

# CRS Report for Congress

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## **Climate Change: Federal Research, Technology, and Related Programs**

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Michael M. Simpson  
Specialist  
Resources, Science, and Industry Division

# Climate Change: Federal Research, Technology, and Related Programs

## Summary

A major focus of efforts to address possible global climate change has been on energy use, given that carbon dioxide, the major “greenhouse gas,” is added to the atmosphere when fossil fuels are burned. Federal programs to increase energy efficiency and the use of renewable energy resources have a history that goes back well over two decades. While many of these efforts were aimed at reducing U.S. dependence on oil imports and addressing electricity needs, they also are relevant to environmental concerns, including climate change.

The Climate Change Technology Initiative (CCTI) was the Clinton Administration’s package of R&D (to develop renewable energy sources and more energy efficient technologies), targeted tax credits (to encourage purchase and deployment of more efficient technologies), and voluntary information programs (to help businesses and schools be better informed when making purchasing and operating decisions that involve energy use and emissions). These programs have been funded as described in this report for FY2001.

The CCTI was succeeded by the Bush Administration’s FY2002 budget request for programs which largely continue those of the CCTI (while not using that name), and the Bush Administration’s announcements of the Climate Change Research Initiative (CCRI) and the National Climate Change Technology Initiative (NCCTI), which contain few specifics at present.

The FY2002 request for climate change funds was made in two main parts: \$940 million for research and technology programs, and a 10-year \$1.1 billion package of energy tax credits (the issue of tax credits is not covered in this CRS report; instead, see CRS Issue Brief IB10054 *Energy Tax Policy*). The climate change research and technology funding for the Department of Energy accounted for about 86.6% of the FY2002 request, for the Environmental Protection Agency 13% of the FY2002 request, and for the Department of Agriculture approximately 0.3% of the FY2002 request (please see IB10020 *Energy Efficiency* and IB10041 *Renewable Energy* for more details).

While the Clinton Administration’s budget requests for CCTI basic research activities generated little controversy, its requests for information and tax incentive programs were more controversial. Opponents argued that the renewable energy industry should have relied for commercial development on market forces rather than federal tax credits and information programs. Proponents held that the federal government needed to be involved to help overcome market barriers.

With details about the Bush Administration’s climate change initiatives still in development, some critics highlight the general decrease in funding for climate change research and technology, and some proponents note that many of the decreases are due to elimination of certain earmarked projects, or near-commercialization of certain research projects.

## Contents

Background .....	1
Federal Funding Levels .....	3
Department of Energy .....	4
Environmental Protection Agency .....	6
Department of Housing and Urban Development .....	9
Department of Agriculture .....	9
Department of Commerce .....	9
2001 U.S. Climate Change Research Initiative .....	10
2001 National Climate Change Technology Initiative .....	11
Conclusion .....	11

## List of Tables

Table 1. Clinton Administration CCTI, and Bush Administration Climate Change Research and Technology Funding by Agency .....	4
Table 2. DOE Climate Change Research and Technology Programs .....	5
Table 3. EPA Climate Change Research and Technology Programs .....	7

# Climate Change: Federal Research, Technology, and Related Programs

## Background

U.S. government policies explicitly addressing possible climate change linked to “greenhouse gas” emissions date back to the mid-1980s.<sup>1</sup> These policies have focused heavily on scientific research. The Energy Policy Act of 1992, in conjunction with the U.S. ratification of the 1992 United Nations Framework Convention on Climate Change (UNFCCC), set the direction of U.S. efforts, which continued in the former Bush and Clinton Administrations toward energy efficiency, renewable energy, and R&D<sup>2</sup>, to try to move toward stabilizing atmospheric greenhouse gas concentrations. The Climate Change Action Plan announced in 1993 by the Clinton Administration included more than 40 federal programs to influence, assist, or work with business, state and local governments, and other entities with the goal of reducing U.S. greenhouse gas emissions. R&D and other programs since then had largely been maintained or extended, or modified with some new activities and names. With evolution from and hybridization among prior efforts, coupled with some augmentation, packages of programs in the Clinton Administration such as the 1997 Climate Change Technology Initiative (CCTI) were built upon these earlier efforts, including efforts to reduce dependence on oil imports.

Carbon dioxide, the major “greenhouse gas” of concern in possible climate change, is produced in large part as a result of energy production and use. The federal government has had programs dealing with energy efficiency for more than 20 years, and the Congress has held hearings about them since the mid-1970s, when a major goal of such programs was to reduce U.S. dependence on oil imports during the energy crisis.

During the preparations for the final negotiations of the December 1997 Kyoto Protocol to the UNFCCC,<sup>3</sup> President Clinton announced a three-stage climate change plan on October 22, 1997.<sup>4</sup> The CCTI was described as “the cornerstone of the [Clinton] Administration’s efforts to stimulate the development and use of renewable energy technologies and energy efficiency products that will help reduce greenhouse

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<sup>1</sup>For details, please see CRS Issue Brief IB89005, *Global Climate Change*.

<sup>2</sup>For further details on this, please see CRS Report RL30024, *Global Climate Change Policy: Cost, Competitiveness, and Comprehensiveness*.

<sup>3</sup>Please see CRS Report 98-2 *Global Climate Change Treaty: The Kyoto Protocol* for details.

<sup>4</sup>Details about the plan, as set forth in 1997, can be found at [<http://www.clinton2.nara.gov/WH/Work/102297.html>].

gas emissions,”<sup>5</sup> through a combination of research and development (R&D), and information and tax incentive programs. Stage 1, as announced in 1997, included funding for research and development (R&D), tax incentives for early action, a set of federal government energy initiatives including various tax credits to encourage purchase and use of more efficient technologies, and industry consultations to explore ways to reduce greenhouse gas emissions. Stage 2, expected to begin around 2004, would have reviewed and evaluated stage 1. Stage 3, as envisioned prior to Kyoto, included actions aimed at reducing emissions to 1990 levels by 2008-2012, meeting the binding targets the U.S. expected to be in the Kyoto Protocol through measures that include domestic and international emissions trading. The Kyoto Protocol (which the United States signed on November 11, 1998 but which has not been submitted to the U.S. Senate for advice and consent on ratification), outlines an obligation for the United States to reduce its total greenhouse gas emissions by an average of 7% below 1990 levels between 2008 and 2012.<sup>6</sup> The Clinton Administration supported United States participation in this protocol. The Bush Administration, on the other hand, has rejected the protocol.

The Congress has passed budget resolutions and appropriations bills with provisions prohibiting the use of funds to implement the Kyoto Protocol, which has not been ratified by the United States or entered into force internationally. Some controversy has been engendered by the possible linkage of funding proposals associated with the CCTI to the Kyoto Protocol goals. After some early consideration of these concerns, for the most part the R & D elements have been found acceptable to the Congress. Moreover, many of the programs related to the CCTI and other climate research preceded the Kyoto Protocol, and in fact would be relevant to the voluntary commitments the United States made in the U.N. Framework Convention on Climate Change to try to meet a voluntary goal of returning greenhouse gas emissions to 1990 levels by the year 2000. (See CRS Report RL30024, *Global Climate Change Policy: Cost, Competitiveness, and Comprehensiveness*).

As first outlined in President Clinton’s FY1999 budget request<sup>7</sup>, the CCTI was to be a combination of research and technology programs and of tax incentives to accelerate development and deployment of technologies designed to reduce greenhouse gas emissions: “The CCTI builds and expands upon an existing foundation of advanced science, basic research, and government-industry partnership. It will increase U.S. competitiveness, reduce U.S. dependence on foreign oil, help maintain U.S. leadership in energy technology, and reduce greenhouse gas emissions at the same time.”<sup>8</sup>

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<sup>5</sup>Testimony on May 20, 1999 by Deidre A. Lee, Acting Deputy Director for Management, Office of Management and Budget (OMB), to the House Committee on Government Reform and Oversight, Subcommittee on National Economic Growth.

<sup>6</sup>Please see CRS Report 98-2 *Global Climate Change: The Kyoto Protocol* for further details.

<sup>7</sup>See [<http://clinton2.nara.gov/OMB/legislative/testimony/test052099ddm.html>] for details.

<sup>8</sup>Climate Change Technology Initiative - A White House Fact Sheet, November 1998.

The Bush Administration's FY2002 budget request included funding for most programs of the CCTI (while not using that name). Those request levels are included in Table 1 below. Separately and later, in June 2001 the Bush Administration announced two programs, the Climate Change Research Initiative (CCRI) and the National Climate Change Technology Initiative (NCTI). Funding details presently are largely absent from the announcements of those initiatives. While details about those initiatives are pending, information on these programs made available to date is summarized below.

## Federal Funding Levels

CCTI funding consisted of two basic parts: (1) research and technology programs, and (2) targeted tax incentives (the tax incentive initiative is not covered in this report; see CRS Report 98-193E *Global Climate Change: the Energy Tax Incentives in the President's FY2001 Budget*). The research and technology program in turn consisted of two main parts: research and development, which primarily focused on understanding processes and developing new technologies related to carbon sequestration and to improving energy efficiencies; and information, audit, and other assistance programs to facilitate diffusion and market penetration of technologies designed to improve energy efficiency or otherwise diminish greenhouse gas emissions. These two main parts of the research and technology side of CCTI were not always clearly distinct; to some extent there was a continuum with R&D at one end and assistance programs at the other. Nonetheless, the distinction has proved significant, in that R&D was less controversial than the assistance programs were, as some argued that market forces should have been allowed to determine commercial development and application. (The same objections were lodged against the tax incentive proposals.) As enacted for FY2001, \$1.239 billion went to research and technology programs and no funds were provided for tax incentives.

Under the Bush Administration, the FY2002 request for climate change research and technology is \$940 million. Also requested is \$1.1 billion for a 10-year package of energy tax credits, not covered in this CRS report. As shown in Table 1, the research and technology funding proposed for the Department of Energy accounted for about 86.6% of the overall climate change research and technology request; 13% was proposed for the Environmental Protection Agency, and approximately 0.3% proposed for the U.S. Department of Agriculture (USDA).

**Table 1. Clinton Administration CCTI, and Bush Administration Climate Change Research and Technology Funding by Agency**  
(\$ millions)

<b>Department / Agency</b>	<b>FY1998 enacted</b>	<b>FY1999 enacted</b>	<b>FY2000 enacted</b>	<b>FY2001 enacted</b>	<b>FY2002 request</b>
Department of Energy	729	902	980	1103	814
Environmental Protection Agency	90	109	103	123	123
Housing and Urban Development	0	10	10	10	0
Department of Agriculture	0	0	0	3	3
Department of Commerce	0	0	2	0	0
<b>TOTAL</b>	<b>819</b>	<b>1021</b>	<b>1095</b>	<b>1239</b>	<b>940</b>

**Source:** "President Clinton's FY2001 Climate Change Budget," page 13, and "Federal Climate Change Expenditures Report to Congress June 2001"

## **Department of Energy**

Carbon dioxide as noted above, the major greenhouse gas, arises mostly from combustion of fossil fuels. The Department of Energy, which has long had R&D programs relating to fossil fuel energy use, was by far the largest recipient of both CCTI funding and the FY2002 climate change request (received \$1,103 million in FY2001; \$814 million requested in FY2002, as was noted, this was about 86.6% of the overall interagency climate change request). Funding for the DOE's efforts were planned for the research, development, and deployment of more energy efficient and renewable technologies such as:

- for "Buildings," low-power sulfur lamps, advanced heat pumps, chillers and commercial refrigeration, fuel cells, insulation, energy conserving building materials, and advanced windows;
- for "Electricity," generation using alternatives to fossil fuels such as solar energy, biomass power, wind energy, geothermal power, hydropower, and optimized nuclear power;
- for more efficient "Industries" including aluminum, steel, mining, agriculture, chemicals, forest products, and petroleum;

- for researching, developing, and deploying more efficient “Transportation” technologies, such as advanced engines, hybrid systems, fuel cells and emission controls; these constitute the federal component of the Partnership for a New Generation of Vehicles (PNGV), a 10-year government/domestic auto industry partnership that aims to produce by 2004 a prototype mid-sized family car with 80 mile per gallon gasoline efficiency and a two-thirds reduction in carbon emissions; seven federal agencies are involved in the PNGV (Commerce, Defense, Energy, Transportation, EPA, National Aeronautics and Space Administration, and the National Science Foundation) (for details on PNGV, see CRS Report RS20852);
- for trying to find better ways to “Remove and Sequester Carbon” from fossil and other fuels, via agricultural and other approaches (in conjunction with EPA, and originally planned in conjunction with USDA); and
- for governmental efforts (federal, state, and others) to conserve energy through more highly coordinated “Management, Planning, Analysis and Outreach.”<sup>9</sup>

As with the PNGV program, many of DOE’s research and technology dollars have been spent in partnership with other federal entities such as EPA, with other governmental units, and with private sector entities.

Table 2 below shows a breakdown of funding levels for the DOE climate change research and technology programs.

**Table 2. DOE Climate Change Research and Technology Programs**  
(\$ millions)

Program	FY98 enacted	FY99 enacted	FY00 enacted	FY01 enacted	FY02 request
<b>Buildings</b>	<b>102</b>	<b>124</b>	<b>141</b>	<b>105</b>	<b>60</b>
Energy Conservation	79	96	115		
Energy Conservation (Federal Buildings)	20	24	24		
Solar Ht/Cool /Hot Water	3	4	2		

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<sup>9</sup>Analysis of the Climate Change Technology Initiative, Research and Development Support. Energy Information Agency, U.S. Department of Energy. [http://www.eia.doe.gov/oiaf/climate99/research.html]

<b>Transportation</b>	<b>223</b>	<b>250</b>	<b>274</b>	<b>255</b>	<b>198</b>
Energy Conservation	193	202	232		
Solar/Renewable, Alternative Fuels	30	42	39		
Energy Information Administration	--	3	3		
Basic Science	--	3	**		
<b>Industry</b>	<b>136</b>	<b>167</b>	<b>170</b>	<b>149</b>	<b>88</b>
Energy Conservation	136	166	170		
Basic Science	--	1	**		
<b>Electricity</b>	<b>239</b>	<b>311</b>	<b>307</b>	<b>421</b>	<b>310</b>
Solar/Renewable	239	291	268	373	277
Nuclear	0	0	5	5	5
Fossil	--	18	34	43	28
Basic Science	--	2	**	--	--
<b>Carbon Removal &amp; Sequestration</b>	<b>--</b>	<b>13</b>	<b>9</b>	<b>39</b>	<b>43</b>
Fossil	--	6	9		
Basic Science	--	7	**		
<b>Management, Planning, Analysis &amp; Outreach</b>	<b>29</b>	<b>38</b>	<b>43</b>	<b>43</b>	<b>41</b>
Energy Conservation	29	38	43		
<b>Basic science</b>	<b>**</b>	<b>**</b>	<b>33</b>	<b>--</b>	<b>--</b>
<b>Total (may not add due to rounding)</b>	<b>729</b>	<b>902</b>	<b>976</b>	<b>1009</b>	<b>740</b>

Source: U.S. Department of Energy. "Department of Energy Report to Congress on FY2000 Expenditures for Energy Supply, Efficiency, and Security Technologies Supporting the Climate Change Technology Initiative" May 18, 1999. P. 3. Also, Federal Climate Change Expenditures Report to Congress June 2001.

\*\*"Basic Science" was presented in FY99-00 for the only time as a specific category. It had been and is now funded in a fragmented fashion throughout other categories.

## Environmental Protection Agency

The Environmental Protection Agency uses two main budget categories: Science and Technology (S&T, which includes R&D and technology development and diffusion efforts), and Environmental Programs and Management (EPM, which are the costs to run programs). Therefore, it is difficult to consistently separate R&D from technology assistance and diffusion efforts. For example, in EPA's climate change Buildings Sector, the owner of a building can have EPA's benchmarking tool voluntarily applied to that building as a target for energy reduction. Various activities can be tried, e.g., plugging leaks and replacing less efficient lights with more efficient lights, to see if the benchmark will be met. If not, other activities can be tried in an

iterative fashion, trying and recording and incorporating the findings in the benchmark. This program includes activities that can be described as both research-related and technology diffusion and assistance. EPA's figures for climate change S&T are used here.

The EPA received \$123 million in FY2001 and requested the same amount for FY2002 (which is 13% of the overall interagency climate change request). While there has been some discussion about the proper roles for government, industry, and academe in climate change and other R&D,<sup>10</sup> the climate change R&D activities were not highly controversial. In general, EPA funds targeted for R&D, especially areas of more basic R&D that predate the CCTI and the Kyoto Protocol, were less controversial, and funds for new programs intended to assist technology deployment and diffusion and to help consumers learn about and choose more efficient commodities and processes have been more controversial.

The elements and levels of EPA's climate change research and technology funds are summarized in Table 3. Activities related to these program areas are briefly described below. Some of these funding areas focused heavily on R&D, while others involved information dissemination and other activities.

**Table 3. EPA Climate Change Research and Technology Programs**  
(\$ millions)

<b>Program</b>	<b>FY99 enacted</b>	<b>FY00 enacted</b>	<b>FY01 enacted</b>	<b>FY02 request</b>
Buildings	38.8	42.6	52	53
Transportation	31.8	29.6	27	32
Industry	18.6	22.0	32	27
Carbon Removal	0.0	1.0	1	2
State & Local Governments	2.9	2.5	8	9
International Capacity Building	7.4	5.6	**	**
Research	10	0	0	***
<b>Total</b>	<b>109.5</b>	<b>103.3</b>	<b>120</b>	<b>123</b>

Sources: EPA FY2000 Annual Performance Plan and Congressional Justification, p. VI-19 and HR1743 "Environmental Protection Agency Office of Air and Radiation Authorization Act of 1999" ordered to be reported May 26, 1999. Also, Federal Climate Change Expenditures Report to Congress June 2001.

<sup>10</sup>Please see CRS Report 98-365 *Some Perspectives on the Changing Role of the U.S. Government in Science and Technology* for details.

\*\* Funding for State & Local Governments was combined with funding for International Capacity Building in FY01 and FY02.

\*\*\*Money for research was incorporated into other categories.

- The “Buildings” component of EPA’s climate change research and technology activities include housing and commercial structures. EPA and others (including DOE) argue that efforts by individual and organizational consumers to secure the most energy efficient process or commodity are hampered by a lack of objective information on which to make comparisons (for details, see IB10020 *Energy Efficiency: Budget, Climate Change, and Electricity Restructuring Issues*). Through the Agency’s ENERGY STAR Program and ENERGY STAR Buildings and Green Lights Partnership, EPA evaluates and certifies energy-saving building-related products (including such items as televisions, appliances, residential lighting, and whole houses), and makes that information available so that consumers and businesses can choose energy-saving and pollution-reducing products more easily.
- “Transportation” activities of EPA include the following:
  - ▶ expanded support for a program which provides new incentives for commuters to consider transit, ridesharing, or other alternatives to driving;
  - ▶ continued support of state and local efforts toward livable communities and smart growth; and
  - ▶ continued efforts in the Transportation Partners network which links about 340 local governments, community organizations, and companies in order to produce knowledge that is designed to reduce vehicle miles traveled
  - ▶ continued work contributing to the Partnership for a New Generation of Vehicles (the government/domestic auto industry partnership described previously under DOE).
- EPA’s “Industry” efforts include working with industries (especially energy-intensive industries such as cement, chemicals, steel, petroleum, airlines, and food processing), commonly through technical assistance, to audit and identify greenhouse gas emission sources and to help in formulating appropriate reduction goals and strategies, including removal of regulatory and other barriers. This includes working with ongoing privately-funded energy efficiency programs at private companies.
- “Carbon Removal” efforts at EPA are planned in coordination with the Department of Agriculture. The EPA/USDA funds for this activity are to study the kinds and sizes of incentives that could be given to land owners and crop growers to increase the quantity of carbon stored on agricultural and forest lands, and at the same time improve soil quality, reduce soil erosion, and enhance other environmental and conservation goals.

- EPA works with “State and Local Governments” to help find ways to reduce energy use and pollution, sometimes by supporting existing state and local programs. The Cities for Climate Protection program, for example, involves 54 local governments in 1998 in implementing building, transportation, waste, and renewable energy projects to eliminate about 3 million metric tons of carbon dioxide. A state-level example is New Jersey’s state carbon bank program, established to help achieve New Jersey’s greenhouse gas emissions reduction goal of 3.5% below 1990 levels by 2005.
- Developing countries currently emit more than half the global total of greenhouse gases, and such emissions are growing rapidly. “International Capacity Building” involves EPA and other agencies working to study ways to provide technical assistance to developing countries to aid in reducing their emissions.

## **Department of Housing and Urban Development**

Climate change research and technology programs, new to the Department of Housing and Urban Development (HUD) in FY1999, were for the government/housing developers/builders Partnership for Advancing Technology in Housing (PATH). Administered by HUD and identified as part of the CCTI through FY2001, PATH research had a number of goals in addition to climate change. PATH efforts sought “to develop and disseminate technologies that will result in housing that is substantially more affordable, durable, disaster resistant, safer and energy/resource efficient...”<sup>11</sup> No money for HUD was requested by the Bush Administration for FY2002.

## **Department of Agriculture**

The FY2002 request of \$3 million, unchanged from the amount enacted in FY2001, for USDA’s climate change research and technology activities is principally to try to understand and better manage the carbon cycle, from sources to sequestration, focusing principally on agricultural approaches.

## **Department of Commerce**

Various programs within the Department of Commerce addressed issues relating to climate change. The wide range of research in Commerce’s National Oceanic and Atmospheric Administration (NOAA) included long-standing climate-related work, much of it not specifically identified as CCTI but rather part of NOAA’s generic mission. Among other things, research at NOAA sought to determine “the impacts of climate variability and change on ecosystems; ... understand how radiative, chemical, and dynamical processes interact in the upper troposphere/lower stratosphere to affect climate; ... (and) study the effects of climate variability and

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<sup>11</sup>Department of Housing and Urban Development Policy Development and Research, from [<http://www.hud.gov/bdfy2000/summary/pdandr/randt.cfm>]

change on health...”<sup>12</sup> There also were programs at the National Institute of Standards and Technology (NIST) which looked at climate change issues.<sup>13</sup> The \$2 million requested and provided in the FY2000 budget for the CCTI specifically was new to the Department and did not go to NOAA<sup>14</sup> or NIST as a single CCTI line-item but to various climate-related R&D projects. No funds were specified for Commerce Department climate change activities in subsequent budget requests.

## 2001 U.S. Climate Change Research Initiative

The Bush Administration submitted a FY2002 climate change budget request that largely followed the programs and categories that made up the Clinton Administration’s Climate Change Technology Initiative. On June 11, 2001 the Bush Administration issued the White House Initial Review on Climate Change, a Cabinet-level review of U.S. climate change policy. Members of the Cabinet, the Vice President, and senior White House staff examined the science, technologies, U.S. activities, and options for addressing atmospheric concentrations of greenhouse gases. The White House Initial Review included the announcement of the U.S. Climate Change Research Initiative which: “... directs the Secretary of Commerce, working with other agencies, to set priorities for additional investments in climate change research, to review such investments, and to maximize coordination among federal agencies; fully funds all priority research areas that the Secretary of Commerce’s review finds are underfunded or need to be accelerated relative to other research; challenges the major greenhouse gas emitting countries to increase significantly their investments in high priority areas of climate change research; provides up to \$25 million, and calls on other developed countries to provide matching funds, to help build climate observation systems in developing countries; and proposes a joint venture with the EU, Japan and others to develop state-of-the-art climate modeling to help us better predict the causes and consequences of climate change.”<sup>15</sup>

Further details are pending. The funding mentioned in the Initial Review has not been included in the FY2002 budget request.<sup>16</sup>

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<sup>12</sup>Department of Commerce budget initiative, details of which can be found at [<http://www.oarhq.noaa.gov/>]

<sup>13</sup>Telephone communication with the National Institute of Standards and Technology on December 6, 1999.

<sup>14</sup>Personal communication with the National Oceanic and Atmospheric Administration on December 6, 1999.

<sup>15</sup>White House Initial Review on Climate Change, Issued June 11, 2001. <http://www.whitehouse.gov/news/releases/2001/06/20010611-2.html>

<sup>16</sup>While the Secretary of Commerce is specifically listed, no details are provided about specific roles for the National Oceanic and Atmospheric Administration, other parts of Commerce, or other federal agencies.

## 2001 National Climate Change Technology Initiative

In the same Initial Review, the Bush Administration announced the National Climate Change Technology Initiative, in which “the President is charging the Secretaries of Commerce and Energy, working with other agencies, to:

- Evaluate the current state of U.S. climate change technology research and development and make recommendations for improvements.
- Provide guidance on strengthening basic research at universities and national laboratories, including the development of the advanced mitigation technologies that offer the greatest promise for low-cost reductions of greenhouse gas emissions.
- Develop opportunities to enhance private-public partnerships in applied research and development to expedite innovative and cost-effective approaches to reduce greenhouse gas emissions.
- Make recommendations for funding demonstration projects for cutting-edge technologies.
- Develop improved technologies for measuring and monitoring gross and net greenhouse gas emissions.
- Enhance coordination across federal agencies, and among the federal government, universities, and the private sector.”<sup>17</sup>

No proposed funding or timetable were mentioned in the White House announcement about the NCCTI.

## Conclusion

Possible climate change linked to “greenhouse gas” emissions has been addressed by various U.S. government policies, including an emphasis on R&D, since the mid-1980s. U.S. efforts in the former Bush and Clinton Administrations toward energy efficiency, renewable energy, and R&D were given direction by the Energy Policy Act of 1992 and the UNFCCC. The 1993 Climate Change Action Plan linked or made partnerships among various federal agencies, business, state and local governments, and other entities with the goal of reducing U.S. greenhouse gas emissions. The Clinton Administration’s CCTI built upon these earlier efforts. The current Bush Administration has, with funding and other details pending, announced its U.S. Climate Change Research Initiative (which has the goal of setting priorities for additional investments in and interagency coordination of climate change research), and the National Climate Change Technology Initiative (which has the goal of strengthening research in academe and national labs, improving monitoring of

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<sup>17</sup>White House Initial Review, *ibid*.

greenhouse gas emissions, and funding demonstrations of cutting-edge technologies). As funding and other details become available, differences from earlier climate-change programs may become apparent.

There were two parts to the research and technology elements of the Clinton Administration's CCTI: (1) R&D of environmentally more beneficial technologies and policies; and (2) information, audit, and other assistance intended to help individual and organizational consumers learn of, choose, and use more efficient goods and processes (e.g., energy saving computers or industrial processes).

The pursuit of R&D was not highly controversial, especially for basic research. More controversy arose from the federal government's past and proposed efforts to use public funds to encourage and to help private individuals, companies, and organizations more quickly benefit from various environmental technologies. As stated by then OMB Acting Deputy Director for Management Deidre Lee, spurring broader use of energy efficient technologies and renewable energy would have reduced energy bills and secured other benefits, so that "even if the threat of global warming did not exist, the [Clinton] Administration believes that these [CCTI] programs make good sense because they help our country address other energy-related and environmental challenges."<sup>18</sup> It was argued by some that economic benefits of saving money should have been sufficient incentives for consumers to invest in more efficient technology, that the renewable energy industry should have relied for commercial development on market forces rather than federal tax credits and information programs.<sup>19</sup> On the other hand, Lee and others argued that the Government needed to be involved to help overcome market barriers, such as a lack of accurate information and existing subsidies for other energy technologies, so as to permit informed energy-saving choices.

In the CCTI, the Clinton Administration drew on several federal agencies and departments in addressing the issue of climate change while aiming to secure other societal benefits as well. While the Clinton Administration's budget requests for CCTI R&D activities generated some controversy, its requests for CCTI information and tax incentive programs were more controversial. Differences between the Clinton Administration and Congress on the value of information and incentive programs in the various federal agencies and departments existed not only because of different perspectives between the executive and legislative branches, but also because of procedural and jurisdictional boundaries among the congressional committees and subcommittees responsible for the various federal agencies and departments (see CRS Report RL30043 *Environmental, Health, and Safety Tradeoffs: A Discussion of Policymaking Opportunities and Constraints* for details). These boundaries made difficult tradeoffs among the several elements of CCTI and meant that each element tended to fend for itself in budgetary considerations.

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<sup>18</sup>Testimony on May 20, 1999 by Deidre A. Lee, Acting Deputy Director for Management, OMB, to the House Committee on Government Reform and Oversight, Subcommittee on National Economic Growth.

<sup>19</sup>This position was described by Hon. Ken Calvert in his opening statement of the House Science Committee hearing on April 14, 1999.

The specified focus on the Secretaries of Commerce and Energy in the current Bush Administration's Climate Change Research Initiative and National Climate Change Technology Initiative is different from the approach of many of the programs in the CCTI. Details about the CCRI and NCCTI are pending and may illuminate other differences from the climate change efforts of the Clinton Administration's CCTI. As it stands, some critics of current climate change policy highlight the general decrease in funding for climate change research and technology, while on the other hand some proponents note that many of the decreases are due to elimination of certain earmarked projects, or near-commercialization of certain research projects.