts are not supposed to assume that lawmakers pad statutes with superfluous verbiage. Rather, they are supposed to make a good faith effort to determine the meaning and implications of each sentence of each provision bearing on the case. Ignoring half the provision in dispute without explanation is not kosher.

If this seems like quibbles over minutia, then let's look at the big picture. As EPA's ANPR makes clear, setting greenhouse gas emission standards under §202 could trigger the biggest expansion of fossil-energy regulation in the Nation's history. There is something wacky in the claim that a two-sentence definition of "air pollutant"—the most abstract provision of a law enacted decades ago—mandates sweeping changes in U.S. environmental programs, energy systems, and the economy.

The whole idea of government directing industrial evolution is dubious to begin with. But if the U.S. economy is to be de-carbonized, then let the plan be adopted in full view of the public by the people's elected representatives. If courts and regulators can "enact" such a plan based on a questionable reading of an ambiguous abstraction in a law enacted more than a decade before the first congressional debate on global warming policy, then constitutional self-government is at an end.

As these comments show, the CAA is a flawed, inappropriate, even destructive instrument for regulating greenhouse gas emissions. CAA regulation of GHGs has a high potential to stifle development, depress the economy, and cripple environmental administration. The only way EPA can regulate greenhouse gases under the CAA without imperiling an already weakened economy is to assume legislative powers and effectively re-write the statute.

2. Setting GHG emission standards under CAA §202 could compel EPA to regulate tens of thousands of small businesses under the PSD program.

Attorney Peter Glaser raised this issue in several congressional testimonies. Glaser pointed out that regulating CO_2 through CAA §202 would automatically make CO_2 a pollutant "subject to regulation" under the Act's PSD pre-construction permitting program. The ANPR amply confirms the accuracy of this analysis.

Under the CAA, a firm may not build a new "major" stationary source of a regulated pollutant, or modify an existing source (if the modification significantly increases emissions) unless the firm first obtains a PSD permit. A source is defined as "major" if it is one of 28 listed industrial categories and has the potential to emit (PTE) at least 100 tons per year (TPY) of the regulated pollutant, or is any other type of establishment and has a PTE of at least 250 TPY. Two hundred and fifty tons is a reasonable threshold for regulating smog- and soot-forming emissions, which in that

quantity may affect local air quality. However, 250 tons is a miniscule amount of CO_2—too little to have any discernible effect on global temperatures even if multiplied a million times over.

Moreover, whereas only large industrial concerns have a potential to emit 250 TPY or more of criteria air pollutants like sulfur dioxide or nitrogen oxides, vast numbers of previously unregulated small entities have the potential to emit 250 TPY of CO_2. As Glaser explained, "A very large number and variety of buildings and facilities exceed this threshold—including many office and apartment buildings; hotels; enclosed malls; large retail stores and warehouses; colleges, hospitals and large assisted living facilities; large houses of worship; product pipelines; food processing facilities; large heated agricultural facilities; indoor sports arenas and other large public assembly buildings; and many others."[81] The ANPR confirms this assessment, as do the accompanying comments by the Department of Commerce and the Small Business Administration Office of Advocacy.[82]

To obtain a PSD permit, a regulated entity must install "best available control technology" (BACT), which can be costly. But even apart from the technology requirements, PSD permitting can be expensive and time-consuming, because BACT determinations are made on a case-by-case basis through a review "customized to account for the individual characteristics of each source."[83] EPA estimates that the average PSD permit costs each regulated entity $125,120 and 866 burden hours to obtain.[84] In Glaser's opinion, "No small business requiring a moderate-sized building or facility heated with fossil fuel could operate subject to the PSD permit administrative burden." He cautions: "…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."[85]

In testimony before Congress, David Bookbinder of the Sierra Club derided such concerns as a "red herring." CAA provisions are not self-enforcing, he argued. If litigants do not compel EPA to apply PSD to small sources, it won't happen. And, he averred, nobody—not the EPA, not industry, not the environmental community—wants to apply PSD to small sources.[86] Mr. Bookbinder overlooks the thousands of NIMBY ("not in my backyard") activists who would find PSD litigation a very convenient tool for blocking development projects. Anyone who doesn't want a new Wal-Mart, shopping mall, large house of worship, McDonalds, or hotel in his neighborhood could file suit demanding

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[81] Testimony of Peter Glaser, "EPA's Response to *Mass v EPA*," House Select Committee, March 13, 2008, pp. 2-3.
[82] ANPR, pp. 44375, 44497-44500.
[83] ANPR, pp. 44497, 44501.
[84] Carrie Wheeler, Operating Permits Group, Air Quality Division, Office of Air Quality Planning and Standards, Office of Air and Radiation, U.S. EPA, *Information Collection Request for Prevention of Significant Deterioration and Non-Attainment New Source Review* (40CFR Parts 51 and 52).
[85] Testimony of Peter Glaser, "EPA's Response to *Mass v EPA*," House Select Committee, March 13, 2008, pp. 3, 12.
[86] Senate Committee on Environment and Public Works, "Regulation of Greenhouse Gases Under the Clean Air Act," September 23, 2008, uncorrected transcript, pp. 91-92.

that the developers submit to a BACT determination and obtain a PSD permit. The mere fact that NIMBY forces would have this new weapon in their litigation arsenal might be enough to scare off investment in many development projects.

The ANPR estimates that, if CO_2 becomes a regulated pollutant, the number of entities applying for PSD permits each year would increase by an "order of magnitude"—from about 200-300 permits annually to 2,000 to 3,000.[87] However, this estimate is "not comprehensive," as the ANPR acknowledges.[88] First, the ANPR estimate "does not include permits that would be required for modifications to existing major GHG sources because the number of these is more difficult to estimate." Yet in any given year, more buildings and facilities are modified than are built from scratch. Second, the ANPR estimate is "based on actual emissions, and thus excludes a potentially very large number of sources that would be major" if, *as stipulated by law* (CAA §169), major sources are defined as those with a "potential to emit" 250 TPY of any air pollutant. Third, the ANPR estimate does not include "non-combustion" CO_2 sources such as brewers, bakers, and manufacturers of carbonated beverages. Finally, the ANPR estimate assumes that "few of these additional permits would be for source categories (such as agriculture) where emissions are fugitive." Yet, as the U.S. Chamber study shows, as many as 17,000 large farms use enough heating oil or natural gas in enclosed facilities to emit at least 250 TPY of CO_2.

The U.S. Chamber study finds that, on average, a firm that annually uses about $70,000 worth of oil or natural gas in stationary equipment emits 250 TPY of CO_2. Based on U.S. Census and Energy Information Administration data for energy consumption, at least one million mid-sized to large commercial buildings, nearly 200,000 manufacturing operations, and about 17,000 farms emit at least 250 TPY of CO_2. All these firms would be vulnerable to new PSD regulation, monitoring, controls, enforcement, and litigation.[89] A significantly greater number could be affected by PSD under a PTE definition of "major source," as required by the statute.

Thus, once CO_2 is regulated under the CAA, EPA and its state counterparts could be compelled to issue tens of thousands of permits per year. Yet, as the ANPR acknowledges, processing just 2,000-3,000 permits annually would impose "significant new costs and administrative burdens" on permitting authorities, requiring "large investments of resources." In addition, GHG "sources would likely face new costs, uncertainty, and delay in obtaining their permits to construct."[90] The ANPR elaborates these points a few pages later:

> Even with advance notice, an increase of this magnitude [i.e. "ten-fold"] over a very short time could overwhelm permitting authorities. They would likely need to fund and hire new permit writers, and staff would need to develop expertise necessary to identify sources, review permits, assess control technology options

[87] ANPR, p. 44499.
[88] ANPR, p. 44499.
[89] Mills & Mills, *Regulatory Burden*, p. 3.
[90] ANPR 44502.

> for a new group of pollutants (and for a mix of familiar and unfamiliar source categories), and carry out the various procedural requirements necessary to issue permits. Sources would also face transition issues. Many new source owners and operators would need to become familiar with PSD regulations, control technology options, and procedural requirements for many different types of equipment. If the transition were not effectively managed, an overwhelmed permit system would not be able to keep up with the demand for new pre-construction permits, and construction could be delayed on a large number of projects under this scenario.[91]

That this process could be "effectively managed" is doubtful, because it unrealistically assumes a mere "order of magnitude" increase in the number of annual PSD permit applications. Let's consider a more realistic scenario in which just 1% or 12,000 of the sources potentially subject to PSD for greenhouse gases undertake new construction or modifications.

According to EPA, the agency issued 282 PSD permits in one recent year. Each permit on average cost $125,120 and 866 burden hours for a source to obtain plus $23,280 and 301 burden hours for a state or local agency to process.[92] If 12,000 major stationary GHG sources undertake new construction or modifications, they could spend more than $1.5 billion and incur the burden-hour equivalent of 5,196 full-time employees. State and local agencies charged with processing PSD permits could spend $279.3 million and incur the burden-hour equivalent of 1,806 full-time employees. The state and local government expense—$279.3 million—exceeds the $227.5 million Congress appropriated in 2008 for state, local, and tribal air quality management assistance grants.[93] This morass could not be managed effectively.

The bottom line is that applying PSD to CO_2 would create significant risks for both agencies and sources. Agencies could face an administrative quagmire. The costs, delays, and uncertainties imposed on sources could bring construction activity and economic development to a screeching halt.

Finally, because PSD and BACT requirements are not triggered unless a firm plans to build a new facility or modify an existing one, expanding the scope of the PSD program by orders of magnitude would discourage many firms from replacing older capital stock with newer, cleaner, more energy-efficient capital stock. Even under current PSD requirements there are "credible examples" of firms delaying or cancelling projects that would have increased energy efficiency and reduced air pollution.[94] Applying PSD to CO_2 would turn these relatively infrequent cases into a pervasive problem.

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[91] ANPR 44507.
[92] Carrie Wheeler, Operating Permits Group, Air Quality Division, Office of Air Quality Planning and Standards, Office of Air and Radiation, U.S. EPA, *Information Collection Request for Prevention of Significant Deterioration and Non-Attainment New Source Review* (40CFR Parts 51 and 52).
[93] My calculations based on U.S. Chamber estimates of costs and FTE if firms build or modify 40,000 major sources per year.
[94] ANPR, p. 44413.

3. EPA cannot avoid a PSD quagmire.

The ANPR proposes a number of remedies to minimize PSD burdens under a GHG control regime, and requests comment on these options. None of these options is free of legal difficulties.

One option is to redefine "major" source in terms of actual emissions instead of "potential to emit" (PTE).[95] This would reduce the universe of major sources somewhat because most buildings and facilities seldom emit up to their full potential. For example, few if any apartment buildings run their heating and air conditioning units 24 hours a day, 365 days a year. Such sources could obtain a "general permit" by agreeing to limit their CO_2 emissions to less than 250 TPY, the ANPR suggests.[96]

However reasonable this approach may seem, it conflicts with the statute. CAA §169 defines "major" stationary source as a "source with *the potential to emit* two hundred fifty tons per year or more of any air pollutant" (emphasis added). Using actual emissions as the threshold for determining which sources are "major" would likely be challenged in court.

In addition, CAA §165(a)(2) says that EPA must hold a "public hearing" before issuing a PSD permit.[97] If thousands of sources apply for permits, then, it would seem, EPA must hold as many hearings. The ANPR suggests that EPA could avoid this mess by seeking public comment on each type of general permit it issues. Whether courts would approve this practice is anybody's guess.

Even if courts allow EPA to use general permits, thousands of previously unregulated sources would still have to go through some sort of PSD permitting to avoid further regulation under the program, as the ANPR admits.[98] More importantly, as previously noted, the universe of stationary facilities with actual CO_2 emissions of at least 250 TPY is much larger than the ANPR assumes—about 1.2 million entities, according to the U.S. Chamber study. These sources would still be vulnerable to the full costs of PSD permitting and any BACT requirements.

The ANPR additionally suggests that "major source" for PSD purposes could be defined in terms of "carbon equivalent" (CE) emissions. It takes 917 tons of CO_2 to produce 250 tons CE. Thus, fewer sources would be major under a 250-ton CE cutoff than under a 250-ton CO_2 cutoff.[99] However, the statute defines as "major" any source with the potential to emit 250 TPY of "any air pollutant" (§169). CE is not an air pollutant, but a measure of global warming potential. This expedient would surely be challenged in court.

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[95] ANPR, p. 44504.
[96] ANPR, pp. 44504-05.
[97] ANPR, p. 44509.
[98] ANPR, p. 44504: "The rule would have to include recordkeeping and reporting…"
[99] ANPR, p. 44505.

In a third option to reduce PSD burdens, the ANPR suggests that for sources emitting 250 tons of CO_2, EPA could replace case-by-case BACT determinations with "presumptive BACT." Under this approach, "BACT determinations could be for common types of equipment and sources, and those determinations could be applied to individual permits with little to no additional tailoring or analysis."[100] For example, sources would verify that their installed equipment meets Energy Star and other federal energy efficiency standards.[101] But, as the ANPR acknowledges, the statute requires that BACT determinations be made on a "case-by-case" basis, not for large numbers of ostensibly similar sources.[102] Moreover, as "add-on controls"[103] and "work practice standards"[104] are developed to limit CO_2 emissions from stationary sources, it will become harder to persuade courts that "presumptive BACT" yields the same emission reductions as would case-by-case BACT determinations. And again, even if courts uphold "presumptive BACT," tens of thousands of previously unregulated sources could still have to undergo some type of PSD permitting.

The boldest option discussed in the ANPR would be for EPA, administratively, to set the major source cutoff much higher—at 10,000, 25,000, or even 100,000 tons.[105] That clearly won't work. Under *Chevron*, courts are to defer to an agency's "permissible construction" of an "ambiguous" term.[106] However, there is nothing ambiguous in the phrase "250 tons."

The ANPR's justification for effectively rewriting the statute—not only in the brazen way just described but also in the subtler ways previously discussed—is the doctrine of "absurd results and administrative necessity":

> The Supreme Court has stated that the plain meaning of legislation is not conclusive "in the 'rare cases [in which] the literal application of a statute will produce a result demonstrably at odds with the intentions of the drafters'…[in which case] the intention of the drafters, rather than the strict language controls.[107]

Surely, the drafters never intended for PSD to apply to tens of thousands of small firms. As evidence, the ANPR quotes from the D.C. Circuit case of *Alabama Power v Costle*:

> Congress's intention [in setting the 250 ton cutoff for major sources] was to identify facilities which, due to their size, are *financially able* to bear the substantial regulatory costs imposed by the PSD provisions and which, as a group, are *primarily responsibl*e for emissions of the deleterious pollutants that befoul our nation's air. 636 F.2d. 323, 353 (D.C. Cir. 1980) (emphasis added).

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[100] ANPR, p. 44508.
[101] ANPR, p. 44509.
[102] ANPR, p. 44509.
[103] ANPR, p. 44497.
[104] ANPR, p. 44491.
[105] ANPR, p. 44505.
[106] *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.* 1984. 467 U.S. 843.
[107] ANPR 44503.

The ANPR misses the triple irony here. First, if Congress intended for PSD to apply to "air pollutants that befoul the nation's air," then Congress did not intend to regulate CO_2 under §202, because doing so automatically applies PSD to CO_2, yet CO_2 does not "befoul the nation's air." Yet, under a strict reading of CAA §169, EPA must apply PSD to apartment buildings and the like even if the agency *does not* find endangerment and *never* regulates CO_2 under another provision. That's because §169 requires EPA to control emissions of "any air pollutant" from major stationary sources, and the Court majority in *Massachusetts* decreed that CO_2 is an air pollutant—yet another reason to conclude that the majority's reading of §302(g) is incorrect.

Second, if a selective reading of the CAA definition of "air pollutant" leads to a "result demonstrably at odds with the intentions of the drafters," then the fault likely lies with the questionable interpretation rather than with the statute itself.

Third, in *Alabama v. Costle*, the D.C. Circuit Court of Appeals remanded an EPA rule, adopted in the name of "administrative necessity," to limit the number of PSD permit applications sources would have to submit and agencies would have to review. EPA may take "into account circumstances peculiar to individual parties in the application of a general rule to particular cases," said the Court. "But there exists no general administrative power to create exemptions to statutory requirements based upon the agency's perceptions of costs and benefits." Thus, the very case cited in the ANPR to justify taking administrative liberties with statutorily-prescribed PSD requirements held that EPA may not exercise such discretion.

Note also that none of the administrative expedients outlined in the ANPR is designed to improve environmental protection by making existing programs more efficient or cost-effective. Rather, each and every contrivance is simply designed to allow EPA, other permitting agencies, and sources to get around the law.

It speaks volumes about the Court majority's opinion in *Massachusetts* that the only way EPA can regulate GHGs under PSD without risking administrative chaos and economic disruption is to assume legislative powers and amend the statute.

4. Setting GHG emission standards under CAA §202 could compel environmental agencies to regulate hundreds of thousands of stationary sources under Title V.

The Title V operating permits program was designed to improve CAA compliance by enabling each regulated stationary source, in a single consolidated document, to track, report, and certify its compliance with all applicable CAA requirements.[108] In general, the Title V permit does not add new pollution control requirements but rather facilitates compliance with other CAA program requirements.[109] Yet, regulating CO_2 under the CAA would compel many small sources to obtain Title V permits even if they have no other requirements under the Act. The only requirements on

[108] ANPR, p. 44510.
[109] ANPR, p. 44510.

which those sources would be reporting would be the paperwork burdens imposed on them by Title V—a totally pointless, make-work exercise.

How many previously unregulated sources might be affected? Title V applies to all sources with a potential to emit 100 TPY of an air pollutant. About 15,000-16,000 stationary sources currently operate under Title V permits. The ANPR estimates that "more than 550,000 additional sources would require Title V permits," if EPA regulates CO_2 under the CAA.[110]

The actual number would likely be much larger. As already noted, the U.S. Chamber study found that 1.2 million stationary sources actually emit 250 TPY of CO_2. This suggests that more than 1.2 million actually emit 100 TPY, and an even larger number have the potential to emit 100 TPY. The staff time, legal and consulting services needed to comply with Title V could be very burdensome to small businesses. In addition, CAA §502(b)(3)(B)(i) requires agencies administering Title V to collect from each permitted source "an amount not less than $25 per ton of each regulated pollutant, or such other amount as the Administrator may determine adequately reflects the reasonable costs of the permit program." EPA's going rate is $43.40 per ton.[111] That translates into a significant burden for any brewer, baker, commercial kitchen, apartment complex, or other small entity with a PTE of 100 TPY of CO_2. Administrative costs and the associated fees could increase dramatically if the number of sources subject to Title V jumps from 16,000 to 550,000, 1.2 million or even more.

Worse, because CO_2 is typically emitted in much greater tonnages than traditional air pollutants, very small sources could end up paying as much for CO_2 emissions as large industrial sources pay for criteria air pollutant emissions. As the ANPR observes, "The most common approach, a cost per ton fee that is equal for all pollutants, would likely result in excessive costs to GHG emitting sources because of the large mass emissions of GHGs compared to other pollutants."[112]

For coal-fired power plants, the Title V tonnage fee would have the same impact as a carbon tax. Fees set at $25 per ton of CO_2 would cost U.S. coal-fired power plants almost $48 billion per year.[113] Even at $12 per ton, Title V tonnage fees for CO_2 could severe impacts on investment in new coal generation.[114] Clearly, that was not what Congress intended when it enacted Title V.

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[110] ANPR, p. 44511.
[111] ANPR, p. 44513.
[112] ANPR, p. 44512.
[113] U.S. coal electric generators emitted 1.9 billion tons of CO_2 in 2006. See EIA, Annual Energy Outlook 2008, Figure 97, Carbon dioxide emissions by sector and fuel, 2006 and 2030, http://www.eia.doe.gov/oiaf/aeo/excel/figure97_data.xls
[114] EIA estimates that a $7.00 per ton CO_2 penalty (increasing by 5% annually plus inflation) would cut the projected growth in coal generation from 53% during 2004 to 2030 to 23%. See EIA, *Energy Market and Economic Impacts of a Proposal to Reduce Greenhouse Gas Intensity with a Cap and Trade System*, January 2007, p. viii, http://www.eia.doe.gov/oiaf/servicerpt/bllmss/pdf/sroiaf(2007)01.pdf.

As with PSD, the ANPR outlines options to limit administrative burdens from the application of Title V to GHGs. Unlike PSD, Title V does provide for general permitting. Again, however, the ANPR's proposed simplifications would merely reduce—not eliminate—irrational administrative burden. For example, the ANPR proposes to raise the cutoff for Title V from 100 TPY of CO_2 to 250 TPY, so that only entities subject to PSD would have to obtain Title V permits.[115] That's cold comfort for the 1.2 million entities potentially subject to PSD permitting requirements.

When the Court majority in *Massachusetts* decided in favor of plaintiffs, did they have any idea that setting GHG emission standards for new motor vehicles could impose pointless Title V paperwork burdens and fees on 550,000, 1.2 million, or an even larger number of previously unregulated stationary sources? Did they anticipate that Title V tonnage fees could undermine the economic viability of coal generation? Sadly, nothing in *Massachusetts* suggests that they gave any thought to these questions.

5. Households could become "major sources" of hazardous air pollutants.

At first glance, the proposition that EPA could be compelled to regulate CO_2 as a hazardous air pollutant (HAP) under §112 is ludicrous and not worth discussing. When Congress enacted §112, it specifically listed some 180 substances as HAPs, each of which is a poison. Consistent with the character of this initial list, §112(b)(2) requires the Administrator periodically to revise the list, "adding pollutants which present, or may present, through inhalation or direct routes of exposure, a threat of adverse human health effects (including, but not limited to substances which are known to be, or may reasonably be anticipated to be, carcinogenic, mutagenic, teratogenic [productive of monsters], neurotoxic, which cause reproductive dysfunction, or which are acutely or chronically toxic)…"

Carbon dioxide is certainly not carcinogenic, mutagenic, teratogenic, neurotoxic, acutely or chronically toxic, or implicated in reproductive dysfunction. Indeed, CO_2 poses no known or anticipated health risks to humans, animals, or plants via "inhalation or direct routes of exposure" even at several times ambient levels.

However, the same provision says that the Administrator "shall" also list as HAPs "pollutants which present, or may present … adverse environmental effects … through ambient concentrations." CAA §112(a)(7) defines "adverse environmental effect" as "any significant and widespread adverse effect, which may reasonably be anticipated, to wildlife, aquatic life, or other natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas." Both scientific and popular literature is rife with claims that global warming from rising ambient concentrations of GHGs threatens or harms wildlife and aquatic life, including endangered species, and degrades environmental quality over large areas. We should not be surprised if litigation groups sue EPA to classify and regulate GHGs as HAPs.

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[115] ANPR, p. 44513.

As the ANPR indicates, regulating GHGs as HAPs could impose crushing compliance burdens on sources and the economy. §112(a)(1) defines as "major" any source that has the potential to emit 10 TPY of any individual HAP or 25 TPY of any combination of HAPs. According to the ANPR, "small commercial or institutional establishments and facilities with natural gas-fired furnaces would exceed this major source threshold; indeed, a large single-family residence could exceed this threshold if all appliances consumed natural gas."[116] If GHGs become HAPs, millions of households would become "major" sources.

Major HAP sources must install maximum achievable control technology (MACT). MACT is more stringent than BACT, and sources have only three years to comply with the requirements of a §112 rule. Enforcing MACT standards for millions of households would likely require the equivalent of an EPA inspector on every block. The environmental gains, if any, would be stunningly trivial compared to the administrative burden on agencies and sources. Regulating GHGs as HAPs would epitomize the phrase "all pain for no gain." Developing MACT standards for GHGs could take many years, because EPA has no emissions data for households and households have no experience with emission controls.[117] Even more than the application of PSD/BACT to small sources, the costs and uncertainties associated with future MACT requirements for buildings and facilities down to the household level would function as a gigantic Anti-Stimulus package.

Applying the HAP program to GHGs—a potential consequence of the *Massachusetts* decision—would make the CAA "acutely or chronically toxic" to the economy. The only silver lining in this dark cloud is that if EPA does regulate GHGs as HAPs, it may not regulate GHGs under the NAAQS program.[118]

6. An endangerment finding under CAA §202 could compel EPA to set NAAQS for CO_2 and other GHGs.

Before EPA can set vehicle emission standards under §202, it must first find that the emissions in question cause or contribute to health- or welfare-endangering air pollution. As the ANPR notes, similar endangerment tests occur in other CAA provisions.[119] Consequently, an endangerment finding for GHGs under §202 could authorize or compel EPA to regulate GHGs under several provisions. The most important of these is §108, which governs the first phase of a NAAQS rulemaking.

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[116] ANPR, p. 44495.

[117] ANPR, p. 44495: "Determining MACT based on the best-controlled 12 percent of similar sources for each category would present a difficult challenge, owing to our current lack of information about GHG control by such sources and the effort required to obtain sufficient information to establish a permissible level of performance."

[118] CAA §112(b)(2) states that no air pollutant listed under §108(a) may be added to the list of HAPs unless it is a precursor to an air pollutant listed under §108(a) and "independently meets" the criteria for listing under §112.

[119] ANPR, pp. 44418-44420 finds variations on §202's endangerment test in §108 (ambient air quality), §111 (pollution from new sources), §115 (international air pollution), §211 (highway and non-road fuels), §213 (non-road engines and vehicles), §231 (aircraft), and §615 (adverse effects on the stratosphere).

A NAAQS is an allowable pollution concentration standard. It determines how many parts per million (or billion) of a targeted pollutant are permissible in the ambient air. Petitioners in *Massachusetts* argued that *current* GHG levels *already harm* public health and welfare.[120] Similarly, as the ANPR mentions, a "common element" in all the endangerment petitions filed since *Massachusetts* is the assertion that GHG emissions "are already harming petitioners' health and welfare and further delay by the Agency will only increase the severity of future harms to public health and welfare."[121] Allegations of present harm by both the *Massachusetts* petitioners and recent petitioners raise an obvious policy question: What kinds of measures would be required to *lower* GHG concentrations *below current levels*?

The Kyoto Protocol, even if faithfully and fully implemented by all industrial countries, including the United States, would barely slow the increase in atmospheric CO_2 concentrations.[122] Many Kyotos would be required to stabilize CO_2 concentrations at 450 parts per million (ppm) or even 550 ppm. Actually reducing GHG concentrations below today's levels (roughly 385 ppm) may well exceed human capability in this century. Even outright de-industrialization of the United States might not be enough to lower atmospheric levels, especially if emerging economies such as China and India continue to industrialize, and energy-related U.S. production, jobs, and emissions migrate to those places.

Yet, as the ANPR explains, the CAA requires EPA to ensure that areas designated to be in "non-attainment" with a "primary" or health-based NAAQS come into attainment within five years. EPA has authority to extend the attainment deadline by up to another five years, but no later than 10 years after an area is designated as "non-attainment."[123] Because GHGs are well mixed throughout the global atmosphere, the entire country would be in non-attainment with GHG NAAQS set below current atmospheric levels.[124]

Again, *Mass. v. EPA* has set the stage for policy disaster. If EPA makes an endangerment finding under §202, and this triggers the setting of a primary NAAQS, and EPA accepts petitioners' claim that current GHG concentrations already harm public health, then EPA would have to achieve in five or 10 years what may not be achievable in 100 years even if all nations adopt tough GHG control measures.

One consequence of the nation's non-attainment with NAAQS for GHGs is that EPA would have to regulate major stationary sources of CO_2 under the Non-Attainment New Source Review (NNSR) pre-construction permitting program. NNSR is similar to PSD but differs in three key respects. First, the cutoff for regulation is a PTE of 100 TPY, not 250 TPY as would be the case for most stationary sources under PSD. Second,

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[120] "Petitioners injuries are not 'some day' injuries, as respondents contend…; they are injuries in the here and now." Petitioners' Final Reply Brief, Massachusetts v EPA, November 16, 2006, p. 2.
[121] ANPR, p. 44399.
[122] T.M.L. Wigley. 1998. The Kyoto Protocol: CO2, CH4, and climate implications. *Geophysical Research Letters*, Volume 25, Issue 13, pp. 2285-2288.
[123] ANPR, p. 44484.
[124] ANPR, p. 44498.

facilities subject to NNSR permitting must comply with Lowest Achievable Emissions Rate (LAER) standards. Unlike BACT, EPA may not take into account compliance costs when setting LAER standards. Third, any emission increases from a new or modified source must be offset by reductions from an existing source in the same non-attainment area.[125] Roughly speaking, nothing could be built or expanded anywhere in the United States unless something else shuts down.

Another consequence of non-attainment with GHG NAAQS is that the federal government, pursuant to CAA "transportation conformity" provisions, would have to withhold funds and approvals for transportation projects:

> If states were unable to develop plans demonstrating attainment by the required date [i.e. 10 years], the result would be long-term application of sanctions, nationwide (e.g. more stringent offset requirements and restrictions on highway funding), as well as restrictions on approvals of transportation projects and programs related to transportation conformity.[126]

EPA would find itself at loggerheads with congressional appropriators, governors, mayors, highway users, and construction unions.

In short, applying the NAAQS program to GHGs—a not unlikely consequence of a GHG endangerment finding under §202—could turn the CAA into the equivalent of an economic suicide pact. Set a primary NAAQS for GHGs below current atmospheric levels, and there is virtually no economic sacrifice that could not be demanded of the American people. The ANPR tacitly acknowledges this, noting that under established legal interpretation, EPA is forbidden to take costs into account when setting NAAQS.[127]

7. EPA could not administratively avoid NAAQS-related economic risks.

The ANPR suggests—and some environmental groups argue—that a GHG endangerment finding under §202 need not compel the agency to initiate a NAAQS rulemaking. This argument goes as follows. Under §108, EPA has to initiate a NAAQS rulemaking if the pollutant of concern meets three criteria: (1) Emissions of the pollutant cause or contribute to dangerous air pollution; (2) the pollutant is emitted by numerous or diverse stationary or mobile sources; and (3) the Administrator plans to issue an air quality "criteria" document for the pollutant. Thus, it is alleged, all EPA needs to do to avoid setting NAAQS for GHGs is simply not "plan" to issue a criteria document.[128]

This won't wash. It is tantamount to saying that EPA can avoid the obligation to set NAAQS to control dangerous air pollution from numerous or diverse sources just by declining to do the paperwork.

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[125] ANPR, p. 44498.
[126] ANPR, p. 44481.
[127] ANPR, p. 44478.
[128] ANPR, p. 44477.

In the 1970s, EPA Administrator Russell Train tried to employ this dodge, claiming that EPA did not have to list lead as an ambient air pollutant, because he had no plan to issue a criteria document for lead. The Second Circuit Court of Appeals rejected Train's argument, explaining:

> If the EPA interpretation were accepted and listing were mandatory only for substances "for which (the Administrator) plans to issue air quality criteria…", then the mandatory language of §108(a)(1)(A) would become mere surplusage. The determination to list a pollutant and to issue air quality criteria would remain discretionary with the Administrator, and the rigid deadlines of §108(a)(2), §109, and §110 for attaining air quality standards could be bypassed by him at will.[129]

Both David Bookbinder of Sierra Club[130] and David Doniger of Natural Resources Defense Council[131] have made this "third criterion" argument in congressional testimony. Yet, it was NRDC that successfully sued EPA to overturn Train's interpretation and compel EPA to regulate lead under the NAAQS program.

Bookbinder and Doniger were also attorneys for petitioners in *Massachusetts*. In 2003, three of the *Massachusetts* petitioners—Attorneys General Thomas F. Reilly of Massachusetts, Richard Blumenthal of Connecticut, and G. Steven Rowe of Maine—filed a notice of intent to sue EPA for failing to initiate a NAAQS rulemaking for CO_2. The three AGs cited *NRDC v. Train* as a precedent requiring EPA to list CO_2 as a criteria air pollutant:

> In *Natural Resources Defense Council v. Train* [cit. omitted], the issue was whether the Administrator could be subject to a mandamus action to compel him to list lead as a criteria air pollutant. The Administrator conceded that lead posed a serious risk, but, asserting a preference to exercise his discretion to regulate lead in a different manner, declined to list it. The Court emphatically rejected this approach and held that when it is uncontested that an air pollutant from numerous or diverse sources is contributing to air pollution that "may reasonably be anticipated to endanger public health or welfare," the Administrator has a mandatory duty to list that pollutant pursuant to Section 108.[132]

Reilly, Blumenthal, and Rowe subsequently withdrew their notice of intent to sue when they and other plaintiffs filed the *Massachusetts* petition. Nonetheless, *NRDC v. Train* has never been overturned, and the reasoning is cogent. It is not plausible that Congress would authorize EPA to avoid setting NAAQS for dangerous air pollution from

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[129] *NRDC v Train*, 545 F.2d 320, November 10, 1976, paragraph 13.
[130] Testimony of David Bookbinder, "Hearing on *Massachusetts v EPA* Part II: Implications of the Supreme Court Decision," House Select Committee on Global Warming, March 13, 2008, p. 9.
[131] Testimony of David Doniger, "Strengths and Weaknesses of Regulating Greenhouse Gas Emissions Under Existing Clean Air Act Authorities," House Energy and Commerce Subcommittee on Energy and Air Quality, April 10, 2008, p. 18.
[132] Thomas F. Reilly, Richard Blumenthal, G. Steven Rowe, Notice of Intent to Sue Christine Todd Whitman, Administrator, United States Environmental Protection Agency, Under Clean Air Act §7604, January 30, 2003.

numerous or diverse sources just by declining to produce the requisite analysis. This would arguably gut the NAAQS program, often described as the "cornerstone" of the CAA.

Apparently, the only way EPA can regulate GHGs from new motor vehicles without imperiling the economy is to revive a discredited legal opinion and treat mandatory language in §108 as surplus verbiage. This is additional evidence that the Court majority in *Massachusetts* did not examine §202 and §304(g) in their proper context—the CAA *as a whole*.

In a footnote,[133] the ANPR observes that *NRDC v. Train* was decided before *Chevron* and wonders whether EPA today might have more discretion to interpret its obligations under §108. This is whistling past the graveyard. *Chevron* did not invalidate all previous decisions pertaining to the scope of EPA's discretion. *Chevron* did not authorize EPA to "bypass at will" the "rigid deadlines of §108(a)(2), §109, and §110 for attaining air quality standards."

The ANPR suggests another solution to the NAAQS peril, but it too is legally dubious. The ANPR says that EPA could issue a "secondary" NAAQS to protect "public welfare" from the known or anticipated adverse effects of GHG emissions yet abstain from issuing a "primary" NAAQS to protect "public health" with an "adequate margin of safety." The advantage here is that unlike a primary NAAQS, which states must attain in five or at most 10 years, a secondary NAAQS has no prescribed attainment date. Rather, secondary NAAQS must be attained "as expeditiously as practicable." EPA compares this approach to its regional haze program, which aims to achieve natural visibility conditions in the nation's parks and wilderness areas by 2064.[134] The ANPR solicits comment on whether the regional haze program could serve as a "model" for regulating GHGs via a secondary NAAQS.

The ANPR's legal and scientific rationale for issuing a secondary NAAQS without issuing a primary NAAQS is as follows. CAA §302(h) defines "welfare effects" to include "effects" on "weather" and "climate." The adverse health effects attributed to climate change are "principally or exclusively welfare-related." For example, "increased viability or altered geographical range of pests or diseases; increased frequency or severity of severe weather events including heat waves…are…indirect impacts resulting from these ecological and meteorological changes, which are effects on welfare."[135]

Although these observations have merit, they are unlikely to bear the legal weight the ANPR wants to place upon them. To begin with, there is no precedent for the suggested approach. Never before has EPA issued a secondary NAAQS for an air pollutant without also issuing a primary NAAQS. The ANPR cites one instance in which EPA revoked a secondary NAAQS—for carbon monoxide (CO)—while retaining the

[133] ANPR, p. 44477, footnote 229.
[134] ANPR, p. 44481.
[135] ANPR, p. 44478.

primary NAAQS.[136] This was entirely unproblematic, however, because an EPA scientific review determined that CO at or near ambient levels has no known or anticipated adverse welfare effects. It hardly follows from this action that EPA may avoid setting a primary NAAQS for air pollution reasonably anticipated to endanger public health.

Nothing in §108 suggests that EPA's obligation to protect public health from dangerous air pollution is reduced or delayed if the adverse health effects are indirect impacts of changes in weather and climate. If the effects on public health are what make the ecological and meteorological changes dangerous, then litigants will undoubtedly demand that EPA issue a primary NAAQS to protect public health.

An analogy may be pertinent here. Ozone smog is an indirect effect of emissions of VOCs and NO_X. What is more, the formation of ozone smog is to a significant extent mediated by the change from winter weather to summer weather, especially in warm climates. Yet no one has ever suggested that because smog is an "indirect" effect of VOCs and NO_X mediated by "welfare" elements, EPA should not issue primary NAAQS for ozone.

The clincher, though, is that EPA is currently proposing to find endangerment on both health and welfare grounds, and specifically rejects the argument that global warming-related health effects are welfare effects.[137] It is almost unimaginable, therefore, that courts would uphold an EPA policy of establishing secondary (welfare) but not primary (health-based) NAAQS for GHGs.

The regional haze program is not the model EPA hopes it might be. For starters, EPA does not regulate regional haze via a secondary NAAQS, so the program provides no legal precedent for the approach the ANPR proposes. Second, few if any experts claim that regional haze endangers public health, whereas hundreds of experts claim that GHG-induced global warming endangers public health. Third, whereas most sources of regional haze are domestic, most GHG sources are international and beyond the power of states to control. As the ANPR admits, "…in the absence of substantial cuts in worldwide emissions, worldwide concentrations of GHGs would continue to increase despite any U.S. emission control efforts."[138] In 2064, the United States might be no closer to attaining a secondary NAAQS for GHGs than it is today. Yet the phrase "as expeditiously as practicable" in CAA §172(a)(2)(B) does not mean "never."

On the contrary, CAA §110(l) requires states with non-attainment areas to adopt measures assuring "reasonable further progress" towards attainment of the applicable NAAQS. Similarly, CAA §169A(a)(4) requires the Administrator to assure "reasonable progress" towards eliminating regional haze, and to assess at five-year intervals "actual progress and improvement in visibility in Class I federal areas." If EPA establishes a secondary NAAQS for GHGs, states will have to adopt measures assuring reasonable

[136] ANPR, p. 44478.
[137] Endangerment Proposal, p. 18901.
[138] ANPR, p. 44367.

progress towards attainment. Yet global CO_2 emissions and concentrations are rising rapidly,[139] and are expected to increase for decades to come. How could EPA and the states determine what measures are necessary to assure reasonable further progress if no measures will achieve progress in attaining the NAAQS?

As the ANPR explains, GHGs are unlike criteria air pollutants in fundamental respects. They persist in the atmosphere for decades to centuries rather than days to weeks. Consequently, they are well mixed throughout the global atmosphere rather than concentrated in particular locales. Further, atmospheric concentrations are a product of all sources and sinks worldwide, not just national or local sources.[140] This means that the NAAQS strategy of controlling local sources to improve local air quality has no rational application to GHGs in the context of global warming policy. Neither a primary health-based NAAQS nor a secondary welfare NAAQS is a reasonable framework for regulating GHGs.

Finally, issuing a secondary NAAQS for GHGs without issuing a primary NAAQS would not spare either agencies or sources from burdens associated with PSD, NNSR, and Title V. If EPA sets the secondary NAAQS above current atmospheric levels, the entire country would be in attainment. In that case, major stationary sources would have to undergo PSD permitting and install BACT in a futile effort to keep GHG concentrations from rising. If, as is more likely, EPA sets the secondary NAAQS below current atmospheric levels, the entire country would be out of attainment. Major sources would have to undergo NNSR permitting, install controls meeting LAER standards, and obtain offsets before undertaking new construction or modification. States and localities would lose federal highway funds and face new restrictions on transportation project approvals. Millions of previously unregulated entities would still have to obtain Title V operating permits.

The real issue in *Massachusetts* was not whether the CAA definition of "air pollutant" can be massaged to justify regulating GHGs from one source category (new motor vehicles) under one provision (§202), but whether Congress intended for EPA to regulate GHGs from *all sectors and industries* under the CAA *as a whole*. In short, did Congress intend for EPA to regulate GHGs under the "cornerstone" of the CAA—the NAAQS program—and its statutory adjuncts: PSD, LAER, and Title V?

Few if any Supreme Court Justices would openly and directly order EPA to implement a Super-Kyoto program via either the NAAQS, PSD, LAER, and Title V programs, or the HAP program, for a very simple reason. No public official wants to take responsibility for wrecking the economy. Had the real issue been squarely before the Court, *Massachusetts* would likely have been decided differently.

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[139] J.G. Canadell et al. 2007. Contributions to accelerating atmospheric CO_2 growth from economic activity, carbon intensity, and efficiency of natural sinks. *PNAS* November 20, 2007 vol. 104, no. 47: 18866-70.

[140] ANPR, p. 44401.

8. EPA could not establish a GHG cap-and-trade program under CAA §110 or §111.

EPA believes that market-oriented regulatory approaches, such as emission fees and trading systems, "offer important advantages" over more prescriptive approaches for certain types of environmental problems. These advantages include lower cost, a continual incentive for over-compliance, greater incentives for technological innovation, and reduced liability for sources.[141] EPA further believes that market-oriented approaches are "relatively well-suited" to controlling GHG emissions: "Providing flexibility on the method, location, and precise timing of GHG reduction would not significantly affect the global climate protection benefits of a GHG control program … but could substantially reduce the cost and encourage technology innovation."[142]

The ANPR suggests that EPA could establish a GHG trading system under either the NAAQS program or the New Source Performance Standards (NSPS) program. This is doubtful.

EPA notes that its Clean Air Interstate Rule (CAIR) established a cap-and-trade program for criteria pollutants under one of the NAAQS provisions, CAA §110(a)(2)(d).[143] However, after the ANPR was drafted, on July 11, 2008, the D.C. Circuit Court of Appeals, in *North Carolina v EPA*, vacated the CAIR cap-and-trade program as a violation of that provision. §110(a)(2)(d) prohibits sources in one state from contributing significantly to non-attainment in another state, or interfering with another state's maintenance of a primary or secondary air quality standard. Yet the hallmark of a cap-and-trade program is the flexibility sources have to buy their way out of emission reduction obligations by purchasing emission credits. The Court found that credit trading under CAIR would allow sources in upwind states to increase their emissions, contributing significantly to non-attainment, or interfering with maintenance of the applicable NAAQS, in downwind states.

The same reasoning could preclude a GHG cap-and-trade program under §110(a)(2)(d). Because GHGs are well-mixed global gases, every state is effectively "upwind" with respect to all other states. Every source anywhere in the United States that does not decrease its emissions would contribute to non-attainment, or interfere with NAAQS maintenance, in other states. In fact, given the long residence times of CO_2 and other GHGs, merely decreasing emissions might not be enough to comply with §110(a)(2)(d). To avoid contributing to NAAQS non-attainment or interfering with NAAQS maintenance in other states, sources might have to reduce their emissions to zero!

Perhaps a court might conclude that no individual source, regardless of how large, emits enough CO_2 to contribute "significantly" to non-attainment by other states. A cap-and-trade program would then not be barred by §110(a)(2)(d). But if, as is likely, EPA

[141] ANPR, p. 44409-10.
[142] ANPR, p. 44410.
[143] ANPR, p. 44412.

would have to set the NAAQS below current atmospheric levels, it would also likely have to set the emissions cap so low as to depress the economy.

The ANPR also suggests that EPA could establish a GHG cap-and-trade program under the NSPS program (§111), arguing that a trading program meets the CAA definition of "standard of performance."[144] This is far from evident. CAA §302(l) defines "standard of performance" as a "requirement of continuous emission reduction," and §111(a) defines "standard of performance" as the "best system of emission reduction," taking various factors into account. Again, the chief virtue of a cap-and-trade program is flexibility. There is no requirement of "continuous emission reduction" for sources individually or even collectively. By purchasing emission credits, individual sources may increase their emissions. Sources are also under no obligation to install the "best system of emission reduction." Cap-and-trade supposedly fosters experimentation to discover the least costly methods, not the one best method.[145] Any EPA rule to establish a GHG cap-and-trade program under §111 would likely be challenged in court.

Apart from these textual considerations, the ANPR seems unaware that several important choices in the design of a cap-and-trade program are not technical but political and, as such, beyond EPA's authority to make.

An eye-opening example emerged at a Senate Environment and Public Works Committee hearing on the U.S. Climate Action Partnership, where this commenter testified.[146] PG&E CEO Jim Darbee advocated a cap-and-trade scheme that allocates permits based on actions already undertaken to reduce emissions and the emitter's historical level of energy produced. This would favor utilities (like PG&E!) that don't burn much coal and instead invest heavily in state-mandated renewable generation. In contrast, Duke Energy CEO Jim Rogers advocated a cap-and-trade scheme that allocates permits based on each company's historical level of emissions. This would favor companies (like Duke!) that burn a lot of coal, in effect paying them to switch to producing more expensive electricity from lower-emitting fuels.[147] The two CEOs disagreed as to which type of cap-and-trade program was "fair." EPA might as well read tea leaves as try to divine the answer from CAA §§ 110 and 111.

Such internecine wrangling partly explains why Congress has never passed a cap-and-trade bill. As my colleague Myron Ebell puts it, the "thieves fall out" as soon as the discussion gets beyond generalities to the specifics of how emission permits worth potentially trillions of dollars are to be allocated. Existing CAA provisions do not authorize EPA to pick which companies make out like bandits and which get fleeced.

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[144] ANPR, p. 44411.
[145] This discussion draws on the Opening Brief of Environmental Petitioners in *State of New Jersey et al v EPA*, January 12, 2007, p. 25.
[146] "Global Warming Issues in the Power Plant Sector," Hearing before the U.S. Senate Committee on Environment and Public Works, June 28, 2007.
[147] Myron Ebell, "Thieves Fall Out," *Cooler Heads Digest*, June 5, 2007, http://cei.org/gencon/014,06019.cfm.

Additional thorny political issues must be resolved before EPA could administer a GHG cap-and-trade program. Should permits be auctioned or allocated free-of-charge? Should a percentage be auctioned at the start of the program and increase over time? If some credits are to be allocated free-of-charge, how many, to whom, and for how long? How should revenues from permit auctions be used—to fund R&D of non-emitting technologies, finance national health care, pay down the national debt, or reduce taxes on labor and capital? EPA has no authority to resolve such power-of-the-purse questions.

9. The NSPS program is not a reasonable framework for regulating GHGs.

EPA seems to relish the prospect of setting NSPS for GHGs. CAA §111 "offers the potential for an independent, comprehensive program for regulating most stationary sources of GHGs." It "provides for consideration of cost, and allows substantial discretion regarding the types and size of sources regulated" plus "significant discretion to determine the appropriate level for the standards." Moreover, the emission control systems on which the standards are based must be "adequately demonstrated."[148] What's not to like?

But then the ANPR says that to be "adequately demonstrated," control systems "need not be actually in use or achieved in practice at potentially regulated sources or even at a commercial scale." In fact, the ANPR claims, EPA could establish future-year standards based on technologies it believes will be "adequately demonstrated" in the future.[149] EPA, it seems, is largely free to define "adequately demonstrated" as it sees fit.

More importantly, applying NSPS to GHG source categories would have no measurable effect on GHG concentrations or climate change.

The Department of Energy (DOE) projects that global CO_2 emissions will increase from 27 billion tons in 2005 to 48.1 billion tons in 2050.[150] To reduce global CO_2 emissions 50 percent below 2005 levels by 2050—the long-term goal of most climate campaigners[151]—global CO_2 emissions must decrease to 13.5 billion tons per year. In other words, global CO_2 emissions in 2050 must be 34.6 billion tons below the baseline projection. To reduce CO_2 emissions in 2050 by just 1 billion tons, nations would have to build 273 new zero-emission 500 MW coal-fired power plants instead of conventional coal power plants, *or* build 136 new nuclear power plants of 1 GW each (equivalent to about one-third of existing world nuclear capacity) instead of conventional coal plants, *or* convert a barren area larger than Germany and France combined into new

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[148] ANPR, p. 44486.
[149] ANPR, p. 44487.
[150] Stephen D. Eule, U.S. Department of Energy, The Climate Change and Energy Security Challenge, 29 November 2007, slide 17. An updated version of this presentation is available on the U.S. Chamber's Institute for 21st Century Web site: Steve Eule, Climate Change: Scale and Scope of the Challenge, February 2009, http://www.energyxxi.org/pages/February_2009__Vice_President_Steve_Eule__Climate_Change_Scale_and_Scope_of_the_Challenge.aspx.
[151] The IPCC calls for a 60-percent GHG emissions reduction by 2050 relative to 2000 levels to stabilize atmospheric concentrations at 440 ppm (ANPR 44401).

forests for CO_2 storage.[152] Each of these strategies would be difficult to implement. Yet all three combined would reduce global CO_2 emissions only 4.3% in 2050—a far cry from the 50% reduction demanded by Al Gore, the European Union, and major environmental groups.

In the policy relevant future—the next five to 10 years—CO_2 reductions achieved via NSPS would be inconsequential. During that period, NSPS for CO_2 would chiefly require sources to undertake "energy efficiency or process efficiency improvements," which EPA estimates could reduce emissions from the regulated sources by 1 to 10%.[153] In 2006, U.S. electric sector and industrial sector CO_2 emissions totaled 3,344.4 million tons.[154] Now, let's generously assume that in 10 years, NSPS prompts *all* U.S. electric and industrial sector CO_2 sources to become 10% more efficient, and that those sources do not increase output as their energy input costs fall. In this unrealistic scenario, U.S. electric and industrial sector CO_2 emissions will decline by about one-third of 1 billion tons.

In reality, because all sources will not implement improvements, not all improvements will boost efficiency by 10%, and efficiency gains will encourage some sources to increase output, actual reductions will likely have no measurable effect on global emission levels in 2050.

The ANPR suggests that NSPS could make a significant difference in electric sector CO_2 emissions once carbon capture and storage (CCS) technology is adequately demonstrated.[155] However, it could take a decade just to determine whether CCS is economic under a range of carbon penalties. The Department of Energy, for example, says that with present technology, "estimates of sequestration cost are in the range of $100 to $300/ton of carbon emissions avoided," yet costs must decline substantially—to $10/ton or less—to keep coal generation with CCS competitive with natural gas or nuclear.[156] Building the infrastructure could take another decade, because a pipeline system big enough to handle the immense volumes of liquefied CO_2 would likely rival the U.S. natural gas and petroleum pipeline networks in size.[157] In addition, it would take

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[152] Eule, Climate Change Challenge, slide 10.
[153] ANPR, p. 44491.
[154] ANPR, p. 44429. The Energy Information Administration (EIA) estimates that global energy-related CO_2 emissions totaled 28 billion tons in 2005. See *International Energy Outlook 2008*, Chapter 7: Energy-Related Carbon Dioxide Emissions, http://www.eia.doe.gov/oiaf/ieo/emissions.html. The ANPR puts the total at 30.6 billion tons in 2000. One of these figures is probably wrong, since global CO_2 emissions in 2005 were greater than in 2000.
[155] ANPR, p. 44492.
[156] U.S. Department of Energy, Carbon Sequestration R&D Review, http://fossil.energy.gov/sequestration/overview/html.
[157] Coal burning U.S. power plants produce about 1.5 billion tons of CO_2 per year. "If all of this CO_2 is transported for sequestration, the quantity is equal to three times the weight and … one-third the annual volume of natural gas transported through the U.S. gas pipeline system. If 60% of the CO_2 produced were to be captured and compressed to a liquid for geologic sequestration, its volume would be equal to the total U.S. oil consumption of 20 million barrels a day." Massachusetts Institute of Technology, *The Future of Coal: Options for a Carbon-Constrained World*, 2007, p. ix, http://web.mit.edu/coal/The_Future_of_Coal_Summary_Report.pdf.

years to work out the regulatory and liability issues, and years to overcome NIMBY opposition.

Thus, in the foreseeable future, CO_2 reductions achieved via NSPS would be largely symbolic. Yet EPA and sources might have to endure years of "regulatory agony," as Peter Glaser puts it.[158] The NSPS process "requires the functional equivalent of a NEPA impact statement," says Glaser, quoting the D.C. Circuit Court of Appeals in *Sierra Club v Costle*.[159] He elaborates:

> In 1976, a number of parties petitioned EPA to revise the sulfur dioxide NSPS for coal-burning power plants. It took three years for EPA to conclude the proceedings and another two years for the court to review the case. The Court noted "[t]he importance of the challenged standards [that] arises not only from the magnitude of the environmental and health issues involved, but also from the critical implications the new pollution controls have for the economy at the local and national levels." The Court further noted that, "the volume and technical complexity of the material necessary for our review is daunting." According to the Court, the recent record before EPA included more than 2,520 submissions; EPA's statement accompanying the rule took up 43 triple columns of single-spaced type; EPA had performed or obtained from contractors 120 studies and collected more than 400 items of reference literature; and EPA had received almost 1400 comments, written 650 letters and 2000 interagency memos, held over 50 public meetings and substantive telephone conversations with the public, and conducted four days of public meetings. Briefs submitted to the Court ran up to 670 pages, and the Court's decision was more than 100 pages in length.

If EPA sets NSPS standards for only half a dozen CO_2 source categories, all in the next five to 10 years, it would not only have to spend vast resources chasing inconsequential reductions, it would also initiate the administrative nightmares described in sections 2-4 above. As the ANPR acknowledges, NSPS for CO_2 "would trigger pre-construction permitting requirements for all types of GHG major sources under the PSD program."[160] It would also trigger operating permit requirements for major sources under Title V.

10. Setting GHG emission standards for new motor vehicles would likely impair consumer welfare.

EPA believes GHG motor vehicle emission standards will enhance consumer welfare, arguing that the "cost per-ton of GHG reduced is more than offset by the value of the fuel savings, and the net present value to society could be on the order $340 to

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[158] Testimony of Peter Glaser, "Strengths and Weaknesses of Regulating Greenhouse Gases under the Clean Air Act," Subcommittee on Energy and Air Quality of the House Committee on Energy and Commerce, April 10, 2008, pp. 20-21.
[159] *Sierra Club v Costle*, 657 F.2d at 331 (D.C. Circuit, 1981), quoting *Portland Cement*, 486 F.2d at 384.
[160] ANPR, p. 44486.

$830 billion without considering [climatic] benefits of GHG reductions."[161] Consumers would pay more for vehicles incorporating advanced technologies, but, says EPA, "the lifetime discounted fuel savings will exceed the initial cost increase substantially."[162] EPA writes as if the only factors consumers weigh and balance when purchasing an automobile are the upfront purchase price and the lifetime fuel costs. In this two-factor decision framework, politically mandated fuel economy standards might seem reasonable. But consumers also consider several other factors including performance, utility, amenities, and safety.

Indeed, when consumers purchase a car, they usually take into account costs that are completely unrelated to the vehicle itself. For example, a motorist may prefer a lower-priced car because she needs more disposable income this year for new home appliances, her daughter's music lessons, or her son's orthodonture bills. Forcing her to spend more of her income on a higher-mpg vehicle would not enhance her family's welfare, even if she could recover the extra expense in 8 to 10 years. Each consumer's welfare is subjective and involves a subtle weighing and balancing of many competing considerations. Yet EPA believes it knows that, "consumers undervalue fuel economy."[163] That is tantamount to saying that the motorist in the foregoing example overvalues her child's music lessons.

Motorists already have the option to buy high-mpg vehicles, and advances in diesel and battery technology will expand the choices available. They are also well aware of the volatility of gasoline prices and have no love of pain at the pump. Tightening fuel economy standards, as the ANPR effectively proposes to do, can only restrict consumers' freedom to make their own welfare maximizing choices. In many cases, tighter standards will force consumers who value utility more than fuel economy to pay higher prices for vehicles with less utility. As air quality analyst Joel Schwartz and economist Lynne Kiesling wrote about a similar proposal:

> When automakers can offer high-mileage vehicles with a palatable combination of price and other desired amenities, motorists will choose them without any external prodding. This suggests that mandating fuel efficiency increases will impose net costs on Americans. Therefore, rather than benefiting Californians, implementing the [CEC/CARB AB 2076] Report's recommendations would likely make people worse off.[164]

Title II requires EPA to take several factors into account when setting emission standards, including vehicle safety. Many motorists place a higher value on safety than on fuel economy. Yet the ANPR never asks for comment on the safety implications of GHG emission standards that effectively mandate increases in fuel economy.

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[161] ANPR, p. 44441.
[162] ANPR, p. 44447.
[163] ANPR, p. 44413.
[164] Joel Schwartz and Lynne Kiesling, Reducing California's Petroleum Dependence, Reason, June 10, 2003, http://www.reason.org/commentaries/schwartz_20030610b.shtml.

The quickest and cheapest way to increase fuel economy is to reduce average vehicle size and weight. And there's the rub. Lighter cars have less mass to absorb collision forces and smaller vehicles provide less space between the occupant and the point of impact. The National Research Council estimates that in 1993, a typical year, federal fuel-economy requirements contributed to 1,300 to 2,600 fatalities, 13,000 to 26,000 incapacitating injuries, and 97,000 to 195,000 total injuries.[165]

The ANPR accepts at face value automakers' claim that they can "utilize weight reduction as a means to improve vehicle efficiency while meeting all applicable safety standards."[166] We would hardly expect auto companies to say anything else, lest they scare customers away. More importantly, meeting applicable safety standards is not the same as giving consumers all the safety they are willing to pay for. Although advanced technologies can improve vehicle safety, a heavier car with advanced technology is still safer than a lighter car with advanced technology. The inescapable consequence of GHG/fuel economy regulation of motor vehicles is to make the average car smaller, lighter, and, thus, less crashworthy than it would be in the absence of fuel economy mandates.

11. Regulating GHG emissions from large stationary sources would not achieve significant "co-benefits" from air pollution reductions.

The ANPR observes that many measures for controlling GHG emissions also contribute to reductions in criteria air pollutants, while some measures for controlling criteria pollutants also contribute to GHG reductions. EPA believes the "co-benefits" of reduced air pollution from GHG control measures "can be substantial," and the ANPR requests comment on the potential for "integrated" regulatory strategies.[167]

GHG control measures are not cost-effective air pollution strategies. It costs billions of dollars more to reduce air pollution as a "co-benefit" of CO_2 reductions than to control air pollution directly. An Energy Information Administration (EIA) analysis of "multi-pollutant" legislation introduced in the 106th Congress by Rep. Henry Waxman (D-CA) and Sen. Jim Jeffords (D-VT) makes this clear.

In EIA's analysis, reducing NO_X and SO_2 emissions 75% below 1997 levels by 2005 would cost power generators and consumers $6 billion. Reducing CO_2 emissions 7% below 1990 levels by 2005 would cost $77 billion. If the three requirements are "integrated," the total cost is $77 billion—$5 billion less than the sum of their individual costs.[168] That $5 billion "savings" is due to the "co-benefits" of "integrated" air quality management—that fact that CO_2 reductions entail ancillary NO_X and SO_2 reductions, and vice versa. However, if your goal is cleaner air, then you haven't saved any money at all.

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[165] National Research Council, *Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards*, (Washington, D.C.: National Academy Press, 2001), pp. 25-26, http://books.nap.edu/html/cafe/ch2.pdf.
[166] ANPR, p. 44448.
[167] ANPR, p. 44407-08.
[168] Energy Information Administration, *Analysis of Strategies for Reducing Multiple Emissions from Power Plants: Sulfur Dioxide, Nitrogen Oxides, and Carbon Dioxide*, December 2000, p. xviii.

Rather, you have spent $77 billion to achieve $6 billion worth of SO_2 and NO_X reductions. Arguably, you have wasted $71 billion—wealth no longer available to meet other consumer or environmental priorities.

V. Conclusion

EPA should not find endangerment with regard to GHG-related "air pollution" for both scientific and legal/constitutional reasons:

- EPA has not exercised its judgment with regard to the fundamental scientific issues: detection, attribution, and climate sensitivity. Instead, EPA uncritically defers to the judgment of a self-appointed scientific "consensus." This is not the analysis required by CAA §202.
- EPA has ignored a significant and growing body of "skeptical" assessments of both the fundamental scientific issues and potential climate change impacts. Thus, the public can have little confidence in EPA's conclusion that endangerment of public health and welfare is reasonably anticipated.
- An endangerment finding would set the stage for multiple policy disasters no Congress would ever approve.
- An endangerment finding would create a constitutional crisis by empowering litigants and courts to usurp Congress's authority to determine the basic direction of public policy. In addition, the only way EPA could regulate GHGs under the CAA without risk of administrative chaos and economic devastation is to flout statutory language, play lawmaker, and effectively amend the Act, violating the separation of powers.