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Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Office of Environmental Initiatives
Series/Staff Member: General Files
Subseries:

OA/ID Number: 19207
FolderID:

Folder Title:
Climate Change General: FY2000 Budget

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President Clinton's FY 2000 Climate Change Budget

"Our most fateful new challenge is the threat of global warming...Tonight I propose a new clean air fund to help communities reduce greenhouse and other pollution, and tax incentives and investments to spur clean energy technology."

President Bill Clinton, State of the Union address. January 19, 1999

Meeting the challenge of global warming. In his FY 2000 budget, the President is proposing a 34 percent increase for R&D in energy efficient technology and renewable energy; a new Clean Air Partnership Fund to boost state and local efforts to reduce greenhouse gases and air pollution; a five-year package of tax incentives to spur clean energy technologies; substantial new funding to focus on the ways farms and forests can reduce and offset greenhouse gas emissions; and \$1.8 billion for global change research -- a total package for FY 2000 of over \$4 billion.

Clean Air Partnership Fund. The President proposes \$200 million for a new fund to provide grants to state and local governments for projects that reduce both greenhouse gases and pollutants like soot, smog, and air toxics.

Climate Change Technology Initiative (CCTI). The CCTI is a package of targeted tax incentives and investments aimed at increasing energy efficiency and spurring the broader use of renewable energy. The package will save consumers money and reduce greenhouse gas emissions at the same time. FY 1999 appropriations represented a 25 percent increase over the prior year. The President's new budget proposes a still more accelerated effort.

\$3.6 billion in tax incentives over five years. The proposed package contains \$3.6 billion over five years in tax cuts (\$383 million for FY 2000) for consumers who purchase energy efficient products and for producers of energy from renewable sources. Highlights include:

- **Tax credits for energy efficient homes.** Consumers can receive a \$1000-2000 credit toward the purchase of a new energy efficient home; a 10-20 percent tax credit for the purchase of selected energy efficient products for their homes and buildings; and a \$1000-2000 credit for installing a rooftop solar system.
- **Tax credits for fuel-efficient cars.** The package includes tax credits ranging from \$1000-4000 for the purchase of a qualifying electric, fuel cell or hybrid vehicle.
- **Tax credits for renewable energy.** The package extends the 1.5 cent per kilowatt hour tax credit for the production of electricity from wind and biomass; expands the biomass credit to cover additional sources of biomass; and adds a 1.0 cent per kilowatt hour tax credit for cofiring coal and biomass in power plants.

\$1.4 billion for Energy Efficiency & Renewables. The proposed package contains nearly \$1.4 billion in FY 2000 to research, develop, and deploy clean technologies for the four major carbon-emitting sectors of the economy -- buildings, transportation, industry, and electricity -- a 34 percent increase over the amount appropriated in FY 1999. Highlights include:

- **Partnership for a New Generation of Vehicles.** PNGV is a government-industry effort to develop comfortable, affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. The combined proposal for PNGV in the FY 2000 budget is \$264 million, an increase from the \$240 million appropriated in FY 1999.

- Partnership for Advancing Technology in Housing. PATH is a government-industry partnership to improve the energy efficiency of new homes by more than 50 percent and to retrofit 15 million existing homes to make them 30 percent more energy efficient within a decade. The FY 2000 budget request for building efficiency efforts, such as PATH, Energy Star, and Building America, totals \$273 million, a 59 percent increase over FY 1999 appropriations.
- Renewable energy. The President proposes \$399 million for the Department of Energy's (DOE) solar and renewable energy programs, a 19 percent increase over the amount appropriated in FY 1999. The package includes expanded efforts in key renewable technologies, such as wind, bioenergy, photovoltaics, and geothermal energy.

Forests and Farms. The FY 2000 proposal includes \$105 million for the Department of Agriculture's (USDA) climate change budget, an increase of \$50 million over the amount appropriated in FY 1999 and \$40 million over the Administration's FY 1999 request. The new proposal includes funding for a new, multi-agency Carbon Cycle Initiative to better understand how carbon is absorbed by agricultural soils and forests; a soil carbon inventory; pilot projects to demonstrate how improved farming practices can help store carbon; and programs to reduce emissions through means such as the conversion of waste to energy. In addition, DOE, in conjunction with USDA, will expand efforts aimed at broadening the use of biomass to produce power, fuels, and chemicals.

Cleaner Coal. The budget request contains \$122 million for R&D to develop next-generation technologies for coal combustion with much higher energy efficiency and lower greenhouse gas emissions.

Weatherization & State Energy Grants. The budget request includes \$191 million -- a \$25 million increase over FY 1999 appropriations -- to deliver energy conservation services to low-income Americans and to assist state energy offices in addressing their energy priorities.

U.S. Global Change Research Program. The FY 2000 request includes \$1.8 billion for scientific research to improve our understanding of human and natural forces that influence the Earth's climate system and to assess the likely consequences of global warming.

President Clinton's FY 2000 Climate Change Budget

The President's climate change package for FY 2000 totals over \$4.1 billion -- an increase of more than \$1 billion (34 percent) from the amount enacted for FY 1999. It is comprised of a new Clean Air Partnership Fund to boost state and local efforts to reduce both greenhouse gases and ground-level air pollutants; the Climate Change Technology Initiative, which mixes tax incentives and direct spending to spur the research, development, and deployment of energy efficient technology and renewable energy; other climate-related investments, such as R&D of highly efficient technologies for the combustion and use of coal and natural gas, weatherization, and state energy grants; and the United States Global Change Research Program, to enhance our understanding of the human and natural forces that influence the Earth's climate system.

Table 1. Climate-Change-Related Domestic Programs (\$ in Millions)

	FY 1999 Enacted	FY 2000 Request	Change
Clean Air Partnership Fund	0	200	+200
Climate Change Technology Initiative--tax incentives	--	383*	+383
Climate Change Technology Initiative--spending	1,021	1,368	+347
Other Climate-Related Investments (cleaner coal & natural gas; weatherization; state energy grants)	387	400	+13
Global Change Research Program	1,681	1,786	+105
TOTAL	3,090	4,137	+1,048

*First year of a proposed five year, \$3.6 billion package.

Clean Air Partnership Fund

To help protect public health and ease the threat of global warming, President Clinton is proposing \$200 million for the creation of a new Clean Air Partnership Fund. The Fund will provide grants to states, localities, and tribes to support state, local, tribal, and private efforts that achieve reductions in both greenhouse gas emissions and ground-level air pollutants. The Fund will be administered by the Environmental Protection Agency (EPA) under existing authority.

- ***Integrated Pollution Control.*** The Fund will stimulate integrated, cost-effective pollution control strategies. It directs new resources to state, local, and tribal governments to finance projects and programs that achieve accelerated reductions in both air pollutants, such as soot, smog, and air toxics, and in greenhouse gases.
- ***A Quicker Path to Cleaner Air.*** By providing new resources for projects that accelerate pollution reductions, the Fund will enable communities to achieve multi-pollutant clean air goals sooner and reduce greenhouse gas emissions at the same time.
- ***Technological Innovation.*** The Fund will help spur both public and private sector innovations in next-generation pollution control technology.
- ***A Magnet for Local Investment & Innovation.*** The Fund will encourage public-private partnerships to demonstrate ways to create a cleaner environment at the local level. The Fund can be used to support local revolving funds, low-interest loan programs, matching grants, and other mechanisms that will leverage the original Federal investment, greatly increasing its impact.
- ***“Win-Win” Clean Air Projects.*** The Fund will support a wide range of practical projects that will mean cleaner air, reduced greenhouse gas emissions, and real savings for taxpayers and consumers. These could include projects such as building combined heat and power facilities that put waste heat to work, reducing emissions of both sulfur dioxide and carbon dioxide; retrofitting municipal buildings to make them more energy efficient, reducing pollution resulting from electricity generation; and upgrading municipal vehicle fleets to make them more fuel efficient.

Climate Change Technology Initiative: \$3.6 Billion in Tax Incentives

The President is proposing a new \$3.6 billion package in tax incentives over five years to help reduce greenhouse gas emissions by spurring the purchase of energy efficient products and the use of renewable energy (see Table 2).

	Revenue Effect	
	FY 2000	Total FY00-04
Homes and Buildings		
Provide tax credit for energy efficient building equipment	-0.2	-1.5
Provide tax credit for new energy efficient homes	-0.1	-0.4
Provide tax credit for rooftop solar systems	--*	-0.1
Vehicles		
Extend tax credit for electric or fuel cell vehicles and provide tax credits for highly fuel efficient hybrid vehicles	0	-0.9
Renewable Energy		
Extend tax credit for electricity produced from wind and biomass; expand eligible biomass sources; and include coal-biomass cofiring	--*	-0.3
Industry		
Provide tax credit for combined heat and power systems	-0.1	-0.3
TOTAL**	-0.4	-3.6

*Less than \$50 million.

**Total may not add due to rounding.

HOMES AND BUILDINGS

- ***Tax credit to consumers who purchase new energy efficient homes.*** To encourage the purchase of new energy efficient homes, consumers would receive a tax credit of \$1,000 for homes purchased from 2000-2001 that are at least 30 percent more energy efficient than the standard under the 1998 International Energy Conservation Code (IECC); a credit of \$1,500 for homes purchased from 2000-2002 that are at least 40 percent more efficient than the IECC standard; and a credit of \$2,000 for homes purchased from 2000-2004 that are at least 50 percent more efficient than the IECC standard.
- ***Tax credit for energy efficient equipment in new and existing homes or buildings.*** This credit will encourage the purchase of electric heat pump and natural gas water heaters, electric and natural gas heat pumps, advanced central air conditioners, and fuel cells. The credit would apply to both residential and commercial equipment. For electric heat pump water heaters, natural gas heat pumps, and fuel cells, the credit would be 20 percent of the cost of the investment, subject to a cap, for equipment purchased from 2000-2003. For all other equipment, the credit would be 10 percent of the cost of the investment, subject to a cap, at one level of efficiency (2000-2001) and 20 percent, subject to a cap, at a higher level of efficiency (2000-2003).
- ***Tax credit for rooftop solar systems.*** A 15 percent tax credit will encourage the purchase by consumers and businesses of rooftop solar systems. The maximum credit would be \$2,000 for rooftop photovoltaic systems placed in service from 2000-2006 and \$1,000 for solar water heating systems placed in service from 2000-2004.

VEHICLES

- ***Tax credits for highly efficient cars and light trucks.*** Cars and light trucks (including minivans, sport utilities, and pickups) currently account for 20 percent of greenhouse gas emissions. Tax credits for electric, fuel cell, and hybrid vehicles will help to move these highly efficient technologies from the laboratory to the highway. These technologies can significantly reduce emissions of carbon dioxide, the most prevalent greenhouse gas.
 - ***Extend the current tax credit for electric vehicles and fuel cell vehicles.*** Under current law, a 10 percent credit, up to \$4,000, is provided for the cost of qualified electric vehicles and fuel cell vehicles. The credit begins to phase down in 2002 and phases out in 2005. The President's proposal would extend the tax credit at its \$4,000 maximum level through 2006.

- **Tax credits for hybrid vehicles.** The credit -- available for all qualifying vehicles, including cars, minivans, sport utility vehicles, and pickup trucks -- would be:
 - \$1,000 for each vehicle that is one-third more fuel efficient than a comparable vehicle in its class -- available from 2003-2004;
 - \$2,000 for each vehicle that is two-thirds more fuel efficient than a comparable vehicle in its class -- available from 2003-2006;
 - \$3,000 for each vehicle that is twice as fuel efficient as a comparable vehicle in its class -- available from 2004-2006; and,
 - \$4,000 for each vehicle that is three times as fuel efficient as a comparable vehicle in its class -- available from 2004-2006.

RENEWABLE ENERGY

- ***Tax credit for electricity produced from wind.*** Current law encourages the production of electricity from wind, which emits no greenhouse gases, through a tax credit of 1.5 cents per kilowatt hour (adjusted for inflation after 1992). The current tax credit covers facilities placed in service before July 1, 1999. The President proposes a 5-year extension of this tax credit.
- ***Tax credits for electricity produced from biomass.*** Biomass refers to trees, crops and agricultural wastes used to produce power, fuels or chemicals. This package of credits would:
 - **Extend current biomass credit.** This proposal extends for five years the current 1.5 cent per kilowatt hour tax credit (adjusted for inflation after 1992), which covers facilities placed in service before July 1, 1999.
 - **Expand definition of eligible biomass.** This proposal expands the definition of biomass eligible for the 1.5 cent tax credit to include certain forest-related resources and agricultural and other sources.
 - **Include cofiring biomass and coal.** This proposal adds a 1.0 cent per kilowatt hour tax credit for electricity produced by cofiring biomass in coal plants.

INDUSTRY

- ***Tax credit for combined heat and power (CHP) systems.*** CHP systems make effective use of thermal energy that is otherwise wasted in producing electricity by more conventional methods. To encourage and accelerate investment in CHP equipment, this proposal provides an 8 percent tax credit for investments in large CHP systems that have a total energy efficiency exceeding 70 percent and in smaller systems that have a total energy efficiency exceeding 60 percent. The credit would apply to property placed in service from 2000-2002.

Climate Change Technology Initiative: \$1.4 Billion for Energy Efficiency & Renewables

The President's FY 2000 budget proposes nearly \$1.4 billion for the research, development, and deployment of renewable energy technologies and energy efficient products that will help reduce U.S. greenhouse gas emissions. This represents a \$347 million increase (34 percent) over FY 1999 spending (see Table 3). The President's proposed investment package covers the four major carbon-emitting sectors of the economy -- buildings, transportation, industry, and electricity -- as well as carbon sequestration (see Table 4). The following sections highlight selected programs in each of these areas of effort. The full agency programs extend well beyond what is described here.

Table 3. CCTI Funding by Agency (\$ in Millions)

	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Request	Change from 1999
Energy	729	902	1,124	+222
EPA	90	109	216	+107
Housing & Urban Development	0	10	10	0
Agriculture	0	0	16	+16
Commerce	0	0	2	+2
TOTAL*	819	1,021	1,368	+347

*Totals may not add due to rounding

Table 4. CCTI Funding by Area of Activity (\$ in Millions)

	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Request	Change from 1999
Buildings	140	172	273	+101
Transportation	245	291	377	+86
Industry	157	188	239	+51
Electricity	239	310	379	+69
Carbon Sequestration	0	14	39	+25
Management, Planning & Analysis	37	46	60	+14
TOTAL*	819	1,021	1,368	+347

* Totals may not add due to rounding.

BUILDINGS

- ***Partnership for Advancing Technology in Housing (PATH).*** PATH is a partnership between the Federal government and building industry to develop and deploy housing technologies to make new homes 50 percent more energy efficient and to make at least 15 million existing homes 30 percent more energy efficient within a decade.
- ***Energy Efficient Appliances and Products.*** Various DOE and EPA programs aim to promote the dissemination of energy efficient appliances and products:

-- DOE will accelerate its program to establish **energy efficiency standards for lighting and appliances.**

-- EPA and DOE's **Energy Star Products** program saves consumers money and reduces greenhouse gas emissions at the same time by promoting the use of energy efficient products -- everything from computers to refrigerators to central air-conditioning units. New funding will support the launch of new Energy Star product lines.

- ***Energy Efficient Commercial Buildings.*** DOE and EPA work in partnership with industry to research, develop, and deploy new technologies and practices to improve the energy performance of commercial buildings. Buildings in the top 25 percent in energy efficiency qualify for EPA's "**Energy Star Buildings**" label. Participants include the Empire State Building, the World Trade Center, and Chicago's Sears Tower.
- ***Energy Smart Schools.*** Announced in October 1998, this initiative cuts across several DOE programs and brings together public and private sector resources to cut schools' energy bills so that the savings can be reinvested in students and their education.

TRANSPORTATION

- ***Partnership for a New Generation of Vehicles (PNGV).*** PNGV is a government-industry effort that aims to develop attractive, affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. Since 1993, great strides have been made in producing lower-cost, light-weight materials, inexpensive fuel cells, and advanced internal combustion engines for use in hybrid vehicles. The program aims to produce a prototype mid-sized family car capable of 80 miles per gallon (mpg) with a two-thirds reduction in carbon emissions by 2004. The FY 2000 budget includes \$264 million for PNGV-related work, an increase of \$24 million over the amount appropriated for FY 1999.

- **Light and Heavy Trucks.** Similar government-industry efforts are aimed at developing cleaner, more efficient diesel engines for both light and heavy trucks.
 - By 2002, DOE aims to develop **advanced diesel cycle engine technologies** for pickup trucks, vans, and sport utility vehicles which achieve at least a 35 percent fuel efficiency improvement relative to current gasoline-fueled trucks while meeting strict emission standards.
 - By 2004, DOE, in coordination with EPA and the Department of Defense, aims to develop **engine and vehicle technologies for heavy trucks** that will increase the fuel economy to 12 mpg from the current average of 5.3 mpg.
- **Biofuels.** Working with the Department of Agriculture (USDA), DOE will continue its work in the biochemistry of converting wood chips, grasses, agricultural wastes, and other products into ethanol and other potentially useful fuels.

INDUSTRY

- **Industries of the Future.** This DOE program works cooperatively with the nation's most energy-intensive industries -- such as aluminum, glass, chemicals, forest products, mining, petroleum refining, 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.
- **Industrial Combined Heat and Power (CHP) Systems.** DOE is developing new industrial CHP systems to capture thermal heat would otherwise be wasted. These systems are expected to be 15 percent more energy efficient and 80 percent cleaner than conventional power systems and cut electricity costs by 10 percent. In addition, EPA and DOE are also working to eliminate barriers to the rapid dissemination of combined heat and power technology.
- **Voluntary Industrial Partnerships.** EPA will expand its industry partnership programs, such as **Climate Wise** and the **Voluntary Aluminum Industrial Partnership**, to encourage businesses to take advantage of cost-effective emissions reductions opportunities -- including emissions of the most potent greenhouse gases, such as methane, perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF6).

- **Agriculture and Forestry.** USDA will undertake R&D and support demonstration projects aimed at both lowering greenhouse gas emissions from agriculture and forestry and reducing their vulnerability to climate change.

--The **Natural Resources Conservation Service** will invest \$3 million in projects to demonstrate and test various means of reducing greenhouse gas emissions in agriculture, such as compost-based waste-handling facilities, rotational grazing systems, and improved feed and forage systems.

--The **Agricultural Research Service** will devote \$7 million towards climate change related activities, including the development of new technology and expertise for reducing agriculture's vulnerability to a changing climate. Field experiments will seek to measure various potential effects of climate change, such as varying amounts and patterns of rainfall on forage production.

The FY 2000 budget also includes important USDA funding for developing advanced biomass energy technologies; R&D and demonstration projects for carbon sequestration; research to study the role of farms, forests, and other natural or managed lands in capturing and storing carbon; and a comprehensive U.S. soil carbon inventory (see pp. 10-12 below).

ELECTRICITY

- **Photovoltaic Energy Systems.** Over the past 20 years, Federal R&D has resulted in a 90 percent cost reduction in solar photovoltaics. DOE will accelerate R&D of the next generation photovoltaic cells; increase manufacturing R&D; increase research in buildings-integrated applications; and fund efforts to develop new, unconventional technologies.

-- **Million Solar Roofs.** In June, 1997, the President announced an initiative to encourage the installation of one million solar systems by 2010, which would reduce carbon emissions equivalent to the annual emissions from 850,000 cars. DOE has received commitments for over half a million solar rooftop installations.

- **Biomass.** Biomass represents a tremendous renewable resource whose use can help strengthen our energy security, protect the environment, and enhance our rural economy.

-- **Biomass Power.** DOE is testing and demonstrating biomass co-firing with coal; developing advanced technologies for biomass gasification using paper industry by-products; and developing and testing high-yield, low-cost biomass feedstocks.

-- **Advanced Biomass Technologies.** This year DOE, USDA, and other Federal agencies and private partners will launch a national partnership to develop advanced integrated biomass technologies. These technologies will enable the production of power, transport fuels, and high-value chemicals from biomass feedstocks.

- **Wind Power.** DOE will continue developing a next-generation wind turbine able to produce power at 2.5 cents per kilowatt-hour in good wind regions, accelerate R&D on critical components, and accelerate testing and field validation.
- **Hydrogen.** DOE will accelerate research on low-cost hydrogen production and storage, prerequisites to the widespread use of hydrogen as a fuel.
- **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.

CARBON SEQUESTRATION

- **R&D for Sequestration.** Research initiatives are being funded to find ways to sequester (store) carbon. Examples include:
 - **Enhancing Forest and Farmland Sinks.** The Forest Service, in conjunction with other USDA agencies, will spend \$6 million for R&D and demonstration projects for optimizing forest, farmland, and rangeland carbon sinks. The focus of such projects will include storage of carbon in forest soils and increased durability and use of wood products to sequester carbon.
 - **Enhancing natural geological and oceanic processes.** DOE will support research into the feasibility of capturing and storing carbon dioxide in underground geological structures and in the deep ocean.

Other Climate-Related Investments

There are a number of additional programs for which funding is proposed in the FY 2000 budget that -- while not part of the Climate Change Technology Initiative per se -- contribute to improving energy efficiency and reducing greenhouse gas emissions. These programs include:

- ***Cleaner Coal and Natural Gas.*** The FY 2000 budget includes \$209 million to support the Department of Energy's (DOE) aggressive R&D effort to develop next-generation technologies for the combustion and use of coal and natural gas. For example, research and development of two new coal combustion technologies -- integrated gasification combined cycle and pressurized fluidized bed combustion -- could lead to ultra-high efficiency coal plants with dramatically lower greenhouse gas emissions.
- ***Low Income Weatherization and State Energy Grants.*** These DOE programs facilitate energy efficiency investments at the State and local level. The **Weatherization Assistance Program**, for example, delivers energy conservation services, such as insulation, to low-income Americans, reducing energy costs for consumers, improving health and safety, and reducing carbon emissions. The total FY 2000 budget request for these two programs is \$191 million -- a \$25 million increase over FY 1999 appropriations.
- ***Agricultural & Forestry Conservation Programs.*** Many Department of Agriculture conservation programs have the co-benefit of reducing carbon emissions resulting from agriculture and forestry and enhancing the ability of "sinks," such as forests and farmlands, to sequester or store carbon. This includes programs such as the **Conservation Reserve Program**, the **Environmental Quality Incentives Program**, and the **Farmland Protection Program**. In general, these programs assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land.

U.S. Global Change Research Program

The United States Global Change Research Program (USGCRP) seeks to provide a sound scientific understanding of both the human and natural forces that influence the Earth's climate system. The information produced by USGCRP's scientists is used by national and international policy makers to make informed decisions on global change issues. This multi-agency scientific research program coordinated through the National Science and Technology Council.

For FY 2000, the President is requesting nearly \$1.8 billion for the USGCRP, an increase of \$105 million, or 6 percent, above the amount enacted for FY 1999. Of the FY 2000 budget request, \$828 million is for scientific research (up \$84 million) and \$958 million is for NASA's development of climate monitoring satellites and ground based observation systems. Other important USGCRP budget highlights include:

- ***Carbon Cycle Initiative.*** The FY 2000 budget request establishes a new multi-agency initiative to improve our understanding of how carbon cycles between the atmosphere, the oceans, and land. Included in this request are funds to study the role of farms, forests, and other natural or managed lands in capturing carbon. Such carbon "sinks" may provide the U.S. and other nations with new tools for offsetting greenhouse gas emissions. The initiative includes \$10 million in new funding for the Department of Agriculture (USDA) and \$5 million for the Department of Energy.
- ***Soil Carbon Inventory.*** The FY 2000 budget request includes \$14 million (an increase of \$12 million from FY 1999 appropriations) to significantly expand efforts to conduct a comprehensive scientific inventory of carbon stored in U.S. soils and to develop methods to predict how soil carbon levels would be affected by different practices and policies. The inventory will be conducted by USDA's Natural Resources Conservation Service.
- ***3-Dimensional Mapping of Forests.*** The FY 2000 budget provides funding to launch NASA's Vegetation Canopy Lidar, which, for the first time, will give scientists a three dimensional view of the Earth's forests to help determine the contribution of forests in sequestering atmospheric carbon.
- ***Consequences of Climate Change.*** The FY 2000 budget provides funding to complete a report on the first national assessment of the potential consequences of climate change on the United States. The report will identify potential impacts on key economic sectors and geographic regions, mitigation and adaptation strategies, and provide technical information for policy makers.
- ***Regional Variability.*** The FY 2000 budget request includes funding to help scientists examine climate change and variability on a regional scale. Supported in part by the Administration's new Information Technology Initiative, the funding will help improve U.S. computer capabilities to run the complex models required to understand the effects of climate change and variability at the regional level.

Agriculture and The President's FY 2000 Climate Change Budget

Farmland, rangeland, and forests can play a critical role in meeting the challenge of global warming through carbon sequestration and renewable bioenergy. In his FY 2000 budget, the President is proposing \$251 million in funding for sequestration and bioenergy research, development, and deployment. This includes \$105 million for the Department of Agriculture (USDA), a \$50 million increase over the amount appropriated for FY 1999, and \$146 million for the Department of Energy (DOE), a \$59 million increase over FY 1999 appropriated funds. Highlights include:

SEQUESTRATION

Carbon sequestration refers to the storage of carbon from the atmosphere by soils, trees, crops, and other plants.

- **Demonstration Projects and New R&D.** The Forest Service, the Agriculture Research Service and the Natural Resources Conservation Service will launch new R&D and demonstration projects to optimize farmland, rangeland, and forest carbon sinks.
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BIOENERGY

Biomass refers to trees, crops and agricultural wastes used to produce power, fuels or chemicals. It represents a tremendous renewable resource whose use can help strengthen our energy security, protect the environment, and enhance our rural economy.

- **Biomass Power and Fuels.** DOE and USDA will continue developing, testing, and demonstrating high-yield, low-cost biomass feedstocks; testing and demonstrating biomass cofiring with coal; and seeking to produce alternative fuels, such as ethanol, from biomass.
- **Advanced Biomass Technologies.** This year, DOE, USDA and other Federal agencies and private partners will launch a national partnership to develop advanced integrated biomass technologies.
- **Biomass Tax Credit.** The President's tax package proposes to extend for 5 years the current 1.5 cent per kilowatt hour tax credit for electricity produced from biomass. The proposal also expands the types of biomass eligible for the credit to include certain forest-related, agricultural and other resources. Finally, the package includes a 1.0 cent per kilowatt hour tax credit for electricity produced by cofiring biomass in coal plants.

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- **Renewable energy.** The President proposes \$399 million for the Department of Energy's (DOE) solar and renewable energy programs, a 19 percent increase over the amount appropriated in FY 1999. The package includes expanded efforts in key renewable technologies, such as wind, bioenergy, photovoltaics, and geothermal energy.

Forests and Farms. The FY 2000 proposal includes \$105 million for the Department of Agriculture's (USDA) climate change budget, an increase of \$50 million over the amount appropriated in FY 1999 and \$40 million over the Administration's FY 1999 request. The new proposal includes funding for a new, multi-agency Carbon Cycle Initiative to better understand how carbon is absorbed by agricultural soils and forests; a soil carbon inventory; pilot projects to demonstrate how improved farming practices can help store carbon; and programs to reduce emissions through means such as the conversion of waste to energy. In addition, DOE, in conjunction with USDA, will expand efforts aimed at broadening the use of biomass to produce power, fuels, and chemicals.

Cleaner Coal. The budget request contains \$122 million for R&D to develop next-generation technologies for coal combustion with much higher energy efficiency and lower greenhouse gas emissions.

Weatherization & State Energy Grants. The budget request includes \$191 million -- a \$25 million increase over FY 1999 appropriations -- to deliver energy conservation services to low-income Americans and to assist state energy offices in addressing their energy priorities.

U.S. Global Change Research Program. The FY 2000 request includes \$1.8 billion for scientific research to improve our understanding of human and natural forces that influence the Earth's climate system and to assess the likely consequences of global warming.

President Clinton's FY 2000 Climate Change Budget

The President's climate change package for FY 2000 totals over \$4.1 billion -- an increase of more than \$1 billion (34 percent) from the amount enacted for FY 1999. It is comprised of a new Clean Air Partnership Fund to boost state and local efforts to reduce both greenhouse gases and ground-level air pollutants; the Climate Change Technology Initiative, which mixes tax incentives and direct spending to spur the research, development, and deployment of energy efficient technology and renewable energy; other climate-related investments, such as R&D of highly efficient technologies for the combustion and use of coal and natural gas, weatherization, and state energy grants; and the United States Global Change Research Program, to enhance our understanding of the human and natural forces that influence the Earth's climate system.

Table 1. Climate-Change-Related Domestic Programs (\$ in Millions)

	FY 1999 Enacted	FY 2000 Request	Change
Clean Air Partnership Fund	0	200	+200
Climate Change Technology Initiative--tax incentives	--	383*	+383
Climate Change Technology Initiative--spending	1,021	1,368	+347
Other Climate-Related Investments (cleaner coal & natural gas; weatherization; state energy grants)	387	400	+13
Global Change Research Program	1,681	1,786	+105
TOTAL	3,090	4,137	+1,048

*First year of a proposed five year, \$3.6 billion package.

Clean Air Partnership Fund

To help protect public health and ease the threat of global warming, President Clinton is proposing \$200 million for the creation of a new Clean Air Partnership Fund. The Fund will provide grants to states, localities, and tribes to support state, local, tribal, and private efforts that achieve reductions in both greenhouse gas emissions and ground-level air pollutants. The Fund will be administered by the Environmental Protection Agency (EPA) under existing authority.

- ***Integrated Pollution Control.*** The Fund will stimulate integrated, cost-effective pollution control strategies. It directs new resources to state, local, and tribal governments to finance projects and programs that achieve accelerated reductions in both air pollutants, such as soot, smog, and air toxics, and in greenhouse gases.
- ***A Quicker Path to Cleaner Air.*** By providing new resources for projects that accelerate pollution reductions, the Fund will enable communities to achieve multi-pollutant clean air goals sooner and reduce greenhouse gas emissions at the same time.
- ***Technological Innovation.*** The Fund will help spur both public and private sector innovations in next-generation pollution control technology.
- ***A Magnet for Local Investment & Innovation.*** The Fund will encourage public-private partnerships to demonstrate ways to create a cleaner environment at the local level. The Fund can be used to support local revolving funds, low-interest loan programs, matching grants, and other mechanisms that will leverage the original Federal investment, greatly increasing its impact.
- ***"Win-Win" Clean Air Projects.*** The Fund will support a wide range of practical projects that will mean cleaner air, reduced greenhouse gas emissions, and real savings for taxpayers and consumers. These could include projects such as building combined heat and power facilities that put waste heat to work, reducing emissions of both sulfur dioxide and carbon dioxide; retrofitting municipal buildings to make them more energy efficient, reducing pollution resulting from electricity generation; and upgrading municipal vehicle fleets to make them more fuel efficient.

Climate Change Technology Initiative: \$3.6 Billion in Tax Incentives

The President is proposing a new \$3.6 billion package in tax incentives over five years to help reduce greenhouse gas emissions by spurring the purchase of energy efficient products and the use of renewable energy (see Table 2).

Table 2. CCTI Tax Incentives (\$ in Billions)

	Revenue Effect	
	FY 2000	Total FY00-04
Homes and Buildings		
Provide tax credit for energy efficient building equipment	-0.2	-1.5
Provide tax credit for new energy efficient homes	-0.1	-0.4
Provide tax credit for rooftop solar systems	--*	-0.1
Vehicles		
Extend tax credit for electric or fuel cell vehicles and provide tax credits for highly fuel efficient hybrid vehicles	0	-0.9
Renewable Energy		
Extend tax credit for electricity produced from wind and biomass; expand eligible biomass sources; and include coal-biomass cofiring	--*	-0.3
Industry		
Provide tax credit for combined heat and power systems	-0.1	-0.3
TOTAL**	-0.4	-3.6

*Less than \$50 million.

**Total may not add due to rounding.

HOMES AND BUILDINGS

- ***Tax credit to consumers who purchase new energy efficient homes.*** To encourage the purchase of new energy efficient homes, consumers would receive a tax credit of \$1,000 for homes purchased from 2000-2001 that are at least 30 percent more energy efficient than the standard under the 1998 International Energy Conservation Code (IECC); a credit of \$1,500 for homes purchased from 2000-2002 that are at least 40 percent more efficient than the IECC standard; and a credit of \$2,000 for homes purchased from 2000-2004 that are at least 50 percent more efficient than the IECC standard.
- ***Tax credit for energy efficient equipment in new and existing homes or buildings.*** This credit will encourage the purchase of electric heat pump and natural gas water heaters, electric and natural gas heat pumps, advanced central air conditioners, and fuel cells. The credit would apply to both residential and commercial equipment. For electric heat pump water heaters, natural gas heat pumps, and fuel cells, the credit would be 20 percent of the cost of the investment, subject to a cap, for equipment purchased from 2000-2003. For all other equipment, the credit would be 10 percent of the cost of the investment, subject to a cap, at one level of efficiency (2000-2001) and 20 percent, subject to a cap, at a higher level of efficiency (2000-2003).
- ***Tax credit for rooftop solar systems.*** A 15 percent tax credit will encourage the purchase by consumers and businesses of rooftop solar systems. The maximum credit would be \$2,000 for rooftop photovoltaic systems placed in service from 2000-2006 and \$1,000 for solar water heating systems placed in service from 2000-2004.

VEHICLES

- ***Tax credits for highly efficient cars and light trucks.*** Cars and light trucks (including minivans, sport utilities, and pickups) currently account for 20 percent of greenhouse gas emissions. Tax credits for electric, fuel cell, and hybrid vehicles will help to move these highly efficient technologies from the laboratory to the highway. These technologies can significantly reduce emissions of carbon dioxide, the most prevalent greenhouse gas.
 - ***Extend the current tax credit for electric vehicles and fuel cell vehicles.*** Under current law, a 10 percent credit, up to \$4,000, is provided for the cost of qualified electric vehicles and fuel cell vehicles. The credit begins to phase down in 2002 and phases out in 2005. The President's proposal would extend the tax credit at its \$4,000 maximum level through 2006.

- **Tax credits for hybrid vehicles.** The credit -- available for all qualifying vehicles, including cars, minivans, sport utility vehicles, and pickup trucks -- would be:
 - \$1,000 for each vehicle that is one-third more fuel efficient than a comparable vehicle in its class -- available from 2003-2004;
 - \$2,000 for each vehicle that is two-thirds more fuel efficient than a comparable vehicle in its class -- available from 2003-2006;
 - \$3,000 for each vehicle that is twice as fuel efficient as a comparable vehicle in its class -- available from 2004-2006; and,
 - \$4,000 for each vehicle that is three times as fuel efficient as a comparable vehicle in its class -- available from 2004-2006.

RENEWABLE ENERGY

- ***Tax credit for electricity produced from wind.*** Current law encourages the production of electricity from wind, which emits no greenhouse gases, through a tax credit of 1.5 cents per kilowatt hour (adjusted for inflation after 1992). The current tax credit covers facilities placed in service before July 1, 1999. The President proposes a 5-year extension of this tax credit.
- ***Tax credits for electricity produced from biomass.*** Biomass refers to trees, crops and agricultural wastes used to produce power, fuels or chemicals. This package of credits would:
 - **Extend current biomass credit.** This proposal extends for five years the current 1.5 cent per kilowatt hour tax credit (adjusted for inflation after 1992), which covers facilities placed in service before July 1, 1999.
 - **Expand definition of eligible biomass.** This proposal expands the definition of biomass eligible for the 1.5 cent tax credit to include certain forest-related resources and agricultural and other sources.
 - **Include cofiring biomass and coal.** This proposal adds a 1.0 cent per kilowatt hour tax credit for electricity produced by cofiring biomass in coal plants.

INDUSTRY

- ***Tax credit for combined heat and power (CHP) systems.*** CHP systems make effective use of thermal energy that is otherwise wasted in producing electricity by more conventional methods. To encourage and accelerate investment in CHP equipment, this proposal provides an 8 percent tax credit for investments in large CHP systems that have a total energy efficiency exceeding 70 percent and in smaller systems that have a total energy efficiency exceeding 60 percent. The credit would apply to property placed in service from 2000-2002.

Climate Change Technology Initiative: \$1.4 Billion for Energy Efficiency & Renewables

The President's FY 2000 budget proposes nearly \$1.4 billion for the research, development, and deployment of renewable energy technologies and energy efficient products that will help reduce U.S. greenhouse gas emissions. This represents a \$347 million increase (34 percent) over FY 1999 spending (see Table 3). The President's proposed investment package covers the four major carbon-emitting sectors of the economy -- buildings, transportation, industry, and electricity -- as well as carbon sequestration (see Table 4). The following sections highlight selected programs in each of these areas of effort. The full agency programs extend well beyond what is described here.

Table 3. CCTI Funding by Agency (\$ in Millions)

	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Request	Change from 1999
Energy	729	902	1,124	+222
EPA	90	109	216	+107
Housing & Urban Development	0	10	10	0
Agriculture	0	0	16	+16
Commerce	0	0	2	+2
TOTAL*	819	1,021	1,368	+347

*Totals may not add due to rounding

Table 4. CCTI Funding by Area of Activity (\$ in Millions)

	FY 1998 Enacted	FY 1999 Enacted	FY 2000 Request	Change from 1999
Buildings	140	172	273	+101
Transportation	245	291	377	+86
Industry	157	188	239	+51
Electricity	239	310	379	+69
Carbon Sequestration	0	14	39	+25
Management, Planning & Analysis	37	46	60	+14
TOTAL*	819	1,021	1,368	+347

* Totals may not add due to rounding.

BUILDINGS

- ***Partnership for Advancing Technology in Housing (PATH).*** PATH is a partnership between the Federal government and building industry to develop and deploy housing technologies to make new homes 50 percent more energy efficient and to make at least 15 million existing homes 30 percent more energy efficient within a decade.
- ***Energy Efficient Appliances and Products.*** Various DOE and EPA programs aim to promote the dissemination of energy efficient appliances and products:
 - DOE will accelerate its program to establish **energy efficiency standards for lighting and appliances.**
 - EPA and DOE's **Energy Star Products** program saves consumers money and reduces greenhouse gas emissions at the same time by promoting the use of energy efficient products -- everything from computers to refrigerators to central air-conditioning units. New funding will support the launch of new Energy Star product lines.
- ***Energy Efficient Commercial Buildings.*** DOE and EPA work in partnership with industry to research, develop, and deploy new technologies and practices to improve the energy performance of commercial buildings. Buildings in the top 25 percent in energy efficiency qualify for EPA's "**Energy Star Buildings**" label. Participants include the Empire State Building, the World Trade Center, and Chicago's Sears Tower.
- ***Energy Smart Schools.*** Announced in October 1998, this initiative cuts across several DOE programs and brings together public and private sector resources to cut schools' energy bills so that the savings can be reinvested in students and their education.

TRANSPORTATION

- ***Partnership for a New Generation of Vehicles (PNGV).*** PNGV is a government-industry effort that aims to develop attractive, affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. Since 1993, great strides have been made in producing lower-cost, light-weight materials, inexpensive fuel cells, and advanced internal combustion engines for use in hybrid vehicles. The program aims to produce a prototype mid-sized family car capable of 80 miles per gallon (mpg) with a two-thirds reduction in carbon emissions by 2004. The FY 2000 budget includes \$264 million for PNGV-related work, an increase of \$24 million over the amount appropriated for FY 1999.

- **Light and Heavy Trucks.** Similar government-industry efforts are aimed at developing cleaner, more efficient diesel engines for both light and heavy trucks.
 - By 2002, DOE aims to develop **advanced diesel cycle engine technologies** for pickup trucks, vans, and sport utility vehicles which achieve at least a 35 percent fuel efficiency improvement relative to current gasoline-fueled trucks while meeting strict emission standards.
 - By 2004, DOE, in coordination with EPA and the Department of Defense, aims to develop **engine and vehicle technologies for heavy trucks** that will increase the fuel economy to 12 mpg from the current average of 5.3 mpg.
- **Biofuels.** Working with the Department of Agriculture (USDA), DOE will continue its work in the biochemistry of converting wood chips, grasses, agricultural wastes, and other products into ethanol and other potentially useful fuels.

INDUSTRY

- **Industries of the Future.** This DOE program works cooperatively with the nation's most energy-intensive industries -- such as aluminum, glass, chemicals, forest products, mining, petroleum refining, 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.
- **Industrial Combined Heat and Power (CHP) Systems.** DOE is developing new industrial CHP systems to capture thermal heat would otherwise be wasted. These systems are expected to be 15 percent more energy efficient and 80 percent cleaner than conventional power systems and cut electricity costs by 10 percent. In addition, EPA and DOE are also working to eliminate barriers to the rapid dissemination of combined heat and power technology.
- **Voluntary Industrial Partnerships.** EPA will expand its industry partnership programs, such as **Climate Wise** and the **Voluntary Aluminum Industrial Partnership**, to encourage businesses to take advantage of cost-effective emissions reductions opportunities -- including emissions of the most potent greenhouse gases, such as methane, perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF6).

- **Agriculture and Forestry.** USDA will undertake R&D and support demonstration projects aimed at both lowering greenhouse gas emissions from agriculture and forestry and reducing their vulnerability to climate change.

--The **Natural Resources Conservation Service** will invest \$3 million in projects to demonstrate and test various means of reducing greenhouse gas emissions in agriculture, such as compost-based waste-handling facilities, rotational grazing systems, and improved feed and forage systems.

--The **Agricultural Research Service** will devote \$7 million towards climate change related activities, including the development of new technology and expertise for reducing agriculture's vulnerability to a changing climate. Field experiments will seek to measure various potential effects of climate change, such as varying amounts and patterns of rainfall on forage production.

The FY 2000 budget also includes important USDA funding for developing advanced biomass energy technologies; R&D and demonstration projects for carbon sequestration; research to study the role of farms, forests, and other natural or managed lands in capturing and storing carbon; and a comprehensive U.S. soil carbon inventory (see pp. 10-12 below).

ELECTRICITY

- **Photovoltaic Energy Systems.** Over the past 20 years, Federal R&D has resulted in a 90 percent cost reduction in solar photovoltaics. DOE will accelerate R&D of the next generation photovoltaic cells; increase manufacturing R&D; increase research in buildings-integrated applications; and fund efforts to develop new, unconventional technologies.

-- **Million Solar Roofs.** In June, 1997, the President announced an initiative to encourage the installation of one million solar systems by 2010, which would reduce carbon emissions equivalent to the annual emissions from 850,000 cars. DOE has received commitments for over half a million solar rooftop installations.

- **Biomass.** Biomass represents a tremendous renewable resource whose use can help strengthen our energy security, protect the environment, and enhance our rural economy.

-- **Biomass Power.** DOE is testing and demonstrating biomass co-firing with coal; developing advanced technologies for biomass gasification using paper industry by-products; and developing and testing high-yield, low-cost biomass feedstocks.

-- **Advanced Biomass Technologies.** This year DOE, USDA, and other Federal agencies and private partners will launch a national partnership to develop advanced integrated biomass technologies. These technologies will enable the production of power, transport fuels, and high-value chemicals from biomass feedstocks.

- **Wind Power.** DOE will continue developing a next-generation wind turbine able to produce power at 2.5 cents per kilowatt-hour in good wind regions, accelerate R&D on critical components, and accelerate testing and field validation.
- **Hydrogen.** DOE will accelerate research on low-cost hydrogen production and storage, prerequisites to the widespread use of hydrogen as a fuel.
- **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.

CARBON SEQUESTRATION

- **R&D for Sequestration.** Research initiatives are being funded to find ways to sequester (store) carbon. Examples include:
 - **Enhancing Forest and Farmland Sinks.** The Forest Service, in conjunction with other USDA agencies, will spend \$6 million for R&D and demonstration projects for optimizing forest, farmland, and rangeland carbon sinks. The focus of such projects will include storage of carbon in forest soils and increased durability and use of wood products to sequester carbon.
 - **Enhancing natural geological and oceanic processes.** DOE will support research into the feasibility of capturing and storing carbon dioxide in underground geological structures and in the deep ocean.

Other Climate-Related Investments

There are a number of additional programs for which funding is proposed in the FY 2000 budget that -- while not part of the Climate Change Technology Initiative per se -- contribute to improving energy efficiency and reducing greenhouse gas emissions. These programs include:

- ***Cleaner Coal and Natural Gas.*** The FY 2000 budget includes \$209 million to support the Department of Energy's (DOE) aggressive R&D effort to develop next-generation technologies for the combustion and use of coal and natural gas. For example, research and development of two new coal combustion technologies -- integrated gasification combined cycle and pressurized fluidized bed combustion -- could lead to ultra-high efficiency coal plants with dramatically lower greenhouse gas emissions.
- ***Low Income Weatherization and State Energy Grants.*** These DOE programs facilitate energy efficiency investments at the State and local level. The **Weatherization Assistance Program**, for example, delivers energy conservation services, such as insulation, to low-income Americans, reducing energy costs for consumers, improving health and safety, and reducing carbon emissions. The total FY 2000 budget request for these two programs is \$191 million -- a \$25 million increase over FY 1999 appropriations.
- ***Agricultural & Forestry Conservation Programs.*** Many Department of Agriculture conservation programs have the co-benefit of reducing carbon emissions resulting from agriculture and forestry and enhancing the ability of "sinks," such as forests and farmlands, to sequester or store carbon. This includes programs such as the **Conservation Reserve Program**, the **Environmental Quality Incentives Program**, and the **Farmland Protection Program**. In general, these programs assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land.

U.S. Global Change Research Program

The United States Global Change Research Program (USGCRP) seeks to provide a sound scientific understanding of both the human and natural forces that influence the Earth's climate system. The information produced by USGCRP's scientists is used by national and international policy makers to make informed decisions on global change issues. This multi-agency scientific research program coordinated through the National Science and Technology Council.

For FY 2000, the President is requesting nearly \$1.8 billion for the USGCRP, an increase of \$105 million, or 6 percent, above the amount enacted for FY 1999. Of the FY 2000 budget request, \$828 million is for scientific research (up \$84 million) and \$958 million is for NASA's development of climate monitoring satellites and ground based observation systems. Other important USGCRP budget highlights include:

- **Carbon Cycle Initiative.** The FY 2000 budget request establishes a new multi-agency initiative to improve our understanding of how carbon cycles between the atmosphere, the oceans, and land. Included in this request are funds to study the role of farms, forests, and other natural or managed lands in capturing carbon. Such carbon "sinks" may provide the U.S. and other nations with new tools for offsetting greenhouse gas emissions. The initiative includes \$10 million in new funding for the Department of Agriculture (USDA) and \$5 million for the Department of Energy.
- **Soil Carbon Inventory.** The FY 2000 budget request includes \$14 million (an increase of \$12 million from FY 1999 appropriations) to significantly expand efforts to conduct a comprehensive scientific inventory of carbon stored in U.S. soils and to develop methods to predict how soil carbon levels would be affected by different practices and policies. The inventory will be conducted by USDA's Natural Resources Conservation Service.
- **3-Dimensional Mapping of Forests.** The FY 2000 budget provides funding to launch NASA's Vegetation Canopy Lidar, which, for the first time, will give scientists a three dimensional view of the Earth's forests to help determine the contribution of forests in sequestering atmospheric carbon.
- **Consequences of Climate Change.** The FY 2000 budget provides funding to complete a report on the first national assessment of the potential consequences of climate change on the United States. The report will identify potential impacts on key economic sectors and geographic regions, mitigation and adaptation strategies, and provide technical information for policy makers.
- **Regional Variability.** The FY 2000 budget request includes funding to help scientists examine climate change and variability on a regional scale. Supported in part by the Administration's new Information Technology Initiative, the funding will help improve U.S. computer capabilities to run the complex models required to understand the effects of climate change and variability at the regional level.

Agriculture and The President's FY 2000 Climate Change Budget

Farmland, rangeland, and forests can play a critical role in meeting the challenge of global warming through carbon sequestration and renewable bioenergy. In his FY 2000 budget, the President is proposing \$251 million in funding for sequestration and bioenergy research, development, and deployment. This includes \$105 million for the Department of Agriculture (USDA), a \$50 million increase over the amount appropriated for FY 1999, and \$146 million for the Department of Energy (DOE), a \$59 million increase over FY 1999 appropriated funds. Highlights include:

SEQUESTRATION

Carbon sequestration refers to the storage of carbon from the atmosphere by soils, trees, crops, and other plants.

- **Demonstration Projects and New R&D.** The Forest Service, the Agriculture Research Service and the Natural Resources Conservation Service will launch new R&D and demonstration projects to optimize farmland, rangeland, and forest carbon sinks.
- **Carbon Cycle Initiative.** The FY 2000 budget request establishes a new multi-agency initiative to improve our understanding of how carbon cycles between the atmosphere, the oceans, and land. Included in this request are funds to study the role of farms, forests, and other natural or managed lands in capturing carbon. Such carbon "sinks" may provide the U.S. and other nations with new tools for offsetting greenhouse gas emissions. The initiative includes \$10 million in new funding for USDA and \$5 million for DOE.
- **Soil Carbon Inventory.** The FY 2000 budget request includes \$14 million to significantly expand efforts to conduct a comprehensive scientific inventory of carbon stored in U.S. soils and to develop methods to predict how soil carbon levels would be affected by different practices and policies.

BIOENERGY

Biomass refers to trees, crops and agricultural wastes used to produce power, fuels or chemicals. It represents a tremendous renewable resource whose use can help strengthen our energy security, protect the environment, and enhance our rural economy.

- **Biomass Power and Fuels.** DOE and USDA will continue developing, testing, and demonstrating high-yield, low-cost biomass feedstocks; testing and demonstrating biomass cofiring with coal; and seeking to produce alternative fuels, such as ethanol, from biomass.
- **Advanced Biomass Technologies.** This year, DOE, USDA and other Federal agencies and private partners will launch a national partnership to develop advanced integrated biomass technologies.
- **Biomass Tax Credit.** The President's tax package proposes to extend for 5 years the current 1.5 cent per kilowatt hour tax credit for electricity produced from biomass. The proposal also expands the types of biomass eligible for the credit to include certain forest-related, agricultural and other resources. Finally, the package includes a 1.0 cent per kilowatt hour tax credit for electricity produced by cofiring biomass in coal plants.