FEDERAL CLIMATE CHANGE EXPENDITURES REPORT TO CONGRESS

August 2003

TABLE OF CONTENTS

LIST OF TABLES

FISCAL YEAR 2004 REPORT TO CONGRESS ON FEDERAL CLIMATE CHANGE EXPENDITURES

INTRODUCTION

The following is a detailed account of Federal spending for climate change programs and activities, both domestic and international, included in the President's FY 2004 Budget. This report is provided in response to Section 555(b), Division E of Public Law 108-7, the Consolidated Appropriations Resolution, FY 2003.

On February 14, 2002, President Bush announced a new national goal to reduce the "greenhouse gas intensity" of the American economy by 18 percent by the year 2012. Achieving this goal will require enhanced and sustained near- and long-term efforts on multiple fronts that are in concert with measures to maintain a strong national economy.

Progress will be achieved by relying on a range of programs and cross-cutting initiatives. These activities focus on reducing the fundamental scientific uncertainties associated with climate change; advancing the development and introduction of energy-efficient, renewable, and other low- or non-emitting technologies; improving standards for measuring and registering emissions reductions, as well as incentivizing emissions reductions throughout the U.S. economy; and providing assistance to other nations, especially the major greenhouse gas emitters, to do the same.

Achievement of this goal directly supports the United States' responsibility as a party to the United Nations Framework Convention on Climate Change (UNFCC). The UNFCC has as its stated objective the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."

The budget information presented in this report reflects the Administration's commitment to meeting the aims of the UNFCCC and its responsibility to the American people to preserve a strong American economy. The President's FY 2004 Budget proposes $4.32 billion for climate change activities. If enacted, it will be the highest level ever. This figure is $560 million, or 15 percent, higher than the FY 2003 enacted level for climate change programs and related tax policies. Though some programs were reduced by eliminating unrequested earmarks or by recognizing certain projects close to commercialization are now more properly funded by the private sector, other higher priority programs were increased. The FY 2004 President's Budget includes continuing support for many successful climate-related programs as well as funding for new programs and initiatives that will help achieve the Administration's climate goals.

Specifically, the FY 2004 Request expands the Climate Change Research Initiative (CCRI) and a National Climate Change Technology Initiative (NCCTI) that were established by the President in June 2001. These initiatives are managed by the Climate Change Science Program (CCSP)

and the Climate Change Technology Program (CCTP) respectively and augment the other research efforts coordinated by these programs. The CCSP and CCTP are programs within a new climate science and technology R&D management structure that includes a cabinet-level Committee on Climate Change Science and Technology Integration (CCCSTI) established to oversee the implementation of climate science and technology R&D efforts.

Beyond the CCSP and CCTP, the President's FY 2004 Budget also supports a wide range of voluntary, partnership and additional research programs and initiatives aimed at reducing greenhouse gas emission intensity. Some examples include:

Hydrogen Fuel Initiative. President Bush launched his Hydrogen Fuel Initiative in this year's State of the Union address. The goal is to work closely with the private sector to accelerate our transition to a hydrogen economy. The President's Hydrogen Fuel Initiative and the FreedomCAR Partnership launched last year will provide $1.7 billion over the next 5 years to develop hydrogen powered fuel cells, hydrogen infrastructure technologies, and advanced automotive technologies, which will lead to widespread commercial availability by 2020. The United States will pursue international cooperation to effect a more rapid, coordinated advance for this technology that could lead to the elimination of air pollutants and a significant reduction of greenhouse gas emissions from transportation throughout the world.

"FutureGen" Initiative -- Coal-Fired, Zero-Emissions Electricity Generation. In February 2003, President Bush announced that the United States would sponsor, with international and private sector cost-sharing partners, a $1 billion, 10-year demonstration project to create the world's first coal-based, zero-emissions electricity and hydrogen power plant. This project is designed to capture and store greenhouse gas emissions. This initiative is part of an international Carbon Sequestration Leadership Forum, chaired by the Secretary of Energy, to work cooperatively with our global partners, including developing countries, on research, development and deployment of carbon sequestration technologies in the next decade.

Climate Leaders Program. Announced in February 2002, Climate Leaders is an EPA partnership program encouraging companies to develop long-term, comprehensive climate change strategies. Under this program, partners set corporate-wide greenhouse gas reduction goals and inventory their emissions to measure progress. Over 35 major companies are now participating, including General Motors, Alcoa, BP, Pfizer, Staples, International Paper, IBM, Miller Brewing, Eastman Kodak and Target.

Additionally, although not included in the body of this report, USDA has recently announced a series of climate change-related incentives using existing and new authorities provided under the Farm Security and Rural Investment Act of 2002. These activities provide targeted incentives to promote forest and agricultural sequestration of greenhouse gases. A description of these activities can be found in Addendum B.

The presentation of programs and tax policies in this report represent one way to inventory programs, initiatives, and tax policies associated with energy use, carbon sequestration and climate change. This report groups funding for climate change activities into four main categories:

1. Climate Change Science. This category encompasses the newly established Climate Change Science Program. As mentioned above, the CCSP has been established to integrate the work of the U.S. Global Change Research Program (USGCRP) with the Climate Change Research Initiative (CCRI) activities.

2. Technology Research, Development and Deployment. This category incorporates a variety of research, voluntary, partnership, and grant programs from multiple agencies across the Federal government that have the effect of stimulating the development and use of certain renewable, fossil, and nuclear energy technologies and energy efficient products that can help improve energy efficiency and reduce greenhouse gas emissions. This category includes programs that focus on advanced low-emission energy supply and CO2 capture and sequestration technologies, which emit no, or very low levels of, greenhouse gases. The new Climate Change Technology Program mentioned above is also contained within this category.

3. International Assistance. This category encompasses international assistance programs that support developing country efforts to address climate change through improvements in energy efficiency, renewable energy, land use changes and forestry practices.

4. Energy Tax Incentives That Reduce Greenhouse Gases. This category includes the Administration's clean energy tax proposals for investments in renewable energy (solar, wind, and biomass), hybrid and fuel cell vehicles, co-generation, and landfill gas conversion. These incentives promote deployment of energy efficient or emissions-free technologies, all of which can help reduce greenhouse gas emissions.

The following sections of this report provide further detail for each of these four areas. Table 1 provides a summary of climate change expenditures and Appendix A presents an expanded listing for each category.

TABLE 1

Summary of Federal Climate Change Expenditures

Programs and Tax Incentives Related to Climate Change
FY 2004 Budget

(Budget authority and tax incentives; in millions of dollars)

	FY 2002 Actual	FY 2003 Enacted	FY 2004 Proposed	Change 2003-2004
Climate Change Science Program				
U.S. Global Change Research Program (USGCRP)	1,667	1,722	1,562	-160
Climate Change Research Initiative (CCRI)	0	42	185	143
Subtotal – CCSP	1,667	1,764	1,747	-17
Technology Research, Development, and Deployment				
Department of Energy	1,519	1,583	1,633	50
National Climate Change Technology Initiative Competitive Solicitation Program[1]	*0*	*0*	*40*	*40*
Environmental Protection Agency	115	106	109	3
Department of Agriculture	3	39	17	-22
Subtotal – Technology Research, Development, and Deployment	1,637	1,728	1,759	31
International Assistance				
U.S. Agency for International Development	174	214	175	-39
Department of the Treasury	43	56	90	34
Department of State	7	6	6	0
Subtotal – International Assistance[2]	224	276	271	-5
Energy Tax Incentives That Reduce Greenhouse Gases[3]	0	0	552	552
Total[4]	**3,522**	**3,762**	**4,322**	**560**

[1] The National Climate Change Technology (NCCTI) Competitive Solicitation Program will largely fund research and development for technologies on the basis of their potential to reduce, avoid, or sequester greenhouse gas emissions. The Program's innovative approach will augment the existing base of research and development in climate change technology. This is a non-add line.

[2] This subtotal contains funds that are also counted in the Climate Change Science Program subtotal. Table total line excludes these double-counts.

[3] The cost of the five energy tax incentives related to climate change included in the President's FY 2004 Budget is $4.2 billion over five years; $5.7 billion over ten years. See the Energy Tax Incentives That Reduce Greenhouse Gases section of this report for details.

[4] Total may not add due to rounding. Excludes double-counts – see footnote 2.

1. CLIMATE CHANGE SCIENCE PROGRAM

A new management structure has been instituted to manage climate change science and technology research and development within the Executive Branch. As part of this new structure, the cabinet-level Committee on Climate Change Science and Technology Integration (CCCSTI) has been established and charged with overseeing the implementation of climate science and technology research initiatives and programs. The Climate Change Science Program (CCSP) has been established under this new committee to integrate the work of the U.S. Global Change Research Program (USGCRP) with the Climate Change Research Initiative (CCRI) activities.

U.S. GLOBAL CHANGE RESEARCH PROGRAM

Much of the U.S. investment in research on climate and other global environmental changes is coordinated through the U.S. Global Change Research Program (USGCRP). The USGCRP has existed for more than a decade and includes activities at 10 different agencies that involve fundamental research on natural and human-induced changes in the global environment. One basic goal of the program is to obtain a more complete understanding of global climate change to better respond to the challenges it presents. The FY 2004 Budget proposes $1,562 million for the USGCRP, a decrease of $163 million below the FY 2003 enacted level. Some programs within the base USGCRP that have been accelerated or refocused to deliver additional inputs to decision support systems and are now included under the CCRI (see text below). Table 2 provides a breakdown of the USGCRP funding by agency.

CLIMATE CHANGE RESEARCH INITIATIVE

In addition to the USGCRP, the FY 2004 Budget requests $185 million for the Climate Change Research Initiative (CCRI), an increase of $143 million over the FY 2003 enacted level. Funding for CCRI activities will be distributed among three research areas: (1) key and emerging climate change science areas from ongoing USGCRP elements; (2) climate-quality observations, monitoring, and data management; and (3) decision support systems. Specific CCRI priorities will focus on improving our understanding of the North American carbon cycle and the role of aerosols and tropospheric ozone in climate change, enhancing computer modeling of climate, developing high quality, long term climate observation data, developing tools for risk management under uncertainty and ensuring high-quality, long-term climate data records. Table 3 provides a breakdown of the CCRI funding by agency.

The Department of Commerce National Oceanic and Atmospheric Administration (NOAA) has responsibility for leading the implementation of the CCSP. Since its creation, the Climate Change Science Program has made progress on its objectives through a variety of review and planning activities. The Administration will continue to determine where financial resources in the climate change science portfolio can be redirected from lower priority work to higher priority projects that address specific areas of research identified as “fundamental uncertainties” by the National Research Council.

TABLE 2

U.S. Global Change Research Program

By Agency/Appropriation Account
FY 2004 Budget

(Discretionary budget authority; in millions of dollars)

	FY 2002 Actual	FY 2003 Enacted	FY 2004 Proposed	Change 2003-2004
Department of Health and Human Services				
National Institutes of Health	56	59	61	2
National Aeronautics and Space Administration				
Science, Aeronautics, and Technology	1,090	1,143	999	-144
Department of Energy				
Science (Biological & Environmental Research)	117	117	108	-9
National Science Foundation				
Research and Related Activities	189	187	188	1
Department of Agriculture				
Agricultural Research Service	30	30	30	0
Cooperative State Research, Education and Extension Services	9	13	16	3
Economic Research Service	*	*	*	*
Forest Service – Forest and Rangeland Research	17	17	12	-5
Subtotal – USDA	56	60	58	-2
Department of Commerce				
National Oceanic and Atmospheric Administration – Operations, Research, and Facilities	100	99	94	-5
Department of the Interior				
U.S. Geological Survey – Surveys, Investigations, and Research	26	26	26	0
Environmental Protection Agency				
Science and Technology	21	19	22	3
Smithsonian Institution				
Salaries and Expenses	6	6	6	0
U.S. Agency for International Development				
Development Assistance	6	6	0	-6
Total[1]	**1,667**	**1,722**	**1,562**	**-160**

Note:
[1] Total may not add due to rounding.
* Less than or equal to $500,000

TABLE 3

Climate Change Research Initiative

By Agency/Appropriation Account
FY 2004 Budget

(Discretionary budget authority; dollars in millions)

	FY 2002 Actual	FY 2003 Enacted	FY 2004 Proposed	Change 2003-2004
Department of Commerce				
National Oceanic and Atmospheric Administration Operations, Research, and Facilities	---	18	42	24
National Science Foundation				
Research and Related Activities	---	15	25	10
National Aeronautics and Space Administration				
Science, Aeronautics, and Technology	---	3	69	66
Department of Energy				
Science (Biological & Environmental Research)	---	3	25	22
Department of Agriculture				
Agricultural Research Service	---	*	7	7
Forest Service - Forest and Rangeland Svc	---	2	6	4
Natural Resources Conservation Service	---	*	*	*
Subtotal – USDA	---	3	13	10
Department of Transportation				
Federal Highway Administration – Federal-aid Highways	---	---	4	4
Federal Transit Administration – Formula Grants and Research	---	---	*	*
Subtotal – DOT	---	---	4	4
Department of State				
International Organizations and Programs	---	---	1	1
U.S. Agency for International Development				
Development Assistance	---	---	6	6
Total		**42**	**185**	**143**

* Less than or equal to $500,000

2. TECHNOLOGY RESEARCH, DEVELOPMENT AND DEPLOYMENT

The FY 2004 Budget proposes $1,759 million in discretionary funding for research, development, and deployment of technologies, products, and processes that help reduce greenhouse gas emission intensity. Programs and initiatives in this category focus on energy efficiency, conservation, renewable energy and carbon sequestration. Funding allocations were guided in part by the Administration's R&D investment criteria and performance evaluations using the Administration's program assessment rating tool (PART). Table 4 provides an accounting of technology research, development, and deployment activities by agency. The following sections describe some of the climate change technology-related initiatives and programs captured in this category.

ADMINISTRATION INITIATIVES

Climate Change Technology Program

In June, 2001, the President announced the creation of the National Climate Change Technology Initiative (NCCTI). He noted that the United States is a leader in innovation and technology and that technology offers great promise to address this issue. The NCCTI constitutes a multi-agency, multi-disciplinary approach to inventorying and prioritizing Federal investments in climate change technology research and development. This effort, which is being coordinated by the Climate Change Technology Program (CCTP), will promote the development of cutting-edge technologies, reducing their costs and accelerating their introduction into the marketplace. The Department of Energy has responsibility for leading the implementation of the CCTP.

One unique component of the NCCTI is a Competitive Solicitation program, which is intended to promote innovative applied research, via a series of open competitive solicitations, aimed at exploring concepts, technologies and advanced technical approaches that could, if successful, contribute significantly to meeting the President's climate change goals. The Program will augment in unique and valued-added ways the base of ongoing Federal climate change technology R&D. Projects supported by this program will generally be those that show the greatest potential for maximizing greenhouse gas reduction per dollar spent, or those that can generate the most meaningful advances in measuring and monitoring technologies.

"FutureGen" -- Coal-Fired, Zero-Emissions Electricity Generation

In February 2003, President Bush announced that the United States would sponsor, with international and private sector cost-sharing partners, a $1 billion, 10-year demonstration project to create the world's first coal-based, zero-emissions electricity and hydrogen power plant. This project is designed to reduce air pollution dramatically and capture and store greenhouse gas emissions. This initiative is part of an international Carbon Sequestration Leadership Forum which is chaired by the Secretary of Energy. The Forum is one mechanism through which the U.S. will work cooperatively with our global partners, including developing countries, on research, development and deployment of carbon sequestration technologies in the next decade.

Fusion Energy

In January 2003, President Bush committed the United States to participate in the largest and most technologically sophisticated research project in the world to harness the promise of fusion energy, the same form of energy that powers the sun. If successful, this $5 billion, internationally-supported research project will advance progress toward producing clean, renewable, commercially-available fusion energy by the middle of the century. Participating countries include the United Kingdom, Russia, Japan, China, and Canada.

"Climate VISION" Partnership

In February 2003, President Bush announced that 12 major industrial sectors and the membership of the Business Roundtable, have committed to work with four of his cabinet agencies (DOE, EPA, DOT and USDA) to reduce their greenhouse gas emissions in the next decade. Participating industries include America's electric utilities, petroleum refiners and natural gas producers; automobile, iron and steel, chemical and magnesium manufacturers; forest and paper producers; railroads; and the cement, mining, aluminum and semiconductor industries.

Voluntary Registry for Reporting GHG Reductions

Responding to President Bush's February 2002 charge, the Secretaries of Energy, Commerce and Agriculture, and the EPA Administrator provided the President with their initial recommendations for enhancing and improving the DOE's greenhouse gas emissions reduction registry. The improvements are intended to enhance the accuracy, reliability, and verifiability of greenhouse gas reductions measurements. As part of the 2002 public comment process, DOE hosted workshops in Houston, Washington, San Francisco and Chicago.

Hydrogen and Fuel Cells

President Bush launched his Hydrogen Fuel Initiative in this year's State of the Union address. The goal is to work closely with the private sector to accelerate our transition to a hydrogen economy. The President's Hydrogen Fuel Initiative and the FreedomCAR Partnership launched last year will provide $1.7 billion over the next 5 years to develop hydrogen powered fuel cells, a hydrogen infrastructure, and advanced automotive technologies, allowing for widespread commercial availability by 2020. The United States will pursue international cooperation to affect a more rapid, coordinated advance for this technology that could lead to a significant reduction of air pollutants and greenhouse gas emissions in the transportation sector worldwide.

In support of this initiative, DOE will research, develop, and validate fuel cell and hydrogen production, delivery, and storage technologies for transportation and stationary applications. This decision is intended to allow for more rapid market penetration, significant oil displacement, greenhouse gas emissions reductions and other environmental benefits for the year 2020 and beyond.

OTHER PROGRAMS

Buildings

The budget includes programs designed to encourage the development of highly efficient new appliances and heating, ventilation, and air conditioning systems, and programs that work toward more rapidly deploying cost-effective, energy efficient products for buildings and homes throughout the marketplace. Some activities in this sector include:

Department of Energy (DOE)

- DOE supports a number of building technology activities. DOE's Building America program creates partnerships with traditional housing developers and manufacturers of industrialized housing to demonstrate how the best of existing and new technologies and techniques can be cost-effectively integrated into whole-house design and construction. The program also works to disseminate this knowledge to other builders. DOE works with States to encourage them to voluntarily upgrade their commercial and residential building energy codes to require greater energy efficiency in all new construction. DOE also funds research on more efficient building equipment and appliances, such as advanced lighting, heat pumps, and chillers.

- DOE funds the Rebuild America program in which community partners commit to improving the energy efficiency of building space. DOE also develops and promulgates energy efficiency standards for many categories of appliances and develops testing methodologies used to set standards and to provide efficiency rating labels. (DOE's rating and labeling programs are performed in partnership with the Federal Trade Commission.) Standards and test procedure development will continue for a variety of appliances and will continue to support the ENERGY STAR program.

- DOE funds low income Weatherization and State Energy Grants to help facilitate energy efficiency investments at the State and local level. The Weatherization program provides energy conservation services, such as insulation, to low-income Americans, thereby reducing energy costs for consumers, improving health and safety, and reducing greenhouse gas emissions. The State Energy Program provides grants that enable States to tailor energy efficiency programs to local needs and leverage non-Federal resources.

Environmental Protection Agency (EPA)

- The ENERGY STAR program delivers the technical information and tools that organizations and consumers need to choose energy-efficient solutions and best management practices. Over the past decade, ENERGY STAR has been a driving force behind the more widespread use of such technological innovations as LED traffic lights, efficient fluorescent lighting, power management systems for office equipment, and low standby energy use. EPA will continue to actively recruit new small businesses and organizations into ENERGY STAR with the goal of reaching over 9,000 participants in 2004.

- EPA continues to work toward the offsetting the growth in greenhouse gas emissions in the buildings sector. In doing so, EPA will actively promote its new buildings benchmark tool and will work with building owners and mangers to benchmark office buildings, schools, Federal and state facilities, retail spaces, hospitals and hotels. In addition, EPA will continue to work closely with the energy services industry to assist these companies in integrating EPA's national energy performance rating system into their customer services, leading to 5,000 benchmarked buildings. EPA also plays an important role in advancing the efficiency of the Federal Government by enhancing the ability of agencies to procure energy efficient products as well as assist agencies in benchmarking and labeling their high-performing buildings.

Transportation

Programs in the transportation sector are designed to encourage technological innovation and targeted greenhouse gas reductions. A range of new technologies should make it possible for Americans to continue to enjoy the best personal transportation in the world while significantly reducing greenhouse gas emissions. Examples of efforts in this sector include:

Department of Energy (DOE)

- The cornerstone of DOE's transportation research and development is the FreedomCAR partnership with the major U.S. automakers. Successful R&D from this partnership could reduce reliance on oil and could significantly reduce criteria pollutants and greenhouse gas emissions from the transportation sector. DOE funds research and development for fuel cells, advanced power-train technology (direct-injection) engines, hybrid-electric drive systems, advanced batteries, and light weight materials and for alternative fuels. FreedomCAR research and development complements the Administration's Hydrogen Fuel initiative.

- DOE also funds research to improve the engine efficiency of heavy-duty truck engines while reducing oxides of nitrogen emissions to near-zero levels. This research includes both fuel injection/combustion research and exhaust after-treatment for particulates and nitrogen oxide. This research will be complemented by R&D to reduce parasitic losses from aerodynamic drag and rolling resistance and to make greater use of lower-weight, high-strength materials for all classes of trucks. In addition, DOE supports the Clean Cities program, which promotes the deployment of alternatively fueled fleet vehicles.

Environmental Protection Agency (EPA)

- EPA's clean automotive technology initiative promotes partnerships with State and local governments and transportation authorities to reduce greenhouse gas emissions and air pollution. EPA will continue its work under Cooperative Research and Development Agreements (CRADAs) with the automotive industry covering both SUVs and urban delivery vehicles. EPA's successful development of the hydraulic hybrid vehicle technology will help to lay the foundation for cost-effective commercialization of high fuel economy, low emission vehicles for delivery to market between 2005 and 2010.

- EPA will also continue to work with companies and State and local governments on transportation improvements that reduce vehicle emissions and congestion. EPA will develop projects to reduce diesel idling time at truck stops and along highways and will partner with States and manufacturers of idling control devices to help promote the installation of such technologies.

Industry

Programs in the industry sector support Federal efforts to develop innovative technologies and production methods which can help businesses achieve productivity gains and prosper in a competitive marketplace while reducing greenhouse gas emissions. Some activities in this sector include:

Department of Energy (DOE)

- DOE's Industries of the Future/Specific program works cooperatively with the nation's most energy-intensive industries – such as aluminum, glass, chemicals, forest products, mining, and steel – on developing technologies that increase energy and resource efficiency. Promising collaborative efforts include improvements in the process of making steel, pulp and paper, and other energy-intensive products that could dramatically increase efficiency, lower greenhouse gas emissions, and improve competitiveness.

- DOE's Industries of the Future/Crosscutting program supports work that has benefits across many industry sectors. For example, the program supports development of a range of advanced materials with special properties, such as intermetallic compounds, metal-matrix composites, and inorganic membranes. The Best Practices programs provide technical expertise and information products to businesses of all sizes on how to use motors, compressed air and steam in an integrated system context. The program also provides plant-wide energy assessments and documented energy savings case studies, and helps to accelerate the adoption of the best available and emerging technologies and best practices.

Environmental Protection Agency (EPA)

- EPA's programs in the industrial sector focus on reducing carbon dioxide emissions and continuing the successful initiatives to reduce methane emissions and emissions of the high global-warming potential gases. EPA's goals for these efforts are to: 1) enhance the rate of energy and resource efficiency improvements in industry between now and 2010 (working with DOE); 2) cost-effectively return emissions of methane to 1990 levels or below by 2010; 3) cost-effectively limit emissions of the more potent greenhouse gases; and 4) facilitate the use of clean energy technologies and purchases of renewable energy. Programs include:

  - *Stewardship Programs for the Reduction of Potent Greenhouse Gases*. EPA will continue its programs to reduce the more potent greenhouse gases, including methane, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). EPA will expand partnerships with the magnesium and electric power industries to reduce emissions of SF6 and will work with the semiconductor, aluminum, and chemical industries to reduce HFC and PFC emissions.

- *Methane Programs*. EPA will continue its programs to reduce emissions of methane, a gas with more than 20 times the heat trapping capability of carbon dioxide. EPA will work with the natural gas, coal mining, waste management, and agricultural industries to promote cost-effective methane emission reductions with the goal being a return of methane emissions to 1990 levels or below by 2010. This program has demonstrated significant success in achieving cost-effective and meaningful greenhouse gas emission reductions in the American economy.

- *ENERGY STAR for Industry*. EPA's ENERGY STAR for Industry (formerly Climate Wise) program will continue to work with individual partnership companies. EPA will enhance and expand the ENERGY STAR program for industry by developing energy and related productivity benchmarks of industrial plant performance for five U.S. industries.

- *Climate Leaders Initiative*. EPA will continue expanding Climate Leaders, a voluntary partnership launched in FY 2002, to challenge businesses to reduce their greenhouse gas emissions and to provide a significant opportunity to achieve the Administration's greenhouse gas intensity reduction goal. Climate Leaders Partners work with EPA to develop corporate-wide greenhouse gas emissions inventories and to set aggressive, long-term GHG reduction goals that exceed projected business-as-usual performance. Companies report emissions of six major greenhouse gases from all major on-site emissions of greenhouse gases and emissions related to the electricity they purchase.

Electricity

The Administration supports a range of activities related to renewable, fossil, and nuclear energy technologies used to produce electricity that can significantly reduce greenhouse gas emissions. Some efforts in this sector include:

Department of Energy (DOE)

- DOE's renewable energy resource programs include: Solar Energy, Biomass, Wind Energy, Geothermal Power, and Hydropower:

  - *Solar Energy*. DOE conducts R&D on the next generation photovoltaic cells; manufacturing photovoltaic cells; buildings-integrated applications; and efforts to develop new, breakthrough technologies such as nanotechnology for solar energy applications.

  - *Biopower*. In partnership with industry and other agencies, DOE is conducting R&D on integrated biorefinery technologies aimed at producing fuels, chemicals, materials, and electricity from biomass feedstocks. DOE is also working with industry and other partners on more efficient biomass collection, handling, and storage concepts.

  - *Wind*. Wind R&D focuses on advancing the technology so it can be used in low wind speed areas, greatly enhancing the potential use of this renewable energy source.

- *Geothermal*. DOE's R&D program focuses on exploration and drilling to enable industry to locate and characterize new geothermal fields at reduced risk, and to access deeper resources with lower drilling costs. DOE also supports advanced technology in heat conversion and power systems for application to a broad range of geothermal resources.

- *Hydropower*. DOE's research focuses on increasing turbine efficiency.

- Deployment. DOE funds the Renewable Energy Production Incentive (REPI), which provides payments to public and non-profit utilities in lieu of renewable energy tax credits. Public and non-profit utilities are not eligible for these tax credits because they pay no taxes. DOE's International Renewable Energy program provides technical assistance to developing countries and U.S. industries to help them put together renewable energy projects that reduce greenhouse gas emissions. The program also funds market and trade development activities and works with other agencies to incorporate solar and renewable energy into disaster-relief programs. DOE also provides technical assistance to state regulators and regional electric markets to design and implement policies to better enable use of renewable energy, demand response, and energy efficiency in electric markets.

- Transmission and Distribution. DOE funds development of advanced storage systems to supply ultra-high power quality to sensitive loads, smooth the power output from distributed generation sources including intermittent renewable sources, and enhance the reliability of the transmission and distribution systems. DOE also addresses power grid reliability and efficient electricity market operation issues by developing real-time measurement and control systems for electric grid management. This work also investigates the use of load management techniques to mitigate emergency power shortages and price spikes. In order to promote and facilitate the integration of distributed sources into the grid, DOE funds development of uniform interconnection standards for distributed power generation, and funds studies to identify any barriers to the wider use of distributed generation.

- High Temperature Superconductivity. DOE supports industry-led projects to capitalize on recent breakthroughs in superconducting wire technology, aimed at developing devices such as advanced motors, power cables, and transformers. These technologies would allow more electricity to reach the consumer without an increase in fossil fuel input.

- Distributed Energy Resources. DOE's Distributed Energy Resources program is supporting work to increase the efficiency, and reduce the cost and emissions of advanced natural gas-driven industrial turbines, microturbines, and reciprocating engines, and developing advanced high temperature materials to improve their performance. High system efficiencies are achieved from these sources by linking them into building combined heat and power systems with advanced absorption heat pumps, chillers and desiccant systems that are also being developed in the program.

- Fossil Energy Programs. Many of DOE's fossil energy programs can contribute to reductions in greenhouse gas emissions. DOE's R&D efforts help industry develop advanced technologies to produce and use coal and gas resources more efficiently and cleanly. Federally funded development of clean, highly-efficient, gas-fired and coal-fired generating systems aims to reduce greenhouse gas emission rates, while reducing electricity costs

compared to currently available technologies. Some of these activities carbon sequestration efforts by providing technologies that can deliver a concentrated carbon dioxide stream, as opposed to the highly diluted stream typical of current technologies.

- Nuclear Energy Programs. DOE funds multiple nuclear energy programs. One example is the Nuclear Energy Research Initiative (NERI) which aims to increase the efficiency of nuclear power plants. Nuclear power is a proven technology capable of providing baseload electricity that emits no air pollutants or greenhouse gases.

Carbon Sequestration

Today, carbon dioxide can be sequestered (stored) through changes in both forestry and agricultural practices. In the future, it could potentially be sequestered on a much larger scale than is possible today through advanced technologies to capture it after the combustion of fossil fuels or during a fuel conversion process. The following programs focus on technologies to capture and store carbon dioxide, to measure and monitor carbon in soils and from agricultural practices, and to improve estimates of carbon fluxes from forests.

Department of Energy (DOE)

- Carbon Sequestration Science Programs. DOE's carbon sequestration programs within the Department of Science include research into the feasibility of capturing and storing carbon dioxide in underground geological structures and in the deep ocean.

- Fossil Energy Carbon Sequestration Programs. The purpose of DOE's fossil energy carbon sequestration programs is to develop and demonstrate technically, economically, and ecologically sound methods to capture and reuse, store or permanently isolate carbon dioxide. When linked with new advanced clean coal power technologies now under development, the program will enable the deployment of clean coal power plants with essentially zero emissions.

  The principal thrust of the fossil carbon sequestration program is to develop the applied science and new technologies for addressing the cost-effective management/sequestration of carbon emissions from the production and use of fossil fuels. The program primarily selects research topics and projects through competitive solicitations involving industry, university, and national laboratory performers. Close collaborations with other DOE, government, industry, and international organizations are maintained providing an integrated approach to advancing the science and technology of carbon sequestration.

Environmental Protection Agency (EPA)

- EPA supports efforts to better quantify the associated environmental co-benefits that result from carbon sequestration. These benefits include improving soil quality, reducing soil erosion, improving water quality, providing wildlife habitat, and enhancing other environmental and conservation goals. EPA will continue to collaborate with USDA to address misperceptions regarding carbon sequestration and to ensure that this important mitigation option is developed in an environmentally sound and economically efficient way.

EPA and USDA will identify and develop specific opportunities to sequester carbon in agricultural soils, forests, other vegetation and commercial products.

U.S. Department of Agriculture (USDA)

- USDA provides Energy Efficiency and Biomass Energy Research Grants to farmers, ranchers, and rural small businesses. These competitive grants fund energy efficiency improvements and renewable energy systems such as those that derive energy from wind, solar, biomass, or geothermal sources, or hydrogen.

- USDA also supports grants to carry out research and development of biomass energy processes. These grant funds are co-administered with the Department and Energy and are available to eligible entities to carry out research, development, and demonstrations on biobased products, bioenergy, biofuels, biopower, and related processes.

TABLE 4

Technology Research, Development and Deployment

Program Details by Agency/Account
FY 2004 Budget

(Discretionary budget authority; in millions of dollars)

	FY 2002 Actual	FY 2003 Enacted	FY 2004 Proposed	Change 2003-2004
Department of Energy				
Energy Conservation				
Energy Conservation R&D	622	624	549	-75
State Energy Grants	45	44	39	-5
Weatherization	230	224	288	64
Energy Supply				
Nuclear Energy Research Initiative (NERI)	32	24	12	-12
Renewable Energy Resources R&D	368	416	444	28
Fossil Energy R&D				
Sequestration R&D	32	40	62	22
Greenhouse gas emission reduction	152	176	189	13
Science				
Sequestration	35	32	35	3
International Thermonuclear Experimental Reactor (ITER)	0	0	12	12
Energy Information Administration	3	3	3	0
National Climate Change Technology Initiative Competitive Solicitation Program[1]	*0*	*0*	*40*	*40*
Subtotal – DOE	1,519	1,583	1,633	50
Environmental Protection Agency				
Environmental Programs and Management	89	84	91	7
Science and Technology	26	22	17	-5
Subtotal – EPA[2]	115	106	109	3
Department of Agriculture				
Natural Resources Conservation Service – bioenergy research and development	3	16	14	-2
Rural Business Service – renewable energy systems and energy efficiency improvements	0	23	3	-20
Subtotal – USDA	3	39	17	-22
Total[2]	**1,637**	**1,728**	**1,759**	**31**

[1] The National Climate Change Technology (NCCTI) Competitive Solicitation Program will largely fund research and development for technologies on the basis of their potential to reduce, avoid, or sequester greenhouse gas emissions. The Program's innovative approach will augment the existing base of research and development in climate change technology. This is a non-add line.

[2] Subtotal may not add due to rounding.

[3] Total may not add due to rounding.

3. INTERNATIONAL ASSISTANCE

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)

The goal of USAID's Climate Change Program is to promote sustainable development that minimizes the associated growth in greenhouse gas emissions and increases resilience to climate change. To accomplish this goal, USAID works within the broad range of USAID's sectors in developing and transition countries to implement "win-win" solutions that provide climate-related benefits while also meeting development objectives. The program supports activities to decrease the rate of growth in emissions by decreasing emissions of greenhouse gases and maintaining or increasing carbon sequestration. The program also encourages and helps strengthen developing and transition country participation in the UN Framework Convention on Climate Change (UNFCCC). Finally, the program assists partner countries in reducing their vulnerability to potential climate variability and change.

Climate-related benefits are achieved primarily through energy, agriculture, forestry and biodiversity activities and in conjunction with disaster preparedness and response efforts. Through its bilateral field missions, regional programs, and central offices, USAID provides technical leadership in more than 40 countries to implement development activities that reduce greenhouse gas emissions growth.

DEPARTMENT OF STATE

The FY 2004 budget includes $6 million to support the work carried out by the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC). The Secretariat is responsible for work related to the Convention and oversees the consideration of communications submitted by countries. The Panel's assessment efforts provide information on the scientific and technical underpinnings of domestic and international policies to address global climate change, and its findings influence policy options available within and between countries.

DEPARTMENT OF THE TREASURY

The Treasury Department contributes to the U.S. climate change activities through two funding mechanisms – the Tropical Forestry Conservation Act (TFCA) and the Global Environment Facility (GEF). TFCA funding reduces qualifying countries' concessional debt in exchange for payment of local currency resources into funds to support programs to conserve tropical forests. Specific information about the GEF can be found in Addendum A.

TABLE 5

International Climate Change Assistance

FY 2004 Budget

(Discretionary budget authority; in millions of dollars)

	FY 2002 Actual	FY 2003 Enacted	FY 2004 Proposed	Change 2003-2004
Agency for International Development (USAID)				
Development Assistance (DA)	116	137	118	-19
Economic Support Fund (ESF)	12	7	7	0
Assistance for the Independent States of the Former Soviet Union (FSA)	30	51	36	-15
Assistance for Eastern Europe and the Baltic States (AEEB)	11	9	7	-2
International Disaster Assistance (IDA)	4	5	5	0
Andean Counterdrug Initiative (ACI)	---	5	4	-1
Subtotal – USAID[1]	174	214	175	-39
Department of the Treasury				
Debt Restructuring – Tropical Forestry Conservation[2]	5	---	20	n/a
Global Environment Facility[3]	38	56	70	14
Subtotal – Treasury	43	56	90	34
Department of State				
International Organizations and Programs	7	6	6	0
Total[4]	**224**	**276**	**271**	**-5**

[1] Subtotal may not add due to rounding.

[2] Prior to the FY 2003 President's Budget request, funding for the Tropical Forest Conservation Act (TFCA) was appropriated to the Treasury Department. FY 2003 enacted level for tropical forest conservation within the US Agency for International Development's Development Assistance (DA) account is $50 million, of which $20 million will be used for TFCA. In FY 2004, $20 million is being requested for TFCA within the Treasury Department budget with an additional $30 million for tropical forest conservation within USAID.

[3] The total FY 2004 request for the Global Environment Facility (GEF) is $185 million. Approximately 38% of total GEF funding from all sources supports climate-related projects (e.g. expanding clean energy production and efficient energy use). The GEF, which also provides funding for other global environmental concerns, does not allocate funds by project type.

[4] Total may not add due to rounding.

4. ENERGY TAX INCENTIVES THAT REDUCE GREENHOUSE GASES

The President is proposing $4.2 billion in tax credits over five years for investments in renewable energy, hybrid and fuel cell vehicles, co-generation, and landfill gas conversion. These incentives are important to meeting the nation's long-term energy supply and security needs, and reducing the projected growth in greenhouse gas emissions. The following is an explanation of these energy tax incentives proposed in the FY 2004 Budget.

HOMES

Tax credit for residential solar energy systems: Current law provides a 10-percent investment tax credit to businesses for qualifying equipment that uses solar energy to generate electricity; to heat, cool or provide hot water for use in a structure; or to provide solar process heat. No credit is available for non-business purchases of solar energy equipment. The Administration proposes a new tax credit for individuals who purchase photovoltaic equipment or solar water heating systems for use in a unit that the individual uses as a residence. An individual would be allowed a cumulative maximum credit of $2,000 per residence for photovoltaic equipment and $2,000 per residence for solar water heating systems. The credit for solar water heating equipment would apply only if placed in service after December 31, 2002 and before January 1, 2006, and to photovoltaic systems placed in service after December 31, 2002 and before January 1, 2008.

RENEWABLE ENERGY

Tax credit for electricity produced from wind or biomass: Current law provides taxpayers a 1.5 cent-per-kilowatt hour tax credit for electricity produced from wind, "closed-loop" biomass, and poultry waste. "Closed-loop" biomass refers to plant material that was grown exclusively for the purpose of being used at a qualified facility to produce electricity. The electricity must be sold to an unrelated third party and the credit applies to the first 10 years of production. The current tax credit covers facilities that are owned by the taxpayer claiming the credit and that are placed in service before January 1, 2004, after which it expires. The new proposal would:

- Extend current biomass credit. This proposal would extend for two years the 1.5 cent-per-kilowatt hour wind and biomass credit to facilities placed in service before January 1, 2006.

- Expand definition of eligible biomass. This proposal expands the definition of eligible biomass to include certain forest-related resources, agricultural, and other sources. Electricity produced from newly eligible sources at facilities placed in service before January l, 2003 would be eligible for the credit from January 1, 2003, through December 31, 2005. The credit for such electricity would be computed at a rate equal to 60 percent of the generally applicable rate. Electricity produced from newly eligible biomass co-fired in coal plants would also be eligible for the credit from January 1, 2003, through December 31, 2005. The credit for such electricity would be computed at a rate equal to 30% of the generally applicable rate.

TRANSPORTATION

Tax credit for hybrid and fuel cell vehicles: Currently, a 10 percent tax credit up to $4,000 is provided for the cost of a qualified electric vehicle. The full amount of the existing credit is available for purchases made prior to 2004. A qualified electric vehicle is a motor vehicle that is powered primarily by an electric motor drawing current from rechargeable batteries, fuel cells, or other portable sources of electric current. Electric and hybrid vehicles have the potential to increase energy efficiency as well as reduce air pollution and greenhouse gas emissions. To encourage the purchase of such vehicles, the Administration is proposing the following tax credits:

- A credit of up to $4,000 for qualified hybrid vehicles purchased after December 31, 2002 and before January 1, 2008. The amount of the credit would depend on the percentage of maximum available power provided by the rechargeable energy storage system and the amount by which the vehicle's fuel economy exceeds the 2000 model year city fuel economy.
- A credit of up to $8,000 for new, qualified fuel cell vehicles purchased after December 31, 2002 and before January 1, 2008. A minimum credit of $4,000 would be provided, which would increase as the vehicle's fuel efficiency exceeded the 2000 model year city fuel economy, reaching a maximum credit of $8,000 if the vehicle achieved at least 300 percent of the 2000 model year city fuel economy.

INDUSTRY

Tax credit for energy produced from landfill gas: Taxpayers that produce gas from biomass are eligible for a credit equal to $3 per barrel-of-oil equivalent. To qualify, the gas must be produced domestically from a facility placed in service before July 1, 1998 and sold to an unrelated person before January 1, 2008. The new proposal would extend the credit to fuel produced from landfill methane at a facility in service after December 31, 2002 and before January 1, 2011. The credit for fuel produced at landfills subject to EPA's 1996 New Source Performance Standards/Emissions Guidelines would be limited to two-thirds of the otherwise applicable amount if any portion of the facility for producing fuel at the landfill was placed in service before July 1, 1998.

Tax credit for combined heat and power property: Combined heat and power (CHP), also known as co-generation, is a highly efficient form of electric generation which recycles heat that is normally lost under traditional power generation methods. CHP captures the heat left over from industrial use, providing a source of residential and industrial heating and air conditioning in the local area around the power plant. CHP systems achieve a greater level of overall energy efficiency, thereby reducing energy consumption, costs, and carbon emissions. No income tax credit is available for investment in CHP property. The Administration is proposing a new 10 percent investment credit for qualified CHP systems placed in service after December 31, 2002 and before January 1, 2008.

TABLE 6

Energy Tax Incentives That Reduce Greenhouse Gases

FY 2004 Budget

(Revenue effect in millions of dollars)

		2004	2005	2006	2007	2008	Total 2004-08
Homes	Provide tax credit for residential solar energy systems.	-7	-10	-18	-25	-11	-71
Renewable Energy	Extend the tax credit for electricity produced from wind and closed-loop biomass and expand eligible biomass sources.	-264	-355	-209	-90	-92	-1,010
Transportation	Provide tax credit for purchase of certain hybrid and fuel cell vehicles.	-154	-316	-524	-793	-631	-2,418
Industry	Provide tax credit for energy produced from landfill gas.	-28	-65	-88	-99	-112	-392
	Provide tax credit for combined heat and power property.	-99	-68	-63	-76	-14	-320
Total [1]		**-552**	**-814**	**-902**	**-1,083**	**-860**	**-4,211**

[1] Total may not add due to rounding.

ADDENDUM A

GLOBAL ENVIRONMENT FACILITY (GEF)

FY 2004 Budget Request

The FY 2004 Budget requests $107.5 million for the second of four annual payments under the third GEF replenishment (GEF-3) and $77.5 million to pay a portion of the U.S. arrears to the GEF-2. The clean energy portion of the GEF portfolio – its climate change focal area – accounts for about 38 percent of its financial commitments, which is about $70 million for climate-related activities in FY 2004.

Background on the Organization

The GEF was created in 1991, before any climate convention or protocol existed, to specialize in trans-border environment problems, one of which climate change. In addition to climate change, GEF funding is focused on international water pollution and overfishing; better forestry, wildlife management, and biological diversity conservation; and phasing out use of ozone-depleting chemicals (in Eastern Europe, to complement Montreal Protocol Fund work in developing countries).

The 1992 Climate Convention (the "1992 Convention") called for a "financial mechanism" to: (1) help developing countries evaluate, quantify, and report publicly on their greenhouse gas emissions; and (2) make investments in cleaner development in developing countries. In 1994, more than three years before conclusion of the Kyoto Protocol, the U.S. and other countries chose the GEF as the institution to run the financial mechanism of the Climate Convention, in part to avoid creating new institutions.

By 1995, donors had concluded a first GEF replenishment that extensively restructured the GEF and improved its operational effectiveness. This restructuring also cemented a governance structure in which donors exercise much more power than in the 1992 Convention or in any standard "UN-configured" institution.

GEF Operations

The GEF focuses on innovative, cost-effective and generally small projects that can be duplicated elsewhere with financing from non-GEF sources. Since beginning regular operations in 1994, the GEF has designed and initiated over 1,218 investment and capacity building projects in over 161 countries that are now being implemented by developing countries with the help of three agencies -- the World Bank, the UN Development Program, and the UN Environment Program. GEF has committed about $4.1 billion to date, leveraging over $13 billion from other sources. Cofinanciers include the developing countries themselves, bilateral aid agencies, the GEF's three implementing agencies and other multilateral financial institutions, and, in some cases, private sector investors and non-governmental organizations. Leveraging for clean energy

projects is significant: $432 million in cofinancing was leveraged in association with $122 million in GEF grants in calendar year 2002. GEF operations take two forms: (1) technical assistance to help developing countries frame more environmentally sound policies in key sectors such as energy production and land management; and (2) direct investments to demonstrate innovative technology projects, such as rural solar power, that countries then can copy on a larger scale

No Projects That Are Kyoto-Specific

The GEF predates both the 1997 Kyoto Protocol and the 1992 Convention, and the Protocol places no new obligations on the GEF as the Convention's financial mechanism. With regard to development finance, the Protocol is related to the GEF through the Protocol's umbrella, the 1992 Convention. Because the GEF acts as the financial mechanism for the Convention, it simply underscores existing 1992 Convention agreements on financial assistance for developing countries:

- Supporting developing country reporting requirements under the 1992 Convention; and

- Providing the extra cost over normal development costs of reducing greenhouse gas emissions in energy or other projects. For example, the GEF covers only the incremental cost of a clean wind power plant relative to a regular oil-fired plant of identical capacity.

GEF Climate Change-Related Clean Energy Activities

The GEF supports five categories of climate-change related projects, all but one focused on the energy sector. The first category is small activities (generally costing about $350,000) to assist countries in preparing reports required under the 1992 Convention. These reports provide detailed inventories of countries' greenhouse gas (GHG) emissions and sources (power plants, etc.), their GHG "sinks" (forests, etc.), and policies and programs that affect GHG emissions (energy pricing policies, etc.).

The four other categories, briefly illustrated with project examples below, all support clean energy development, usually combined with capacity-building for good policies and effective institutions. These programs make sense on their own terms and are all initiatives the U.S. has been pursuing domestically for years. None of them is directed by the Protocol.

The GEF already undertakes systematic annual portfolio performance evaluation. Criteria include quality of overall project management, financial management, policy impacts, country capacity development, civil society engagement, and pollution abatement. For example, for energy efficiency projects, evaluators compare investments in efficient equipment following the GEF intervention to a baseline scenario of efficiency investments. An extensive effort to update and improve measurement criteria at both project and program levels for climate change activities has been concluded. These measurements are now being used to ensure projects and programs achieve their objectives.

Promoting Energy Efficiency and Conservation

The GEF's Mexico High Efficiency Lighting Project aimed to reduce energy waste and power plant pollution by proving the commercial viability of energy efficient lighting. $10 million from GEF leveraged over $13 million in initial cofinancing. Since the project's completion, its long-term impacts have outstripped all expectations. Mexican consumers and businesses have installed almost 40% more efficient lights than the GEF's most optimistic projections. The project's success also convinced Mexico to expand dramatically energy efficiency programs in other locations and sectors.

Promoting Renewable Energy

In Sri Lanka, a GEF project has succeeded in supplying electricity by employing renewable technologies and demonstrating the advantages of such technologies to rural households and the country in general. This $5.9 million GEF grant has leveraged $49.4 million in cofinancing, including $24.2 million from the World Bank. Approximately 30 megawatts of mini-hydropower have been added to the grid through private developers, and a total of 8,800 households have been provided with electricity through village hydropower and solar photovoltaic power. The aim is to provide for the replication of such renewable energy schemes by private businesses in Sri Lanka and many other countries.

Lowering the Long-Term Cost of Advanced Clean Energy Technologies

The Brazil Biomass Power Commercial Demonstration Project uses high-efficiency technology to use agricultural byproducts as fuel for electric power and agro-industry process heat. A $40.5 million GEF investment leverages $82 million, mostly from Brazilian public and private sources. The project should help increase economies of scale for this promising technology and thus help it become commercially viable. By conservative estimates, biomass power could supply clean electricity to 100 million rural people, particularly needed in Africa and South Asia.

Clean Fossil-Fuel Combustion and Other Short-Term Measures

The GEF's $10 million Coal Bed Methane Project demonstrated at three sites a wide variety of techniques and technologies that Chinese coal mines can employ to reduce methane emissions and capture clean-burning methane as a fuel. It also spawned landmark policy and institutional reforms, including the creation of the China United Coal Bed Methane Corporation, that support replication of coal-bed methane recovery. The Chinese Ministry of Coal has since negotiated agreements with BP-Amoco and other companies for coal-bed methane projects. Based on the GEF's early work, the Asian Development Bank, Asia-Pacific Economic Cooperation, and the China United Coal Bed Methane Corporation are all working to expand coal-bed methane development in China.

ADDENDUM B

OPPORTUNITIES CREATED BY THE FARM BILL

Over the past year, Department of Agriculture (USDA) agencies, including the Farm Service Agency, the Forest Service, the Natural Resources Conservation Service, the Rural Business and Cooperative Service, and the Rural Utilities Service, have developed a series of actions using existing and new authorities provided under the Farm Security and Rural Investment Act of 2002. These activities provide targeted incentives to promote forest and agricultural sequestration of greenhouse gases.

For the first time, USDA will give consideration to greenhouse gas offsets in setting priorities and implementing forest and agriculture conservation programs. While maintaining the Department's historical natural resource conservation priorities, the programs will now also include explicit consideration of greenhouse gas offsets.

USDA will continue research on the potential effects of climate change and options to mitigate greenhouse gas emissions. The application of research findings will further assist conservation efforts. Research will aid efforts to assess the benefits of actions and will underpin new accounting rules for greenhouse gas offset activities.

Farmers, ranchers, and forestland owners can play a unique role in addressing the build up of greenhouse gases in the atmosphere. Carbon losses from past land use activities can be restored through improvements in management practices, reducing carbon dioxide concentrations in the atmosphere. Since certain land use practices including livestock grazing, manure management and application of fertilizer emit greenhouse gases such as methane and nitrous oxide, changes in management can reduce the emissions of these gases as well. In addition, certain forests and agricultural lands can be a source of biomass energy feed stocks, a renewable resource that is greenhouse gas neutral.

Major elements of the USDA actions to reduce greenhouse gases are as follows:

Environmental Quality Incentives Program (EQIP): The Natural Resources Conservation Service (NRCS) delivered guidance to its state offices to reward and recognize actions that provide greenhouse gas benefits within the EQIP ranking systems. By including this ranking criterion, NRCS can provide cost-share assistance to livestock producers to install greenhouse gas mitigating technologies, including construction of methane digesters. Producers who improve the quality of their nutrient management systems by achieving a higher level of nitrogen use efficiency can also be rewarded.

NRCS is developing planning tools to assist states in this effort, including new practice standards for anaerobic digestion. New practice standards for biomass production and harvest are also being developed. NRCS is also developing new cultivars of plants for conservation plantings with improved carbon sequestration characteristics.

Forest Land Enhancement Program (FLEP): The Forest Service is issuing an interim final regulation that will provide financial incentives to improve forest management on private lands. In addition, technical assistance for sustainable forest practices will also be provided to owners of forestland. This assistance will promote additional carbon sequestration, improve wildlife habitat, improve soil and water quality, and promote sustainable forest management. Eligible FLEP activities that provide carbon sequestration benefits include afforestation, reforestation, forest stand improvements, and agroforestry practices.

Conservation Reserve Program (CRP): The Farm Service Agency has issued a new rule for implementing the Conservation Reserve Program. The new rule will allow trading of environmental credits as a permissive use on CRP acreage. FSA has modified the Environmental Benefits Index used to score and rank offers to enroll land in the CRP to give points for installing vegetative cover that sequesters carbon.

In addition, FSA also enrolls certain highly environmentally sensitive acreage in the CRP on a continuous basis. The agency recently announced it will target 500,000 acres of continuous signup enrollment toward hardwood tree planting beginning in summer 2003.

Greenhouse Gas Pilots: USDA will pursue projects in collaboration with private partners to test forest and agriculture greenhouse gas offset technologies and practices. Potential partners include locally led conservation groups such as Resource Conservation and Development Councils, private companies, environmental groups, and farm cooperatives.

Greenhouse Gas Accounting Protocols: USDA is working closely with the Department of Energy and the Environmental Protection Agency to establish new accounting rules and guidelines for forest and agriculture greenhouse gas offsets. The new accounting rules will improve the voluntary greenhouse gas registry (1605b) and are on schedule to be delivered in January 2004.

Biomass Energy: USDA announced the availability of approximately $44 million in grants that will expand the economic and environmental promise of biomass. Twenty-three million dollars of this will be available from USDA's Rural Development for the Renewable Energy Systems and Energy Efficiency Improvements program to assist farmers, ranchers, and rural small businesses to develop renewable energy systems and make energy efficiency improvements to their operations. Through the Biomass Research and Development Initiative, in cooperation with the Department of Energy, $21 million in grants are available to carry out research, development and demonstration of biomass energy, biobased products, biofuels and biopower processes.

APPENDIX A

TABLE A-1

DETAILED ACCOUNTING OF FEDERAL CLIMATE CHANGE EXPENDITURES

Programs and Tax Policies Related to Climate Change

By Appropriation Account/Line Item
FY 2004 Budget

(Budget authority and tax incentives; in millions of dollars)

	FY 2002 Actual	FY 2003 Enacted	FY 2004 Proposed	Change 2003-2004
CLIMATE CHANGE SCIENCE PROGRAM				
U.S. Global Change Research Program (USGCRP)				
Department of Health and Human Services				
National Institutes of Health (NIH)				
National Institute of Environmental Health Sciences	10	11	11	0
National Eye Institute	14	15	15	0
National Cancer Institute	32	34	35	1
National Institute of Arthritis & Musculoskeletal & Skin Diseases	*	*	*	*
Subtotal -- HHS/NIH[1]	56	59	61	2
National Aeronautics and Space Administration				
Science, Aeronautics, and Technology	1,090	1,143	999	-144
Department of Energy				
Science - Biological & Environmental Research	117	117	108	-9
National Science Foundation				
Research and Related Activities	189	187	188	1
Department of Agriculture				
Agricultural Research Service	30	30	30	0
Cooperative State Research, Education, & Research and Education	9	13	16	3
Economic Research Service	*	*	*	*
Forest Service - Forest and Rangeland Research	17	17	12	-5
Subtotal -- USDA	56	60	58	-2
Department of Commerce				
National Oceanic and Atmospheric Administration - Operations, Research, and Facilities	100	99	94	-5

Department of the Interior				
U.S. Geological Survey - Surveys, Investigations, and Research	26	26	26	0
Environmental Protection Agency				
Science and Technology	21	19	22	3
Smithsonian Institution				
Salaries and Expenses	6	6	6	0
U.S. Agency for International Development				
Development Assistance	6	6	0	-6
Subtotal -- USGCRP	**1,667**	**1,722**	**1,562**	**-160**
Climate Change Research Initiative (CCRI)				
Department of Commerce				
National Oceanic and Atmospheric Administration - Operations, Research, and Facilities	0	18	42	24
National Science Foundation				
Research and Related Activities	0	15	25	10
National Aeronautics and Space Administration				
Science, Aeronautics, and Technology	0	3	69	66
Department of Energy				
Science (Biological & Environmental Research)	0	3	25	22
Department of Agriculture				
Agricultural Research Service	---	*	7	7
Forest Service (Forest and Rangeland Svc)	---	2	6	4
Natural Resources Conservation Service	---	*	*	*
Subtotal - USDA	---	3	13	10
Department of Transportation				
Federal Highway Administration – Federal-aid Highways	---	---	4	4
Federal Transit Administration – Formula Grants and Research	---	---	*	*
Subtotal - DOT	---	---	4	4
Department of State				
International Organizations and Programs	---	---	1	1
U.S. Agency for International Development				
Development Assistance	---	---	6	6
Subtotal -- CCRI	**---**	**42**	**185**	**143**

SUBTOTAL – CLIMATE CHANGE SCIENCE PROGRAM	**1,667**	**1,764**	**1,747**	**-17**
TECHNOLOGY, RESEARCH, DEVELOPMENT & DEPLOYMENT				
Department of Energy				
Energy Conservation				
Energy Conservation R&D	622	624	549	-75
State Energy Grants	45	44	39	-5
Weatherization	230	224	288	64
Energy Supply				
Nuclear Energy Research Initiative (NERI)	32	24	12	-12
Renewable Energy Resources R&D	368	416	444	28
Fossil Energy R&D				
Greenhouse gas emission reduction	152	176	189	13
Sequestration R&D	32	40	62	22
Science				
International Thermonuclear Experimental Reactor (ITER)	0	0	12	12
Sequestration	35	32	35	3
Energy Information Administration	3	3	3	0
National Climate Change Technology Initiative Competitive Solicitation Program[2]	*0*	*0*	*40*	*40*
Subtotal – DOE	1,519	1,583	1,633	50
Environmental Protection Agency				
Environmental Programs and Management	89	84	91	7
Science and Technology	26	22	17	-5
Subtotal – EPA[1]	115	106	109	3
Department of Agriculture				
Natural Resources Conservation Service – bioenergy research and development	3	16	14	-2
Rural Business Service – renewable energy systems and energy efficiency improvements	0	23	3	-20
Subtotal – USDA	3	39	17	-22
SUBTOTAL -TECHNOLOGY, RESEARCH, DEVELOPMENT, AND DEPLOYMENT	**1,637**	**1,728**	**1,759**	**31**
INTERNATIONAL ASSISTANCE				
Agency for International Development (USAID)				
Development Assistance (DA)	116	137	118	-19
Economic Support Fund (ESF)	12	7	7	0
Assistance for the Independent States of the Former Soviet Union (FSA)	30	51	36	-15

Assistance for Eastern Europe and the Baltic States (AEEB)	11	9	7	-2
International Disaster Assistance (IDA)	4	5	5	0
Andean Counterdrug Initiative (ACI)	---	5	4	-1
Subtotal – USAID[1]	174	214	175	-39
Department of Treasury				
Debt Restructuring - Tropical Forest Conservation[3]	5	---	20	n/a
International Development Assistance - Global Environment Facility[4]	38	56	70	14
Subtotal – Treasury	43	56	90	34
Department of State				
International Organizations and Programs	7	6	6	0
SUBTOTAL – INTERNATIONAL ASSISTANCE[5]	**224**	**276**	**271**	**-5**
ENERGY TAX INCENTIVES THAT REDUCE GREENHOUSE GASES - Revenue Effect	**0**	**0**	**552**	**552**
TOTAL – ALL PROGRAMS AND TAX INCENTIVES[6]	**3,522**	**3,762**	**4,322**	**560**

Note: Table 8 is a detailed listing of Federal climate change expenditures by agency with account level information as provided in the President's FY 2004 Budget Appendix amended to reflect enacted FY 2003 appropriations. All numbers represent budget authority unless otherwise noted. The line items in the Program and Financing schedule in the Budget Appendix use obligations, not budget authority, so the numbers may not be comparable.

***** Less than $500,000

[1] Subtotal may not add due to rounding.

[2] The National Climate Change Technology (NCCTI) Competitive Solicitation Program will largely fund research and development for technologies on the basis of their potential to reduce, avoid, or sequester greenhouse gas emissions. The Program's innovative approach will augment the existing base of research and development in climate change technology. This is a non-add line.

[3] Prior to the FY 2003 President's Budget request, funding for the Tropical Forest Conservation Act (TFCA) was appropriated to the Treasury Department. FY 2003 enacted level for tropical forest conservation within the US Agency for International Development's Development Assistance (DA) account is $50 million, of which $20 million will be used for TFCA. In FY 2004, $20 million is being requested for TFCA within the Treasury Department budget with an additional $30 million for tropical forest conservation within USAID.

[4] The total FY 2004 request for the Global Environment Facility (GEF) is $185 million. Approximately 38% of total GEF funding from all sources supports climate-related projects (e.g. expanding clean energy production and efficient energy use). The GEF, which also provides funding for other global environmental concerns, does not allocate funds by project type.

[5] This subtotal contains funds that are also counted in the Climate Change Science Program subtotal. Table total line excludes these double-counts.

[6] Total may not add due to rounding. Excludes double-counts – see footnote 5.

APPENDIX B

TABLE B-1

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT GLOBAL CLIMATE CHANGE FUNDING BY BUREAU/COUNTRY

(Dollars in Thousands)

Bureau/ Country	Strategic Objective Name	Reporting Category	Fund Account	FY 2002 Obligations	FY 2003 Estimate	FY 2004 Request
Africa (AFR)						
DROC	Health, Agriculture and Conflict Mitigation			-	-	1,000
Guinea	Increased use of Sustainable Natural Resources Mgmt Practices	3	DA	1,000	2,000	2,000
Madagascar	Biologically Diverse Ecosystems Conserved	3	DA	7,000	2,500	2,500
Malawi	Sustainable Use, Conservation, & Mgmt of Renewable Natural Resources	3	DA	1,600	1,000	1,000
Mali	Increased Value-Added of Specific Economic Sectors	3	DA	1,025	-	-
	Increased Value-Added of Specific Economic Sectors	1	DA	475	-	-
	Accelerated Economic Growth	3	DA	-	1,050	1,050
	Accelerated Economic Growth	1	DA	-	450	450
Mozambique	Increased Rural Household Incomes	3	DA	2,000	2,000	-
Namibia	Community Based Natural Resource Management	3		-	500	1,000
Nigeria	Sustainable Agriculture and Economic Growth	3		-	-	500
Senegal	More effective Management of Services & Resources	3	DA	1,000	1,000	1,000
South Africa	Improved Capacity to Implement Economic Policy	1	DA	600	420	200
	Improved Capacity to Implement Economic Policy	3	DA	400	280	130
	Housing and Municipal Services	1	DA	1,190	1,445	1,970
	Housing and Municipal Services	3	DA	210	255	350
	Increased Market Driven Employment Opportunities	3	DA	500	500	250
	Democratic Consolidation Advanced	3	DA	100	100	100
Uganda	Expanded Opportunities for Rural Sector Growth	3	DA	2,500	2,500	2,500
AFR/Regional/ SD	Central Africa Regional Program for Environment	3	DA	3,000	-	-

	Improved Environmental/Natural Resource Management	2	DA	1,500	1,000	1,000
	Congo Basin Forest Partnership	3	DA	-	8,000	8,000
Initiative for Southern Africa	Increased Regional Cooperation in Natural Resource Mgmt	3	DA	-	1,000	1,000
	Increased Regional Cooperation in Natural Resource Mgmt	3	ESF	500	-	-
REDSO/ESA	Regional Food Security	5	DA	-	500	500
WARP	Increased Food Security	5	DA	-	500	500
Total AFR				**24,600**	**27,000**	**27,000**
ASIA and the NEAR EAST (ANE)						
Bangladesh	Improved Performance of the Energy Sector	1	DA	3,470	3,470	3,470
	Improved Performance of the Energy Sector	1	ESF	1,500	1,500	1,500
Egypt	Mgt of Env. and Natural Resources in Targeted Sectors Improved	1	ESF	7,280	1,155	-
India	Increased Environmental Protection in Energy, Industry, & Cities	1	DA	6,050	6,050	6,050
	Increased Environmental Protection in Energy, Industry, & Cities	1	ESF	3,000	2,000	3,000
Indonesia	Energy Sector Governance Strengthened	1	DA	1,500	1,500	1,500
	Strengthened & Decentralized Natural Resource Management	3	DA	1,630	1,630	1,630
Nepal	Increased Private Sector Participation & Investment in Hydropower	1	DA	2,200	2,200	2,200
Philippines	Environmental Management Improved	1	DA	1,500	2,000	1,500
Philippines	Environmental Management Improved	3	DA	1,500	2,000	1,500
USAEP	U.S. Asia Environmental Partnership	1	DA	2,170	2,000	1,250
SARI/E	South Asia Regional Initiative - Energy Program	1	DA	2,900	2,900	2,900
TOTAL ANE				**34,700**	**28,405**	**26,500**
Latin American and the Caribbean (LAC)						

Bolivia	Sustainable Forest Management and Parks	3	DA	4,555	4,800	4,760
Brazil	Env & Socioeconomically Sustainable Alternatives for Sound Land Use	3	DA	2,245	3,520	3,161
	Clean and Efficient Energy Production and Use	1	DA	1,117	1,000	1,000
	Env & Socioeconomically Sustainable Alternatives for Sound Land Use	1	DA	723	700	700
Ecuador	Conserving Ecuador's Forests	3	DA	4,488	2,000	1,685
	Conserving Ecuador's Forests	3	ESF	-	2,000	2,000
Guatemala	Conserving and Sustainable Using Forests	3	DA	2,427	2,000	1,500
G-CAP (Central America)	Improved Management in the Mesoamerican Biological Corridor	3	DA	1,319	3,000	3,000
	Improved Management in the Mesoamerican Biological Corridor	1	DA	-	632	500
	Improved Management in the Mesoamerican Biological Corridor	5	DA	-	1,000	1,000
Honduras	Protecting Honduran Forests	3	DA	2,846	2,600	2,600
LAC Regional	Improved Conservation of the Region's Biological Resources	3	DA	2,800	2,800	2,800
Mexico	Critical Ecosystems and Biological Resources Conserved	3	DA	4,115	3,200	3,200
	Critical Ecosystems and Biological Resources Conserved	5	DA	400	800	800
	Carbon Dioxide Emissions and Pollution Reduced	1	DA	1,750	1,000	1,000
Nicaragua	Improving Park Management	3	DA	1,000	-	-
	Trade-Led Economic Growth	3	DA	-	500	500
Panama	Conserving Forests	3	DA	436	761	563
Paraguay	Management of Globally Important Eco-regions	3	DA	150	150	225
Peru	Strengthen Environmental Management	3	DA	2,774	2,500	2,500
	Reduced Illicit Coca Production in Targeted Areas	3	ACI	-	5,150	3,650
TOTAL LAC				**33,145**	**40,113**	**37,144**

Europe and Eurasia (E&E)

Albania	Growth in Number of self-sustaining Private Enterprises	1	AEEB	620	1,000	1,000
Bulgaria	Special Initiatives	3	AEEB	200	150	-
	Accelerated Development & Growth of the Private Sector	1	AEEB	300	600	500

	Cross cutting programs	3	AEEB	100	50	-
Croatia	Growth of a Dynamic and Competitive Private Sector	1	AEEB	500	500	300
Romania	Accelerated Private Sector Growth	1	AEEB	1,900	300	200
	Accelerated Private Sector Growth	3	AEEB	-	200	200
CEE Regional	Economically Sustainable and Environmentally Sound Energy Sector	1	AEEB	6,044	3,363	4,140
	Increased Environmental Mgmt Capacity to Sppt Sustainable Ec Growth	3	AEEB	214	117	46
	Increased Environmental Mgmt Capacity to Sppt Sustainable Ec Growth	1	AEEB	1,569	856	339
	Transfer to Department of Energy (DOE)	1	AEEB	-	1,987	-
Sub-total Europe				**11,447**	**9,123**	**6,725**
Armenia	Economically Sustainable and Environmentally Sound Energy Sector	1	FSA	520	1,957	2,290
	More Sustainable Water Management for Enhanced Env Quality	1	FSA	300	500	500
	Transfer to Department of Energy (DOE)	1	FSA	-	4,471	2,750
	Transfer to Nuclear Regulatory Commission (NRC)	1	FSA	-	800	500
Georgia	Economically Sustainable and Environmentally Sound Energy Sector	1	FSA	13,496	8,750	9,000
Kazakhstan	Improved Management of Critical Natural Resources, incl Energy	1	FSA	50	850	834
Kyrgyzstan	Improved Management of Critical Natural Resources, incl Energy	1	FSA	100	850	470
Moldova	Private Enterprise Growth Creates Jobs and Generates Income	1	FSA	4,675	6,037	987
Russia	Cross-Cutting Programs	3	FSA	3,600	3,000	-
	Transfer to Nuclear Regulatory Commission (NRC)	1	FSA	-	650	-
Tajikistan	Improved Management of Critical Natural Resources, incl Energy	1	FSA	100	200	559
Turkmenistan	Improved Management of Critical Natural Resources, incl Energy	1	FSA	50	100	102
Ukraine	Economically Sustainable and Environmentally Sound	1	FSA	3,475	-	-

	Energy Sector					
	Increased Env Mgmt Capacity to Sppt Sustainable Development	1	FSA	1,645	-	-
	Cross cutting programs	3	FSA	653	-	-
	Improved Investment Climate	3	FSA	-	3,063	2,724
	Transfer to Department of Energy (DOE)	1	FSA	-	17,903	12,000
	Transfer to Nuclear Regulatory Commission (NRC)	1	FSA	-	675	500
Uzbekistan	Improved Management of Critical Natural Resources	1	FSA	-	-	94
CAR Regional	Improved Management of Critical Natural Resources	1	FSA	500	-	880
Eurasia Regional	More Economically Sound and Environment Sustainable Environment	1	FSA	775	1,341	1,240
	Increased Env Mgmt Capacity to Sppt Sustainable Development	3	FSA	494	-	215
Sub-total Eurasia				**30,433**	**51,147**	**35,645**
TOTAL E&E				**41,880**	**60,270**	**42,370**
Economic Growth, Agriculture & Trade (EGAT)						
EGAT/ENV	Office of Environment and Natural Resources	3	DA	9,320	8,850	11,117
EGAT/ENV	Office of Environment, Energy and Technology	1	DA	11,500	10,000	8,000
EGAT/ENV	Global Climate Change	1	DA	2,675	1,000	7,356
EGAT/ENV	Global Climate Change	5	DA	700	700	-
EGAT/ENV	Global Climate Change	3	DA	100	1,300	-
EGAT/EGAD	AFS	3	DA	2,775	2,775	5,000
EGAT/EGAD	AFS	3	DA	3,000	3,000	-
TOTAL EGAT				**30,070**	**27,625**	**31,473**
Democracy, Conflict, and Humanitarian Assistance (DCHA)						
DCHA/OFDA	Worldwide Climate Monitoring and Observing	5	IDA	4,000	5,000	5,000
DCHA/OFDA	Famine Early Warning System (A)	5	DA	6,000	6,000	6,000
Total DCHA				**10,000**	**11,000**	**11,000**

Tropical Forestry Conservation Act (TFCA)						
Total TFCA	Transfer to Department of Treasury	3	DA	**-**	**20,000**	**-**
Development Credit Authority (DCA) (B)						
Bulgaria		1	AEEB	202	-	-
Peru		1	DA	73	-	-
Total DCA				**275**	**-**	**-**
TOTAL USAID				**174,395**	**214,413**	**175,487**

(A) The Famine Early Warning System was funded in the Africa Bureau in FY 2002; AID expects the program to expand worldwide in FY 2004.
(B) Development Credit Authority is a credit program funded by transfer authority. The FY2002 level is the subsidy amount obligated. The leveraged amount through FY2000 is $28 million.

FY 2004 Legislative Reporting Categories:

1) Activities that promote the transfer and deployment of United States clean energy technologies.
   Under USAID's Climate Change Program, technology transfer is promoted to assist developing countries to achieve sustainable economic growth and development but is not tracked as an individual goal within the program. USAID's energy-related climate change programs demonstrate U.S. technologies and/or work to address the policy, legal and regulatory barriers that limit clean technology deployment.

2) Activities to assist in the measurement, monitoring, reporting, verification, and reduction of greenhouse gas emissions.
   USAID does not currently separate measuring, monitoring, reporting and verification of GHG emissions from the energy and land use sector activities in which these occur. All of the activities that assist with technology transfer and carbon capture promote the reduction of greenhouse gas emissions.

3) Activities/programs to promote carbon capture and sequestration measures.

4) Activities/programs to help meet such countries' responsibilities under the Framework Convention on Climate Change.
   The spending for this category has not been formally tracked under USAID's Climate Change Program. It has been tracked as a performance indicator of program results and information concerning results through FY 2002 can be provided upon request.

5) Activities to develop assessments of the vulnerability to impacts of climate change and response strategies.