Testimony of

Jason Burnett

Private Citizen

Former Associate Deputy Administrator,
Environmental Protection Agency

Before the

Committee on Environment and Public Works

U.S. Senate

Hearing:

"An Update on the Science of Global Warming and its Implications"

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Thank you for the opportunity to testify before this committee on the science of climate change and its implications. I will briefly summarize the peer-reviewed, synthesis scientific reports produced or endorsed by the US government and then will focus my remarks on why this body of science compels action under current law. In particular, the Supreme Court's interpretation of the Clean Air Act, combined with the science of climate change, will require regulations of greenhouse gases for a range of mobile and stationary sources. However any action should be tempered by the recognition that regulation of greenhouse gases under the current Clean Air Act poses unnecessary challenges because the law was not specifically designed for greenhouse gas regulation. Congress can and should design and pass new legislation that simultaneously addresses the challenges of the current law and sets in place a more comprehensive, equitable, and efficient national program.

Background:

I worked at the Environmental Protection Agency (EPA) in two positions. In 2004 I came to EPA to work in the Office of Air and Radiation as a senior advisor to the Assistant Administrator. In that position I helped develop a suite of regulations to

reduce air pollution. I also worked closely with Administrator Johnson in EPA's review of the air quality standards for fine particles, commonly called "soot." Fine particles are the most deadly type of air pollution in the US, killing tens of thousands of Americans every year. A tighter standard would have reduced this toll and done so cost-effectively. I left EPA in the fall of 2006 after the decision to not provide increased protection from fine particles through a tighter annual standard. I also wanted to work on climate change policy and thought the most productive work would be done outside EPA.

One event many observers did not foresee was the April 2nd, 2007 Supreme Court decision in *Massachusetts v EPA*. In that decision, the Supreme Court fundamentally, profoundly and permanently changed the regulatory landscape by finding that "greenhouse gases fit well within the Clean Air Act's capacious definition of 'air pollutant.'" According to the Court's logic, greenhouse gases from vehicles must be regulated if they meet the two-part endangerment test provided by the Clean Air Act. The first part of that test requires the Administrator to judge whether the air pollution in question "may reasonably be anticipated to endanger public health or welfare." The second part of the test requires the Administrator to judge whether "the emission of any air pollutant" is found to "cause, or contribute to" the air pollution problem. If so, "[t]he Administrator shall by regulation prescribe … standards applicable" to those emissions. The basic logic of the law is straightforward; if the public is endangered, the government must act.

Administrator Johnson asked if I would return to EPA to help him lead the effort to respond to the Supreme Court decision and develop the first federal greenhouse gas regulations. Having just left EPA less than a year before caused me to be cautious and view with skepticism any suggestion that the Administration had decided to take regulatory action designed to reduce greenhouse gases. However there were two things that caused me to believe action would be taken. First, President Bush made an announcement on May 14, 2007 directing EPA and others to "take the first steps towards regulations that would cut gasoline consumption and greenhouse gas emissions from motor vehicles…" The President's announcement seemed to indicate hat the policy direction had been settled. Second, in conversations with EPA Administrator Johnson and others familiar with the internal process I came to believe that this Administration would want to lay down its mark on how the Clean Air Act should and should not be used.

I therefore accepted the invitation to return to EPA as Associate Deputy Administrator with the charge of coordinating energy and climate change policy and helping to lead the effort to respond to the Supreme Court.

Climate Change Science

The initial matter before EPA was how to make the endangerment finding, and what body of scientific information would be used to support the finding. The scientific information is presented in the recently released "Technical Support Document for Endangerment Analysis for Greenhouse Gas Emissions under the Clean Air Act, Sixth Order Draft" (Endangerment TSD) dated June 21, 2008. EPA developed this

Endangerment TSD by relying primarily on existing peer-reviewed synthesis reports with a focus on the Intergovernmental Panel on Climate Change (IPCC), US Climate Change Science Program (CCSP), and National Research Council of the US National Academy of Sciences (NRC) reports. As stated in the Endangerment TSD (page 4):

> EPA is relying most heavily on these synthesis reports because they 1) are very recent and represent the current state of knowledge on climate change science, vulnerabilities and potential impacts; 2) have assessed numerous individual studies in order to draw general conclusions about the state of science; 3) have been reviewed and formally accepted by, commissioned by, or in some cases authored by, US government agencies and individual government scientists and provide EPA with assurances that this material has been well vetted by both the climate change research community and by the U.S. government; and 4) in many cases, they reflect and convey the consensus conclusions of expert authors.

Since it was natural to interpret endangerment to *public* health or welfare as most clearly applying to the American public, the Endangerment TSD synthesized the impacts, vulnerabilities and risks within the US or impacts abroad that will indirectly affect the US such as threats to national security.

The authors of the Endangerment TSD summarized not just the central estimates of impacts but also the possibility that climate change will be more benign or more catastrophic than those central estimates. The motivation for doing so was that if

climate change is more catastrophic then there would be huge benefits of addressing that possibility and we would be glad we began putting in place "insurance policies." Our public institutions, EPA included, are reasonably good at dealing with risks of high probability events with known societal impact. We have a reasonably good understanding of the societal risks posed by future levels of smog and soot since we have decades of experience with air pollution higher than today's levels. But climate change is different than most other risks that EPA regulates for the simple reason that, unlike air pollution problems such as smog and soot, we do not have historical experience with climate change of the magnitude we will likely experience this century. The risk is unbounded because the possible extent of climate change is unbounded; it is more likely we will experience a 2 degree Celsius increase in mean temperature than a 10 or 20 degree Celsius increase but we are not able to rule out the possibility of higher temperature changes leading to more catastrophic climate change.

The Endangerment TSD discusses these possibilities. For example, the report states that "[r]isk increases with increases in both the rate and magnitude of climate change. Climate warming may increase the possibility of large, abrupt, and unwelcome regional or global climatic events (e.g., disintegration of the Greenland Ice Sheet or collapse of the West Antarctic Ice Sheet). The majority of the impacts literature assesses the effects of warming for climate sensitivities within the most likely range, not at the tails of the distribution. Consideration of outlier information is crucial for risk- management analysis even if potential impacts are of low probability or low confidence. The abrupt climate changes of the past are not fully

explained yet, and climate models typically underestimate the size, speed, and extent of those changes. Hence, future abrupt changes cannot be predicted with confidence. Environmental changes that are more extreme or persistent than society's experience with natural climatic variability can lead to vulnerabilities, especially if the changes are not foreseen and/or if capacities for adaptation are limited." (Endangerment TSD at ES-3)

Of course change is not all bad; we expect a number of benefits of a warmer, wetter climate. The Endangerment TSD identifies eight sectors in the US that are impacted by climate change ranging from health and air quality to forestry, ecosystems and wildlife. For each sector, the report identifies any positive, negative and uncertain impacts. For example, the report states that "[s]evere heat waves are projected to intensify in magnitude and duration over the portions of the U.S. where these events already occur, with likely increases in mortality and morbidity, especially among the elderly, young and frail. Climate change is projected to bring some benefits, such as fewer deaths from cold exposure. Ranges of vector-borne and tick-borne diseases in North America may expand but with modulation by public health measures and other factors." (Endangerment TSD at ES-3)

Of particular concern is the likely increase in extreme weather events and the consequences of a less predictable climatic system. Individuals, businesses and our communities benefit from our ability to plan for the future. By making our future less certain, climate change impedes that ability. For example the Endangerment TSD states that "[i]ntensity of precipitation events is projected to increase in the U.S.

and other regions of the world, increasing the risk of flooding, greater runoff and erosion, and thus the potential for adverse water quality effects. Increases in the amount of precipitation are very likely in higher latitudes, while decreases are likely in most subtropical, more southern regions, continuing observed patterns in recent trends in observations. The mid-continental area is expected to experience drying during summer, indicating a greater risk of drought. It is likely that hurricanes will become more intense, with stronger peak winds and more heavy precipitation associated with ongoing increases of tropical sea surface temperatures." (Endangerment TSD at ES-2)

Throughout the process of developing and reviewing the Endangerment TSD, EPA received and incorporated literally hundreds of comments. This is a healthy part of the review process and ensured that the document reflected the best information available. For example, the Office of Management and Budget was interested in how adaptation may affect the nature and extent of impacts. This lead to the development of a section providing a "preliminary review of the state of knowledge pertaining to adaptation" (Endangerment TSD at 118). In other examples, theories were advanced that did not have scientific support and they were rejected or dismissed. To my knowledge, EPA successfully defended any efforts to delete sections of the Endangerment TSD and the full Sixth Order Draft was made public earlier this month.

Public Endangerment

The science contained in the Endangerment TSD provided the support for answering the Supreme Court and making an endangerment finding but the Endangerment TSD itself or, for that matter, any amount of science does not substitute for the judgment of the Administrator as required by the Clean Air Act. Given the profound consequences of making an endangerment finding we worked to ensure we had agreement across the federal government. The policy process culminated in a cabinet-level meeting in November 2007 where agreement was reached that greenhouse gases endangered the public and therefore that regulation was required.

This conclusion was reached despite various efforts made over the past year to develop theories for how another answer could be reached. For example, some advanced the idea that EPA could only consider in an endangerment analysis impacts that could be quantified or monetized, ruling out consideration, for example, of "non-market damages, the effects of climate variability, risks of potential extreme weather (e.g., droughts, heavy rains and wind), socially contingent effects (such as violent conflict), and potential long-term catastrophic events." (Technical Support Document on Benefits of Reducing GHG Emissions, U.S. Environmental Protection Agency, June 12, 2008 at 15). Others advanced the idea that the endangerment test was limited to current impacts and could not consider the future projected and likely more serious impacts.

After the passage of the Energy Independence and Security Act of 2007 (EISA) other theories came forward. One theory was that motor vehicles no longer "contributed"

greenhouse gases to the atmosphere because of the increased fuel economy required by EISA. Another theory was that EISA could be used to argue that the Supreme Court decision no longer applied. Despite these various theories, the Administration recognized that the only supportable answer to the Supreme Court was to find that greenhouse gases endanger the public. They also recognized that a finding of endangerment would have profound consequences and the initial decisions for how to apply the Clean Air Act would set the stage for years to come.

On April 16, 2008 President Bush called on Congress to pass new legislation and to amend the Clean Air Act so that it did not need to be used to regulate greenhouse gases. This strategy of calling for a legislative "fix" to the Supreme Court decision had been tried just four months earlier as Congress was debating EISA. The legislative strategy did not work when coupled with EISA and it was even less likely to work coupled with comprehensive climate change legislation that does not have serious prospects this year. Without a realistic legislative strategy for amending the Clean Air Act or a regulatory strategy to deal with the profound consequences of an endangerment finding, the Administration just left the important decisions about how to best move forward to the next Administration and the next Congress.

In the end, the only way to avoid making a positive endangerment finding was to avoid making any finding at all and that is what this Administration has decided to do. By issuing the Advanced Notice of Proposed Rulemaking, they have left the next Administration with the challenge of actually responding to the Supreme Court. The fact that an Administration intent on not using the Clean Air Act could only find a

way to delay its use should signal to everyone that it is only a matter of time before a positive endangerment finding is made and regulation under the Clean Air Act is triggered.

Regulation under the Clean Air Act

The most direct regulatory consequence of issuing a positive endangerment finding for greenhouse gas emissions from motor vehicles is that the "Administrator shall by regulation prescribe … standards applicable" to those emissions.

Carbon dioxide is the primary greenhouse gas from motor vehicles and most but certainly not all of the greenhouse gas reductions would come from reducing carbon dioxide emissions. The only real way to reduce carbon dioxide emissions is to reduce the amount of carbon being put in the gas tank;, greenhouse gas regulations for cars and trucks would force manufacturers to build and sell vehicles with higher fuel economy. The EISA already stipulates that the Department of Transportation (DOT) set mileage standards to require higher fuel economy "[b]ut that DOT sets mileage standards in no way licenses EPA to shirk its environmental responsibilities," to quote the Supreme Court. Reducing the risk of climate change is a different but similar societal challenge than improving our energy security. Climate change is a long-term issue resulting from the accumulation of greenhouse gases over many decades. Mirroring the timeframe of the environmental concern, EPA regulations designed to reduce greenhouse gases could also be phased in over the course of many years. In this way EPA regulations could provide more lead-time for manufacturers to design and phase in new vehicle models than the shorter 5-

year time horizon that DOT uses in its fuel economy regulations. The flexibility of the mobile source sections of the Clean Air Act can also be used to design more efficient regulations, saving both money and leading to greater fuel savings. The analysis performed over the past year provides strong evidence that EPA greenhouse gas regulations for cars and trucks could lead to much higher fuel economy and enable Americans to save a substantial amount money at the gas pump than DOT's proposed fuel economy rule. Moving forward with Clean Air Act regulation of motor vehicles would reduce greenhouse gases, improve energy security, and make Americans better off in large part by reducing the amount they spend on gasoline. Although the effect would be modest, the price of oil would also likely decline as demand was reduced.

The Clean Air Act is structured such that one regulation often triggers additional regulation. When EPA starts regulating greenhouse gases from cars and trucks, the law requires that the best available greenhouse gas control technology be used on a variety of other new sources such as oil refineries, power plants, and many smaller sources. While the prospect of requiring the best technology for new sources may sound reasonable and could be administered in a way that would phase in over time, it is not without its challenges. For example, it is not clear to what degree, if at all, regulation of greenhouse gases should differentiate between new sources and existing sources. New sources are generally more efficient than existing sources simply because they use new, better technology. A sensible program may actually want to encourage these new, more efficient sources relative to older sources. If a regulatory program for new sources is not carefully designed it could counter-

productively retard the turnover of capital and actually extend the economic life of the existing, less efficient sources.

Another concern with the Clean Air Act is that it may eventually require very small sources to obtain an air permit and install the best available control technology for greenhouse gases. EPA's recently released Advanced Notice of Proposed Rulemaking offers several options for mitigating this concern but there is no question that this section of the Clean Air Act demonstrates that Congress did not design the act specifically for greenhouse gases.

New Legislation

Unlike the Clean Air Act, new legislation could be specifically designed for the challenges of greenhouse gas regulation. For example, new legislation can more clearly define what types and sizes of sources are subject to regulation. New legislation can also more explicitly provide authority for comprehensive, economy-wide, flexible programs that allow the market, not government, to determine how best to achieve reductions in emissions. Perhaps most importantly, Congress can design a program that discourages greenhouse gas emissions through either a cap and trade system or a carbon tax. Under either approach, Congress would need to decide how best to use the value of carbon allowances or the tax revenue and could significantly improve the efficiency of any such program by using the revenues to reduce payroll or capital gains taxes. This tax shift would discourage things we don't want--like greenhouse gas emissions--while promoting things we do want--like work and investment.

In closing, I think that we are at the end of the debate about whether greenhouse gases endanger the public. They clearly do. I look forward to the next phase in the debate about how government should respond. There are no easy answers and a serious response will require hard work, compromise and sacrifice. But we are better off confronting the challenge now rather than allowing it to grow.