



Testimony

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CLIMATE CHANGE

Preliminary Observations on the Administration's February 2002 Climate Initiative

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Highlights of [GAO-04-131T](#), a report to Senate Committee on Commerce, Science, and Transportation

Why GAO Did This Study

In 2002, the Administration announced its Global Climate Change Initiative. It included, among other things, a goal concerning U.S. carbon dioxide and other greenhouse gas emissions, which are widely believed to affect the earth's climate.

The Administration's general goal was to reduce the growth rate of emissions, but not total emissions, between 2002 and 2012. Its specific goal was to reduce emissions intensity 18 percent, 4 percentage points more than the 14 percent decline already expected. Emissions intensity measures the amount of greenhouse gases emitted per unit of economic output. In the United States, this ratio has generally decreased for 50 years or more. Under the Initiative, emissions would increase, but less than otherwise expected.

GAO was asked to testify on whether the Administration's publicly available documents (1) explain the basis for the Initiative's general and specific goals, (2) identify elements to help reduce emissions and contribute to the 18 percent reduction goal, as well as their specific contributions, and (3) discuss plans to track progress in meeting the goal.

This testimony is based on ongoing work, and GAO expects to issue a final report on this work later this year. Because of time constraints, GAO's testimony is based on its analysis of publicly available Administration documents.

www.gao.gov/cgi-bin/getrpt?GAO-04-131T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact John B. Stephenson at (202) 512-3841.

CLIMATE CHANGE

Preliminary Observations on the Administration's February 2002 Climate Initiative

What GAO Found

The Administration stated that the Initiative's general goal is to slow the growth of U.S. greenhouse gas emissions, but it did not provide a basis for its specific goal of reducing emissions intensity 18 percent by 2012. Any reduction in emissions above the 14-percent reduction already anticipated would contribute to this general goal. However, GAO did not find a specific basis or rationale for the Administration's decision to establish a 4-percentage-point reduction goal beyond the already expected reductions.

The Administration identified 30 elements that it expected would reduce U.S. emissions and contribute to meeting its 18 percent reduction goal by 2012. The 30 elements include a range of policy tools (such as regulations, research and development, tax incentives, and other activities) that cover four broad areas: (1) improving renewable energy and certain industrial power systems, (2) improving fuel economy, (3) promoting domestic carbon sequestration (for example, the absorption of carbon dioxide by trees to offset emissions), and (4) challenging business to reduce emissions. GAO found that the Administration provided estimates of the reductions associated with 11 of the 30 elements, but not with the remaining 19 elements. Of these 11 estimates, GAO found that 3 estimates represented future emissions reductions related to activities that occurred after the Initiative was announced. However, the other 8 estimates represented past or current emissions reductions or related to activities that were already underway before the Initiative was announced. Specifically,

- In five cases, an estimate is provided for current or recent reductions, but no information is provided about the expected additional savings to be achieved by 2012, the end of the Initiative.
- In two cases, the elements are expected to yield savings over many years, but it is not clear what emissions reductions will be achieved by 2012.
- In one case, savings are counted for an activity that began prior to the announcement of the Initiative.

It is, therefore, unclear to what extent the 30 elements will contribute to the goal of reducing emissions and, thus, lowering emissions intensity by 2012.

The Administration plans to determine, in 2012, whether the 18-percent reduction goal was met. Unless the Administration conducts one or more interim assessments, it will not be in a position to determine, until a decade after announcing the Initiative, whether its efforts are having the intended effect or whether additional efforts may be warranted.

Mr. Chairman and Members of the Committee:

We are pleased to be here today to discuss our preliminary observations on certain aspects of the Administration's February 2002 Global Climate Change Initiative. This Initiative included, among other things, a goal related to domestic emissions of carbon dioxide and other greenhouse gases.

Specifically, the Initiative established the goal of reducing U.S. emissions intensity 18-percent by 2012, which is 4 percentage points more than the 14-percent reduction that was otherwise expected to occur. In 2012, this 4-percent reduction in emissions intensity is expected to translate into a 100 million ton reduction in carbon emissions below levels that would be expected in the absence of the Initiative. The Initiative is comprised of 30 elements, including partnerships with industry and tax credits, designed to achieve the reduction in emissions intensity.

It is important to note that the Administration's goal is to reduce emissions intensity, not total emissions. Emissions intensity measures the amount of greenhouse gases emitted per unit of economic output. For example, in 1990, U.S. emissions totaled 1,909 million metric tons of carbon equivalent and economic output (or Gross Domestic Product) totaled \$9,216 billion.¹ Dividing these numbers yields an emission intensity ratio of 207 tons of emissions per million dollars of economic output. Emissions intensity changes in response to variations in either emissions or economic output. For example, if emissions increase more slowly than economic output increases, the ratio decreases. If emissions increase more quickly than economic output increases, the ratio increases. If emissions and economic output increase by the same proportion, emissions intensity does not change.

Our testimony, which is based on ongoing work, discusses the extent to which the Administration's public documents (1) explain the basis for its general goal of reducing emissions and its specific goal of reducing emissions intensity 18 percent by 2012, (2) explain how the elements included in the Administration's Initiative are expected to reduce

¹To allow for comparisons among greenhouse gases, which differ in terms of their effects on the atmosphere and their expected lifetimes, emissions are sometimes measured in million metric tons of carbon equivalent (which we refer to as million metric tons). The economic output number is expressed in 1996 dollars.

emissions and contribute to the goal of reducing emissions intensity 18 percent, and (3) discuss the Administration's plans to track progress toward meeting the goal. We expect to issue a final report on the results of our work later this year.

Our testimony is based on our analysis of the Administration's February 2002 Global Climate Change Policy Book and subsequent White House fact sheets, as well as congressional testimony by administration officials, an August 2003 report on federal climate change spending,² and related documents. Because of time constraints, we limited our work to reviewing these documents.

We performed our work between July and September 2003 in accordance with generally accepted government auditing standards.

Summary

In summary, in our review of the Administration's documents, we found that the Administration provided a general basis for its climate goal, but did not provide a detailed rationale for the emissions intensity target that it established. That is, we did not find a specific justification for the additional 4-percentage-point reduction—as opposed to any other target that could have been established—or what achieving a 4-percent reduction is specifically intended to accomplish.

The Administration's documents identified 30 elements that it expects to help reduce greenhouse gas emissions, but did not consistently provide information on how each element would contribute to the approximately 100 million metric tons that it estimates the Initiative will save in 2012. In 11 cases, the Administration provided an estimate of the element's contributions, but in 19 other cases it did not provide such an estimate. Moreover, while 3 of the 11 estimates represented future savings levels related to activities that occurred after the Initiative was announced, the other 8 estimates were based upon past or current savings levels or were related to elements that were underway before the Initiative was announced. Furthermore, we found no current and comprehensive source for information about all 30 of the Initiative's elements and their expected contributions toward achieving the goal of the Initiative.

²*Federal Climate Change Expenditures: Report to Congress*, Aug. 2003.

Finally, the Administration states that it plans to determine, in 2012, whether the goal of reducing emissions intensity was met. However, the documents we reviewed did not indicate whether it plans to assess its progress in the interim. Unless the Administration conducts one or more interim assessments, it will not be in a position to determine, until a decade after announcing the Initiative, whether its efforts to meet the goal are having the intended effect or whether additional efforts may be warranted.

To help the Congress credibly assess the likelihood that the Initiative will achieve its stated goal, we believe that it would be helpful if the Administration would make readily available more current and complete information regarding the basis for establishing its emissions intensity goal, the elements intended to help achieve it as well as their expected contributions, and plans for monitoring interim progress toward the goal. Providing such information would constitute a small, but important step toward addressing broader issues in the policy debate now before the Congress about the challenges posed by global climate change.

Background

Carbon dioxide and certain other gases trap some of the sun's heat in the earth's atmosphere and prevent it from returning to space. The trapped energy warms the earth's climate, much as glass in a greenhouse. Hence, the gases that cause this effect are often referred to as greenhouse gases. In the United States, the most prevalent greenhouse gas is carbon dioxide, which results from the combustion of coal and other fossil fuels in power plants, the burning of gasoline in vehicles, and other sources. The other gases are methane, nitrous oxide, and three synthetic gases. In recent decades, concentrations of these gases have built up in the atmosphere, raising concerns that continuing increases might interfere with the earth's climate, for example, by increasing temperatures or changing precipitation patterns.

In 1997, the United States participated in drafting the Kyoto Protocol, an international agreement to limit greenhouse gas emissions, and in 1998 it signed the Protocol. However, the previous administration did not submit it to the Senate for advice and consent, which are required for ratification. In March 2001, President Bush announced that he opposed the Protocol.

In addition to the emissions intensity goal and domestic elements intended to help achieve it, the President's February 2002 climate initiative includes (1) new and expanded international policies, such as increasing funding for tropical forests, which sequester carbon dioxide, (2) enhanced

science and technology, such as developing and deploying advanced energy and sequestration technologies, and (3) an improved registry of reductions in greenhouse gas emissions. According to testimony by the Chairman of the White House Council on Environmental Quality, the President's climate change strategy was produced by a combined working group of the Domestic Policy Council, National Economic Council, and National Security Council.

While U.S. greenhouse gas emissions have increased significantly, the Energy Information Administration reports that U.S. emissions intensity has generally been falling steadily for 50 years. This decline occurred, in part, because the U.S. energy supply became less carbon-intensive in the last half-century, as nuclear, hydropower, and natural gas were increasingly substituted for more carbon-intensive coal and oil to generate electricity.

Administration's Public Documents Provide a Context But Not a Specific Basis for the 18-percent Goal

The Administration explained that the Initiative's general goal is to slow the growth of U.S. greenhouse gas emissions, but it did not explain the basis for its specific goal of reducing emissions intensity 18 percent by 2012 or what a 4-percent reduction is specifically designed to accomplish. Reducing emissions growth by 4 percentage points more than is currently expected would achieve the general goal, but—on the basis of our review of the fact sheets and other documents—we found no specific basis for establishing a 4-percentage-point change, as opposed to a 2- or 6-percentage-point change, for example, relative to the already anticipated reductions.

According to the Administration's analysis, emissions under its Initiative will increase between 2002 and 2012, but at a slower rate than otherwise expected. Specifically, according to Energy Information Administration (EIA) projections cited by the Administration, without the Initiative emissions will increase from 1,917 million metric tons in 2002 to 2,279 million metric tons in 2012. Under the Initiative, emissions will increase to 2,173 million metric tons in 2012, which is 106 million metric tons less than otherwise expected. We calculated that under the Initiative, emissions would be reduced from 23,162 million metric tons to 22,662 million metric tons cumulatively for the period 2002-12. This difference of 500 million metric tons represents a 2-percent decrease for the 11-year period.

Because economic output will increase faster than emissions between 2002 and 2012, according to EIA's projections, emissions intensity is estimated to decline from 183 tons per million dollars of output in 2002 to 158 tons per million dollars in 2012 (a 14-percent decline) without the

Administration's Public Documents Estimated Contributions for Some, but Not All, of the Initiative's Elements

Initiative, and to 150 tons per million dollars under the Initiative (an 18-percent decline).

The Administration identified 30 elements (26 in February 2002 and another 4 later) that it expected would help reduce U.S. emissions by 2012 and, thus, contribute to meeting its 18-percent goal. These 30 elements include regulations, research and development, tax incentives, and other activities. (The elements are listed in Appendix I.) The Administration groups them into four broad categories, as described below.

Providing incentives and programs for renewable energy and certain industrial power systems. Six tax credits and seven other elements are expected to increase the use of wind and other renewable resources, combined heat-and-power systems, and other activities. The tax credits cover electricity from wind and new hybrid or fuel-cell vehicles, among other things. Other elements would provide funding for geothermal energy, primarily in the western United States, and advancing the use of hydropower, wind, and other resources on public lands. Still other elements involve research and development on fusion energy and other sources.

Improving fuel economy. Three efforts relating to automotive technology and two other elements are expected to improve fuel economy. The technology efforts include advances in hydrogen-based fuel cells and low-cost fuel cells. Two of the five elements are mandatory. First, a regulation requiring the installation of tire pressure monitoring systems in cars and certain other vehicles was finalized in June 2002 and will be phased in between 2003 and 2006.³ Properly inflated tires improve fuel efficiency. Second, a regulation requiring an increase in the fuel economy of light trucks, from the current 20.7 miles per gallon to 22.2 miles per gallon in 2007, was finalized in April 2003.⁴

Promoting domestic carbon sequestration. Four U.S. Department of Agriculture programs were identified as promoting carbon sequestration on farms, forests, and wetlands. Among other things, these programs are intended to accelerate tree planting and converting cropland to grassland or forests.

³Federal Motor Vehicle Safety Standards; Tire Pressure Monitoring Systems; Controls and Displays, 67 Fed. Reg. 38704 (2002)(to be codified at 49 C.F.R. pts. 571 and 596).

⁴Light Truck Average Fuel Economy Standards, Model Years 2005-2007, Final Rule, 68 Fed. Reg. 16868 (2003)(to be codified at 49 C.F.R. pt. 533).

Challenging business to reduce emissions. Voluntary initiatives to reduce greenhouse gases were proposed for U.S. businesses. For major companies that agreed to establish individual goals for reducing their emissions, the Environmental Protection Agency (EPA) launched a new Climate Leaders Program. In addition, certain companies in the aluminum, natural gas, semiconductor, and underground coal mining sectors have joined voluntary partnerships with EPA to reduce their emissions. Finally, certain agricultural companies have joined two voluntary partnerships with EPA and the Department of Agriculture to reduce their emissions.

The Administration provided some information for all 30 of the Initiative's elements, including, in some cases, estimates of previous or anticipated emission reductions. However, inconsistencies in the nature of this information make it difficult to determine how contributions from the individual elements would achieve the total reduction of about 100 million metric tons in 2012. First, estimates were not provided for 19 the Initiative's elements. Second, for the 11 elements for which estimates were provided, we found that 8 were not clearly attributable to the Initiative because the reductions (1) were related to an activity already included in ongoing programs or (2) were not above previous or current levels. We did find, however, that the estimated reductions for the remaining 3 elements appear attributable to the Initiative.

We have concerns about some of the 19 emission reduction elements for which the Administration did not provide savings estimates. At least two of these elements seem unlikely to yield emissions savings by 2012. For example, the April 2003 fact sheet listed hydrogen energy as an additional measure, even though it also stated a goal of commercializing hydrogen vehicles by 2020, beyond the scope of the Initiative. Similarly, the same fact sheet listed a coal-fired, zero-emissions power plant as an additional measure, but described the project as a 10-year demonstration; this means that the power plant would not finish its demonstration phase until the last year of the Initiative, much less be commercialized by then.

Of the 11 elements for which estimates were provided, we found that the estimated reductions for 8 were not clearly attributable to the Initiative. In five cases, an estimate is provided for a current or recent savings level, but no information is provided about the expected additional savings to be achieved by 2012. For example, the Administration states that aluminum producers reduced their emissions by 1.8 million metric tons to meet a goal in 2000, but it does not identify future savings, if any. Similarly, it

states that Agriculture's Environmental Quality Incentives Program, which provides assistance to farmers for planning and implementing soil and water conservation practices, reduced emissions by 12 million metric tons in 2002. However, while the Administration sought more funding for the program in fiscal year 2003, it did not project any additional emissions reductions from the program.

In two cases, it is not clear how much of the claimed savings will occur by the end of the Initiative in 2012. The requirement that cars and certain other vehicles have tire pressure monitoring systems is expected to yield savings of between 0.3 and 1.3 million metric tons a year when applied to the entire vehicle fleet. However, it will take years for such systems to be incorporated in the entire fleet and it is not clear how much of these savings will be achieved by 2012. Similarly, the required increase in light truck fuel economy is expected to result in savings of 9.4 million metric tons over the lifetime of the vehicles covered. Again, because these vehicles have an estimated lifetime of 25 years, it is not clear how much savings will be achieved by 2012.

In one case, savings are counted for an activity that does not appear to be directly attributable to the Initiative. Specifically, in March 2001 (nearly a year before the Initiative was announced), EPA and the Semiconductor Industry Association signed a voluntary agreement to reduce emissions by an estimated 13.7 million metric tons by 2010. Because this agreement was signed before the Initiative was announced, it is not clear that the estimated reductions should be considered as additions to the already anticipated amount.

Estimates for the remaining 3 of the 11 elements appear to be attributable to the Initiative in that they represent reductions beyond previous or current levels and are associated with expanded program activities. These are:

- Agriculture's Conservation Reserve Program was credited with additional savings of 4 million metric tons a year. This program assists farm owners and operators to conserve and improve soil, water, air, and wildlife resources and results in carbon sequestration.
- Agriculture's Wetland Reserve Program was credited with additional savings of 2 million metric tons a year. This program helps convert cropland on wetland soils to grassland or forest and also sequesters carbon emissions.

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- The Environmental Protection Agency's Natural Gas STAR Program was credited with additional savings of 2 million metric tons a year. This program works with companies in the natural gas industry to reduce losses of methane during production, transmission, distribution, and processing.

More current information about certain of these elements and their expected contributions has been made public, but has not been consolidated with earlier information about the Initiative. For example, the Department of Agriculture's web site includes a June 2003 fact sheet on that agency's programs that contribute to carbon sequestration. Among other things, the fact sheet estimated that the Environmental Quality Incentives Program, cited above, will reduce emissions 7.1 million metric tons in 2012. However, we did not find that such information had been consolidated with the earlier information, and there appears to be no comprehensive source for information about all of the elements intended to help achieve the Initiative's goal and their expected contributions. The lack of consistent and comprehensive information makes it difficult for relevant stakeholders and members of the general public to assess the merits of the Initiative.

Administration's Public Documents Do Not Discuss Plans for Monitoring Interim Progress

According to the February 2002 fact sheet, progress in meeting the 18-percent goal will be assessed in 2012, the final year of the Initiative. At that point, the fact sheet states that if progress is not sufficient and if science justifies additional action, the United States will respond with further policies; these policies may include additional incentives and voluntary programs. The fact sheets did not indicate whether the Administration plans to check its progress before 2012. Such an interim assessment, for example, after 5 years, would help the Administration determine whether it is on course to meet the goal in 2012 and, if not, whether it should consider additional elements to help meet the goal.

Mr. Chairman, this concludes our prepared statement. We would be happy to respond to any questions that you or Members of the Committee may have.

Contacts and Acknowledgments

For further information about this testimony, please contact me at (202) 512-3841. John Delicath, Anne K. Johnson, Karen Keegan, David Marwick, and Kevin Tarmann made key contributions to this statement.

Table 1: Summary of Initiative's Elements Expected to Reduce Greenhouse Gas Emissions

Number	Measure
<i>Providing tax incentives and programs for renewable energy and certain industrial power systems</i>	
1	Tax credit for combined heat and power systems
2	EPA Combined Heat and Power Partnership
3	Department of Energy challenge to heat and power industry
4	Tax credit for residential solar energy systems
5	Tax credit for electricity from wind and certain biomass sources
6	Tax credit for electricity from additional biomass sources
7	Tax credit for new methane landfill projects
8	Tax credit for new hybrid or fuel-cell vehicles ^a
9	Funding for geothermal energy
10	Renewable energy on public lands
11	Hydrogen energy
12	Coal-fired, zero-emissions electricity generation
13	Fusion energy
<i>Improving fuel economy</i>	
14	Advancing hydrogen-based fuel cells
15	Department of Energy public-private projects for low-cost fuel cell technology
16	Fuel economy standards for light trucks
17	Tire pressure monitoring systems
18	High-efficiency automobile technology
<i>Promoting domestic carbon sequestration</i>	
19	Conservation Reserve Program
20	Environmental Quality Incentives Program
21	Wetland Reserve Program
22	Forest Stewardship Program
<i>Challenging business to decrease emissions</i>	
23	EPA Climate Leaders Program
24	Semiconductor industry
25	Aluminum producers
26	EPA Natural Gas STAR Program
27	EPA Coal Bed Methane Outreach Program
28	AgSTAR Program
29	Ruminant Livestock Efficiency Program
30	Climate VISION Partnership

Source: Data from Global Climate Change Policy Book, Feb. 2002; White House Fact Sheets, July 2002 and April 2003; analysis by GAO.

^aAlso listed in improving fuel economy category.

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