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Climate Change Technology Initiative (CCTI): Research, Technology, and Related Programs

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Climate Change Technology Initiative (CCTI): Research, Technology, and Related Programs

Summary

The Climate Change Technology Initiative 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).

A major focus of efforts to address possible global climate change was 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, they also are relevant to environmental concerns, including climate change. This report describes the R&D, voluntary information programs, and funding aspects of the CCTI (for details about the energy tax incentives in the last Clinton Administration budget, which this report does not discuss, please see CRS Report 98-193E *Global Climate Change: the Energy Tax Incentives in the President's FY 2000 Budget*).

The FY2001 request for CCTI funds was made of two main parts: \$1.432 billion for research and technology programs, and a 5-year \$4.030 billion package of targeted tax incentives (the issue of tax incentives is not covered in this report). The largest portion of CCTI research and technology funding was to go to the Department of Energy (89% of the FY2000 overall CCTI budget as enacted; 81% of the FY2001 request) and to the Environmental Protection Agency (10 % of the FY2000 overall CCTI budget as enacted; 16% of the FY2001 request), with relatively small amounts to the Housing and Urban Development Department, the U.S. Department of Agriculture, and the Department of Commerce.

While the Clinton Administration's budget requests for CCTI basic research activities generated little controversy, its requests for CCTI 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.

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Climate Change Technology Initiative (CCTI): Research, Technology, and Related Programs

Background

The Climate Change Technology Initiative 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 gas emissions,”¹ through a combination of research and development (R&D), and information and tax incentive programs. 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 when these are based on fossil fuel combustion. 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.

U.S. government policies explicitly addressing possible climate change linked to “greenhouse gas” emissions date back to the mid-1980s.² 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 under the Bush and Clinton Administrations toward energy efficiency, renewable energy, and R&D³, to try to move toward stabilizing atmospheric greenhouse gas concentrations.⁴ The Climate Change Action Plan announced in 1993 included more than 40 federal programs working 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 CCTI were built upon these earlier efforts, including efforts to reduce dependence on oil imports.

¹Testimony 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.

²For details, please see CRS Issue Brief IB89005, *Global Climate Change*.

³For further details on this, please see CRS Report RL30024, *Global Climate Change Policy: From “No Regrets” to S.Res. 98*.

⁴One example is the Climate Change Action Plan, released by President Clinton on October 19, 1993, which proposed voluntary domestic measures for stabilizing greenhouse gas emissions.

During the preparations for the final negotiations of the December 1997 Kyoto Protocol to the UNFCCC,⁵ President Clinton announced a three-stage climate change plan on October 22, 1997.⁶ 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 review and evaluate 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 2012.⁷

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 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 has 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. (See CRS Report RL30024, *Global Climate Change Policy: From "No Regrets" to S.Res.98*).

As first outlined in President Clinton's FY1999 budget request⁸, 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."⁹

⁵Please see CRS Report 98-2 *Global Climate Change Treaty: The Kyoto Protocol* for details.

⁶Details about the plan, as set forth in 1997, can be found at [<http://www.epa.gov/globalwarming/publications/actions/clinton/index.html>]

⁷Please see CRS Report 98-2 *Global Climate Change Treaty: Summary of the Kyoto Protocol* for further details.

⁸See [<http://www.epa.gov/budget/budget/1999/s9.htm>] for details.

⁹Climate Change Technology Initiative A White House Fact Sheet, November 1998.

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 FY2000 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 energy efficiencies; and information, audit, and other assistance programs to facilitate diffusion 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 noncontroversial, while the assistance programs had been, 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 FY1999, \$1.021 billion went to research and technology programs and no funds were provided for tax incentives. As described in subsequent Clinton Administration documents, President Clinton's climate change plans were enlarged beyond the CCTI to include a proposed Clean Air Partnership Fund to support government and private efforts to reduce greenhouse gas emissions and ground-level air pollutants, work toward legislation on possible credit to companies for early voluntary action to reduce greenhouse gas emissions or increase carbon sequestration, and continuation of diplomatic efforts to develop details in the Kyoto Protocol on such matters as international emissions trading and participation by developing countries. This report discusses only the research and technology activities (which were basic R&D and information programs), and related funding aspects of the CCTI.¹⁰

The FY2001 request for the research and technology element of CCTI was \$1.432 billion. Also requested was \$4.030 billion for a 5-year package of targeted tax incentives,¹¹ not covered in this report. As shown in Table 1, by far the largest portion of CCTI research and technology funding was to go to the Department of Energy (DOE: 89% of the FY2000 overall CCTI budget as enacted; 81% of the FY2001 request) and to the Environmental Protection Agency (EPA: 10% of the FY2000 overall CCTI budget as enacted; 16% of the FY2001 request), with relatively small amounts to the Housing and Urban Development Department (HUD), the U.S. Department of Agriculture (USDA), and the Department of Commerce. It should be noted that as enacted in FY2000, while DOE received 87% of its FY2000 request,

¹⁰See [<http://www.epa.gov/globalwarming/publications/actions/clinton/index.html>] for a general description of the President Clinton's climate change plan.

¹¹Charter for hearing on Fiscal Year 2001 Climate Change Budget Authorization Request, House Committee on Science, Subcommittee on Energy and Environment, March 9, 2000. Page 5.

EPA was given 48% of its request, reflecting concerns raised about non-R&D activities.

Historically, as part of the FY1999 Clinton Administration budget proposals, President Clinton in February 1998 first proposed the Climate Change Technology Initiative. It proposed funding primarily for research and development activities at the Department of Energy, tax credits to encourage purchases of certain energy-efficient cars and houses, EPA's voluntary information programs to encourage businesses and others to conserve energy, and research into ways to sequester carbon in agriculture, in some cases as renewable fuels. In general in the CCTI, R&D relating to energy efficiency and renewable energy sources were largely evolutionary steps from earlier programs, initiated in the late 1970s and early 1980s to reduce dependency on oil imports.

Table 1. CCTI Research and Technology Funding by Agency
(\$ millions)

Department / Agency	FY1998 enacted	FY1999 enacted	FY2000 request	FY2000 enacted	FY2001 request; [% of CCTI FY2001 request]
Department of Energy	729	902	1124	980	1169 [81]
Environmental Protection Agency	90	109	216	103	227 [16]
Housing and Urban Development	0	10	10	10	12 [1]
U.S. Department of Agriculture	0	0	16	0	24 [2]
Department of Commerce	0	0	2	2	0 [0]
TOTAL	819	1021	1368	1095	1432

Source: "President Clinton's FY2001 Climate Change Budget," page 13.

Speaking about the Clinton Administration's FY2000 CCTI budget requests, a senior DOE official said "although the tax credits are largely new initiatives, many of the other programs are continuations or expansions of ongoing research, development, and deployment programs."¹² The CCTI (composed of R&D, incentive, and voluntary information programs) grew from the base programs detailed in "The Climate Change Action Plan" (released by the U.S. in October 1993) with consultations among the Federal entities (including the Global Change Research Program) and the Office of Management and Budget.

¹²Testimony on April 14, 1999 by Jay Hakes, Administrator, Energy Information Administration, U.S. Department of Energy, to the House Committee on Science.

Department of Energy

Carbon dioxide, the major greenhouse gas, arises mostly from combustion of fossil fuels. The Department of Energy (DOE), which has long had R&D programs relating to fossil fuel energy use from its days seeking to manage and to develop energy supplies, was by far the largest recipient of CCTI funding. DOE received \$980 million for CCTI activities in FY2000 (89% of all federal CCTI funds), approximately 87% of the level of funding that it requested. DOE received from 82% to 89% of the total funding for the Initiative. Funding for the DOE's efforts in the CCTI 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, including furthering 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 midsized 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 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."¹³

As with the PNGV program, many of DOE's CCTI research and technology dollars were spent in partnership with other federal entities such as EPA and HUD, with other governmental units, and with private sector entities. As noted above, many of DOE's activities identified as Climate Change Technology Initiative, were to a great extent a continuation or evolution of DOE (and other federal) programs that

¹³Analysis 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>]

predate the CCTI (and predate the 1977 establishment of the DOE in some cases, e.g., research into energy conservation and renewable energy sources). All of DOE's FY2000 CCTI funding and programs were continuations of FY1999 programs.

See Table 2 for a breakdown of funding levels for the DOE CCTI research and technology programs. Specific program and funding details for FY2000 and prior years were released in May 1999, as shown in the Source note of Table 2.

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 CCTI Buildings Sector, the owner of a building can have EPA's benchmarking tool voluntarily applied to that building as a target for energy use. 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 CCTI S&T are used here.

The EPA in FY2000 received \$103 million for CCTI research and technology activities (about 9% of all the federal CCTI research and technology funds), a distant second to DOE's \$980 million (89% of all federal CCTI research and technology funds). Also notable is the fact that while DOE received 87% of its FY2000 request, EPA got 48% of its request. While there has been some discussion about the proper roles for government, industry, and academe in climate change and other R&D,¹⁴ the CCTI 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 were more controversial.

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

¹⁴Please see CRS Report 98-365 *Some Perspectives on the Changing Role of the U.S. Government in Science and Technology* for details.

Table 2. DOE CCTI Research and Technology Programs
(\$ millions)

Program	FY98 actual	FY99 estimate	FY00 proposed	FY00 enacted	FY01* request
Buildings	102	124	183	141	--
Energy Conservation	79	96	145	115	
Energy Conservation (Federal Buildings)	20	24	32	24	
Solar Ht/Cool /Hot Water	3	4	6	2	
Transportation	223	250	316	274	--
Energy Conservation	193	202	252	232	
Solar/Renewable, Alternative Fuels	30	42	53	39	
Energy Information Administration	--	3	3	3	
Basic Science	--	3	8	**	
Industry	136	167	172	170	--
Energy Conservation	136	166	171	170	
Basic Science	–	1	1	**	
Electricity	239	311	375	307	--
Solar/Renewable	239	291	340	268	
Nuclear	0	0	5	5	
Fossil	--	18	27	34	
Basic Science	--	2	3	**	
Carbon Removal & Sequestration	--	13	29	9	--
Fossil	--	6	9	9	
Basic Science	--	7	20	**	
Management, Planning, Analysis & Outreach	29	38	47	43	--
Energy Conservation	29	38	47	43	
Basic science	**	**	**	33	--
Total (may not add due to rounding)	729	902	1124	976	1169

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. “FY2000 Enacted” expenditures were obtained via telephone conversation on December 20, 1999 from the Department of Energy, and include estimates for the spread of the 0.38% rescission.

*Details were unavailable as of March 13, 2000.

**“Basic Science” was presented in FY2000 for the first time as a specific category. It had been funded before in a fragmented fashion throughout other categories.

Table 3. EPA CCTI Research and Technology Programs
(\$ millions)

Program	FY99 request	FY99 enacted	FY00 request	FY00 enacted	FY01 request
Buildings	78.1	38.8	80.1	42.6	80.1
Transportation	58.9	31.8	62.0	29.6	65.1
Industry	51.6	18.6	55.6	22.0	63.7
Carbon Removal	3.4	0.0	3.4	1.0	3.4
State & Local Governments	5.0	2.9	5.0	2.5	4.5
International Capacity Building	8.4	7.4	10.4	5.6	10.6
Research	0	10*	0*	0	0
Total	205.4	109.5	216.5	103.5	227.4

Sources: (for all but FY00 and 01) 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.

*From the EPA FY2000 Annual Performance Plan, p. VI-33, "Funding is discontinued for Climate Change Technology Initiative activities funded through the FY1999 Omnibus appropriation." FY00 enacted and FY01 figures were obtained from EPA at [<http://www.epa.gov/ocfo/budget/budget.htm>] on February 8, 2000.

! The "Buildings" component of EPA's research and technology activities in the CCTI included housing and commercial structures. It had been argued by EPA and others (including DOE) 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, please 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 included the following:

- < continued work in the Partnership for a New Generation of Vehicles (the government/domestic auto industry partnership described previously under DOE);

- < expanded support for a program which provided 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 linked about 340 local governments, community organizations, and companies in order to produce knowledge that was designed to reduce vehicle miles traveled.
- ! EPA's "Industry" efforts included 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 included working with ongoing privately-funded energy efficiency programs at private companies.
 - ! "Carbon Removal" efforts at EPA were planned in coordination with the Department of Agriculture. The EPA/USDA planned to use funds for this activity to study the kinds and sizes of incentives that could have been 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 worked 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, involved 54 local governments in 1998 to implement 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" involved EPA and other agencies working to study ways to secure meaningful participation from key developing countries to reduce their emissions.

Department of Housing and Urban Development

CCTI research and technology programs were new to the Department of Housing and Urban Development (HUD) in FY1999, and the FY2000 budget proposed and received \$10 million (no change from FY1999) for the government/housing developers/builders Partnership for Advancing Technology in Housing (PATH). Administered by HUD and identified as part of the CCTI, 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...”¹⁵ The FY 2001 request was for \$12 million.

Department of Agriculture

The FY2000 request of \$16 million for USDA’s CCTI research and technology activities included \$7 million for the Agricultural Research Service, \$3 million for the Natural Resource Conservation Service, and \$6 million for the Forest Service, to understand and better manage the carbon cycle, from sources to sequestration, focusing principally on agricultural approaches. While some of those proposed efforts were to build on prior work, the specific designation of USDA programs as part of CCTI funding was new in FY2000. However, the USDA identified a much wider array of base programs that carry out climate related research. The USDA overall had some \$55 million in climate-related research among some 5 USDA agencies, an amount that had been stable during the 1990s.¹⁶ The FY2000 appropriations as enacted contained no CCTI funds for USDA. The total FY2001 request of \$24 million for CCTI activities was divided into \$14 million for developing advanced biomass energy technologies, \$6 million for studying agricultural carbon sequestration, and \$4 million for examining agricultural practices and their relationships with greenhouse gas emissions.

Department of Commerce

Various base 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 change on health...”¹⁷ There also were base programs at the National Institute of Standards and Technology (NIST) which looked at climate change issues.¹⁸ The \$2 million requested and provided in the FY2000 budget for the CCTI specifically was

¹⁵Department of Housing and Urban Development Policy Development and Research, from [<http://www.hud.gov/bdfy2000/summary/pdandr/randt.html>]

¹⁶Telephone communication with the United States Department of Agriculture, Office of the Chief Economist, on September 13, 1999.

¹⁷Department of Commerce budget initiative, details of which can be found at [<http://www.oarhq.noaa.gov/>]

¹⁸Telephone communication with the National Institute of Standards and Technology on December 6, 1999.

new to the Department and did not go to NOAA¹⁹ or NIST as a single CCTI line-item. No funds were specified for Commerce Department CCTI activities in the FY2001 budget request.

Conclusion

There were two parts to the research and technology elements of the 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 secure 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."²⁰ 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.²¹ 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, so as to permit informed energy-saving choices.

The CCTI was an effort by the Clinton Administration to draw on several federal agencies and departments in addressing the issue of climate change while securing other societal benefits as well. While the Clinton Administration's budget requests for CCTI R&D activities generated little 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

¹⁹Personal communication with the National Oceanic and Atmospheric Administration on December 6, 1999.

²⁰Testimony 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.

²¹This position was described by Hon. Ken Calvert in his opening statement of the House Science Committee hearing on April 14, 1999.

departments (please 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.