FOIA Number: 2017-1094-F

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Folder Title:
Clinton Administration Climate Change Documents: Final Task Force Releases and Other Useful Papers, October 1997 - August 1999 [binder] [2]

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EXECUTIVE SUMMARY OF U.S. DOMESTIC CLIMATE CHANGE PROGRAM

NOVEMBER 1998

"The vast majority of the world's climate scientists have concluded that if the countries of the world do not work together to cut the emission of greenhouse gases, then temperatures will rise and will disrupt the climate. In fact, most scientists say the process has already begun. [Today], I'm announcing a far-reaching proposal that provides flexible market-based and cost-effective ways to achieve meaningful reductions here in America. I want to emphasize that we cannot wait until the treaty is negotiated and ratified to act."

—President Clinton, October 22, 1997

PRESIDENT CLINTON'S OCTOBER 1997 PLAN

In October 1997, President Clinton outlined an environmentally and economically sound plan for reducing U.S. greenhouse gas emissions. This plan emphasizes win-win initiatives designed to cut emissions by increasing energy efficiency; develops new, cleaner energy technologies; works with industry and others to promote sensible solutions; and employs market-based mechanisms to ensure cost-effective reductions. The President's plan will prepare the United States to step up to the challenge of meeting the target set forth in the Kyoto Protocol (greenhouse gas emissions 7% below 1990 levels during the commitment period 2008-12)—once it is ratified by the United States.

Time and again the United States has faced environmental challenges that skeptics claimed would be impossible to solve without threatening the economy. Yet time and again, the ingenuity and creativity of U.S. businesses and consumers have shown that these challenges could be met with greater speed and less economic cost than anyone could have predicted. President Clinton's sensible domestic climate change program will allow for continued economic growth even as we begin to address one of the great environmental challenges of the 21st century. As awareness of the climate change challenge and its importance grows among U.S. businesses and consumers, private responses to the President's broad policy directions can be expected to accelerate.

Important elements of President Clinton's plan include:

- ***Tax incentives and R&D.*** The President's plan includes the **Climate Change Technology Initiative** (CCTI)—a vigorous program of tax cuts and research and development aimed at improving energy efficiency and spurring the use of renewable energy sources. The package amounts to an additional $6.3 billion over 5 years ($3.6 billion in tax cuts and $2.7 billion in

new investment)—over and above what was planned already for climate change-related investments. The President recently signed the Fiscal Year 1999 appropriations bills, which include over $1 billion for investments that will improve U.S. energy efficiency—a 26% increase over last year.

- The **investment package** stimulates research and development in the major carbon-emitting sectors of the economy—buildings, transportation, and industry. Among projects to be expanded are the Partnership for a New Generation of Vehicles, a government-industry effort to develop highly efficient cars, and the Partnership for Advancing Technology in Housing, aimed at cutting energy use in new homes by 50% and in retrofitted homes by 30%. Substantial funds also will be invested in research partnerships for key renewable energy technologies such as wind, photovoltaics, geothermal, biomass, and hydropower to reduce prices and improve performance.

- The **tax incentive package** includes a tax credit of up to $4,000 for consumers who purchase highly efficient vehicles; a tax credit of up to $2,000 for energy-efficient new homes; a 15% tax credit (with a $2,000 cap) for rooftop solar equipment; a 20% tax credit (subject to a cap) for energy-efficient building equipment for homes and offices; a 10% tax credit for investment in combined heat and power systems; and an extension of a current tax credit of 1.5 cents a kilowatt hour for the production of electricity from wind and biomass.

- ***Industry consultations.*** A second component of the President's plan aims at building sector-by-sector partnerships with key energy-intensive industries to encourage voluntary efforts to cut emissions. These partnerships will identify opportunities for working together to remove barriers to the development and widespread use of energy-efficient technologies and practices. As part of these consultations, the Administration will discuss ways to ensure credit for businesses that act early.

  - High-level Administration officials already have met with top management of the following industries: aluminum, cement, publicly-owned and investor-owned electric utilities, forest products, gas pipelines, and steel. Meetings also have occurred with officials from a number of other key industries, including: airlines and aerospace, agriculture, chemicals, commercial real estate, electronics/semi-conductors, glass, residential housing, metal casting, and oil. More meetings will follow in the months to come.

  - On May 4, President Clinton announced an important new partnership with the homebuilding sector—the **Partnership for Advancing Technology in Housing (PATH).** This partnership is designed to build new homes that are 50% more energy-efficient within a decade and to retrofit at least 15 million existing homes within a decade to make them 30% more energy-efficient. Meeting PATH goals would reduce annual carbon emissions in 2010 by an amount equal to nearly 24 million metric tons (MMTCE)—the amount produced by some 20 million cars—and would save consumers $11 billion a year in energy costs by 2010.

- ***Electricity restructuring.*** Another core element of the President's plan involves restructuring the electricity industry in a manner that will reduce greenhouse gas emissions while cutting consumers' energy bills. The Administration's restructuring proposal includes a requirement that utilities open up their distribution and transmission wires to all qualified sellers; a renewable portfolio standard to increase the use of electricity from renewable sources to at least 5.5% of

sales by 2010; a $6 billion/year Public Benefits Fund to spur greater investment in energy-efficiency and renewable energy technologies; and a green labeling requirement to inform consumers about their clean energy options. This plan is projected to reduce carbon emissions by roughly 25 to 40 MMTCE in 2010 while saving consumers at least $20 billion a year on their electricity bills.

- ***Federal energy use and procurement.*** The President's plan also includes making substantial reductions in the Federal government's own greenhouse gas emissions by improving the energy efficiency of Federal facilities and activities and by reforming procurement practices. These actions are important in their own right, since the Federal government is the nation's largest single energy user, but also they can set an important example for the private sector. In July, the President announced the first 4 elements of his federal energy plan.

  - **Energy Savings Performance Contracts (ESPCs).** The President directed all Cabinet agencies to expand the use of ESPCs. Under an ESPC, a Federal agency hires contractors to audit facilities; propose energy-saving retrofits; and privately finance, install, and maintain retrofits. Contractors are paid from a share of the savings, and the remainder of savings are returned to the taxpayers and agency. Expanded use of ESPCs can reduce greenhouse gas emissions by over 2 MMTCE/year, reduce Federal energy use 30% below 1985 levels by 2005, and save as much as $700 million/year.

  - **Federal Lighting.** The Federal government will seek to purchase and install an additional 300,000 high-efficiency compact fluorescent light bulbs over the next 3 years. This will prevent emissions equal to 40,000 metric tons of carbon (MTCE) over the life of the bulbs and generate electricity cost savings of $13.5 million.

  - **Federal ENERGY STAR® Buildings.** The President directed all agencies to take the steps needed to bring existing Federal buildings up to the ENERGY STAR® standards (top 25% in energy efficiency).

  - **Sustainable Design in New Federal Buildings.** The Department of Defense and 6 other Federal agencies will adopt "sustainable design" standards in all new buildings. "Sustainable design" is an integrated approach reflecting an increased commitment to environmental stewardship and conservation, including energy-efficient and environmentally preferable practices, products, and services.

In the coming months the President is committed to directing further efficiencies in Federal energy management, such as enhancing the procurement of energy-efficient equipment, spurring increased use of alternative fuels and vehicles, and expanding renewable technology use by Federal agencies.

- ***Domestic emissions trading.*** The President has proposed a domestic emissions trading system to begin by 2008. Emissions trading would harness the power of the market to achieve a national greenhouse gas target at the lowest possble cost. The United States has used emissions trading successfully to reduce the pollution that causes acid raid—exceeding environmental objectives at about 50% below the expected cost.

- ***Scientific research.*** The Administration is continuing strong support for the U.S. Global Change Research Program. This program is focused on increasing our knowledge of the timing and regional patterns of expected climate changes, the combined effects of natural variation and

human actions, and the vulnerability of natural resources. A strong foundation of peer-reviewed science results will support sound policy making and the evaluation of actions taken to confront the challenge of climate change.

PROGRAMS PREDATING THE PRESIDENT'S OCTOBER 1997 PLAN

In 1993, following The United States' ratification of the Framework Convention on Climate Change, President Clinton launched the Climate Change Action Plan (CCAP). The CCAP focuses on promoting voluntary initiatives across a wide array of industries and sectors of the economy to reduce greenhouse gas emissions. Among the ongoing programs undertaken pursuant to the CCAP are:

- ***Partnership for a New Generation of Vehicles (PNGV).*** This initiative is a government-industry effort to develop cars that have 3 times the fuel efficiency (one-third the greenhouse gas emissions) of today's autos. Meeting this goal would mean that the typical midsize car would have an efficiency of 80 miles per gallon. This year all 3 major U.S. automakers announced concept vehicles that go far in advancing these objectives. The President's Climate Change Technology Initiative proposes increased funding for PNGV and also includes tax credits to stimulate the early introduction of new generation automobiles and light trucks. Substantial increases in funding for PNGV were included as part of the Fiscal Year 1999 appropriations bills recently signed into law.

- ***Climate Challenge.*** This program is a joint, voluntary effort between the Department of Energy (DOE) and the electric utility industry to reduce, avoid, or sequester greenhouse gases. Utilities identify and implement cost-effective activities that are specified in agreements between the Federal government and individual electric utilities. Under this program, the electric utility industry as a whole also has developed 9 industry-wide initiatives to research, develop, and promote technologies and practices that lower greenhouse gas emissions. Currently, Climate Challenge's partner utilities now number over 600 and represent 71% of the U.S. 1990 electric generation and utility carbon emissions. It is estimated that pledged Climate Challenge partners' actions will reduce emissions by 47 MMTCE in 2000.

- ***Climate Wise.*** This program gives technical assistance to over 450 individual manufacturing companies that have entered into partnership agreements with the Federal government to reduce greenhouse gas emissions, increase productivity, and save money. Companies submit comprehensive action plans that identify specific steps they will undertake between the time they enter into the compact and 2000. In 1997, Climate Wise partners prevented emissions equal to more than 8 million metric tons of carbon (MMTCE) and saved $80 million on their energy bills. By 2000, it is estimated that Climate Wise partners will reduce emissions by more than 9.5 MMTCE and cut energy costs by more than $350 million.

- ***Industries of the Future.*** This program works with the nation's most energy-intensive industries to focus cooperative research on increasing energy and resource efficiency. Industries that have signed partnership agreements include: metal casting, aluminum, forest products, steel, chemicals, mining, and plant/crop-based renewable resources. It is estimated that partners will prevent emissions of 25 MMTCE by 2010 and realize a $4 billion savings in energy costs.

- ***Million Solar Roofs.*** This initiative aims to place solar energy systems on 1 million roofs across the United States by 2010. After just 1 year, commitments already have been received for a half million systems. In June, a new private sector partnership was announced to provide homeown-

ers with low-cost loans for rooftop solar systems and to help meet the program's goal. The President's CCTI includes $12 million in funding for this initiative, as well as $120 million in tax credits. Substantial increases in funding were included as part of the Fiscal Year 1999 appropriations bills recently signed into law. Meeting the program's goal will reduce carbon emissions equivalent to the annual emissions from 850,000 cars.

- ***Motor Challenge.*** Motor Challenge, Steam Challenge, Combined Heat and Power Challenge, and Compressed Air Challenge are a group of voluntary program initiatives aimed at improving energy efficiency in U.S. manufacturing plants by breaking down market barriers to the development and diffusion of energy-efficient technologies and practices. These 4 programs offer a variety of technical assistance, tools, and information to industry. By 2015, the 4 initiatives are expected to reduce emissions by 20 MMTCE and will generate $3 billion in annual cost savings.

- ***Energy-efficiency Standards for Equipment and Appliances.*** To save energy and reduce consumer utility bills, the U.S. Government develops test procedures and national minimum energy-efficiency standards for equipment and appliances, such as heating and cooling equipment, water heaters, lighting, refrigerators, clothes washers and dryers, and cooking equipment. Through 1997, residential appliance standards have avoided cumulative emissions of 30 MMTCE and saved consumers a cumulative $10.5 billion. By 2010, the currently enacted standards cumulatively will have avoided cumulative emissions of 150 MMTCE and saved consumers $33 billion.

- ***ENERGY STAR® Products.*** The ENERGY STAR® Products program allows manufacturers of selected energy-efficient products to promote their products with an "ENERGY STAR®" label. This allows consumers to easily identify products that help the environment and save energy and money. Over 3,000 highly efficient ENERGY STAR® product models currently are available to consumers, ranging from computers to refrigerators to central air-conditioning units. Accompanied by a national consumer education campaign, the ENERGY STAR® program prevented emissions of 2 MMTCE—the equivalent of more than 1.5 million automobiles—and saved consumers more than $740 million in 1997. By 2010, the full program is expected to prevent emissions of 23 MMTCE and generate cost savings of $10 billion.

- ***ENERGY STAR® Buildings and Green Lights.*** The ENERGY STAR® Buildings and Green Lights Partnership encourages individual building owners, developers, and managers to install energy-efficient lighting and undertake a 5-stage strategy to capitalize on system interactions that maximize energy savings at minimum cost. Commercial and Federal buildings that are in the top 25% in energy efficiency qualify for an "ENERGY STAR® Buildings" label. Among the major buildings that already have signed up for the program are the Empire State Building, the World Trade Center, and Chicago's Sears Tower.

  To date, ENERGY STAR® Buildings and Green Lights have established partnerships with over 2,600 organizations that have upgraded the lighting in 3 billion square feet of commercial building space, preventing emissions equal to more than 1 MMTCE in 1997 alone and saving themselves over $500 million on their annual energy bill. In 2010, the full ENERGY STAR® Buildings and Green Lights Partnership is expected to prevent emissions of 23.9 MMTCE and generate energy cost savings of $11.4 billion.

- ***Voluntary Aluminum Industrial Partnership (VAIP).*** This partnership between the U.S. Government and the U.S. domestic aluminum industry seeks to reduce perfluorocarbon (PFC) (an extremely potent greenhouse gas) emissions while increasing the efficiency of primary aluminum production. Since the VAIP was launched in April 1995, membership has grown to include 11 of the nation's 12 primary aluminum producers, representing 22 smelters and 94% of U.S. production capacity. In 1996, partners reduced their emissions by 1.45 MMTCE. VAIP partners cumulatively have committed to reducing PFC emissions by 45% from 1990 levels by 2000—equal to 2.2 MMTCE.

- ***WasteWi$e.*** WasteWi$e works with American businesses; federal, state, local, and tribal governmental agencies; and other institutions to reduce municipal solid waste. Presently, more than 800 organizations are WasteWi$e partners. Waste reduction activities reduce greenhouse gas emissions in several ways, including energy savings, increased carbon sequestration, and avoided methane emissions. In 1997 alone, the combined waste reduction results of WasteWi$e partners prevented emissions of 5 MMTCE—equivalent to the average annual emissions from electric power consumption of roughly 3.0 million households.

- ***Methane Reduction Programs.*** The U.S. Government administers a variety of industry-government voluntary partnerships that significantly reduce U.S. methane emissions from a variety of sources: the Landfill Methane Outreach Program, the Coalbed Methane Outreach Program, Natural GasSTAR, AgSTAR, and the Ruminant Livestock Efficiency Program. In each case, the programs encourage the profitable collection and use of methane, as opposed to its release to the atmosphere. In 1997, participants in the programs reduced methane emissions by 3.7 MMTCE—equivalent to the emissions from more than 3 million automobiles. By 2010, these programs are expected to avoid 22 MMTCE of methane emissions.

- ***Energy Smart Schools.*** This national partnership brings together public and private sector resources to cut energy bills in schools and reinvest the savings in students and their education. The program will work with primary and secondary school systems to reduce energy use, energy costs, and greenhouse gas emissions. It is estimated that a 25% reduction in schools' energy use will cut annual U.S. greenhouse gas emissions by 3-4 MMTCE.

- ***Bioenergy.*** The U.S. government administers a variety of programs, in partnership with industry, on the research, development, and deployment of bioenergy resources and technologies, including electricity production, fuels for transportation, and industrial processing and manufacturing. These programs provide both federal tax incentives and funding for R&D and demonstration projects to encourage the use of biofuels. Currently, bioenergy is one of the leading renewable energy technologies in the United States—accounting for 3-4% of primary energy consumption—and one of the few technologies that can recycle and sequester carbon.

- ***Carbon Sequestration in Agriculture and Forestry.*** Carbon sequestration and carbon "sinks" will play a critical role in helping the world meet the challenge of climate change. Recently, there has been an intensified focus and greater understanding of how agriculture and forestry practices can greatly affect the ability of farmland and forests to sequester carbon and help mitigate climate change effects. As a result, the U.S. Government has begun to analyze the net carbon effects of its various conservation and environmental programs and to determine how they can be enhanced and expanded to foster greater sequestration. In general, these programs assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land.

- ***State and Local Climate Change Program.*** The State and Local Climate Change Program helps states and communities reduce greenhouse gas emissions by providing guidance and technical information to help prepare inventories of their greenhouse gas emissions, assess and build awareness of the impacts of climate change, and develop action plans to reduce emissions. The program also provides technical and financial assistance to help states integrate climate change initiatives with existing state programs. Based on initial estimates, the program will help reduce U.S. greenhouse gas emissions by 1.9 MMTCE in 2000 and 4.2 MMTCE in 2010.

- ***U.S. Country Studies Program.*** This program provides financial and technical assistance to developing countries and countries with economies in transition in addressing the problem of global climate change, particularly within the context of the U.N. Framework Convention on Climate Change (UNFCCC). Since 1993, funding for the Country Studies Program has totaled $40 million. The program assists countries to: inventory their emissions of greenhouse gases; assess their potential vulnerability to climate change and approaches for adapting to such change; identify and evaluate options for controlling these gases or increasing sinks; develop national plans for responding to climate change; assess related technological needs; and increase public understanding of climate change.

(Because of the interaction effects of programs designed to reinforce each other, it would not be appropriate to add together emissions reductions estimates for all programs listed above to arrive at an estimate of total U.S. reductions. Furthermore, there is a substantial amount of uncertainty associated with any of these projections because the estimates attempt to quantify projected technology adoption more than a decade into the future.)

FACT SHEET ON CLIMATE CHANGE TECHNOLOGY INITIATIVE

NOVEMBER 1998

An important component of the President's October 1997 plan to reduce U.S. greenhouse gas emissions is the **Climate Change Technology Initiative (CCTI)**—designed to provide an additional $6.3 billion over 5 years of tax incentives and research and development investment to stimulate the development and use of energy-efficient technologies, clean energy sources, and carbon sequestration. The CCTI builds and expands upon an existing foundation of advanced science, basic research, and government-industry partnership. It will increase U.S. competitiveness, reduce U.S. dependence on foreign oil, help maintain U.S. leadership in energy technology, and reduce greenhouse gas emissions at the same time. In response to the CCTI, the Fiscal Year 1999 appropriations bills recently signed into law by the President include over $1 billion for investments that will improve U.S. energy efficiency—a 26% increase over last year.

$2.7 billion in new R&D investment. The CCTI contains $2.7 billion over the next 5 years in additional research and development spending—covering the 4 major carbon-emitting sectors of the economy (buildings, industry, transportation, and electricity), plus carbon removal and sequestration, Federal facilities, and cross-cutting analyses and research. Selected examples of the R&D effort include:

- ***Partnership for a New Generation of Vehicles (PNGV).*** Government-industry effort to develop safe, attractive, affordable cars that get up to 3 times the fuel efficiency of today's cars. Similar efforts are underway to develop cleaner, more efficient diesel engines for both light trucks and heavy trucks.
- ***Partnership for Advanced Technologies in Housing (PATH).*** Partnership with the homebuilding industry to develop, demonstrate, and deploy housing technologies and practices that are inexpensive, highly efficient, and attractive to consumers. PATH's goal is to build new homes that are 50% more energy efficient within a decade and to retrofit at least 15 million existing homes to make them 30% more energy efficient.
- ***Industries of the Future.*** Research partnerships with energy-intensive industries focused on increasing energy and resource efficiency. Increased funding will permit expansion of the program to include 2 new industry sectors—mining and agriculture. Package also includes increased funding for Motor Challenge, which focuses on saving energy through better motor technology.
- ***Million Solar Roofs.*** Increased funds for DOE cost-reduction R&D for solar thermal and rooftop PV systems to help meet the President's goal of placing solar installations on 1 million roofs over the next 10 years. Million Solar Roofs will establish partnerships with communities, builders, and other Federal agencies to promote the use of building-mounted solar systems.
- ***Bioenergy.*** Increased funds for accelerated deployment of rural bioenergy projects that will provide the power industry with opportunities to produce electricity with very low net greenhouse gas emissions while giving farmers an alternative market for crops.
- ***Wind Power.*** Increased funds for the development of the next generation of wind turbines, which have the potential to make wind power cost-competitive with natural gas.

$3.6 billion in tax credits. The CCTI also contains $3.6 billion over the next 5 years in tax cuts for purchases of energy-efficient and renewable energy technologies.

- ***Tax credits for fuel-efficient cars.*** Includes tax credits of $3,000 to $4,000 for consumers who purchase highly fuel-efficient vehicles.
- ***Tax credits for rooftop solar systems.*** Provides a 15% credit (up to $2,000) for purchases of rooftop solar electricity and hot water systems.
- ***Other tax credits for energy efficiency.*** Includes a $2,000 credit for purchasing energy-efficient new homes; a 20% credit (subject to a cap) for purchasing energy-efficient building equipment; a 10% tax credit for investment in combined heat and power systems; and an extension of the current tax credit of 1.5 cents a kilowatt hour for the production of electricity from wind and biomass.

FACT SHEET ON
INDUSTRY CONSULTATIONS

NOVEMBER 1998

A key component of the President's October 1997 plan to reduce U.S. greenhouse gas emissions is to build voluntary partnerships with energy-intensive industries to develop strategies to cut emissions. Consultations are identifying opportunities for the development and diffusion of energy-efficient or less carbon-intensive technologies and practices, and, in the case of agriculture and forestry, carbon storage. As part of this process, the Administration actively solicits ideas from industry about how to remove technical and regulatory barriers and foster innovative ways that government can support industry's efforts to reduce net emissions. Consultations also are addressing ways to ensure credit for those businesses that take early action.

HIGH-LEVEL DIALOGUE

Pursuant to the President's initiative, senior White House staff have initiated dialogues with high-level officials from key industries over the past several months on voluntary emissions reductions, including:

- Aluminum
- Cement
- Electric Power
- Forest Products
- Gas Pipelines
- Steel

Initial consultations have begun with officials from a number of other key industries, including: airlines and aerospace, agriculture, chemicals, commercial real estate, electronics/semi-conductors, glass, residential housing, metal casting, and oil. Dialogues with additional key, energy-intensive industries will be initiated in the months to come.

REAL REDUCTIONS

As part of the consultative process, the Administration is encouraging industries to review their current energy practices, conduct emissions inventories, and establish systems for ongoing emissions measurement. The Administration also is encouraging industries to articulate "stretch goals" for emissions reductions and improved energy efficiency and to set forth action plans for achieving these goals.

BUILDING ON WHAT WORKS

The Administration's industry consultations initiative builds on successful voluntary approaches developed under 1993's Climate Change Action Plan (CCAP), including: **Climate Challenge** (partnership program with electric utili-

PARTNERSHIP FOR ADVANCING TECHNOLOGIES IN HOUSING (PATH)

The Administration's dialogue with the home-building sector has produced an important new partnership. PATH, announced in May, seeks to design and build new homes that are 50% more energy efficient within a decade and to retrofit at least 15 million existing homes within a decade to make them 30% more energy efficient. PATH joins government and industry in a coordinated strategy to identify promising housing technologies and swiftly move them to market. Meeting PATH goals would reduce annual emissions equal to nearly 24 million metric tons of carbon (MMTCE)—the amount produced by 20 million cars—and save consumers $11 billion a year in energy costs by 2010.

ties to reduce emissions); **Climate Wise** (manufacturing partnership program); **Industries of the Future** (cooperative research program with energy-intensive industries); **Voluntary Aluminum Industrial Partnership** (emissions reduction program involving 90% of U.S. aluminum industry); and **Natural Gas STAR** (methane emissions reduction program).

EARLY CREDIT

Consultations with industry and non-governmental organizations have included discussions on how companies can receive credit for actions taken to reduce emissions or increase carbon removal by storage before the start of the first commitment period under the Kyoto Protocol (2008-2012). The President has made clear that he is committed to providing credit for early action, and the Administration will continue working with the private sector on this issue.

FACT SHEET ON PARTNERSHIP FOR ADVANCING TECHNOLOGIES IN HOUSING

NOVEMBER 1998

In May 1998, President Clinton launched a new partnership with America's building industry to improve the energy efficiency of U.S. homes dramatically—cutting consumers' energy bills by 30-50%, while significantly reducing greenhouse gas emissions. Over the next decade, the **Partnership for Advancing Technologies in Housing (PATH)** seeks to cut energy use by 50% in new homes and by 30% in 15 million retrofitted existing homes. By fostering the development and deployment of 21st century housing technologies, PATH has the potential to reduce annual emissions equal to nearly 24 million metric tons of carbon (MMTCE)—the amount produced by some 20 million cars—and save consumers $11 billion a year in energy costs by 2010.

ADVANCED HOUSING FOR THE 21ST CENTURY

Residential energy use currently accounts for about 20% of U.S. emissions of greenhouse gases. PATH will make possible homes that are stronger, more affordable, and far more energy-efficient. It brings together Federal agencies, state and local governments, and the building, finance, and insurance industries to spur design and construction innovations for the next generation of American housing. Important industry partners that have signed on to this effort include the National Association of Home Builders, the Manufactured Housing Institute, and the Institute for Business and Home Safety.

COLLABORATIVE RESEARCH ON NEXT-GENERATION TECHNOLOGIES

PATH will bring together the best minds of the public and private sectors to develop and evaluate new technologies that can achieve both performance and cost goals. A national Conference on the Future of the American House in 1999 will help set the research agenda. Examples of promising technologies include: ultra-efficient heating and cooling systems, a new generation of windows that provide as much insulation as most walls today, and roof shingles that generate solar power.

PATH PROJECTS AROUND THE COUNTRY

Several major developments around the country—some still in the planning stages, others already underway—will serve as the first PATH pilot projects:

- Los Angeles (186 single-family homes);
- Tucson (2,500 homes);
- Pittsburgh (713 homes); and
- Denver (airport and air base redevelopment).

These pilot sites will begin developing the markets for, and demonstrating the feasibility of, new generation housing technologies. They also will act as training sites for builders and community leaders to learn about the benefits of the technologies and how to use them.

MOVING TECHNOLOGY FROM THE LABORATORY TO THE MARKETPLACE

Because the housing industry is large and dispersed, it can take 10 to 25 years for a new technique or product to gain wide acceptance. PATH aims to cut that time in half by removing market barriers, developing national testing and evaluation standards, and streamlining approval processes. A blue-ribbon panel made up of experts from among PATH members

will investigate regulatory and other barriers. Federal, state, and local organizations are committed to helping remove unnecessary barriers and encourage adoption of cost-effective new technologies. PATH's website (http://www.pathnet.org) will help ensure that builders, suppliers, and consumers have access to the latest information about innovative products.

TAX INCENTIVES FOR ENERGY EFFICIENCY

The President's Climate Change Technology Initiative (CCTI) includes $200 million in tax credits for purchases of ultra-efficient homes and $1.4 billion in tax credits for energy-saving systems and appliances for buildings and homes. In response to the CCTI, the Fiscal Year 1999 appropriations bills recently signed into law by President Clinton include a substantial increase in funding to build this new partnership as well as increased funding for research and development related to energy-efficient appliances and systems.

FACT SHEET ON
ELECTRICITY RESTRUCTURING

NOVEMBER 1998

Restructuring the U.S. electricity sector and opening it up to competitive market forces is a key part of President Clinton's climate change initiative. Enactment of legislation along the lines of the President's Comprehensive Electricity Competition Plan will reduce carbon emissions roughly equal to 25 to 40 million metric tons (MMTCE) in 2010 and save consumers at least $20 billion a year on their electricity bills.

HOW RESTRUCTURING WOULD WORK

Under electricity restructuring, competition will replace regulation as the primary mechanism for setting electricity generation prices. In the past, U.S. electrical utilities were generally State-regulated monopolies that were permitted to charge customers a regulated rate for electric power based on the cost of production plus a "rate of return" on investment. Under restructuring, electricity generation would become a competitive market, and utilities would be required to open up their distribution and transmission wires to all qualified sellers. At the same time, the actual distribution and transmission of electricity would continue to be regulated because these functions will remain monopolies for the foreseeable future. The system would be restructured, not completely deregulated.

BENEFITS OF COMPETITION

Today, a typical older fossil fuel electricity generator wastes two-thirds of the energy it produces. Monopoly regulation does little to discourage this type of inefficiency. Under restructuring, a generator that wrings as much energy as it can from every unit of fuel will be rewarded by the market. In addition, under restructuring, competitive sellers can be expected to maximize the value of their product offerings by bundling electricity with energy efficiency and management services.

Thus, a more competitive electricity industry will provide immense benefits to both individual U.S. consumers and the U.S. economy as a whole. It will result in a cleaner environment, lower prices, greater innovation and new services, a more reliable power supply grid, and will save the government money.

Cleaner Environment. Restructuring will produce significant environmental benefits through both market mechanisms and policies that promote investment into energy efficiency and renewable energy. The Administration's Competition Plan is projected to reduce greenhouse gas emissions by roughly 25 to 40 MMTCE in 2010. Specific environment-enhancing provisions of the plan include:

- Establishment of a non-hydroelectric **Renewable Portfolio Standard** to ensure that at least 5.5% of all electricity sales include generation from renewable sources by 2010.
- Establishment of a $6 billion/year **Public Benefits Fund** to provide matching funds to states for energy-efficiency programs, renewable technologies, low-income assistance, and other purposes.
- **"Green" labeling** to help consumers who value clean energy choose it.
- A **net metering** provision encouraging the installation of small renewable systems.

Cost Savings. The Administration estimates that retail competition will save consumers at least $20 billion a year on their electricity bills. This translates into projected savings for the typical family of four of $232 a year—$104 of direct savings plus another $128 of indirect savings arising from the lower costs of other goods and services.

Economic Growth. Competition also will spark innovation in the American economy, creating new industries, jobs, products, and services just as telecommunications reform spawned widespread use of cellular phones and other new technologies. This will further strengthen the U.S. position as the world's most vibrant and dynamic economy.

Fiscal Benefits. Competition is likely to reduce total government spending—federal, state, and local—on electricity by at least 10%, a savings of close to $2 billion a year, helping governments maintain balanced budgets into the future while meeting critical public needs.

FACT SHEET ON
FEDERAL ENERGY EFFICIENCY

NOVEMBER 1998

President Clinton's plan to reduce U.S. domestic greenhouse gas emissions includes an aggressive effort to reduce the Federal government's own emissions by improving the energy efficiency of Federal facilities and activities and by reforming government procurement practices.

The Federal government is the United States' largest energy consumer with an annual energy bill of $8 billion. Over 90% of this energy derives from fossil fuels. Improving Federal energy efficiency saves taxpayer dollars, cuts emissions that contribute to global warming, and expands markets for energy-efficient and renewable technologies. Progress towards these goals currently is being made through the initiatives outlined below.

EXPANDED USE OF ENERGY SAVINGS PERFORMANCE CONTRACTS

In July 1998, President Clinton directed all Cabinet agencies to expand the use of Energy Savings Performance Contracts (ESPCs) and other alternative financing, and to step up efforts to reduce Federal energy use to 30% below 1985 levels by 2005. ESPCs leverage private sector investment and expertise to accomplish energy and cost-saving projects in Federal facilities at little or no cost to taxpayers. Under ESPC authority, Federal agencies hire contractors to audit facilities, propose energy saving retrofits, and privately finance, install, and maintain retrofits. Contractors are paid from a share of the savings, with the remaining savings returned to the taxpayers and the agency.

Streamlined ESPC contracts put in place by the Department of Defense (DOD) and the Department of Energy (DOE) already have accelerated large investments in energy projects at many Federal facilities. In July, DOE announced $1.5 billion in new ESPC contract authority, bringing to $5 billion the total amount of ESPC authority currently available to Federal agencies. ESPCs can cut over 2 million metric tons of carbon (MMTCE) emissions and save as much as $700 million a year. The President has directed Federal agencies to develop proposals on ways in which ESPC authority can be expanded, and Congress recently voted to renew existing ESPC authority through 2002.

FEDERAL LIGHTING PURCHASING AND RETROFIT CAMPAIGN

The President's July initiative includes a vigorous effort to upgrade institutional lighting fixtures and to purchase and install an additional 300,000 compact fluorescent bulbs over the

NEXT STEPS

Significant strides already have been made in improving Federal energy efficiency—energy consumption per square foot in Federal buildings is down 15%, and energy use in civilian and military vehicles is down approximately 27% from 1985 levels. However, much more can and will be done. In the coming months, the President is committed to directing further efficiencies in Federal energy management, such as: enhancing the procurement of energy-efficient equipment; spurring increased use of alternative fuels and vehicles; expanding renewable technology use by Federal agencies; and expanding knowledge of sustainable building practices by making Federal energy management training materials available by internet and satellite broadcast.

next 3 years. This will prevent up to 600,000 metric tons of carbon emissions (MTCE) over the life of the fixtures and generate electricity cost savings of over $10 million/year for 3 years through upgrades of old-style institutional lighting fixtures.

FEDERAL ENERGY STAR® BUILDINGS

The ENERGY STAR® Building Label is offered to the top 25% of energy-efficient buildings. In July, the President directed all agencies to take the steps needed to bring existing Federal buildings up to the ENERGY STAR® standards through the use of ESPCs, utility programs, and other agency funded efforts. Increasing energy efficiency will save money in energy bills and reduce the emissions that contribute to global warming.

SUSTAINABLE DESIGN IN NEW FEDERAL BUILDINGS

In July, the President announced that DOD and 6 other Federal agencies will adopt "sustainable design" standards in all new buildings. DOD, for example, has committed to build facilities that use as much as 50% less energy than similar buildings. "Sustainable design" is an integrated approach reflecting increased commitment to energy-efficient and environmentally preferable practices, products, and services. Sustainable design standards can reduce emissions by over 90 MTCE a year and cut energy costs for a typical medium-sized office building by $70,000 a year.

FACT SHEET ON U.S. GLOBAL CHANGE RESEARCH PROGRAM

NOVEMBER 1998

The **U.S. Global Change Research Program (USGCRP)** is a $1.82 billion national, interagency research program. Its goals are to increase understanding of the Earth and human and naturally induced changes in the Earth's environment; to assess the consequences of, and society's vulnerability to, those changes; and to provide a sound scientific basis for decision-making on global change issues.

PROVIDING A SOUND SCIENCE FOUNDATION FOR POLICY DECISIONS

Much is known about the science of climate change. Most fundamentally, it is known that atmospheric concentrations of carbon dioxide and other greenhouse gases are rising as a result of the burning of fossil fuel. Much of the uncertainty of climate change science is focused not on whether increased greenhouse gas concentrations will cause global warming, but rather on exactly how fast and how much temperatures will rise and how climate extremes will be affected. Those are significant questions with far-reaching policy implications. The goal of the continuing U.S. climate change research program is to help reduce those uncertainties and give policymakers a better understanding of both the global and regional impacts of climate change.

CORE RESEARCH AREAS

- ***Seasonal to Interannual Climate Variability***: Acquire the understanding and skills in order to reliably forecast short-term climate fluctuations such as El Niño.
- ***Climate Change Over Decades to Centuries***: Understand, predict, and assess changes in climate resulting from natural causes and human activities, and assess the vulnerability of society, ecosystems, and natural resources to long-term changes in climate.
- ***Changes in Ozone, UV Radiation, and Atmospheric Chemistry***: Monitor, understand, and characterize chemical changes in the global atmosphere and assess their consequences for the well-being of society and ecosystems.
- ***Changes in Land Cover and Terrestrial and Aquatic Ecosystems***: Understand, predict, and assess the causes and consequences of changes in land cover, and in terrestrial and aquatic ecosystems.

NEW RESEARCH DIRECTIONS

- ***Nation's Vulnerability to Climate Change***: Apply available analytical and modeling tools to assess U.S. vulnerability to climate change on a region-by-region, cross-region, and cross-sector basis (i.e., water, food).
- ***Sources and Repositories of Atmospheric CO_2***: More accurately identify and quantify sources and sinks for carbon; understand how movement of carbon from one reservoir to another influences climate change; and assess potential opportunities to store and/or manage carbon for the purposes of coping with climate change.
- ***Ecosystem Health and Function***: Identify and understand the requirements and processes responsible for ecosystem health and function; assess the consequences of the direct and indirect human impacts on ecosystems.

FACT SHEET ON PARTNERSHIP FOR A NEW GENERATION OF VEHICLES

NOVEMBER 1998

In 1993 President Clinton, Vice President Gore, and the CEOs of the 3 major U.S. domestic auto makers announced the **Partnership for a New Generation of Vehicles (PNGV)**. PNGV joins the U.S. Federal government (7 agencies and 20 federal laboratories) and Chrysler, Ford, and General Motors in an effort to develop safe, attractive, affordable automobiles that get up to 3 times the fuel efficiency of comparable vehicles sold today. This would mean that a typical midsize car would be able to achieve 80 miles per gallon.

POTENTIAL BENEFITS OF PNGV

The number of registered vehicles in the United States is expected to climb from 198 million in 1996 to as many as 253 million in 2010, making PNGV's success critical to controlling U.S. and world greenhouse gas emissions. The program also will result in low-cost methods for controlling other urban air pollutants, reduce U.S. dependence on foreign oil, and enhance America's competitiveness in clean, sustainable technologies.

NEXT STEPS

PNGV's ambitious goals are seemingly within reach, given the advances in key technologies that have been achieved during the relatively short life of the program. Since 1993, great strides have been made in the production of lower-cost, light-weight materials for the vehicle body and frame; electrical control systems; batteries; compact, inexpensive fuel cells; and advanced internal combustion engines for use in hybrid vehicles.

An enormous amount of work remains to be done, however, to convert these concepts into practical production vehicles. While the bulk of investments in vehicle development will be made by the industry, Federal cost-sharing and incentive-setting is essential to stimulating the introduction of key new technologies. That is why the President's Climate Change Technology Initiative (CCTI) includes a substantial increase in funding for all PNGV-related work, including funds for developing fuel cells that can substitute for today's internal combustion engine, advanced direct injection diesel cycle engines, and low-NO_x methanol-fueled diesel engines. In response to this initiative, the Fiscal Year 1999 appropriations bills recently signed by President Clinton include a substantial increase in PNGV-related funding.

PROGRESS ON CONCEPT CARS

A direct result of PNGV is the development of "concept cars"—including hybrid vehicles that combine a traditional power source with battery storage and electric motors—that appear capable of approaching PNGV's fuel efficiency and emissions goals without sacrificing safety, performance, or cost. At this year's Detroit Auto Show, all 3 major U.S. auto manufacturers had such concept cars on display. Ford, for instance, demonstrated its P2000 concept car that uses advanced materials to reduce the weight of a full-size vehicle by 40%. Combined with an advanced direct-injection engine, the P2000 is projected to deliver 63 miles per gallon. More recently, at this September's Paris Auto Show, General Motors introduced the first drivable fuel cell vehicle.

The CCTI also proposes tax credits to stimulate early introduction of new generation automobiles and light trucks. Under the President's plan, in 2000 a credit of up to $3,000 would be provided for vehicles achieving 2 times the efficiency of today's comparable vehicles, and in 2003 a credit of up to $4,000 would be provided for cars that achieve 3 times today's efficiency. The Administration also continues to work with industry to explore other tax credit options that would spur increased use of more efficient cars and trucks.

FACT SHEET ON
CLIMATE CHALLENGE

NOVEMBER 1998

Climate Challenge is a joint, voluntary effort of the Department of Energy (DOE) and the U.S. electric utility industry to reduce, avoid, or sequester greenhouse gases. Utilities identify and implement cost-effective activities that are specified in agreements between DOE and individual electric utilities. Electric utility trade associations are active in promoting the program and developing industry-wide initiatives. DOE estimates that pledged Climate Challenge partners' actions will reduce emissions equal to 47 million metric tons of carbon (MMTCE) in 2000.

REAL REDUCTIONS

Climate Challenge has been successful in helping shift the thinking of electric utility management and strategic planners, making greenhouse gas emissions mitigation part of their corporate culture and philosophy. Examples of real reductions include:

- **Tennessee Valley Authority** is planning to co-fire wood waste on a continuous, commercial basis at several of its plants. Substituting wood waste for coal causes no net addition of CO_2, since the CO_2 emitted is part of the natural carbon cycle.
- Several utilities, including **Jacksonville (Fla.) Electric Authority,** have committed to landfill gas and generation projects. Others, such as **Allegheny Power,** are seeking to recover methane from coal mining operations.
- In the first market-based CO_2 emissions trade between electric utilities, **Niagara Mohawk Power** exchanged 1.75 million tons of CO_2 reductions for **Arizona Public Service Company's** 25,000 tons of SO_2 allowances (which have an established market value under the 1990 Clean Air Act Amendments). Niagara Mohawk then donated the SO_2 allowances to a non-profit environmental group to be retired, helping mitigate both acid rain and global climate change.

Other actions that utilities have committed to in their agreements include: efficiency improvements in end-use, distribution, transmission, and generation; increased use of electrotechnologies; fuel switching to lower carbon fuels (e.g., natural gas, nuclear, or renewables); transportation actions, including greater use of natural gas-powered and electric vehicles; forestry actions; recovery of methane from landfills and coal seams; and the use of fly-ash as a Portland cement substitute.

INDUSTRY-WIDE INITIATIVES

The utility industry as a whole also has developed 9 industry-wide initiatives under Climate Challenge to research, develop, and promote technologies and practices that lower greenhouse gas emissions. Prominent among these are:

- ***EnviroTech***: $50 million in venture capital funds committed to accelerate commercialization of renewable energy technology and energy-efficient electrotechnologies.
- ***Earth Comfort Program***: promoting a ten-fold increase in the purchase of energy-efficient geothermal heat pumps.

- ***International Utility Efficiency Partnerships***: identifies international energy project development opportunities for U.S. utilities that reduce, limit, or avoid greenhouse gas emissions, and works with host countries to facilitate project investments.

STATUS REPORT

Through April 1998, DOE has signed 124 Climate Challenge Participation Agreements. These agreements represent over 600 utilities and 71% of the U.S. 1990 electric generation and utility carbon emissions. DOE's estimate that currently pledged actions will reduce emissions by 47 MMTCE in 2000 does not include reductions not yet quantified or reductions resulting from the 9 industry-wide initiatives. Some of the Climate Challenge emissions reductions reported by electric utilities also are accounted for elsewhere in the Climate Change Action Plan (CCAP) within estimates for specific technology programs or in baseline assumptions.

FACT SHEET ON CLIMATE WISE

NOVEMBER 1998

Climate Wise is a government-industry voluntary partnership sponsored by the Environmental Protection Agency (EPA) that helps businesses reduce greenhouse gas emissions, increase productivity, and save money. The program gives technical assistance to over 450 individual manufacturing companies (representing 12% of U.S. industrial energy use) that have entered into partnership agreements and submitted comprehensive action plans that identify specific steps they will undertake between the time they enter into the compact and 2000. In 1997, Climate Wise partners prevented emissions equal to more than 8 million metric tons of carbon (MMTCE) and saved $80 million on their energy bills. By 2000, EPA estimates that Climate Wise partners will reduce emissions by more than 9.5 MMTCE and cut energy costs by more than $350 million.

HOW IT WORKS

As part of their Climate Wise commitment, partner companies develop comprehensive Action Plans that describe and quantify cost-effective energy efficiency, pollution prevention goals, and specific implementation measures. Companies then must report results annually while striving for continuous improvement. In return, participants receive help in identifying actions that both save energy and reduce costs:

- ***Climate Wise Action Plan Software*** helps companies identify, track, and quantify project benefits.
- ***Peer exchange seminars and workshops*** bring companies together to share managerial and technical expertise.
- ***Technical documents,*** such as Wise Rules and Case Study Compendium, help partners estimate energy, cost, and carbon dioxide savings from a wide number of projects and sector-specific savings opportunities.
- ***Public recognition*** for achievements gives companies and individual employees the motivation to continuously improve operations.

WIDE AND GROWING PARTICIPATION

Climate Wise's reach is not limited to large companies—in fact, nearly 50% of Climate Wise partners have fewer than 500 employees. The program also supports 30 State and Local Government Ally partners that are bringing state and local technical assistance resources together with those of the Federal government to help companies identify and implement cost-saving energy efficiency projects.

Building on its U.S. domestic success, EPA recently has teamed with the United States Agency for International Development (USAID) to extend Climate Wise to local municipalities and companies abroad that seek energy savings and emissions reductions. Targeted countries and regions include Brazil, Central America, India, Mexico, and the Philippines.

SUCCESS STORIES

The success of Climate Wise is based on its unique ability to attract a diverse range of companies from various industrial sectors and to encourage the inclusion of greenhouse gas emissions mitigation into their corporate culture and philosophy. Climate Wise success stories include:

- ***British Petroleum*** has implemented energy efficiency projects at 10 company business units that are reducing annual emissions equal to 54,500 metric tons of carbon (MTCE). In 1996 alone, the company improved the energy efficiency of its worldwide refining operations by 1.2%, saving more than $8 million. [Apart from its participation in Climate Wise, British Petroleum announced in September that it planned to reduce its worldwide greenhouse gas emissions by 10% below 1990 levels by 2010.]
- ***Boeing Company*** is upgrading air compressor systems and motors and adopting state-of-the-art energy management control systems covering over 46 million square feet of custodial space. The company also is pioneering the use of digital design technology and lower impact materials. By 2000, Boeing will reduce emissions by 300,000 MTCE.
- ***General Motors*** has implemented a wide array of actions including annual energy project competitions, more than 800 conservation projects, over 370 energy partnership projects, and implementation of fuel-switching for 5 steam generating powerhouses. These actions have resulted in emissions reductions of 545,000 MTCE.

FACT SHEET ON
INDUSTRIES OF THE FUTURE

NOVEMBER 1998

Through **Industries of the Future**, the Department of Energy (DOE) has formed research partnerships with the United States' most energy-intensive industries, focusing on ways to increase energy and resource efficiency. Industries included in the program use more than 80% of all energy consumed in U.S. manufacturing. As research projects come to fruition, participating industries stand to significantly reduce both their energy costs and their greenhouse gas emissions.

HOW IT WORKS

Industries of the Future seeks to make the most of scarce research resources by helping to ensure that government-funded research is more sharply focused on helping U.S. industry develop energy-efficient technologies. Industry participants create a document outlining the industry's vision for the future, providing a framework for shaping major advancements in technology. DOE then draws from the menu of possibilities to shape a portfolio of near-, medium-, and long-term research, development, and deployment activities.

TOWARDS A GREENER, MORE COMPETITIVE FUTURE

Without significant improvements in reducing waste in the participating industries, expenditures on pollution abatement and control are expected to exceed $200 billion by 2000. By incorporating pollution prevention and energy efficiency into their corporate culture and philosophy, industry can reduce or eliminate the need for expensive downstream pollution control equipment and transform these expenditures into productive investments for new manufacturing equipment and jobs. The international competitiveness of these industries also will be enhanced significantly as the developing world increasingly demands cleaner technologies to set them on a sustainable development course.

WIDE PARTICIPATION, AMBITIOUS GOALS

Industries participating in the program account for about 5% of the U.S. gross domestic product, employ 2.9 million workers, and account for more than 80% of all energy used and 90% of all waste produced by the U.S. manufacturing sector. They include:

- Agriculture
- Aluminum
- Glass
- Chemicals
- Forest Products
- Metal Casting
- Mining
- Petroleum Refining
- Steel

Industries of the Future-based research has put many of these industries on the verge of genuine technological and commercial breakthroughs that will improve their energy efficiency dramatically and lower their greenhouse gas emissions. The forest products industry, for example, is working with DOE on the development of advanced biomass and black liquor gasification technology for use in cogeneration systems that actually could make the forest products industry a net *sink* of carbon. The aluminum industry believes that it is possible to reduce dramatically the energy intensity

of the aluminum reduction cell through the use of a non-consumable anode combined with wettable cathode technology. Adoption of these technologies could increase the industry's energy efficiency up to 25%, reduce operating costs up to 10%, and eliminate PFC emissions and process-related CO_2 emissions from smelters.

For the program as a whole, DOE has articulated a "stretch goal" of a 25% reduction in energy intensity (energy/unit output) in these industries by 2010. DOE's preliminary estimates are that partners will prevent emissions equal to 25 million metric tons of carbon (MMTCE) by 2010 and realize a $4 billion savings in energy costs. These numbers may increase significantly as research programs related to the mining, agriculture, and petroleum industries (all of which only recently joined the program) are analyzed.

FACT SHEET ON
MILLION SOLAR ROOFS INITIATIVE

NOVEMBER 1998

In June 1997 President Clinton launched the **Million Solar Roofs Initiative** with the goal of placing solar energy systems on 1 million roofs in the United States by 2010. This goal will be achieved through existing Federal financing, procurement, and other programs, and by working in partnership with local communities, businesses, utilities, and Federal agencies to accelerate the use of solar energy systems. Meeting the President's goals will reduce carbon emissions equivalent to the annual emissions from 850,000 cars by 2010 and will produce the same electrical generating capacity as several large coal-fired plants. It also will create an estimated 70,000 high-tech jobs and increase domestic production of solar technologies, helping reduce production prices and enhancing the competitiveness of the U.S. solar energy industry.

STATUS REPORT

By June, 1998—just one year after President Clinton announced the initiative—the Department of Energy (DOE) already had received commitments from utilities and states for over half a million solar rooftop installations. Entities involved include: Hawaii Electric Company, the Los Angeles Department of Water and Power, New England Service, Sacramento Municipal Utility District, the State of Colorado, Maryland Energy Administration, Tucson Electric Power Company, Washington State, Salt River Project, and the Federal government.

AFFORDABLE FINANCING

This past June, a new private sector partnership was announced to provide long-term, low-cost financing for solar energy systems. Spurred by the President's initiative, the General Motors Acceptance Corporation and the Solar Energy Industries Association announced a partnership to provide long-term, low-cost financing for solar energy systems. Under this plan, financing will be available at the same rate as standard home mortgages, rather than at the much higher rates that are typically charged. This breakthrough removes a significant barrier to the installation of solar energy systems in new and existing homes.

TAX INCENTIVES AND R&D FUNDING

The President's Climate Change Technology Initiative (CCTI) includes tax incentives and R&D investments to encourage installation of solar energy systems in buildings, including:

- ***Increased investment in solar and renewable energy R&D.*** DOE would fund cost-reduction R&D for solar rooftop systems and establish partnerships with communities, builders, and other Federal agencies to accelerate their use.
- A ***tax credit equal to 15%*** of the cost of rooftop photovoltaic (PV) systems and solar water heating systems to make them more affordable and encourage their purchase. The maximum credit would be $2,000 for PV systems and $1,000 for solar water heating systems.

In response to the CCTI, the Fiscal Year 1999 appropriations bills recently signed into law by President Clinton include a substantial increase in funding to further solar and other renewable energy research and development.

FACT SHEET ON
MOTOR CHALLENGE AND ENERGY EFFICIENCY IN MANUFACTURING

NOVEMBER 1998

The Department of Energy (DOE) currently has several voluntary initiatives aimed at improving energy efficiency in manufacturing plants: **Motor Challenge, Steam Challenge, Combined Heat and Power Challenge,** and **Compressed Air Challenge.** These 4 programs offer various types of technical assistance, tools, and information to industry. By 2015, the 4 initiatives are expected to reduce emissions equal to 20 million metric tons of carbon (MMTCE) and to generate $3 billion in annual cost savings.

The most mature partnership, Motor Challenge, began in 1995 and works with U.S. industry to increase the energy efficiency of electric motor systems by eliminating unfavorable market barriers so that system efficiencies are achieved and sustained by market forces alone. Through Motor Challenge, U.S. industry already has saved 6 to 9 billion kilowatt-hours a year through the installation of energy-efficient electric motors and adjustable speed drives, reducing emissions by 2 MMTCE—equivalent to the emissions from 400,000 automobiles—and saving $300-$450 million in energy costs.

OVERCOMING MARKET BARRIERS TO ENERGY EFFICIENCY

Energy-efficient technologies and practices have the potential to reduce greatly the amount of energy used in U.S. manufacturing, but often they face significant market barriers to widespread use. Sixty-six percent of industrial electricity, for example, goes to some type of motor-driven system and accounts for nearly 10% of all U.S. emissions of carbon dioxide. A recent Motor Challenge study projected that 10-16% of motor system electricity use could be saved if all cost-effective applications of proven efficiency technologies and practices were undertaken. However, significant barriers prevent these changes from occurring.

One such barrier is the low priority of energy efficiency among capital investment and operating objectives within U.S. manufacturing. This is because manufacturing motor system energy costs constitute less than 1% of total operating costs. Another barrier is the general lack of awareness among facility managers, equipment distributors, and engineers of options to increase motor system efficiency. Manufacturing plants also lack the staff resources to target the opportunities. Lastly, there are conflicting incentives for suppliers regarding the promotion of efficiency equipment and practices.

SUCCESS STORY

DuPont is working with the Motor Challenge and Steam Challenge programs to identify new management methods and additional efficiency opportunities at DuPont's Chambers Works plant in Deepwater, New Jersey. Since 1993, DuPont's efforts to conserve energy and improve efficiency at the Chambers Works plant have increased productivity by 5%, reduced energy cost per pound of product by 25%, and improved overall energy utilization by 29%. Cumulative energy cost savings from 1994 to 1997 amounted to more than $45 million, with a corresponding reduction in greenhouse gas emissions.

Motor Challenge, Steam Challenge, Combined Heat and Power Challenge, and Compressed Air Challenge seek to reduce barriers such as these by providing tools, information, and training.

WIDE AND GROWING PARTICIPATION

As of 1998, Motor Challenge has reached over 30,000 industry people to provide them with tools, information, and training (about 5% of the potential customer base). Currently, there are over 200 Motor Challenge Allied Partner companies that work with DOE to disseminate the information and tools of Motor Challenge; the Allied Partners have trained over 10,000 people in the past year. Organizations such as the Technical Association of the Pulp and Paper Industry (TAPPI), which has 33,000 members, and the Hydraulic Institute, which represents the U.S. pump industry, are examples of industry groups that have joined with DOE to develop new products and disseminate valuable information resources as broadly as possible to industry.

FACT SHEET ON
ENERGY EFFICIENCY STANDARDS FOR EQUIPMENT AND APPLIANCES

NOVEMBER 1998

To save energy and reduce consumer utility bills, the Department of Energy (DOE) develops test procedures and national minimum **energy efficiency standards for equipment and appliances**, such as heating and cooling equipment, water heaters, lighting, refrigerators, clothes washers and dryers, and cooking equipment. By law, these standards must result in the maximum improvement in energy efficiency that is technologically feasible and economically justified. Through 1997, residential appliance standards avoided emissions equal to 30 million metric tons of carbon (MMTCE) and have saved consumers a total $10.5 billion. These standards will continue to save money and avoid carbon emissions every time a new appliance is purchased. By 2010, the currently enacted standards will have avoided emissions of 150 MMTCE and saved consumers $33 billion.

HOW IT WORKS

Residential and commercial buildings account for 37% of total U.S. energy use and 35% of total U.S. carbon emissions. About 75% of this use is determined by 6 kinds of equipment and appliances: heating and cooling equipment, water heaters, lighting, refrigerators, clothes washers and dryers, and cooking equipment. Improving the energy efficiency of these products offers tremendous opportunities for reducing U.S. greenhouse gas emissions. DOE enlists the participation of manufacturers, utilities, environmental groups, state officials, and consumers to enact standards that reflect a consensus position that maximizes energy savings while balancing the economic, energy, and environmental objectives. Currently, DOE is in the process of developing standards for 4 additional priority products: clothes washers, fluorescent lamp ballasts, water heaters, and central air conditioners.

OTHER BENEFITS

In addition to reducing U.S. greenhouse gas emissions and saving money for consumers, equipment and appliance standards also benefit the marketplace in other ways. Reduced energy consumption of peak-load equipment like air-conditioners has allowed utilities to better balance electricity capacity. Product planning by manufacturers can take place with known future levels of performance standards. Finally, the consumer benefits not only from reduced operating costs, but also often from higher quality products since standards tend to remove the worst performing products from the market.

FACT SHEET ON
ENERGY STAR® PRODUCTS

NOVEMBER 1998

The ENERGY STAR® Products program is a voluntary, public-private partnership that helps bring high-efficiency consumer and office products into U.S. homes and offices. Administered by the Department of Energy (DOE) and the Environmental Protection Agency (EPA), the program allows manufacturers of selected energy-efficient products to promote their products with an "ENERGY STAR®" label, giving consumers and businesses the ability to easily identify products that save energy and money and help the environment. In 1997 alone, products bearing the ENERGY STAR® label prevented emissions equal to some 2 million metric tons of carbon (MMTCE)—the equivalent of more than 1.5 million automobiles—and saved consumers more than $740 million. In 2010, the full program is expected to prevent emissions of 23 MMTCE and generate cost savings of $10 billion.

OVERCOMING MARKET BARRIERS TO ENERGY EFFICIENCY

Electricity generation accounts for 35% of all U.S. emissions of carbon dioxide and 38% of nitrogen oxides. Studies by DOE indicate that the United States could reduce its greenhouse gas emissions by 20% by 2010 simply by investing in existing, proven, and cost-effective energy-efficiency technology.

But both consumers and businesses often lack objective information on energy-efficient products or are dissuaded from buying them due to competing and confusing energy efficiency claims or their higher purchase price (despite the long-term savings they afford). ENERGY STAR® Products seeks to overcome these market barriers and provide consumers and businesses with the standardized, reliable information they need to invest in long-term energy cost savings. The program also works with lenders to provide financing packages that overcome the high initial purchase price of energy-efficient products.

WIDE AND GROWING PARTICIPATION

As of January 1998, over 500 manufacturers were participating in the ENERGY STAR® Products program, offering more than 25 kinds of ENERGY STAR® products, ranging from computers to refrigerators to central air conditioning units. The number of ENERGY STAR®-qualified models across these products has grown to 3,400. Recent additions to the partnership include TV and VCR manufacturers and window manufacturers. Products now bearing the ENERGY STAR® label include:

- ***Appliances:*** Dishwashers, refrigerators, room air-conditioning units, clothes washers
- ***Office Equipment:*** Computers, monitors, copiers, fax machines, printers, scanners
- ***Residential Heating and Cooling Equipment:*** Boilers, central air-conditioning, furnaces, heat pumps, thermostats
- ***Home Electronics:*** Televisions, VCRs, TV/VCR combination units
- ***Windows:*** Residential windows, doors, skylights .
- ***Other Products:*** Exit signs, insulation, home lamps and lighting fixtures, transformers

The program also is continuing its consumer awareness efforts through televised public service announcements, print media advertisements, and mass-transit bulletins. In addition, 20 utilities across the United States are now using the ENERGY STAR® label to promote energy-efficient products in their own service areas.

FACT SHEET ON ENERGY STAR® BUILDINGS AND GREEN LIGHTS

NOVEMBER 1998

ENERGY STAR® Buildings and Green Lights are cutting-edge, voluntary partnerships with the private sector to improve energy efficiency in commercial and industrial buildings. These programs promote energy efficiency as a business strategy that owners and managers of commercial and industrial buildings can adopt to improve the environment and their bottom line. In 1997, participants in the programs prevented emissions equal to 1.4 million metric tons of carbon (MMTCE)—equivalent to the emissions from more than 1 million automobiles. In 2010, the full ENERGY STAR® Buildings and Green Lights programs are expected to prevent emissions of 23.9 MMTCE and generate energy cost savings of $11.3 billion.

OVERCOMING MARKET BARRIERS TO ENERGY EFFICIENCY

Electricity generation accounts for 35% of all U.S. emissions of carbon dioxide and 38% of nitrogen oxides. Commercial and industrial buildings, in turn, account for over 15% of all U.S. energy consumption. Yet businesses often lack objective information on the benefits of energy-efficient strategies or are dissuaded by high up-front costs (despite the long-term savings they

SUCCESS STORIES

Notable ENERGY STAR® Buildings and Green Lights success stories include:

- The ***Mobil Corporation*** has realized tremendous success as a partner in both the Green Lights and ENERGY STAR® Buildings programs. By completing a comprehensive lighting upgrade, they already have saved over $1 million a year and are preventing emissions equal to more than 13,500 metric tons of carbon (MTCE). Mobil Corporation's management has embraced the principles of Green Lights and ENERGY STAR® Buildings and implemented their own "Energy Management Plan" which reaches not only across the U.S., but to all of their facilities around the globe. With this new plan, Mobil is committed to reaching a goal of $125 million energy cost savings in 5 years.

- The ***State of Wisconsin*** has joined the Green Lights & ENERGY STAR® Buildings Partnership and invested in energy-efficient lighting technologies in its state buildings. Wisconsin already is preventing the release of over 30,000 MTCE annually while saving more than $7 million annually in taxpayers' money.

- The ***Davenport Community School District.*** With the help of technical information from EPA, the Davenport, Iowa, school system was able not only to improve the lighting in its buildings, but also to prevent the annual release of 729 MTCE and 25,000 pounds of smog-forming nitrogen oxides and save more than $240,000 in annual energy costs. According to Dr. Brad Allison, superintendent of the school district: "Green Lights is a government program that really works. Now [the money we are saving in energy costs] can be used instead for textbooks and other needs."

afford). ENERGY STAR® Buildings and Green Lights seek to overcome these market barriers and provide consumers and businesses with the information they need to invest in long-term energy cost savings. Once thought of as an uncontrollable overhead expense, energy has, in fact, become an area for high-return investment—estimated at 20-30% for whole-building upgrades.

HOW IT WORKS

Under Green Lights, EPA provides technical information and support and public recognition to participants who agree to install energy-efficient lighting. The ENERGY STAR® Buildings program expands upon Green Lights by encouraging individual building owners, developers, and others to undertake more comprehensive building upgrades. This program leads a building owner through a five-stage strategy to capitalize on system interactions that maximize energy savings at minimum cost. Commercial and Federal buildings that are in the top 25% in energy efficiency qualify for the "ENERGY STAR® Buildings" label.

WIDE AND GROWING PARTICIPATION

To date, ENERGY STAR® Buildings and Green Lights have established partnerships with over 2,600 organizations that are now helping eliminate 7 billion kilowatt-hours of annual energy waste and saving themselves over $500 million on their annual energy bills. Among the buildings that have already signed up for the ENERGY STAR® Buildings Program are the Empire State Building, the World Trade Center, and Chicago's Sears Tower.

FACT SHEET ON
THE VOLUNTARY ALUMINUM INDUSTRIAL PARTNERSHIP

NOVEMBER 1998

The **Voluntary Aluminum Industrial Partnership (VAIP)** is a joint effort of the Environmental Protection Agency (EPA) and the domestic aluminum industry to reduce perfluorocarbon (PFC) emissions while increasing the efficiency of primary aluminum production. PFCs are extremely potent greenhouse gases that occur during interruptions in the aluminum production process. Reducing PFCs emissions not only helps counteract global climate change, but also puts to productive use energy that would otherwise be wasted. Since the VAIP was launched in April 1995, membership has grown to include 11 of the nation's 12 primary aluminum producers, representing 22 smelters and 94% of U.S. production capacity. In 1996, partners reduced their emissions by an amount equal to 1.45 million metric tons of carbon (MMTCE). VAIP partners cumulatively have committed to reducing PFC emissions by 45% from 1990 levels by 2000—equal to 2.2 MMTCE.

OVERCOMING MARKET BARRIERS TO ENERGY EFFICIENCY

The primary aluminum industry is energy intensive, consuming 430 trillion British thermal units (Btus) of electricity in 1995, roughly 1.2% of the nation's total industrial energy use. Energy accounts for about one-third of the cost of primary aluminum production. As a result, primary aluminum smelters have a clear economic incentive to reduce energy use. One of the ways producers can reduce energy use is by minimizing so-called "anode effects," which in turn reduces emissions of PFCs. By supporting research on anode effects and disseminating information, VAIP is helping its partners take steps to reduce anode effects and use energy more efficiently.

HOW IT WORKS

The VAIP is implemented through a Memorandum of Understanding (MOU), which describes the commitments and responsibilities of each party. For its part, EPA agrees to support the development of technical information that will improve the understanding of how PFC emissions relate to anode effects and what steps might be taken to reduce emissions. Partners, in turn, agree to pursue technically feasible and cost-effective efforts to reduce PFC emissions, and to provide EPA with annual reports indicating their success. The VAIP is flexible, allowing its partners to tailor the program to reflect their own particular mix of technology, management structure, and operational practices. VAIP partner actions to reduce anode effects and emissions include improved employee training, changes in the alumina feed techniques, and the use of computer monitoring to optimize pot performance.

FACT SHEET ON WASTEWI$E

NOVEMBER 1998

Since January 1994, the Environmental Protection Agency's (EPA) **WasteWi$e** program has worked with American businesses; Federal, state, local, and tribal governmental agencies; and other institutions to reduce municipal solid waste. Presently, more than 800 organizations are WasteWi$e partners. Through the WasteWi$e program, partners voluntarily set goals in 3 areas: waste prevention, recycling, and buying/manufacturing recycled products. Partners track their progress during a 3-year period and report annually on their accomplishments.

Waste reduction activities reduce greenhouse gas emissions in several ways, including energy savings, increased carbon sequestration, and avoided methane emissions. In 1997 alone, the combined waste reduction results of WasteWi$e partners prevented emissions equal to 5 million metric tons of carbon (MMTCE)—equivalent to the average annual emissions from electric power consumption of roughly 3 million households.

HOW IT WORKS

The WasteWi$e program helps participating organizations discover waste reduction opportunities and set waste reduction goals. Partners contact the program to receive personalized technical assistance and have access to an extensive library containing information on municipal solid waste reduction practices nationwide. In addition, the program maintains a website and a list server to support its partners. EPA also publicly recognizes individual organizations and program successes through its publications, satellite forums, trade show exhibits, regional and national events, and an awards program.

WIDE AND GROWING PARTICIPATION

WasteWi$e partners are located all across the United States and represent over 50 business, civic, and industrial sectors, ranging from Fortune 1000 companies to small local governments. In

SUCCESS STORIES

WasteWi$e recognizes Partners of the Year and Program Champions at a national awards ceremony held every year. In September of this year, 8 Partners of the Year and 20 Program Champions were recognized. Examples of these domestic waste reduction achievements include:

- ***Partner of the Year Bank America*** recycled 14,500 tons of office paper and used 386 tons less paper by switching to 15 pound rather than 20 pound paper.
- ***Partner of the Year Bell Atlantic*** recycled 21,600 tons of metal and purchased 61,000 tons of recycled mixed paper for telephone directories.
- ***Program Champion Herman Miller, Inc.*** reduced its volume of transport packaging for finished goods by 50 percent, eliminating 250 tons of wood pallets and 491 tons of corrugated cardboard.
- ***Program Champion Seattle University*** collected 438 tons of material through its campus-wide recycling program.

These are just several of the thousands of waste reducing activities undertaken by WasteWi$e partners. Although the program promotes these types of waste reduction activities to reduce costs and pollution in the United States, these activities are readily transferable internationally to companies and governments interested in waste reduction.

recent years, WasteWi$e membership has grown from 361 partners in 1994 to its current membership of 823 partners. Most recently, WasteWi$e has expanded to include government partners. Reported waste reduction achievements of WasteWi$e partners totaled 7.7 million tons of solid waste in 1997. Avoided disposal cost savings has grown from $35 million in 1994 to $217 million in 1997.

FACT SHEET ON
METHANE REDUCTION PROGRAMS

NOVEMBER 1998

The United States government administers a variety of industry-government voluntary partnerships that are reducing significantly U.S. methane emissions from a variety of sources. Three of the programs (the **Landfill Methane Outreach Program**, the **Coalbed Methane Outreach Program**, and **Natural GasSTAR**) are administered by the Environmental Protection Agency (EPA); the two agriculture-based programs (**AgSTAR** and the **Ruminant Livestock Efficiency Program**) are joint efforts of the EPA and the U.S. Department of Agriculture (USDA). In each case, the programs encourage the profitable collection and use of methane, as opposed to its release to the atmosphere. In 1997, participants in the programs reduced methane emissions by an amount equal to 3.7 million metric tons of carbon (MMTCE)—equivalent to the emissions from more than 3 million automobiles. By 2010, these programs are expected to avoid methane emissions of 22 MMTCE.

OVERCOMING BARRIERS

The reasons for methane emissions are diverse, and vary among the different industries in which they occur. In all instances, however, methane emissions represent lost energy product. In natural gas systems, for example, methane emitted to the atmosphere through valves or leaky pipelines represents gas that cannot be sold to customers.

In general, there are 3 main types of barriers to reducing methane emissions. First, typically methane is a byproduct emission and is not viewed as a resource in its own right. Companies may lack objective technical and economic information on methane recovery options. Second, reducing methane emissions frequently involves investing in methane recovery technologies, which may be unfamiliar to companies or require partnerships with outside entities. Third, many companies confront institutional or regulatory barriers as they try to develop projects. The United States Government's methane reduction programs seek to overcome these barriers by promoting the use of available methane technologies, taking account of the unique needs and challenges of each industry.

- The ***Landfill Methane Outreach Program*** provides technical information and support to the many players in landfill projects, including state agencies, energy companies, communities, and industry. The landfill program has assisted more than 80 planned and operational projects, through such activities as providing decision support software, identifying potential partners, and addressing specific technical or regulatory issues.

- The ***Coalbed Methane Outreach Program*** works with coal mines and project developers to identify attractive opportunities and identify the necessary participants to develop projects. EPA profiles promising projects, develops technical and cost evaluation models, and undertakes a variety of studies for coal mines on specific project implementation issues. As a result of the program, methane recovery by the coal industry has more than doubled since 1993.

- Through ***Natural GasSTAR***, EPA works with more than 70 gas production, transmission, and distribution companies, which commit to evaluate the applicability of several "best management practices" in their systems. EPA provides partners with detailed technical and economic

information on how to reduce emissions, as well as recognition for their efforts. The program has identified more than 50 previously unrecognized ways of economically reducing methane emissions, which are now being widely adopted by industry.

- ***AgSTAR*** is a joint EPA/USDA program that assists livestock producers with recovering methane from their animal waste management systems. Through provision of technical information and design and engineering assistance, AgSTAR helps producers optimize their waste management systems and recoup some of their investments through energy recovery. Over 500 farms are currently AgSTAR partners and are evaluating the potential to install methane recovery systems.

- The ***Ruminant Livestock Efficiency Program*** is a joint effort of USDA and EPA that aims to increase livestock production efficiency by improving the conversion of animal feed into useful products like beef or milk, resulting in increased profitability for producers and less methane per unit of product. The program has identified a number of simple livestock management techniques that can improve productivity and is now focused on educating livestock producers in these techniques through USDA's field extension services.

SUCCESS STORIES

- **Lucent Technologies**, a leader in telecommunications, is benefiting as an end-user from one of the Landfill Methane Outreach Program's Gas-to-Energy projects. Lucent, in collaboration with Network Energy of Lake County, Inc., is fueling boiler operations with landfill gas instead of fossil fuels, saving Lucent $100,000 a year on fuel bills. The project is reducing greenhouse gas emissions equal to more than 28,000 metric tons of carbon (MTCE)—equivalent to taking more than 23,000 cars off the road each year.

- Since 1990 **Chevron USA Production Company**, an integrated energy company that produces, transports, and refines petroleum products, has actively implemented several cost-effective methane reduction technologies and practices with the help of the Natural GasSTAR Program. By taking actions such as the replacement or retrofit of high-bleed pneumatic devices, the installation of flash tank separators on glycol dehydrators, and the use of vapor recover units on oil tank batteries, the company has prevented methane emissions of 780,000 MTCE.

WIDE AND GROWING PARTICIPATION

All of the methane recovery programs have secured wide participation from key industry groups. To date, there are more than 80 landfills, almost 20 coal mines, 70 natural gas companies, and over 500 livestock producers participating in the programs. In addition, key companies, states, and trade associations are working together with the U.S. government to promote methane recovery. As a result, the U.S. should be able to maintain relatively flat methane emissions through 2000 and is projecting declining methane emissions in the future.

FACT SHEET ON
ENERGY SMART SCHOOLS

NOVEMBER 1998

Energy Smart Schools is a national partnership that brings together public and private sector resources to cut energy bills in schools and reinvest the savings in students and their education. Announced by U.S. Energy Secretary William Richardson on October 5, 1998, the Energy Smart Schools partnership will work with primary and secondary school systems to reduce energy use, energy costs, and greenhouse gas emissions. The partnership will increase the use of clean energy technologies in existing and new schools; develop incentives that allow additional school districts to reinvest energy savings into critical education needs; improve the learning environment of classrooms and other school facilities through daylighting, better temperature control, and air quality; and increase student, teacher, and community awareness of energy and related issues. It is estimated that a 25% reduction in schools' energy use will cut annual U.S. greenhouse gas emissions by an amount equal to 3-4 million metric tons of carbon (MMTCE).

BENEFITS OF ENERGY SMART SCHOOLS

Our nation's schools spend over $6 billion a year on energy. At the same time, it is believed that schools could save up to $1.5 billion annually through smarter energy use in both new and existing schools. These smarter energy practices will not only reduce greenhouse gas emissions, but also result in better lighting conditions, better indoor and outdoor air quality, better controlled classroom temperature, and reductions in vehicle emissions—all of which can improve the productivity and general well-being of students and teachers. What is more, the savings could pay for 40 million new text books, 30,000 new teachers, or 1.5 million new computers every year.

10-POINT ACTION PLAN

Through the Energy Smart Schools partnership, the U.S. Department of Energy (DOE) will work with diverse groups and individuals involved with schools, including administrators, teachers, facility managers, custodians, school bus drivers, teachers, students, parents, architects, and labor unions. Under a 10-point action plan, the Energy Smart Schools partnership will establish aggressive goals; disseminate information on energy efficiency and renewable energy; provide training and technical assistance; remove barriers to innovative financing; develop energy curricula; support studies that quantify the impact of energy technologies on learning and health; develop energy specifications for school design and construction; demonstrate advanced technologies; recognize success; and hold quarterly meetings to track progress, share lessons learned, and plan future activities.

GROWING NUMBER OF PARTNERS

Though officially launched just last month, the Energy Smart Schools partnership already is building a solid foundation of participation. Major companies, along with federal, state, and local organizations, already have pledged significant support to the Energy Smart Schools partnership after a July meeting with over 80 representatives of utilities; leading businesses; manufacturers; the renewable energy industry; federal, state, and local governments; unions; and school organizations.

FACT SHEET ON BIOENERGY

NOVEMBER 1998

The U.S. government administers a variety of programs, in partnership with industry, on the research, development, and deployment of **bioenergy** resources and technologies, including electricity production, fuels for transportation, and industrial processing and manufacturing. Administered by the U.S. Department of Energy (DOE) and the U.S. Department of Agriculture (USDA), these programs provide both federal tax incentives and funding for R&D and demonstration projects to encourage the use of biofuels. Currently, bioenergy is one of the leading renewable energy technologies in the United States—accounting for 3-4% of primary energy consumption—and one of the few technologies that can recycle and sequester carbon. Bioenergy refers to the application of advanced technologies for the conversion of trees, grasses, crops, and wastes, including agricultural wastes, to electricity, fuels, and chemicals.

POTENTIAL BENEFITS OF BIOENERGY TECHNOLOGIES

Bioenergy technologies provide substantial environmental benefits. Since bioenergy crops absorb carbon during growth, their use for energy applications can result in a near zero net carbon release. When these fuels are used to displace traditional fossil fuels, significant emissions reductions of greenhouse gases can be achieved. DOE estimates, for example, that by 2010, the addition of 8,000 megawatts of new biomass power capacity will result in reduced emissions equal to 11-16 million metric tons of carbon (MMTCE). Four billion gallons of increased ethanol production is expected to result in emissions reduction of 3-9 MMTCE. In addition, since biomass is domestically produced and is renewable, it offers significant opportunities for job creation, rural economic development, and alternative crop production opportunities for farmers.

BIOENERGY TAX INCENTIVES

Federal tax incentives to expand bioenergy use include:

- ***Unconventional Fuels Credit*** (gas produced from biomass and certain other fuels can qualify for a credit of 51.7 cents/million Btus [plus indexation for post-1979 inflation]);
- ***Production Tax Credit*** (1.5 cents/kilowatt hours [plus indexation for post-1992 inflation] for electricity generated from wind and "closed loop biomass");
- ***Alcohol Fuel Credit*** (60 cents/gallon for converting biomass into ethanol or methanol);
- ***Alcohol Mixture Credit*** (54 cents/gallon of ethanol and 60 cents/gallon of methanol when mixed with gasoline and diesel fuel and claimed by the company that does the mixing as a credit against otherwise applicable excise taxes on motor fuel);
- ***Tax Credit for "Small" Ethanol Producers*** (10 cents/gallon tax credit on first 15 million gallons of output a year for producers who have a production capacity of less than 30 million gallons/year);
- ***Tax-Exempt Financing*** (for certain facilities that burn municipal waste and also generate electricity).

DEMONSTRATION PROJECT SUCCESSES

In order to accelerate the use of bioenergy technologies and realize environmental benefits, demonstration projects are a high priority. Working with industry, several demonstrations of first-of-a-kind technology are underway. These successes include a biomass gasification system, which initiated operations in 1997; a chemical process producing plastics from plants, which was proven technically feasible in 1998; and an ethanol-from-waste facility projected to go into operation in 1999. The recent formation of the Agriculture Industries of the Future program is a positive step toward using plant and crop resources for making a host of everyday consumer products like plastics, paints, and adhesives.

NEXT STEPS

More than ever, concerns about weakening economic conditions for the nation's farmers, global climate change, clean air, clean water, rising oil imports, and the restructuring of the utility industry offer the bioenergy industries an opportunity to increase production of clean and affordable feedstocks, fuels, and technologies. DOE and USDA are working to strengthen the existing research, development, and deployment programs in bioenergy technologies to accelerate the development of these technologies and overcome barriers to deployment. In support of these efforts, the President's Climate Change Technology Initiative includes significant increases in funding for bioenergy, as do the Fiscal Year 1999 appropriations bills he recently signed into law.

FACT SHEET ON CARBON SEQUESTRATION AND U.S. AGRICULTURE AND FORESTRY PROGRAMS

NOVEMBER 1998

Carbon sequestration and carbon "sinks" will play a critical role in helping the world meet the challenge of climate change. Recently, there has been an intensified focus on and greater understanding of how agriculture and forestry practices can greatly affect the ability of farmland and forests to sequester carbon and help mitigate climate change effects. As a result, the U.S. Department of Agriculture (USDA) has begun to analyze the net carbon effects of its various conservation and environmental programs and to determine how they can be enhanced and expanded to foster greater sequestration. In general, these programs assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land. Some of these programs and their estimated ancillary carbon sequestration benefits (where available) are described more fully below.

- ***Conservation Technical Assistance (CTA)*** helps farmers to develop and implement conservation plans on farms and ranches. Conservation compliance requires such plans on highly erodible lands to maintain eligibility for other USDA programs. USDA estimates that an amount equal to 22 million metric tons of carbon (MMTCE) was sequestered in 1997 as a result of conservation tillage alone. Other practices that result in significant carbon sequestration and have been applied due to this program include cover crops, residue management, crop rotation, and buffer establishment.

- ***Conservation of Private Grazing Land Initiative (CPGLI)*** provides technical grazing management assistance for owners and managers of non-Federal grazing lands that result in improved animal performance, decreased methane gas emissions, and increased carbon sequestration. In 1997, conservation systems were implemented on 6.4 million acres through this initiative (up 25% over 1996).

- ***Conservation Reserve Program (CRP)*** provides rental payments and cost-sharing on 36.4 million acres for grass, shrub, or tree plantings in exchange for retiring highly erodible or other environmentally sensitive cropland for 10-15 years. The annual carbon sequestration for this program is approximately 11.3 MMTCE/year. Additional benefits from elimination of nitrogen application have been estimated at 1.8 MMTCE/year.

- ***Environmental Quality Incentives Program (EQIP)*** provides cost-sharing to encourage farmers and ranchers to adopt conservation practices. For example, in 1997 grazing land cover was improved on 3.2 million acres (increasing soil carbon storage), and nutrient and manure management systems were implemented on 1.9 million acres (lowering emissions).

- ***Swampbuster*** program links wetlands protection to program benefit eligibility and has preserved over 5.8 million acres of wetlands that would otherwise have been converted to agricultural use. This has resulted in sequestration of an estimated .6-1.3 MMTCE/year (not including above-ground carbon sequestered in wetland trees or shrubs).

- ***Wetlands Reserve Program (WRP)*** offers private landowners financial incentives to enhance wetlands in exchange for retiring marginal agricultural land. Some 666,760 acres are now enrolled in the program, sequestering an estimated 66,676 metric tons of soil organic carbon (MTCE)/year (not including above-ground carbon).

- ***Forestry Incentives Program (FIP)*** provides financial and technical assistance to encourage production of sawtimber and pulpwood on non-industrial private forestlands. From 1991 to 1997, a total of 1,054,500 acres were enrolled in the program. In 1997 .2 MMTCE was sequestered in biomass above and below ground due to this program.
- ***Stewardship Incentive Program (SIP)*** provides financial and technical assistance to expand tree planting and implement stewardship plans on private forest properties. In 1997 .1 MMTCE was sequestered in biomass above and below ground due to this program.
- ***National Forest conservation*** practices in the 1990s on the 85 million acres of U.S. timberland have reduced timber harvest from 12 billion board-feet/year in the 1980s to 4 billion board-feet/year in the 1990s. Clear cutting has been reduced from 250,000 acres/year in the 1980s to 100,000-120,000 acres/year in the 1990s. Because of these changes in management, the net biomass flux from national forests has gone from a minus 60 MMTCE/year in the 1980s to a net gain of 40 MMTCE/year, and is continuing upward.

FACT SHEET ON
STATE AND LOCAL CLIMATE CHANGE PROGRAM

NOVEMBER 1998

The **State and Local Climate Change Program** has been helping states and communities reduce emissions of greenhouse gases for the past 9 years. Administered by the Environmental Protection Agency (EPA), this capacity-building program provides states and local governments with guidance and technical information to help them prepare inventories of their greenhouse gas emissions, assess and build awareness of the impacts of climate change, and develop action plans to reduce emissions. The program also provides technical and financial assistance to help states integrate climate change initiatives with existing state programs. The goal of this technical and financial assistance is to encourage state and local decision makers to implement voluntary measures to reduce greenhouse gas emissions.

Between 1992 and 1997, the State and Local Climate Change Program allocated more than $7 million in grants and other awards for state greenhouse gas emissions inventories, action plans, demonstration projects, and education and outreach programs. Based on initial estimates, the program will help reduce U.S. greenhouse gas emissions by an amount equal to 1.9 million metric tons of carbon (MMTCE) by 2000 and 4.2 MMTCE by 2010.

STATES AND LOCAL GOVERNMENTS ARE ACTING

Currently, 34 states and Puerto Rico participate in the program, accounting for nearly 60 percent of total U.S. carbon dioxide emissions. These 34 states and Puerto Rico have started or completed inventories of their emissions of carbon dioxide and other greenhouse gases. Twenty-five of these states also have taken additional steps, such as setting up task forces and starting or completing action plans to curb their state's greenhouse gas emissions.

SUCCESS STORIES

Some examples of how state and local governments are addressing climate change, utilizing assistance from the EPA's State and Local Climate Change Program, include the following:

- After completing a greenhouse gas inventory, **New Jersey** issued an executive order to reduce its greenhouse gas emissions 5% below 1990 levels by 2005. New Jersey also is creating a Greenhouse Gas Bank and has signed a letter of intent with The Netherlands that establishes a framework for developing joint initiatives to address global warming, including an emissions trading system.
- **California** boasts the largest and most diverse renewable energy generation industry in the world. Renewable resources provide 11% of all electricity used in the state. The 1998 inventory reported that electric generation in 1994 produced only about 16% of all carbon-related emissions in California.
- The State of **Oregon** introduced state legislation and business tax credits to encourage transportation efficiency. Today Oregon is one of the nation's leaders in the field of telecommuting (working at home using telecommunications equipment, including the telephone, fax, and internet). Approximately 7-8% of Oregon's workforce currently, telecommutes.

FACT SHEET ON
THE U.S. COUNTRY STUDIES PROGRAM

NOVEMBER 1998

The **U.S. Country Studies Program (USCSP)** was announced in 1992, at the "Earth Summit" in Rio de Janeiro, Brazil. The purpose of the program is to provide financial and technical assistance to developing countries and countries with economies in transition in addressing the problem of global climate change, particularly within the context of the U.N. Framework Convention on Climate Change (UNFCCC). Since 1993, funding for the Country Studies Program has totaled $40 million. The program assists countries to:

- Inventory their emissions of greenhouse gases;
- Assess their potential vulnerability to climate change and approaches for adapting to such change;
- Identify and evaluate options for controlling these gases or increasing sinks;
- Develop national plans for responding to climate change;
- Assess related technological needs; and
- Increase public understanding of climate change.

ACHIEVEMENTS

- ***China***: Since 1994, the People's Republic of China (PRC) has been active in several areas of the U.S. Country Studies Program. China's completed country study includes a greenhouse gas emissions inventory, an assessment of the PRC's potential vulnerability to climate change in a number of sectors, and an evaluation of technologies and strategies for mitigating climate change. The Country Studies Program also has provided technical assistance for the development of a national climate change action plan, which will be completed in early 1999.
- ***Mexico***: Since 1993, the U.S. Country Studies Program has worked with Mexico on the development of a greenhouse gas emissions inventory, an assessment of Mexico's potential vulnerability to climate change, the development of future emission scenarios, the identification and evaluation of measures for adapting to or mitigating climate change, and the development of a national action plan.
- ***Egypt***: With the support of the U.S. Country Studies Program, the Egyptian Organization for Energy Conservation and Planning (OECP) coordinated a 2-day workshop in June 1997 on its "National Action Plan and National Communication." The workshop was organized to present the Framework of Egypt's National Action Plan (developed with USCSP support), Egypt's climate change program, and guidelines for the preparation of its first National Communication to the Framework Convention on Climate Change. The former governor of Alexandria, the head of the Egyptian Environmental Affairs Agency, and the chairman of OECP led the workshop, which was attended by high-level government officials, industrialists, non-government organizations, and representatives of the media.

HOW IT WORKS

To enhance the long-term capacity of developing and transition countries to address the problem of climate change and to participate fully in the international response to this problem, the U.S. Country Studies Program provides participants with financial support, training, technical assistance, computer equipment, data, analytical tools, and information services. Fifteen senior officials from the participating countries have helped shape the program by working for a number of months each with the Country Studies Management Team in Washington. Thus, handbooks to guide studies, state-of-the-art simulation models, and analytical methodologies and tools have been tailored to meet the needs of the countries. During the life of the program, training has been provided in 10 global training workshops and over 20 regional workshops. Building on the work of analysts from developing and transition countries, more than 350 publications and journal articles have been produced, including 10 guidance documents, 60 workshop and conference proceedings, more than 160 country reports, and 17 special journal editions.

WIDE PARTICIPATION

Fifty-five countries have been involved in the Country Studies Program since 1993. Forty-three countries have received support for the development of greenhouse gas emission inventories, and 26 have submitted final emission inventories. Forty-nine countries have received support for conducting vulnerability and adaptation assessments, and 34 have completed these assessments. Thirty-four countries have initiated studies of mitigation options, and 27 have completed these studies. Eighteen countries have initiated the development of national action plans, and 4 have completed these plans.

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KEY POINTS ON BUENOS AIRES

- The Kyoto Protocol was an historic achievement -- industrialized nations agreed to take on legally binding commitments to reduce emissions of the greenhouse gases (GHGs) that cause global warming.

- However, the Protocol is incomplete. More meaningful participation by developing countries must be secured. Work still needs to be done on a number of provisions, such as international emissions trading, the Clean Development Mechanism and sinks.

- While Kyoto brought headlines and breakthroughs, Buenos Aires will be more a technical "working" meeting. The U.S. is focused on achieving progress at Buenos Aires, but we expect that progress to be incremental.

- For example, we are seeking agreement on specific work plans and timetables that would enable us to finalize the important flexibility mechanisms in the Protocol. The U.S. has been working hard to develop common understandings with other countries on key elements of these mechanisms. We hope to build on this work at Buenos Aires and beyond.

- In Buenos Aires, we will continue to encourage developing countries to participate meaningfully in global efforts to address climate change. While we do not expect to reach this goal at Buenos Aires, we will press ahead. We understand that developing countries face pressing needs and cannot take on commitments identical to those of industrialized nations. We will continue to use bilateral and multilateral meetings to further this participation.

- Finally, we will renew our commitment to take actions under the UN Framework Convention itself. From the beginning, the U.S. has spearheaded the international effort to address climate change. The Convention, negotiated by the Bush Administration and supported unanimously by the U.S. Senate, recognizes both the need for a global effort and the differing obligations of developed and developing countries.

- The problem of climate change has emerged over decades and solving it is a "marathon," not a "sprint." We view COP4 as a stepping stone to future efforts on climate change. Buenos Aires must yield incremental, credible progress.

KEY POINTS ON FLEXIBILITY MECHANISMS

- A key feature of the Kyoto Protocol is the flexibility allowed to nations to meet emissions targets. In addition to taking actions at home to cut their emissions, countries may seek lower-cost reductions in other countries using innovative, market-based mechanisms. The three most important mechanisms are international emissions trading, the Clean Development Mechanisms (CDM) and Joint Implementation.

- These flexibility mechanisms are critical to the success of the Kyoto Protocol because:

  - they ensure that countries will meet their targets. Excess emission allowances and credits can be sold on the international market and thus provide incentive for continued reductions;

  - they allow countries to seek the most cost-effective reductions wherever they may be found, making the most efficient use of scarce resources;

  - they encourage quick action to address climate change by fostering a market for and deployment of technologies that most effectively reduce emissions; and

  - they provide important incentives to developing countries to participate in the process. Through the CDM, developing countries can host emission reduction projects funded by firms or governments from the industrialized world. In addition, if developing countries take on binding targets, they can participate in emissions trading, which offers potentially far more lucrative opportunities for investment in climate friendly technology and investment.

- The U.S. fought hard for these mechanisms and they are key to our support of the Protocol.

- At Buenos Aires, we are seeking agreement on specific work plans and timelines that will enable us to finalize all necessary elements of these mechanisms.

- We hope we can build on common ground as we pursue these work plans. There is common understanding that we need strong measuring, reporting and verification of reductions as well as transparency and accountability.

- Some countries, however, have proposed restrictions on flexibility mechanisms to force greater domestic action. Restricting trading fails to recognize the bargain struck in Kyoto: our agreement to an ambitious targets was premised on the availability of market measures to cut costs. That bargain must hold. Restrictions will be counterproductive and undermine the very flexibility these mechanisms were intended to provide.

- We hope we can move beyond these differences and complete work plans and timelines to finalize these important mechanisms.

INTERNATIONAL EMISSIONS TRADING

The Kyoto Protocol combines ambitious environmental targets with innovative market-based mechanisms to help Parties achieve those targets at the lowest possible cost. Recognizing that the cost of reducing greenhouse gas emissions is many times greater in some countries than in others, the Protocol allows each country with a binding target (an Annex B country) to use "emissions trading" and other flexibility mechanisms to meet their commitments.

How Emissions Trading Would Work

In an emissions trading system, Annex B countries and their authorized private entities will be able to purchase emissions allowances from each other. Each Annex B country's binding target determines how many allowances it has. Countries may buy or sell these emissions allowances at the government-to-government level. Countries may also authorize their legal entities (companies, individuals, NGOs, etc.) to buy and sell emissions allowances. If the cost of controlling emissions is different in two countries, both will benefit if the one facing lower costs sells some of its emissions allowances to the other. The environmental impact of reducing greenhouse gases will be the same no matter where the reductions take place. Thus, emissions trading will allow the overall reduction required by the Kyoto targets to be achieved at a lower total cost, with both buyers and sellers gaining from the savings allowed by trading.

U.S. Experience with Emissions Trading

U.S. experience with domestic emissions trading has been highly successful. The acid rain provisions of the federal Clean Air Act allow electric power plants to trade sulfur dioxide allowances, resulting in an active private market. Emissions are being cut significantly ahead of schedule -- over the last three years, emissions have been reduced over 30% more than required -- and the cost of emissions reductions has been less than 50% of what was expected.

Benefits of Trading

In order to provide real environmental benefits, a trading system must have mechanisms for verification, reporting and accountability that meet high standards. At the same time, the system must be designed to be as efficient as possible to result in cost-effective reductions. Greenhouse gas emissions trading will bring many benefits. It would:

- ***Promote ratification of and global compliance with the Protocol*** by making reductions less costly. Trading will also provide incentives to reduce emissions below target levels;
- ***Cut the cost of reducing greenhouse gases*** by allowing the marketplace to identify the most cost-effective reductions, thereby making efficient use of scarce global resources; and
- ***Quicken the pace at which countries address climate change*** by creating a market for innovative ways to reduce emissions cost-effectively and fostering the rapid development and diffusion of new technologies that reduce emissions.

Next Steps

The rules of an emissions trading system need to be clear and predictable -- ensuring the integrity of the process while avoiding restrictions that would burden the market or reduce cost savings. To participate in trading, a country must take on a binding target under the Protocol and meet the high standards of the emissions trading system. The U.S. is working with a number of countries to help establish the necessary measurement and reporting capacity.

THE CLEAN DEVELOPMENT MECHANISM

At Kyoto, industrialized and developing nations came together to formulate an innovative, market-based approach to promoting sustainable development and providing cost-effective reductions of greenhouse gas emissions. The Clean Development Mechanism (CDM) is a win-win proposition in which industrialized countries or their companies could earn emissions credits while developing countries acquire technology and capital and earn emission credits that could be banked or sold.

How CDM Could Work

The CDM might work as follows: a company from an industrialized country could help build a highly efficient plant in a developing country rather than a less efficient plant previously planned. This would result in emissions reductions below what would have been the case without the project investment. Those reductions would be certified as credits and the developing nation and investing company would then determine how to share the credits. The developing country could acquire technology and capital investment as well as a share of credits it could sell or bank. The company could acquire a share of credits it could use to meet its emissions reduction commitments at home.

Benefits of the CDM

- ***Promotes Sustainable Development.*** The CDM will assist in achieving sustainable development by providing an incentive for investments in developing countries, helping those countries get on a path toward cleaner energy and economic growth.
- ***Encourages Meeting Environmental Goals.*** The CDM, in combination with emissions trading and joint implementation, will allow developed countries to secure the most cost-effective emissions reductions wherever they may be found.
- ***Spurs Technology Investment.*** The CDM promotes the diffusion of climate-friendly technologies and creates a worldwide market for them.
- ***Helps Meet the Costs of Adaptation.*** Finally, the CDM will aid those countries that are most vulnerable to climate change since, under the Protocol, a "share of the proceeds" from qualifying projects is to be used to assist those countries in meeting the costs of adaptation.

Next Steps

The U.S. is committed to working with the international community to develop operational rules as quickly as possible, especially in view of the Protocol provisions allowing CDM activities to begin as early as 2000. The Parties need to work through a number of issues relating to how the CDM will function, including determining rules for baselines, verification, institutional structures and allocation of project proceeds. Work on these issues will begin at Buenos Aires and should be guided by the following key principles:

- The CDM should assist developing countries in achieving sustainable development;
- The CDM should be a flexible, market-based mechanism that ensures cost-effective reductions through public and private sector investment in clean energy and carbon sequestration projects;
- The CDM should help ensure compliance with targets and be based on principles of efficiency, transparency and accountability; and
- Wherever possible, the CDM should use existing institutions to streamline the process.

FACT SHEET ON JOINT IMPLEMENTATION

The 1992 Framework Convention on Climate Change introduced the concept of Joint Implementation (JI) that was further advanced in 1995 by the launching of the Activities Implemented Jointly (AIJ) pilot phase. During the pilot phase, all parties have been able to work together on projects to reduce greenhouse gas emissions. The Kyoto Protocol established JI as the vehicle to allow for project-based reductions between the industrialized countries that adopted binding targets. Kyoto also created a separate vehicle, known as the Clean Development Mechanism, for project-based reductions between industrialized nations and developing nations (i.e. between nations with binding targets and nations without such targets).

How JI Would Work

JI will provide project-based opportunities for industrialized countries to meet their emission reduction targets through cooperative efforts with other industrialized countries or entities within other countries where the cost of reducing emissions may be lower. For example, a number of factories in Eastern Europe continue to rely on outdated and inefficient technologies. Through investing in technology upgrades at one of these facilities, the investing industrialized country may receive a share of the resulting emission reductions to use in meeting its own target. The U.S. has participated in AIJ pilot-phase since 1993, through the U.S. Initiative on Joint Implementation. To date, over 30 projects in 13 countries have been accepted.

Benefits of JI

- ***Reduction of Global Emissions.*** Transferring or acquiring emission reductions through project-based activities allow industrialized countries to cooperatively work to achieve their commitments under the Kyoto Protocol.
- ***Cost-effective Emissions Reductions.*** Like other flexibility mechanisms, JI will allows parties to share credits for identifying lower-cost opportunities for reducing greenhouse gas emissions. Firms in one nations may face higher costs in abating greenhouse gas emssions, but may reduce the same amount of greenhouse gases faster and cheaper in another industrialized nation.
- ***Facilitate Investment.*** Investment in JI projects also provide local health, environmental and economic benefits in host countries.
- ***Transfer of Technology.*** JI encourages private sector investment in developing and disseminating innovative technologies that reduce greenhouse gas emissions.

Next Steps

Valuable experience both in the U.S. and abroad has been gained from the pilot phase of JI. The U.S. will continue to work in partnership with the international community to:

- further elaborate guidelines as necessary for the implementation of JI, including verification and reporting;
- explore and clarify the linkages between JI and other flexibility mechanisms, such as the Clean Development Mechanism;
- encourage private sector participation in JI projects.

NEW CLIMATE SCIENCE FINDINGS

Significant new findings over the past year reinforce the broad scientific consensus that human activities are disrupting the Earth's climate. New analyses of tree ring, ice melt, borehole and satellite data provide further evidence that global temperatures are rising as a result of increasing atmospheric concentrations of greenhouse gases.

Temperatures Warmest in 600 Years (Mann, et al., *Nature* **392**:779-787; Pollack, et al., *Science* **282**:279-280)
Two independent studies published this year have provided additional evidence of the unusual nature of 20th century warming. In a study published in *Nature*, scientists used climate indicators, such as tree rings, corals and ice cores, to analyze surface temperatures for the Northern Hemisphere back to 1400. They found the 1990s to be the warmest decade in the last six centuries. Similarly, *Science* published results from scientists who measured temperatures in 358 boreholes (holes drilled deep in the Earth's surface) in North America, Europe, Africa, and Australia. They found that the average surface temperature has increased in the last five centuries (approximately 1.8 °F) and that half of this warming has occurred this century.

1997 Warmest Year on Record (NOAA National Climatic Data Center)
In January, the U.S. National Oceanic and Atmospheric Administration (NOAA) announced that 1997 was the warmest year on record -- agreeing with a November 1997 analysis by the UK Meteorological Office -- and that 9 of the last 11 years have been the warmest this century.

Warming Found in Satellite Temperature Measurements (Wentz, et al., *Nature* **394**:661-664)
A new analysis of satellite temperature trends for the lower atmosphere (troposphere) bring them into closer agreement with ground-based temperature trends. The study re-analyzed data from Microwave Sounding Unit instruments aboard NOAA weather satellites, and found that they show the troposphere is warming at a rate of 0.07 °C per decade. This work suggests that the cooling of 0.05 °C per decade reported in previous analyses was the result of a failure to account for the effect of decaying (or lowering) satellite orbits.

Stability of West Antarctic Ice Sheet Questioned (Oppenheimer, *Nature* **393**:325-332)
According to a study published in *Nature*, human-induced climate change over the next century could irreversibly affect the Western Antarctic Ice Sheet, leading to its inevitable collapse in the next 500-700 years and causing a rise in sea level of 4 to 6 meters. The study concludes that while uncertainties remain, recent trends indicate that collapse is the most likely scenario if human-induced climate change is not slowed.

Greenhouse Gas Increases May Delay Antarctic Ozone Hole Recovery (WMO, 1998)
Greenhouse gases trap heat in the lower atmosphere, which contributes to a cooling of the upper atmosphere that leads to increased ozone destruction. With global adherence to the Montreal Protocol, the ozone layer should begin recovering early next century, but increasing greenhouse gases are expected to slow that recovery. On October 6, the U.S. National Aeronautics and Space Administration and NOAA announced that the Antarctic "ozone hole" has reached a record size in area, and a near-record size in depth.

Evidence for Large North America Carbon Sink (Fan, et al., *Science* **282**:442-446)
Researchers have found evidence that North American ecosystems may be absorbing significant amounts of carbon dioxide from the atmosphere -- on the order of 1.7 Gt C per year from 1988 to 1992. These results suggest that most of the assumed 'missing' terrestrial carbon sink is in North America. This new estimate is much larger than previous estimates of the North American sink.

FACT SHEET ON COMPLIANCE

By setting binding targets for industrialized countries' greenhouse gas emissions, the Kyoto Protocol was an historic step forward in addressing the threat of global climate change. But progress can be made only if countries actually meet their obligations. Thus, provisions to promote compliance with targets (including through the use of flexibility mechanisms) and other commitments in the Protocol are critical to the ultimate success of the agreement and overall efforts to combat climate change.

Compliance Provisions in the Protocol

The Protocol contains a framework designed to promote compliance. Key elements include:

- legally binding emissions targets, demonstrating the seriousness of national commitments;
- availability of market-based flexibility mechanisms to lower the costs of compliance, thereby making it more likely that countries will meet their commitments;
- requirements for strong national emissions measurement systems to foster accuracy of emissions data;
- stringent reporting requirements to promote integrity and enable independent review;
- an expert review process to assess implementation and identify potential non-compliance;
- a provision for elaborating procedures to determine and address cases of non-compliance through appropriate consequences; and
- enforceable dispute settlement procedures that do not impinge on national sovereignty.

Compliance Issues at Buenos Aires and Beyond

Further work is necessary to elaborate the existing compliance framework. The substantive rules related to, for example, measurement and reporting, emissions trading, and the Clean Development Mechanism; the procedure(s) by which compliance with Protocol rules will be assessed; and the consequences for a Party that fails to comply.

Substantively, the United States supports a compliance regime that strikes a careful balance between sufficient stringency to promote compliance while avoiding inappropriate intrusions on sovereignty, and that seeks to ensure a level playing field by making sure Parties play by the same rules and do not advantage themselves at the expense of others.

At Buenos Aires, the United States supports continuing to work on relevant compliance-related aspects of the Kyoto Protocol, particularly as elaborated under the rules for flexibility mechanisms in Article 17. At the same time, we support having COP 4 set up the appropriate process (for example, under the Subsidiary Body on Implementation) for beginning to elaborate the more general non-compliance procedures and consequences under Article 18 of the Protocol. Discussions on flexibility mechanisms (Article 17) and on Article 18 should proceed and conclude in tandem, so that we can achieve a comprehensive compliance regime.

FACT SHEET ON SINKS

Carbon is stored in the atmosphere, oceans, vegetation, and soils. By increasing the capacity of oceans, vegetation, and soils to store carbon, we can move carbon dioxide from the atmosphere into these other reservoirs. These reservoirs are then known as *sinks*. Carbon dioxide is stored in plant material. Agricultural and forestry management and conservation practices can increase carbon sinks. Tillage practices that increase carbon storage or intentional afforestation or reforestation activities are further examples of sinks.

Sink Provisions in the Protocol

The United States successfully sought to include sinks in the Kyoto Protocol. The Protocol specifies that "net changes" in greenhouse gases, including emissions from sources and removals by sinks, count toward meeting a country's targets. Specifically, sinks are addressed in two separate provisions: (1) Article 3.3 of the Protocol states that the net emissions effects of three sink activities - afforestation, reforestation, and deforestation since 1990 - shall be considered during the first commitment period of 2008 - 2012 and (2) Article 3.4 of the Protocol provides for the addition of new sink activities.

Need for Further Work

The U.S. seeks a coherent approach to the treatment of sinks that is both environmentally and scientifically sound. Current efforts are underway internationally to better assess the scientific, technical and methodological issues of sinks. The Intergovernmental Panel on Climate Change (IPCC) plans to issue a Special Report on these issues in mid-2000. Specifically, the Report will examine various options for implementing the three sink activities - afforestation, reforestation, and deforestation - included in Article 3.3 and to provide the Parties with scientific and technical advice that will be helpful in making decisions under Article 3.4 on additional categories of sink activities.

The Parties are also conducting workshops on these issues. The first workshop was held in late September and the second workshop will be held in the United States in February or March 1999. In Buenos Aires, the Parties will likely hear a report from the first workshop as well as consider a longer term workplan to address unresolved sink issues. However, discussion on this last issue, while critical, is not likely to be lengthy. Few decisions on sinks are likely to emerge until after the IPCC Special Report is completed.

KEY POINTS ON DEVELOPING COUNTRIES

- Climate change is a global problem that requires a global solution. Industrialized and developing countries must be part of this solution.

- We were disappointed that the Parties in Kyoto were unable to establish a specific process to enable developing countries voluntarily to adopt binding commitments.

- Meaningful participation by key developing countries is absolutely essential. We understand, however, that developing countries face pressing needs and cannot take on commitments identical to those of industrialized nations.

- Meaningful participation does not require a "one size fits all approach." Developing countries have different emissions profiles, levels of development, capacity for action, and domestic and political conditions -- all of which are likely to result in differing commitments.

- We believe key developing countries must commit to serious steps to limit their greenhouse gas emissions. Many of the Protocol's market-based mechanisms are not only good for the global environment, but also can speed the transfer of investment and clean-energy technologies to them.

- For example, adopting emissions targets consistent with strong economic growth would allow developing countries to participate in potentially lucrative international emissions trading.

- The Clean Development Mechanism is another avenue for developing countries to actively participate and would bring financial and techonology investments to these countries.

- The U.S. will continue to press for developing country engagement through bilateral and multilateral discussions. We particularly encourage developing countries to discuss - or take on - voluntary commitments in the Kyoto time frame and encourage further consideration of developing country commitments by the Conference of the Parties at Buenos Aires.

U.S. DOMESTIC CLIMATE CHANGE PROGRAM

The U.S. is undertaking a vigorous plan for reducing domestic greenhouse gas emissions. This plan, outlined by President Clinton in October 1997, emphasizes win-win initiatives designed to cut emissions by increasing energy efficiency; developing new, cleaner energy technologies; working with industry and others to promote sensible solutions; and employing market-based mechanisms to ensure cost-effective reductions. Important elements of President Clinton's plan include:

Clean Energy Investments and Incentives. The Climate Change Technology Initiative -- a vigorous program of tax cuts and research and development aimed at improving energy efficiency and spurring the use of renewable energy sources -- represents an additional $6.3 billion over 5 years ($3.6 billion in tax cuts and $2.7 billion in new investment). In response to the President's climate change request, the Fiscal Year 1999 appropriations bills include over $1 billion for investments in U.S. energy efficiency and renewables -- a 25% increase over last year. Included in this package are additional funds for:

- ***Partnership for a New Generation of Vehicles,*** a government-industry effort to develop safe, attractive, affordable cars that are three times as fuel efficient as today's autos. Similar efforts are underway to develop cleaner, more efficient diesel engines for both light and heavy trucks.
- ***Partnership for Advancing Technology in Housing,*** a partnership with the homebuilding sector to build new homes that are 50% more energy-efficient and retrofit at least 15 million existing homes to make them 30% more energy efficient within the next decade.
- ***Energy Star Buildings and Green Lights***, voluntary programs that encourage individual building owners, developers and managers to install energy efficient lighting and maximize energy savings. Buildings that are in the top 25% in energy efficiency qualify for an "Energy Star Buildings" label. Major buildings that have already signed up include: the Empire State Building, the World Trade Center, and Chicago's Sears Tower.
- ***Renewable Energy*** research partnerships to accelerate price reductions and improve performance in areas such as wind, photovoltaics, geothermal, biomass, and hydropower, and for the President's Million Solar Roofs initiative, that aims to install solar panels on one million U.S. roofs over the next 10 years.

Industry Consultations. Senior White House staff are meeting with top management from key industrial sectors, including, to date, aluminum, steel, forest products, utilities, cement and natural gas pipelines to encourage voluntary efforts to cut emissions. These sector-by-sector consultations identify opportunities to remove barriers to the development and widespread use of energy efficient technologies and practices. The President has made clear his commitment to provide appropriate credit to firms that take action to reduce emissions before the Kyoto Protocol's first commitment period.

Electricity Restructuring. In March, the Administration introduced its electricity restructuring proposal that, by encouraging competition, will save consumers $20 billion a year on electricity bills, and reduce greenhouse gas emissions by roughly 25 to 40 million metric tons per year.

Federal Energy Use and Procurement. The President's plan includes making substantial improvements in the Federal government's own use and procurement of energy. In July, the President announced the first four elements of his plan focusing on the building sector.

Climate Change Action Plan. In 1993, following the United States' ratification of the U.N. Framework Convention on Climate Change, President Clinton launched the Climate Change Action Plan (CCAP). The CCAP focused on promoting voluntary initiatives across a wide array of industries and sectors of the economy to reduce greenhouse gas emissions. Example of the CCAP, not discussed above, include: Climate Challenge, Climate Wise, Industries of the Future, Motor Challenge, Voluntary Aluminum Industrial Partnership, Energy Star Products, Energy Efficiency Standards for Equipment and Appliances, WasteWise, Methane Reduction Programs, Energy Smart Schools, State and Local Climate Change Program and U.S. Country Studies Program.

CLIMATE CHANGE TECHNOLOGY INITIATIVE
FY99 BUDGET HIGHLIGHTS

The Fiscal Year 1999 budget provides for over $1 billion -- a 25% increase -- for research investments that will reduce greenhouse gas pollution, create jobs, and save consumers money through energy efficiency and renewable energy technologies. Funding for the Climate Change Technology Initiative is contained in three appropriations bills:

1. Energy and Water - $350M

$336 for DOE's Solar and Renewable Energy Portfolio. Programs under this account include:

- **Photovoltaics R&D**, including the President's goal of installing **One Million Solar Roofs** on American homes and offices by 2010.

- **Biopower and Wind power R&D** to improve and accelerate rural biopower as well as the next generation of wind turbines.

- **Hydropower** design work on a new generation turbine that will be both more energy efficient and avoid killing fish.

- The **Climate Challenge** program. A successful voluntary DOE/electric utilities partnership with over 640 participants, that will result in reductions of 47 million metric tons of carbon emissions in 2000.

$14M for Energy Research

- Basic research, including research on carbon sequestration, to support the applied R&D climate change programs.

2. Interior - $552M

$526M for DOE's Energy Efficiency Portfolio. Programs under this account include:

- The **Industries for the Future** program which establishes research partnerships between DOE and energy-intensive industries to develop ways to increase energy and resource efficiency and are projected to save participating industries over $10 billion in energy costs by 2010.

- **The Partnership for a New Generation of Vehicles** - additional funding will help achieve the President's goal of an affordable, triple efficiency family sedan by 2004. Development of this vehicle would reduce carbon emissions by 1.4 million metric tons annually and reduce energy costs by $1.2 billion annually by 2010.

•**Building Technologies.** DOE will implement technology roadmaps for commercial buildings and lighting and develop new energy efficiency standards for large appliances.

$24M for Fossil Energy R&D

•Applied research and development for, among other things, sequestration and highly efficient combustion techniques.

$3M for Energy Information Administration

• Funding to track voluntary greenhouse gas emissions reductions in the U.S. as well as international emissions reduction activities.

3. VA-HUD-Independent Agencies - $119M

$109M to EPA for climate change programs which include:

•The **Green Lights and Energy Star Buildings** program. With increased funding for Green Lights and Energy Star Buildings, EPA will be able to enter into partnerships with many new small businesses and schools by the year 2000. A typical school can cut its energy bills by $27,000 per year through this program -- enough money to buy 900 new text books.

$10M to HUD for PATH

• The **Partnership for Advancing Technology in Housing (PATH)** is an important new public-private partnership with the homebuilding sector. Launched by the President in May, PATH will dramatically improve the energy efficiency of homes, cutting consumers' energy bills by 30%-50%, saving consumers $11 billion a year in energy costs by 2010 and reducing annual carbon emissions by nearly 24 million tons by 2010.

Fact Sheet on EIA Economic Analysis

The Energy Information Administration's (EIA) recent analysis of the Kyoto Protocol is significantly flawed. In modeling implementation of the Protocol, EIA fails to take into account the Protocol's flexibility mechanisms, incorrectly assumes that most businesses will fail to take action to address climate change until 2005 or later, and uses a model that underestimates the dynamism of the U.S. economy. In contrast, the Administration's economic analysis of the Protocol, released in July, demonstrates that with effective market mechanisms, meaningful developing country participation, and a realistic ramp up period, the costs of meeting the Kyoto target should be modest.

The EIA Analysis Fails to Model the Kyoto Protocol's Flexibility

- ***The EIA analysis fails to model international trading.*** EIA's model is not capable of modeling international emissions trading, even though this is a critical feature in reducing the cost of compliance for the United States and other countries. By contrast, the Administration explicitly modeled international trading, as has every modeling team participating in the exercise assessing Kyoto conducted under Stanford's Energy Modeling Forum -- which includes virtually all of the leading energy economic modelers in the world. These models have demonstrated that international trading among industrialized countries could lower costs of emissions reductions by as much as half.

  EIA does attempt to include scenarios which assume an amount of domestic reductions intended to mirror the level of domestic reductions implied in the model used by the Administration. However, these EIA scenarios still overstate the cost of permits because they fail to take into account the way that an international market, bidding to a single international permit price, lowers cost.

- ***The EIA analysis fails to account for all six types of greenhouse gases.*** The EIA study assumes that the United States would achieve its target only through carbon dioxide reductions. In fact, the Kyoto Protocol covers all six major greenhouse gases, and permits countries to achieve their targets through reductions made in any of these gases. This flexibility allows countries and companies to make reductions in the most cost-effective manner possible, reducing the cost of compliance.

EIA Assumes Firms Take Little or No Action to Address Climate Change before 2005

- In EIA's study, most businesses do not take action to address climate change until 2005, and therefore only have a short time until the 2008-2012 budget window to reduce emissions. Studies have demonstrated that the amount of lead time a company takes has dramatic economic implications. For example with EIA's model, a 5-year "ramp-up" (starting in 2005) would result in economic costs 65% greater than that associated with a 10-year "ramp-up" (starting in 2000). Thus, EIA's assumption that many businesses would fail to plan for the future results in higher projected costs.

- Already businesses are taking action to address climate change. For example, on September 18, British Petroleum announced its plan to reduce emissions of greenhouse gases worldwide by 10% below 1990 levels by the year 2010. In July, United Technologies announced their plan to reduce its worldwide energy consumption by 25% by the year 2007.

The EIA Analysis Does Not Include Policy Elements That Will Lower Costs

- In the Administration's analysis, additional elements of policy were recognized as having the potential to significantly decrease the costs of compliance and increase the amount of reductions that might be accomplished at home. These policies were not factored into the illustrative model the Administration cited, but were qualitatively taken into account in reaching the conclusion that the United States could meet its Kyoto target for a relatively modest cost. The EIA analysis, however, ignores elements such as forestry activities (covered under the Kyoto Protocol) and the Administration's electricity restructuring proposal, which could significantly lower compliance costs.

- Studies put out by the Department of Energy's National Laboratories (the so-called Five Lab and Eleven Lab studies) demonstrate that there are many viable technology pathways to reduce greenhouse gas emissions at low cost.

The EIA Study Ignores the Dynamism of the U.S. Economy

- The EIA study uses a macroeconomic model -- a short-term forecasting tool that is inappropriate to use for making forecasts going out a decade or more -- as opposed to a general equilibrium-type model that would incorporate the dynamism and flexibility that is the hallmark of the American economy. (For example, the American economy has adopted the Internet in the past decade, leading to industries and services that could not have been imagined a decade ago.) A study by the World Resources Institute indicates that this one factor is often enough to double the estimated costs of meeting a given emissions reduction goal.

- The EIA study assumes that in their use of energy, consumers and businesses are much less responsive to price changes than is commonly assumed in the economics literature. A more moderate choice of price responsiveness would reduce the estimated permit prices and reduce the economic costs estimated by EIA.

The EIA Study is Pessimistic About the Role of Technology

- The EIA study is pessimistic about the potential of technology and market innovation. It assumes no direct effect of substantially higher fuel prices on the availability of more advanced technology or more innovative uses of technology, both of which could contribute significantly to reducing emissions.

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TUESDAY, NOVEMBER 10, 1998

OPINION/ESSAYS

Combating Global Warming

Buenos Aires conference works to put Kyoto agreement into effect

Stuart E. Eizenstat

Last December in Kyoto, Japan, 160 countries reached an historical agreement to cut greenhouse gas emissions and put markets rather than regulation and heavy taxes to work to help fight global warming. These nations are now gathered in Buenos Aires to take the next steps in meeting the most profound environmental challenge of the 21st century.

One year after Kyoto, the scientific evidence of global warming - gathered from centuries-old trees, satellites, and Arctic ice - continues to mount. Every month so far this year has set a record high for global temperatures, right on the heels of 1997, the warmest year on the books. And a powerful El Niño gave us a taste of the extreme weather we can expect from global warming - droughts and floods in Texas, drought-driven fires in Indonesia, Florida, and Mexico, and devastating floods in China and Bangladesh.

As the evidence has grown stronger, so has our resolve. Some in Congress tried to block the administration's common-sense efforts to reduce greenhouse gases. Some even sought a gag order to keep us from educating the public about Kyoto. But President Clinton stood firm and, in the recent budget agreement, won more than $1 billion for clean energy research - a 25 percent increase. He will propose more in next year, including incentives for farmers and others to take steps to absorb carbon from the atmosphere.

The administration also is working intensively with business, launching creative efforts such as the Partnership for Advancing Technology in Housing that will help build new homes that are as much as 50 percent more energy efficient, and the Partnership for the Next Generation Vehicle that will triple the gas mileage of automobiles. We are working to help energy-intensive industries be more productive while using less power. And we have launched a government-wide effort to reduce the federal energy bill by $1 billion a year.

Even more striking is the growing number of leading corporations recognizing the urgency of addressing global warming. Companies like British Petroleum, Shell, United Technologies, and IBM have pledged publicly to reduce their emissions - in some cases, well below the Kyoto target. Senators Joseph Lieberman, John Chaffee, and Connie Mack recently introduced bipartisan legislation to reward companies that take early action by granting them credit that can be used against future emission reduction targets.

In Buenos Aires, we face two major diplomatic challenges. First, we must begin to design the flexible, market-based measures agreed to in Kyoto - such as emissions trading - that will dramatically lower the cost of reducing greenhouse gases. Emissions trading works. It has allowed the US to combat acid rain at

less than half the expected cost. To achieve both lower cost and real environmental gain, we need to develop firm rules that guarantee an efficient market with high integrity. We hope the Buenos Aires meeting will produce a work plan with clear timetables to establish such rules.

Well-meaning critics want to restrict the use of trading, viewing it as a loophole to avoid real action. They have it wrong. Strong rules can ensure that trading has integrity without sacrificing its capacity to bring down everyone's cost of reducing greenhouse gases. Moreover, those who argue for limits on trading fail to recognize the basic bargain struck in Kyoto: Our agreement to an ambitious emissions reduction target was premised on the availability of market measures to cut costs. That bargain must hold. It is critically important - especially at a time of global economic uncertainty - that everyone gets the greatest reduction possible for each dollar spent. Therefore, the United States and like-minded nations, from Japan to Russia, strongly oppose efforts to restrict use of market measures.

Our second challenge is to make progress with developing countries. As we have emphasized in our vigorous diplomatic efforts, we understand that developing countries face pressing needs and cannot take on commitments identical to those of industrialized nations. Nevertheless, developing nations will generate a majority of emissions in the next century; without them, we cannot meet the challenge of global warming no matter how much we do at home.

That is why Mr. Clinton has said he will not submit Kyoto for ratification without meaningful participation from key developing nations. While we do not expect to reach this goal at Buenos Aires, we are pressing ahead. We are emphasizing to developing countries that addressing climate change can help promote economic growth, and that many of the protocol's market-based mechanisms can speed the transfer of investment and clean-energy technologies to them.

The Kyoto Protocol represented a landmark advance, creating the structures to begin combating global warming. In Buenos Aires, the international community has begun the task of turning the protocol's broad concepts into working realities. Our success over time will ensure that we pass on to future generations a sustainable and livable world.

Stuart E. Eizenstat is undersecretary of State for economic business and agricultural affairs. He is head of the US delegation to the climate change talks in Buenos Aires this week.

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Statement by Stuart E. Eizenstat
U.S. Under Secretary of State for
Economic, Business and Agricultural Affairs
November 11, 1998

On behalf of the United States, I commend President Menem's historic announcement today that Argentina will voluntarily take on an emissions target for the first commitment period of the Kyoto Protocol.

As the first developing country to make this pledge, Argentina demonstrates great leadership, real courage and a deep appreciation that climate change is a global challenge that demands a truly global solution. We can pass on a livable world to future generations only if all nations -- developed and developing alike -- meet this challenge head on. As the Climate Change Convention states, we must each act according to our "common but differentiated responsibilities."

We applaud Argentina's effort to chart a new pathway for developing countries to deepen their commitments and take full advantage of the Protocol's important flexibility mechanisms, including emissions trading. These mechanisms will benefit both our environment and our economy, allowing nations to achieve greater greenhouse gas reductions at a faster pace and a lower cost.

In the long run, the objectives of the Protocol will be achieved only if countries that wish, according to their own convictions, to chart their own sovereign path to lower emissions are allowed to do so.

Today, Argentina has taken a bold step towards a healthier, more sustainable future. President Menem's pledge is a clarion call for all nations to join in strengthening the global effort to meet the most profound environmental challenge of the 21st century.

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Divider Title: _____

Stuart E. Eizenstat
Under Secretary for Economic, Business and Agricultural Affairs
U.S. Department of State
Remarks at UNFCCC Fourth Conference of the Parties
Buenos Aires, Argentina, November 12, 1998
(Link to Spanish version.)

(As Delivered)

Thank you, Madame President. At the outset of this Conference, delegates stood in a moment of silence for the victims of Hurricane Mitch. Today, on behalf of the United States of America, I extend our deepest sympathies and assure our friends in Central America that they can rely on our help as they recover from this terrible tragedy.

Madame President, I also want to thank you most sincerely for your tireless efforts in hosting this Conference.

Nearly a year ago in Kyoto we forged an historic agreement. The Kyoto Protocol represents mankind's collective effort to confront the most profound environmental challenge of the 21st century -- the challenge of global warming. Climate change is a threat no nation can escape; a threat that respects no border, nor the differences between rich and poor.

In the United States, we are strengthening our already robust domestic efforts to address global warming. Under the leadership of President Clinton and Vice President Gore, we have increased federal investment for energy efficiency and renewable energy to $1 billion in this year alone -- a 25 percent increase, over last year.

This new funding will accelerate actions already underway to develop automobiles with three times the fuel economy of today's models by the middle of the next decade; housing that is 50 percent more energy-efficient; a thriving bioenergy industry and much more. We have initiated aggressive efforts to reduce federal energy usage. And we have launched new partnerships with industry to help boost productivity while lowering emissions.

During the coming year, President Clinton will seek further increases in federal investment to address global warming. We will launch new initiatives on federal energy procurement and transportation, we will begin setting new energy efficiency standards for major appliances, we will spur the development of clean industrial technologies, and we will promote the use of carbon sinks. We will also renew our efforts to restructure our electricity industry to unleash market forces to boost energy efficiency and reduce

emissions. In short, there is more we can, and there is more we will do at home.

Among the most important developments since Kyoto has been the growing number of leading U.S. corporations acknowledging that the threat of climate change is real. Many are now working to turn the promise of Kyoto into a reality, exploring new ways to use energy better and to use it smarter. Some have even pledged to voluntarily reduce their emissions below their Kyoto targets. And we are encouraged as well by the introduction in the United States Senate of bipartisan legislation to give credit to companies that achieve early greenhouse gas reductions, and one of the sponsors, Senator Lieberman, is here in this hall.

Each of these steps represents real progress. Our job here is to build on this momentum.

In that spirit, I am pleased to announce that today in New York the United States will sign the Kyoto Protocol. We pledged at the conclusion of the Kyoto conference that we would sign this historic agreement. And today, we will do so.

In taking this action, the United States reaffirms our commitment to work with the nations gathered here to address the challenge of climate change. And we are guided by the firm belief that signing will serve our environmental, economic and national security goals.

Kyoto is a landmark achievement, but it is a work-in-progress and key issues remain outstanding. As an original signatory to the Protocol, the United States will be able to play a stronger and more effective role in resolving these issues.

The first major set of issues concerns the Protocol's flexibility mechanisms, including international emissions trading and the Clean Development Mechanism.

These mechanisms can be the engines that drive both the cost-effective achievement of our environmental objectives, and as well, the transfer of climate-friendly technology to the developing world. To realize that promise, we must develop appropriate means for measurement, for reporting and compliance and to resolve liability considerations to create a system with integrity and with high standards.

Our experience in the United States has proven the enormous potential of a well-designed system of emissions trading. For example, in our fight in the United States against acid rain, emissions trading has allowed us to achieve our goals 30 per cent faster at less than half the projected cost. Far from avoiding responsibility, trading is enabling us to achieve our environmental responsibilities faster, and at markedly less cost.

Done right on a global scale, emissions trading will allow the whole world to achieve greater greenhouse gas reductions at a faster pace and a lower cost for all Parties. At a

time of global financial uncertainty, which affects almost every country in this room, it should be clear to all that we cannot afford a system that makes the reduction of a ton of carbon more expensive than it needs to be. As Tuesday's roundtable made clear, a robust system of flexible mechanisms with clear rules - and, yes, without arbitrary limits -- is the key to unlocking the energies and ingenuity of the private sector to meet the challenge of climate change.

The second issue we must resolve is the meaningful participation of key developing countries in efforts to address climate change.

The United States commends Argentina for the historic announcement by President Menem yesterday that it will voluntarily take on a binding emissions target for the first commitment period of the Protocol. And we support Argentina's call for new pathways for developing countries to more actively participate in efforts to address climate change. We also applaud Kazakstan's intention to join Annex I and Annex B.

Many decades ago, when this region was struggling for freedom and independence, the great Argentine patriot San Martin said to the people of South America that "all the Americas are watching you and counting on the courage and honor you have habitually displayed."

San Martin's words echo down through the ages, and today, all the world is watching Argentina and is inspired by the courage and honor it has displayed at this Conference. Let us be frank: Without the meaningful participation of key developing nations, the world simply cannot meet the challenge of global warming no matter how much is done by industrialized countries.

And that is why, absent such meaningful participation, President Clinton will not submit the Protocol to the United States Senate, whose approval is required to make it legally binding.

The U. S. understands fully that developing countries face pressing needs and their responsibilities are not identical to those of industrialized nations. For many developing countries, "meaningful participation" could mean slowing the rate of emissions increase while their economies continue to grow. As President Menem stated so eloquently, the only path to sustainable growth is clean growth.

That is why we are working with scores of countries around the world to help them along the path to sustainable development, lower emissions, and enhanced technology transfer. In the long run, the objectives of the Convention will be achieved only if countries that wish to chart their own sovereign path to lower emissions are allowed to do so.

The third critical issue before us is to ensure that the Protocol fully accounts for carbon absorbing sinks, such as forests and farmlands. Guided by science, we must ensure that

we provide appropriate incentives for protecting our forests from deforestation; promoting afforestation and reforestation; and improving forest and agricultural conservation practices.

And finally, the Kyoto architecture must rest on a solid foundation of compliance. Already, the Protocol contains numerous building blocks that promote compliance, including provisions on measurement, reporting, and in-depth reviews. To realize the Protocol's environmental objectives, these must be supplemented by additional substantive rules, procedures, and non-compliance consequences. The United States urges this Conference to set in motion an expedited process to build a compliance regime that is strong, that is coherent and that is effective.

All our nations have expended enormous effort over the past decade to address the profound challenge of global warming -- from Rio de Janeiro to Berlin, from Kyoto to Buenos Aires. Ultimately, solving the problem will take sustained effort by all of us over many decades. This is a marathon, not a sprint. It is our duty to future generations to turn Kyoto's broad concepts into working realities. Let us recommit ourselves here in Buenos Aires to do this great endeavor.

Thank you very much.

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UNITED STATES SIGNS THE KYOTO PROTOCOL
November 12, 1998

The United States will today sign the Kyoto Protocol, reaffirming its commitment to work with countries around the world to meet the challenge of global warming. The Protocol will be signed at the United Nations in New York by Acting U.N. Ambassador Peter Burleigh.

By joining other major industrialized countries as an original signatory to the Protocol, the United States ensures its ability to continue playing a strong role on issues left unresolved in Kyoto. These include meaningful participation by key developing countries and the rules and guidelines for implementing Kyoto's flexibility mechanisms, including international emissions trading and the Clean Development Mechanism.

The United States signs the Protocol in the firm belief that it will serve its environmental, economic and national security goals.

Signing vs. Ratification

Signing the Kyoto Protocol, while an important step forward, does not make the agreement binding on the United States or impose any obligation to implement it. The Protocol can be ratified by the United States only with the advice and consent of the United States Senate. President Clinton has made clear that he will not submit the Protocol to the Senate until there is meaningful participation by key developing countries in addressing climate change. To date, 59 other countries have signed the Protocol, and two have ratified it.

Progress Since Kyoto

The Kyoto Protocol is an historic step forward in international efforts to address global warming, combining ambitious environmental targets with flexible market-based mechanisms to minimize the cost of meeting them.

In the year since Kyoto, new findings have reinforced the strong scientific consensus that human activities are affecting the climate. The most recent El Nino offered a window on the kinds of extreme weather that global warming may bring.

The United States continues to strengthen its domestic efforts to reduce greenhouse gas emissions, launching new partnerships with industry and taking new steps to reduce federal energy use. President Clinton secured over $1 billion in the fiscal year 1999 budget to support research and development in energy efficiency and renewable energy -- a 25 percent increase. At the same time, a growing number of leading corporations are publicly recognizing the threat of climate change and voluntarily pledging to reduce their emissions. During the coming year, President Clinton will seek further increases in federal investment to address global warming.

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Divider Title: _____

THE WHITE HOUSE

Office of the Vice President

For Immediate Release November 12, 1998

STATEMENT BY VICE PRESIDENT GORE
ON THE UNITED STATES' SIGNING OF THE KYOTO PROTOCOL

Our signing today of the Kyoto Protocol reaffirms America's commitment to meeting our most profound environmental challenge -- global climate change.

U.S. leadership was instrumental in achieving a strong and realistic agreement in Kyoto -- one that couples ambitious environmental targets with flexible market mechanisms to meet those goals at the lowest possible cost. At the close of the Kyoto conference, President Clinton and I made clear his intention to sign this historic accord. In the eleven months since Kyoto, the evidence of global warming has grown only stronger, and so has our resolve. The recent budget agreement provides more than $1 billion for our domestic climate change efforts -- a 25 percent increase. And a growing number of leading corporations are pledging voluntary cuts in their greenhouse gas emissions.

With talks now under way in Buenos Aires to continue the vital work begun in Kyoto, our signing of the Protocol underscores our determination to achieve a truly global solution to this global challenge. We hope to achieve progress in refining the market-based tools agreed to in Kyoto, and in securing the meaningful participation of key developing countries.

Signing the Protocol, while an important step forward, imposes no obligations on the United States. The Protocol becomes binding only with the advice and consent of the U.S. Senate. As we have said before, we will not submit the Protocol for ratification without the meaningful participation of key developing countries in efforts to address climate change.

We are confident that in time the nations of the world will arrive at a course that maintains strong and sustainable economic growth, respects the needs and aspirations of all nations, and protects future generations from the threat of global warming.

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Statement by Stuart E. Eizenstat, U.S. Under Secretary of State for Economic, Business and Agricultural Affairs
At the Conclusion of the Fourth Conference of the Parties, UNFCCC
Buenos Aires, Argentina, November 14, 1998
(Remarks as Delivered)

In the Southern Hemisphere, according to the Almanac, the longest day of 1998 is December 22. I think it arrived about five weeks early. I am pleased to report to you, though, that after days of almost round-the-clock negotiations, the Fourth Conference of the Parties has achieved real progress in turning the promise of Kyoto into a reality.

Our success here proves that the framework we built in Kyoto is indeed sound. It has withstood its first test. We have reached agreement on a solid plan of action to complete the unfinished business of Kyoto. We have resolved to settle a number of the key issues before us within two years' time.

Most significant, though, this Conference was marked by a clear shift in the terms of the debate. Our talks here were infused by a promising new spirit of engagement that is helping to bridge the divide between developed and developing nations.

This was best exemplified by the historic pledge of our host country, Argentina, to take on a binding emissions target, and the announcement by Kazakhstan that it intends to do so as well. These pledges reflect a growing recognition that climate change is truly a global challenge that requires a global solution. They have changed the map of future negotiations. And they challenge the Parties gathered here to find new pathways, so that nations wishing to assume their share of our common but differentiated responsibilities, can chart their own sovereign course to lower emissions.

On other issues as well, developing countries from Latin America to Africa to small Pacific island states are stepping forward to play a more constructive role in our collective endeavor, recognizing - in the words of President Menem -- that the only path to sustainable growth is clean growth.

For our part, the United States remains steadfast in its resolve. We are taking strong action at home to reduce our greenhouse gas emissions, forging new partnerships with industry and dramatically increasing our investments in clean and efficient technologies. We can - and will - do more.

Thursday, we signed the Kyoto Protocol, reaffirming our commitment to work with other nations to achieve the ambitious environmental goals we set in Kyoto. While signing does not legally commit us to implement the Protocol, it strengthens our ability to resolve issues left open in Kyoto, so that we can then submit the Protocol for the approval of the U.S. Senate.

Our talks here were arduous. But looking back over the past year, I would not have predicted that we would come so far in so short a time. In Kyoto, only a handful of companies would even acknowledge that the threat of climate change is real. A year later, a growing number are becoming full partners in our efforts and pledging real action to reduce emissions. And, for the first time, the Parties themselves recognized the value of directly involving the private sector -- as, by the way, we urged at the Tokyo ministerial -- in these proceedings. It is, after all, the private sector that will have to marshal the resources and know-how to meet our goals.

In Kyoto, emissions trading was a novel concept to most nations. A year later, there is growing recognition that trading will help us achieve maximum environmental gain for each dollar, peso, euro or yen invested in greenhouse gas reduction.

In Kyoto, many developing countries resisted creation of the Clean Development Mechanism. A year later, countries from Senegal to China are expressing great interest in using this powerful tool to help meet both their environmental and their economic needs.

The action plan we adopted today will carry forward a new momentum, a momentum we have seen here in Buenos Aires. In this action plan, the Parties resolve to reach decisions by the end of 2000 on a number of key issues. These include:

- Elaborating rules and guidelines for Kyoto's market-based mechanisms -- emissions trading, the Clean Development Mechanism, and Joint Implementation;
- Encouraging the transfer of technology to help developing nations along the path to clean, sustainable growth;
- Assisting countries adversely affected by climate change and helping them to adapt to these consequences; and,
- Ensuring that the Kyoto architecture rests on a solid foundation of compliance.

Importantly, the Parties, at our urging, also agreed that since the issues have grown more numerous and complex, annual meetings are no longer sufficient. In fact the fact that we stay up through the night is one indication of that. Consequently, there will be more frequent, high-level consultations to provide political guidance to the subsidiary bodies that grapple with the outstanding issues. This will allow us to maximize our progress at future conferences.

Buenos Aires has not only sustained, but advanced the momentum of Kyoto. Let there be no mistake: we confront a challenge many years in the making. Serious hurdles remain before this treaty is workable and complete. But the agreement we have forged here today gives us a way to move forward, so that we can create and mobilize the most effective means to our environmental ends.

Finally, I want to thank President Menem, Minister Alsogaray, and the people of Argentina for hosting this conference. We will always recall the "good air" of Buenos Aires as we continue our work together to ensure that the planet we pass to our children and grandchildren is healthy and hospitable. Thank you.

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The Washington Post DEC 7 1998

Circ: 852,262

Stuart E. Eizenstat

Frank E. Loy

Hot Air On Climate Change

A25

Taking Exception

H. L. Mencken once said that "a cynic is a man who, when he smells flowers, looks around for a coffin." In his Nov. 20 op-ed article, "Kyoto Shell Game," David Victor demonstrates the relevance of Mencken's dictum, stringing together a variety of criticisms as to why last year's Kyoto Protocol will not work to control emissions of the greenhouse gases that most scientists believe are causing global warming.

Victor argues that the protocol will result in a financial windfall for Russia and Ukraine; that the two-year plan agreed to at last month's climate change conference in Buenos Aires for shaping the protocol's operational framework is too short and finally, that the Clinton administration is wrong to insist that developing countries participate in meeting the challenge of climate change. None of these criticisms survives close scrutiny.

The Kyoto Protocol is a market-based agreement that commits the industrialized world to national targets that will result in an aggregate 5.2 percent reduction in greenhouse gas emissions below 1990 levels by 2008 to 2012. Targets for the developed countries are differentiated: Some must reduce their emissions below 1990 levels; some, such as Russia and Ukraine, must freeze emission levels; others are allowed emissions exceeding 1990 levels. Under the protocol's emissions trading system, countries where it is relatively inexpensive to meet the targets can sell emission allowances to countries where reducing emissions is expensive. Similarly, the protocol's Clean Development Mechanism allows industrialized countries to earn credits by investing in clean-technology projects in developing countries.

Victor apparently concurs with most analysts that Kyoto's market-based mechanisms are essential to meeting the challenge of climate change at the lowest possible cost. These mechanisms also create incentives for all countries to make deeper, faster cuts in greenhouse gas emissions and to adopt better policies and clean technology.

What troubles Victor is that dramatic economic downturns in Russia and Ukraine will give those nations a lot of emissions allowances to trade. His point can be made more broadly: The European Union and Germany also will find it easier to meet their targets because of lower emissions resulting from the collapse of the former East German economy.

But the suggestion that these countries will receive a "windfall for doing nothing" misses the point. First, Victor ignores the critical fact that trading will give financially strapped economies strong incentives to use cleaner technology and improve energy efficiency. One of the crucial features of trading is that it provides a continuing incentive for countries or companies to reduce emissions even if they have met their targets, because they can sell their excess allowances.

Moreover, Victor's argument fails to appreciate that Kyoto's combination of differentiated targets and market-based mechanisms for meeting them was part of an ambitious, intensely negotiated framework. Going back to square one and "renegotiating the whole Kyoto deal"—as Victor suggests—makes no sense.

Victor also disdains the notion that effective systems for monitoring and enforcement can be established within the two-year timetable agreed to in Buenos Aires. But creating the structure for emissions trading, while complex and arduous, is also both doable and necessary. Nations need to know what they are agreeing to when they ratify the protocol. Drawing on the experience of our own highly successful domestic acid rain emissions trading program, the United States is committed to building a trading system with integrity—not one that is "half-baked" or a mere "shell game." Victor also ignores the fact that "full-blown emissions trading" will not start until almost a decade from now—plenty of time to fine-tune the system.

Victor's more fundamental disagreement with the administration is that our policy places too much emphasis on securing the participation of the developing countries in the fight against global warming. He even argues, "It is only proper that developing countries get a free ride for now."

But the developing countries' participation in this fight is not a political nicety—it is an environmental necessity. Early in the next century, emissions from the developing world will surpass those from developed nations. Moreover, Victor's free ride would be a costly disaster for developing nations themselves. Environmental problems put off today would strangle growth and devastate the environment tomorrow.

Argentina's pledge last month to take on a binding emissions target was no "vague and irrelevant promise" but a commitment—followed by one from Kazakhstan and two of the small, vulnerable island nations—that represents a critical step on the path to greater participation of developing countries.

Where Victor and the administration agree is on the need for the United States to lead the way on climate change. The administration has initiated or expanded more than 50 programs since 1993 that are improving U.S. energy efficiency and accelerating research and development into renewable energy sources. This fall President Clinton secured more than $1 billion in funding for climate-related programs. Next month he will request more from Congress—aiming, as Victor suggests, to "spawn new technologies" that will put us on a path toward lower greenhouse gas emissions.

The writers are, respectively, undersecretary of state for economic, business and agricultural affairs; and undersecretary of state for global affairs.

Kyoto Shell Game

By David G. Victor

Friday, November 20, 1998; Page A29

The two weeks of marathon negotiations just concluded in Buenos Aires did little to slow global warming. Delegates who met there adopted a road map for implementing last year's Kyoto Protocol, but the road leads nowhere, because the protocol will never work.

The Kyoto Protocol sets targets and timetables for all 38 industrialized countries to regulate emissions of six gases that cause global warming. If the United States ratifies the pact, for example, it must cut emissions 7 percent below 1990 levels by the years 2008 to 2012. Similar cuts are required in Western Europe and Japan. Russia and Ukraine must freeze emissions at 1990 levels.

In practice, it doesn't matter where on earth the reductions actually occur. Once the gases are emitted, air currents carry them worldwide. Thus the Kyoto Protocol also envisions a new currency -- greenhouse gas emission permits -- that might be traded like pork bellies or greenbacks.

The logic for emission trading is compelling. Regulating emissions in relatively efficient Western economies could be difficult and costly. But elsewhere, the fruits hang low, easy to pick. Projects to refurbish inefficient power plants in Poland, for example, have cut greenhouse gas emissions at one-tenth the cost in the West. Trading would let investors earn valuable emission permits while the Polish hosts get new technology.

Without trading, the United States alone could spend more than $100 billion to meet its Kyoto target, an amount comparable to the annual American spending on all federal clean-air and clean-water programs. With trading, the cost is lower by half or more.

Politically, however, the Kyoto trading system will fail, because it is a shell game. Most permits are likely to be sold by Russia and Ukraine. In these countries, combustion of fossil fuels, the main source of greenhouse gas emissions, has fallen steadily as the economies collapsed. Their emissions in 2008 to 2012 will be far below the Kyoto targets.

But declining living standards are not a sustainable way to slow global warming. When the economies rebound, so will emissions. Yet, by selling their excess permits in the interim, Russia and Ukraine might reap a $100 billion windfall while doing nothing to limit future emissions.

It's doubtful the Senate would ratify a $100 billion transfer that buys nothing. And absent America, no other major country will implement Kyoto's costly commitments.

Most disturbing is that Kyoto's enemies have attacked the protocol's strongest element. Automobile manufacturers, mining conglomerates and other carbon-spewing industrialists are bankrolling a venomous campaign to kill the Kyoto deal because it exempts developing countries. Last year the Senate resolved 95 to 0 to reject any pact that doesn't include meaningful participating by developing countries.

In response, the Clinton administration is wasting scarce political capital pressuring developing countries to make vague and irrelevant promises to regulate greenhouse emissions. Argentina was the first to cave; last week it announced it would pledge to slow growth in greenhouse gas emissions.

A more effective way to bring in developing countries is the protocol's "Clean Development Mechanism." Like emission trading, the mechanism allows industrialized countries to earn credits by investing in projects that lower the effluent from the developing world. Over time, developing countries can be urged to shoulder a rising share of the cost.

Swayed by special interests that want to block any global warming action, America's government has missed the point. It is only proper that developing countries get a free ride for now. The rich industrialized nations put this issue on the agenda, and they must lead. Per capita, the United States still vents greenhouse gases at 10 times the rate of China.

Thus, when the Kyoto pact is rejected in the Senate, the wrong lessons will be learned. Opponents of emission trading -- who fear it is a loophole for buying compliance rather than cutting emissions -- will claim that trading was unworkable. They will be wrong. A sensible trading system with fair permit allocations was never attempted.

Others will attribute Kyoto's failure to the industrialists' campaign. But that will wrongly result in even more pressure on developing countries to regulate emissions, which will deepen conflict between North and South and deadlock progress.

The first step out of this cul-de-sac is to recognize that the Kyoto Protocol, as it stands, is politically dead on arrival -- and should be. Russia and other reluctant countries must be compensated if we want them to participate in slowing global warming, but Kyoto's $100 billion is extreme. The only way to halt bogus permit trading is to reallocate the permits, and that requires renegotiating the whole Kyoto deal.

Second, full-blown emission trading should be attempted only when the necessary institutions are tested and in place. Particularly lacking are systems for monitoring and enforcement.

Creating a viable emission trading system is no less difficult than designing monetary union. Under the best conditions, a decade will be needed. The Buenos Aires road map allows only two years. That rapid timetable will yield a half-baked system that destroys the credibility of the trading concept for the future, when tighter and costlier regulations might be adopted and the benefits of trading would be greater.

Finally, future negotiations must focus on this key fact: Only new technology can solve the global warming problem. Technological change -- especially radical change, such as toward an economy that runs on hydrogen fuels and emits no greenhouse gases -- can't be planned according to Kyoto-like short-term binding emission targets. More effective agreements must reward long-term investment and be focused on policies that spawn new technologies, not just short-term emission trends.

America can lead the way by expanding the Clinton administration's plans for technological research and development. America also can organize credit guarantees or subsidies for the Clean Development Mechanism, which will preserve the incentive for firms to apply new technologies in the developing countries when the rest of the Kyoto pact dies.

The writer is Robert W. Johnson Jr. fellow for science and technology at the Council on Foreign Relations.

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THE BUENOS AIRES CLIMATE CHANGE CONFERENCE
STATE DEPARTMENT FACT SHEET
DECEMBER 1998

OVERVIEW

- At a conference held November 2-13, 1998, in Buenos Aires, Argentina, the Parties to the UN Framework Convention on Climate Change agreed to a two-year action plan for advancing the ambitious agenda outlined in the historic Kyoto Protocol. The Protocol commits developed countries to reduce emissions of the greenhouse gases most scientists believe are causing global warming, and provides innovative, market-based tools for achieving those reductions. [See box].

- The Buenos Aires conference (known also as the "Fourth Session of the Conference of the Parties" or "CoP-4") also saw a significant breakthrough on the issue of developing country participation in international efforts to address climate change. Argentina became the first developing country to announce its intention to take on a binding emissions target for the 2008-2012 time period. Kazakhstan announced that it intended to do so as well.

- During the Buenos Aires conference, on November 12, 1998, the United States signed the Kyoto Protocol at the United Nations in New York. Signing reaffirms the United States' commitment to work with other nations to meet the Protocol's ambitious environmental goals and ensures a continued strong U.S. role in settling issues left unresolved at Kyoto. Signing does *not* impose an obligation on the United States to implement the Kyoto Protocol. (The Protocol cannot become binding on the United States without the approval of the United States Senate.) The President will not submit the Protocol to the U.S. Senate for approval without the meaningful participation of key developing countries in efforts to address climate change.

SUMMARY OF ACCOMPLISHMENTS

BUENOS AIRES ACTION PLAN

- By securing a plan of action with a deadline for developing key aspects of the operational framework of the Kyoto Protocol, the United States achieved one of its primary diplomatic objectives in Buenos Aires.

- In the Buenos Aires action plan, the Parties resolved to reach decisions by the end of 2000 on a number of key issues, including:

    - Rules and guidelines for Kyoto's market-based mechanisms (e.g., emissions trading, joint implementation, and the Clean Development Mechanism);

    - Compliance rules and procedures, including consequences for non-compliance;

    - Development and transfer of cleaner, climate-friendly technologies; and

    - Consideration of the adverse impacts of climate change and response measures.

THE KYOTO PROTOCOL

In December, 1997, in Kyoto, Japan, some 160 countries reached an historic agreement to cut greenhouse gas emissions in an effort to fight global warming -- one of the most profound environmental challenges of the 21st century.

The Kyoto Protocol includes binding emissions targets for developed nations -- 8% below 1990 emissions levels for the European Union; 7% for the United States; and 6% for Japan -- as well as U.S. proposals for flexible, market-based measures to ensure that these targets can be met in a cost-effective manner. The key market-based provisions are:

- **International emissions trading among nations with emissions targets.** Under an emissions trading regime, countries or companies that find it relatively expensive to reduce emissions may purchase additional emissions units from those emitters that have more units than they need (because they have already met their targets with room to spare). Trading encourages reductions where they can be achieved at the lowest cost, thus getting the world the most greenhouse gas reductions for each available dollar, euro or yen.
- **Clean Development Mechanism (CDM).** Industrialized countries will be able to use certified emissions reductions from projects in developing countries to contribute to their compliance with greenhouse gas reduction targets.
- **Joint implementation among developed countries.** Countries with emissions targets may get credit towards their targets through joint project-based emissions reductions in other such countries.

The Protocol includes additional elements of flexibility:

- **Emissions targets are to be reached over a five-year commitment period. The first commitment period will be 2008-2012.** Allowing emissions to be averaged over a commitment period helps smooth out short-term fluctuations due to economic performance or weather. Having a decade before the start of the binding period will allow more time for companies to make the transition to greater energy efficiency and/or lower carbon technologies.
- **Emissions targets include all six major greenhouse gases.** This will provide more comprehensive environmental protection while lending additional flexibility to nations and companies in meeting their targets.
- **Activities that absorb carbon, such as planting trees, can be used as offsets against emissions of greenhouse gases.** Including these so-called "carbon sinks" will encourage activities such as afforestation, reforestation, and better forestry and agriculture conservation practices.

To enter into force, the Protocol must by ratified by at least 55 countries, accounting for at least 55 percent of the total 1990 greenhouse gas emissions of developed countries. United States ratification will require the advice and consent of the U.S. Senate.

BUENOS AIRES ACTION PLAN (continued from page 1)

- The plan of action for proceeding on Kyoto's market-based mechanisms includes a list of critical operational issues raised by Parties, including:
  - Transparency in tracking transfers of emissions units;
  - Allocating risk in emissions trades; and
  - Measurement, reporting and verification issues.
- The Parties decided to continue the Activities Implemented Jointly pilot phase for emissions reduction and carbon sink activities. This will provide, in particular, the least developed and

small island states additional opportunities to develop projects and gain experience that will allow them to participate more fully in the Protocol's Clean Development Mechanism.

CARBON SINKS

- In addition to the Buenos Aires Action Plan, the Parties agreed to move forward with a process to define, measure and verify various categories of carbon sinks and have tasked the Intergovernmental Panel on Climate Change (IPCC) (an international body of over 2000 of the world's leading climate scientists and experts) with conducting a comprehensive study on land-use, land-use change, and forestry activities.
    - As part of this process, the Parties accepted the offer of the United States to host a workshop in the spring of 1999 on additional sink categories, such as those created by improved conservation and management of forests, agricultural soils, and grasslands.
    - Once the IPCC report is finished in the spring of 2000, the Parties will be in a position, at the following Conference of the Parties, to consider further decisions on the scope and use of carbon sinks under the Protocol.

DEVELOPING COUNTRY PARTICIPATION

- On November 11th, Argentina became the first developing country to announce its intention to adopt a binding emissions target for the 2008-2012 time period. Kazakhstan followed the next day with a similar pledge. While the issue of developing country participation in the Protocol remains far from resolved, these announcements signaled a clear shift in the terms of the international debate.
- The announcements by Argentina and Kazakhstan present a new challenge to the Parties. The Protocol does not now provide for nations to voluntarily assume binding emissions targets. Thus, future conferences will need to find pathways under the Protocol in order to facilitate greater developing country participation. Possibilities include a supplemental agreement that would modify the Protocol as it enters into force.
- Greater engagement in Buenos Aires on the part of developing countries was evidenced in other areas as well. One notable example was the growing interest of countries in Latin America and Africa in the Clean Development Mechanism, one of the Protocol's market-based provisions that provides incentives for investment in clean technology projects.
- Climate change is a global problem requiring a global solution. Thus, securing meaningful participation from key developing countries remains a top priority for the United States. The Administration will continue a "full-court diplomatic press" in this area.

PRIVATE SECTOR INVOLVEMENT

- Another encouraging development in Buenos Aires was the active participation of the private sector. Business representatives were involved in two roundtables on the Kyoto mechanisms and technology transfer. Private sector representatives will continue to have opportunities to participate in upcoming international meetings on a number of climate issues.

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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.

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Divider Title: _____

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 hexaflouride (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.

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Divider Title: _____

MEETING THE CHALLENGE OF GLOBAL CLIMATE CHANGE
APRIL 1999

Global climate change is one of our greatest environmental challenges. The overwhelming weight of scientific authority tells us that the build-up of greenhouse gases in the atmosphere creates dangers -- such as severe storms and droughts, increases in respiratory and infectious diseases, and rising sea levels – that are too serious to ignore.

The Clinton Administration is working at home and abroad to meet the challenge of climate change. Domestically, we are working on a wide range of initiatives to reduce greenhouse gas emissions by developing and deploying energy efficient technologies and spurring the broader use of renewable energy. Internationally, we are working to secure the meaningful participation of developing countries in addressing global warming and to complete the other unfinished business of the Kyoto Protocol.

THE SCIENCE OF CLIMATE CHANGE

Greenhouse gases trap heat from the sun. These gases warm the Earth's surface by an estimated 60° Fahrenheit (F), sustaining our existence on the planet. However, the burning of fossil fuels and deforestation have increased the concentration of carbon dioxide (the principal greenhouse gas) by more than 30% since preindustrial times.

Scientists predict that, if we continue on our current course, concentrations of greenhouse gases in the atmosphere will reach roughly twice current levels by 2100 -- a level not seen on this planet for the past 50 million years. The Intergovernmental Panel on Climate Change (IPCC), which represents the work of more than 2,000 of the world's leading climate scientists, estimates that this will lead to an increase in global temperature of 2 to 6.5° F. By way of comparison, the last ice age was only 5 to 10° F colder than today.

Over the past year, new data from satellites, tree rings, ice cores, and deep boreholes drilled in the Earth's surface have reinforced the broad scientific consensus that human activities have started to affect the climate and that continuing on a "business as usual" course will lead to substantial warming in the next century. Studies have shown that the 20th century has been the warmest century in the past 1,000 years and that the 1990s have been the warmest decade in that period, while 1998 has been the single warmest year on record.

POTENTIAL IMPACTS OF CLIMATE CHANGE

Scientists predict a range of likely effects from global warming:

- ***Extreme weather.*** As temperatures increase, so does the rate of evaporation. This acceleration of the so-called hydrologic cycle is projected to increase the frequency and intensity of extreme weather events such as floods and droughts. Last year's El Nino – which produced warmer and wetter conditions akin to those anticipated from global warming – offered us a window on the type of extreme weather that climate change may bring, from heat waves and drought in Texas, to wildfires in Florida, Mexico and Indonesia, ice storms in the northeastern United States, and devastating floods in China and Bangladesh.

- ***Human health.*** Warmer temperatures are projected to increase fatalities from heat stress and expand the geographic ranges for diseases like malaria and dengue fever. Additional smog caused by warmer temperatures could increase the incidence of asthma and other respiratory illnesses, particularly among children and the elderly.

- ***Sea level rise.*** Scientists project that the sea level will rise by an additional 6 to 37 inches by 2100, endangering island states and coastal areas. A 20-inch rise could inundate 7,000 square miles of the U.S. coastline, with Florida and the Gulf Coast at greatest risk.

- ***Agricultural impacts.*** Changes in growing seasons, water availability, soil moisture, and precipitation are expected to cause significant regional shifts in food productivity, with decreased production in many of the world's poorest regions. Water supplies and water quality may also be affected, posing threats to irrigation, fisheries, and drinking supplies.

- ***Damage to ecosystems.*** Many species are highly adapted to particular climate conditions and may not survive substantial climate shifts. For example, the United States may lose beech trees and sugar maples, and western conifer forests are likely to shrink, as the tolerable climate zones for these species shift hundreds of miles to the north.

PRESIDENT CLINTON'S DOMESTIC PLAN

Since 1993, President Clinton has put into place dozens of win-win programs to develop and deploy energy efficient technologies and spur the development and broader use of renewable energy. These efforts have accelerated since the Kyoto climate change conference in 1997.

- ***Climate Change Technology Initiative.*** This vigorous program of *tax incentives* and *investments* focuses on energy efficiency and renewable energy technologies. The FY 1999 appropriations for these programs totaled over $1 billion and represented a 25% increase over the prior year. The President's FY 2000 budget proposes a still more accelerated effort.

    - The **tax incentive package** contains $3.6 billion over five years for consumers who purchase energy efficient products and for producers of energy from renewable sources. Highlights include: a tax credit of up to $2000 for energy efficient new homes; a 10-20% credit for selected energy efficient products for homes and buildings; a credit of up to $2000 for rooftop solar systems; a credit of up to $4000 for qualifying electric, fuel cell or hybrid vehicles; extension of the current 1.5 cents/kilowatt hour credit for the production of electricity from wind and biomass; an expansion of the biomass credit to cover additional sources; and a 1.0 cent/kilowatt hour credit for cofiring coal and biomass in power plants.

    - The **investment package** contains nearly $1.4 billion in FY 2000 to research, develop, and deploy clean energy technologies. This represents a 34% increase over the amount appropriated in FY 1999. Highlights include: increased funding for the *Partnership for a New Generation of Vehicles*, a government-industry effort to develop cars that get up to three times the fuel efficiency of today's cars; the *Partnership for Advancing Technology in Housing*, which aims to improve the energy efficiency of new homes by more than 50% and to retrofit 15 million existing homes to make them 30% more energy efficient within a decade; a stepped-up *Bioenergy Initiative* to develop advanced bioenergy technologies; expanded research and development efforts in other key renewable energy technologies, such as solar, wind, and geothermal energy; and a *Carbon Cycle Initiative*, to deepen our understanding of carbon "sinks," such as forests and farmlands.

- ***Electricity restructuring.*** Another core element of the President's plan involves restructuring the electricity industry by introducing competition that will save consumers millions on their energy bills while reducing greenhouse gas emissions. The Administration's restructuring proposal would provide a profit incentive for generators to produce more electricity with less fuel and to improve energy efficiency. It also includes an aggressive, 7.5 percent renewable portfolio standard to increase the use of electricity from renewable sources and a $3 billion Public Benefits Fund to spur greater investment in energy efficiency and renewables.

- ***Industry Partnerships.*** The Administration is also engaged in a wide range of consultations with key industry sectors to improve energy use and reduce emissions. For example, the *Industries of the Future* program works cooperatively with the nation's most energy-intensive industries -- such as aluminum, glass, chemicals, forest products, mining, petroleum refining, and steel -- to develop technologies that increase energy and resource efficiency.

- ***Credit for Early Action.*** The Administration is committed to working with Congress and industry on legislation to reward companies taking early, voluntary action to reduce their greenhouse gas emissions or increase carbon sequestration.

- ***Clean Air Partnership Fund.*** The President's FY 2000 budget proposes $200 million for the creation of a new Clean Air Partnership Fund to support state and local projects to reduce both greenhouse gas emissions and ground-level air pollutants.

- ***Federal energy use and procurement.*** The President's plan seeks to substantially reduce the Federal government's own greenhouse gas emissions by improving the energy efficiency of Federal facilities and activities and reforming procurement practices. These actions are important in their own right, since the Federal government is the nation's largest single energy user, but they also set an important example for the private sector.

- ***Domestic emissions trading.*** The President has proposed a domestic emissions trading system to begin by 2008 so that we can achieve our emissions target at the lowest possible cost. The U.S. has used emissions trading successfully to reduce the pollution that causes acid rain -- exceeding environmental objectives at about 50% the expected cost.

- *Scientific research.* The Administration is continuing its strong support for the U.S. Global Change Research Program, with nearly $1.8 billion in funding requested for FY 2000. This program provides a sound science foundation for policy decisions by furthering our understanding of human- and naturally-induced changes in the Earth's environment and assessing the likely consequences of global warming.

DIPLOMATIC AGENDA

Thanks largely to U.S. leadership, the international climate change agreement reached at Kyoto, Japan in December 1997, combines strong environmental targets with elements of flexibility that will allow nations to meet their targets in a cost-effective manner, including:

- ***Flexible market mechanisms.*** The Protocol includes critically important market mechanisms that can dramatically cut the cost of reducing emissions. Chief among these are *international emissions trading* and the so-called *Clean Development Mechanism (CDM)*, which will allow U.S. companies to participate in joint clean energy ventures in the developing world and earn credits from verified reductions in greenhouse gas emissions.

- ***Emissions targets are to be reached over a five-year commitment period. The first commitment period will be 2008-2012.*** Allowing emissions to averaged over a commitment period helps smooth out short-term fluctuations due to economic performance or weather. Having a decade before the start of the binding period will allow more time for companies to make the transition to greater energy efficiency and/or lower carbon technologies.

- ***Emissions targets include all six major greenhouse gases.*** This will provide both more comprehensive environmental protection and additional flexibility for nations and companies.

- ***Activities that absorb carbon, such as planting trees, can be used to offset emissions.*** Including these so-called carbon sinks will encourage afforestation, reforestation, and better forestry and agricultural conservation practices.

At the November 1998 UN climate change conference in Buenos Aires, the parties agreed on a two-year timetable for filling in the key details of the Kyoto Protocol in areas such as emissions trading, the CDM, compliance, and the scope and use of carbon sinks. Buenos Aires also saw progress on the issue of developing country participation as Argentina and Kazakhstan announced their intention to take on binding emissions targets for the 2008-2012 time period. The President has made clear that he will not submit the Kyoto Protocol to the Senate without meaningful participation from key developing countries in efforts to address global warming.

ECONOMIC COST OF KYOTO

The Administration's economic analysis of the Kyoto Protocol concludes that, if we do it right, the cost to the United States of meeting our Kyoto target should be modest. Even without counting the impact of domestic policies or the environmental, health, and economic benefits of limiting climate change, estimates derived from economic modeling suggest an emissions price in the range of $14 to $23 per ton of greenhouse gases. In 2010, that would translate into an increase of $70 to $110 per year for an average family's energy bill. This increase, however, would be substantially offset by the decline in electricity prices resulting from increased competition in a restructured electricity industry, as the Administration and others have proposed. In addition, noted economists have estimated the ancillary benefits of reducing greenhouse gas emissions -- such as reduced air pollution -- could produce savings equal to one quarter of the costs of meeting our Kyoto target.

CONCLUSION

For the past 25 years, efforts to protect the environment, whether by cleaning our air, our water, or eliminating acid rain, have been repeatedly assailed as a threat to our economy. Yet today, we have the cleanest environment in a generation and the strongest economy in a generation. President Clinton's balanced approach to the challenge of climate change will allow us to continue to grow the economy and protect the environment at the same time.

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Divider Title: _____

NEW CLIMATE SCIENCE FINDINGS
APRIL 1999

Significant new findings over the past year reinforce the broad scientific consensus that human activities have started to affect the climate and that continuing a "business as usual" course will lead to substantial warming in the next century.

Temperatures Warmest in 1000 years. In the last year, several independent studies have provided additional evidence of 20th century warming. In a study published last April in *Nature*, scientists analyzed tree rings, corals, ice cores, and lake sediments that showed this century's surface temperatures for the Northern Hemisphere to be the warmest since at least 1400. A more recent study of Northern Hemisphere temperatures published in *Geophysical Research Letters* found it highly likely that the 20th century has been the warmest century of the millennium; the 1990s have been the warmest decade; and 1998 has been the warmest year. A study of temperature data from 600-1800 foot deep boreholes in North America, Europe, Africa, and Australia, published last October in *Science* found that the Earth's average surface temperature has increased by about 1.8° Fahrenheit (F) over the last five centuries, and that half of this total warming occurred in this century.

1998 Sets Record for Warmest Year. In January 1999, NASA and NOAA researchers released data showing that 1998 was the warmest year recorded since reliable instrument records began over a century ago. Over this same span, 7 of the 10 warmest years on record have all occurred since 1990. The global average temperature in 1998 broke the previous record, set in 1997, by a quarter of a degree F. In, addition, 1998 was also 1.2° F above the long-term average temperature – the 20th consecutive year in which this benchmark has been exceeded.

El Nino a Window on the Future. Last year's strong El Nino produced warmer and wetter conditions in some areas of the world similar to those anticipated from global warming. The heat waves and drought in Texas and other parts of the southwestern United States, wildfires in Florida, Mexico, and Indonesia, ice storms in the northeastern United States, and devastating floods in China and Bangladesh, are illustrative of the kinds of extreme events that are expected to become more frequent as average global temperatures increase.

Growing Season Lengthening Due to Warming. A new study analyzing the behavior of trees and shrubs across Europe concluded that botanical spring is starting an average of six days earlier than it did three decades ago, while autumn has been delayed an average of about five days. This confirms earlier studies which have used different methods to show, for example, that spring arrived about a week earlier in the early 1990s than it did in the early 1980s for regions north of the 45th parallel.

New Analysis of Satellite Temperature Measurements Finds Warming. A new analysis of satellite data published last August in *Nature* found that previous reports indicating a cooling trend in the lower atmosphere failed to account for the decaying (lowering) of satellite orbits. The corrected satellite record shows a slight warming trend more consistent with ground-based observations.

New Study Shows Role of CO2 in Ice Age Warming. A study of Antarctic ice cores published in March in *Science* compared changes in temperature and levels of atmospheric carbon dioxide during several ice ages. The study showed that as the Earth began to warm due to minor changes in its orbit, carbon was released from the ocean into the air, raising atmospheric CO2 levels that then greatly magnified and accelerated the warming process. The study confirms that small changes in the factors that affect climate can have large effects on global temperatures.

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Divider Title: _____

INDUSTRY AND CLIMATE CHANGE
APRIL 1999

There is a growing awareness in the business community that the threats posed by climate change are real and a number of companies are stepping forward to assume leadership roles in efforts to address the problem. The Clinton Administration is working to facilitate these efforts through a range of voluntary programs. It also supports the principle of granting credit to firms that take early action to reduce greenhouse gas (ghg) emissions.

Growing Awareness and Support From Business. An increasing number of companies are committing to take real actions to cut their ghg emissions. In the past year alone:

- **British Petroleum** pledged in September 1998 to reduce its ghg emissions 10% below 1990 levels by 2010 across its global operations and to ramp up its solar business to $1 billion in sales by 2007. The company later extended its pledge to include its newly acquired subsidiary, **Amoco**.
- **Royal Dutch Shell** pledged to cut its global ghg emissions by 10% by 2002 and maintain that level of reduction through 2010. It will also spend $500 million over the next 5 years on developing a new renewable energy business.
- **United Technologies** -- producers of Otis elevators, Carrier air conditioners, Pratt & Whitney engines and Sikorsky helicopters -- announced a plan to cut emissions by improving energy efficiency 25% per unit of production by 2010.
- **IBM** announced goals to improve energy efficiency by 4% per year and to reduce ghg emissions.
- The new **Pew Center on Climate Change** launched a $5 million campaign to build support for taking action on climate change. **Boeing**, **DuPont**, **Shell**, **Weyerhaeuser** and some 17 other major corporations joined the Center's *Business Environmental Leadership Council*, saying "enough is known about the science and environmental impacts of climate change for us to take actions to address its consequences."

Industry Partnerships. A number of voluntary government-industry partnerships are supporting efforts to reduce emissions, including:

- *Partnership for a New Generation of Vehicles*, a partnership with the **auto industry** to develop cars that get up to three times the fuel efficiency of today's cars;
- *Partnership for Advancing Technology in Housing*, a partnership with the **building industry** to develop and deploy housing technologies to make new homes 50% more energy efficient and to retrofit 15 million existing homes to make them 30% more energy efficient within a decade; and
- *Industries of the Future*, a cooperative research program with the nation's most energy-intensive industries -- such as **aluminum**, **glass**, **chemicals**, **forest products**, **mining**, **petroleum refining**, and **steel** -- to develop energy efficient technologies.

Credit for Early Action. In this year's State of the Union address in January, President Clinton reiterated his commitment to providing credit to companies that take early, voluntary action to reduce ghg emissions or increase carbon sequestration. We look forward to working with Congress and stakeholders on a fair and workable program that rewards real environmental gain.

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Divider Title: _____

CARBON SEQUESTRATION & AGRICULTURE
APRIL 1999

Carbon sequestration could play a critical role in helping the world meet the challenge of climate change. Under the Kyoto Protocol, so-called carbon "sinks" -- activities that absorb carbon, such as planting trees -- can be used as offsets against emissions of greenhouse gases. The United States strongly supports the broadest inclusion of sinks that is supported by sound science. Broad inclusion of sinks has the capacity to help the United States cost effectively address the risks of climate change and provide opportunities for the agriculture and forestry sectors to be a part of the solution.

What is carbon sequestration and what agricultural activities sequester carbon? Carbon sequestration refers to the storage of carbon dioxide from the atmosphere by soils, trees, crops, and other plants. Carbon sinks, such as farmland, rangeland, and forests, can make a great contribution to reducing net greenhouse gas emissions. Conservation activities -- such as planting trees on marginal lands; restoring degraded soils; and adopting best management practices that improve water quality, soil quality, and habitat protection -- also have the added benefit of absorbing carbon.

Carbon Sinks and the Kyoto Protocol. The Kyoto Protocol recognizes that sinks must be included as part of an economically and environmentally sound approach to climate change -- an approach that the United States worked hard to achieve. Specifically, Article 3.3 of the Protocol allows certain forestry activities to be counted toward a party's reduction commitments. Moreover, Article 3.4 allows the Parties of the Protocol to add additional sink activities activities, such as those related to agricultural soils. There is no need to amend the Protocol to accomplish this.

International Progress. In 1998, the Parties agreed to move forward with a process to define various categories of sinks and determine how they can best be measured and verified. This process includes:

- ***The IPCC Special Report on Land Use Change Issues.*** The Parties tasked the Intergovernmental Panel on Climate Change (IPCC) (an international body of over 2,000 of the world's leading climate scientists and experts) with conducting a comprehensive study on land-use, land-use change, and forestry activities. Authors of the Special Report include international technical experts, including many from the United States. Once the IPCC report is finished in the spring of 2000, the Parties will be in a position at the following Conference of the Parties to consider further decisions on the scope and use of carbon sinks under the Protocol.

- ***UN Workshops on Land Use Change and Forestry.*** The Subsidiary Body for Scientific and Technological Advice (SBSTA) of the United Nations Framework Convention on Climate Change (FCCC) is organizing two workshops on land use, land use change, and forestry issues. The first workshop was held in Rome in September 1998. The objectives of the Rome workshop were to provide input into the IPCC Special Report and to give Parties the opportunity to discuss data, methods, and implementation of Article 3.3.

The United States is hosting the next workshop, which will take place in Indianapolis, Indiana on April 26-28. This workshop will provide another opportunity for Parties to discuss methodological and technical issues related to additional sink categories, such as those created by improved conservation or management of agricultural soils, forests, and grasslands. In preparation for this workshop, the Administration hosted a meeting on April 8 with interested stakeholders to discuss the United States' presentation at the Indianapolis workshop. Following the workshop, there will be a May 6 meeting with stakeholders to discuss the status of this process.

Domestic Progress. The United States leads the world in understanding the science of carbon sinks. More work, however, is needed to better understand how agricultural and forestry practices affect the net carbon balance and to develop methods that will assist farmers, ranchers, and forest landowners in increasing and verifying carbon sinks.

To help further our understanding of carbon sinks and how they can be enhanced, the President's FY 2000 budget includes funding for the following initiatives:

- ***Demonstration Projects and New R&D.*** The Forest Service, the Agriculture Research Service, and the Natural Resources Conservation Service will launch new demonstration projects as well as undertake additional R&D to better understand 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. The initiative includes $10 million in new funding for USDA as well as additional funding for other research agencies.

- ***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.

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Divider Title: _____

USDA'S ECONOMIC ANALYSIS ON CLIMATE CHANGE & AGRICULTURE

USDA's economic analysis concludes that U.S. compliance with the Kyoto Protocol would have a relatively modest impact on agriculture. Even if energy prices were to rise a good deal higher than the Administration projects, the impact on farm income would be far less than what other studies have claimed. Moreover, taking action to mitigate climate change could create opportunities for farmers to supplement their income through sequestering carbon or producing biomass for use in fuels, energy and chemicals.

The Rationale for Taking Action. There is a broad scientific consensus that climate change could lead to serious adverse consequences, such as intense floods and droughts, disease, and rising sea levels. For agriculture, it will likely mean changes in growing seasons, water availability, soil moisture, precipitation, and the incidence of pests. While most studies project that total food production will not be substantially altered, there will be regional and sectoral winners and losers.

Complying with Kyoto would have relatively modest impacts on U.S. agriculture. The Administration's 1998 analysis of the costs of complying with the Kyoto Protocol found that those costs would be relatively modest if we take advantage of the cost-cutting provisions of the Protocol, such as international trading of emissions permits. Based on the permit price arrived at in that analysis, $23 per ton of carbon equivalent, the economic impact on agriculture of meeting the U.S. Kyoto target would be relatively small. The U.S. Regional Agricultural Sector Model (USMP) suggests modest declines in production ranging from 0.1 percent for soybeans to 0.9 percent for rice. Moreover, these small declines would be partially offset by increased commodity prices, so net cash returns to farmers would fall by around 0.5 percent. Competitiveness effects would also be minimal. Further, this analysis does not count the potential opportunities for farmers to earn income through sequestering carbon or through the production of biomass that can be used to make fuels, energy, and chemicals.

Even at permit prices far higher than projected by the Administration, the impact on agriculture would be far lower than several recent studies assert. Studies by Sparks (1999) and Francl (1997) use emission permit prices that do not take into account the key cost-cutting mechanisms in the Kyoto Protocol, such as international permit trading. The USMP, however, finds that even at these high permit prices, declines in farm production and income would be a fraction of those estimated by these studies. This is because the Sparks and Francl studies employ analytical techniques that assume farmers fail to respond to changes in production costs, leading to a substantial overstatement of the impacts of reducing greenhouse gas emissions.

Addressing climate change could create substantial economic opportunities for farmers. Because the Kyoto Protocol includes certain so-called "sink" activities that store or sequester carbon, such as planting trees, farmers may be able to supplement their income by sequestering carbon through improved conservation practices or converting marginal agricultural lands to forests. Bioenergy – using trees, crops, and agricultural wastes to produce power, fuels or chemicals – also represents a potentially significant opportunity both to reduce net emissions and supplement farm income.

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Divider Title: _____

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release June 3, 1999

STATEMENT BY THE PRESIDENT

The Rose Garden

2:52 P.M. EDT

THE PRESIDENT: Good afternoon. I have just completed a very good meeting with the Cabinet. We discussed many issues, three in particular I would like to discuss with you.

First, with regard to Kosovo. As you know, we have been working closely with President Ahtisaari and Mr. Chernomyrdin to try to achieve an agreement that would allow the refugees to go home with security, safety and self-government. Movement by the Serbian leadership to accept these conditions, established by NATO and the international community, is, of course, welcome. But based on our past experience, we must also be cautious.

First, we must have clarity that the Serbian leadership has fully accepted these conditions and intends to fully implement them. Until then, and until Serb forces begin a verifiable withdrawal from Kosovo, we will continue to pursue diplomacy, but we will also continue the military effort that has brought us to this point.

In a few moments, I will meet with the Joint Chiefs of Staff to speak about the progress of our campaign and our planning for the force that would enter Kosovo when NATO's conditions are met. NATO and our military have been working hard to ensure that we can sustain our campaign and deploy KFOR quickly and effectively when that is necessary. We have worked to ensure that we can do this while maintaining our overall military posture around the world. They have my complete confidence and support as we move forward.

The second thing we discussed today was the budget and the importance of maintaining fiscal discipline, which has helped our nation reach historic levels of prosperity, honored our values of opportunity, responsibility and community, and enabled us to begin to meet the challenges of America in the 21st century.

Last fall, my Cabinet and I worked very hard to put together a budget that reduces the publicly-held debt to its lowest point since before World War I, safeguards the solvency of Social Security and Medicare and makes improvements in both programs, offers targeted tax cuts for long-term retirement savings, stays within the budget caps and makes substantial new investments in the benefit of the American people, from education to the environment, to new technology.

Unfortunately, the Republican majority in Congress is moving ahead with a budget plan that, in the end, may do none of these things. It fails to extend the solvency of Social Security and Medicare. It fails to make new, crucial investments. It requires deep cuts in areas of great national need -- from law enforcement, to education, to the environment. These cuts would be so damaging that Congress, itself, to

date has been unwilling and unable to move some of the most basic and normally noncontroversial spending bills out of their committees.

The majority budget plan is simply not realistic. It is a blueprint for chaos and we can do better. I urge Congress when it returns to work with me in a bipartisan way for a budget that is both fiscally responsible and honors our values and prepares for our future.

I also discussed with the Cabinet new actions to deal with what, in my State of the Union address, I said was our most fateful environmental challenge -- global warming. Almost every month, we see disturbing new evidence of climate change. Scientists now believe that last year, 1998, was very likely the warmest year in a millennium. Whole species of frogs are disappearing from forests in Costa Rica because the air there is getting hotter and drier. In the Arctic, the permafrost has started to warm and the sea ice is shrinking. These are alarming signs for what it means to biodiversity and the potential of a rising water level around the globe.

Yet some still insist that the vast majority of scientists are simply wrong, and that we should do nothing. Others call for a raft of new regulations and new taxes.

I believe there is a third way here, a better way -- to invest in technologies that reduce greenhouse gases while also spurring economic growth. Many of those technologies are on hand right now.

As the single largest consumer of energy in our country, the federal government should be leading the way. That is why today I am directing all federal departments and agencies to take steps to markedly improve the energy efficiency of our buildings. With new technologies and contracts with private companies, the federal government will cut its greenhouse gas emissions by 30 percent. That is the equivalent of taking 1.7 million cars off the road. By taking these steps, we will also save the taxpayers over $750 million a year when they are fully implemented.

I'm also pleased to announce that the Defense Department will award, by the end of this month, the largest energy-saving contract in the history of the federal government. Under this contract, the government pays no up-front costs, the contractor wins a share of the energy savings, greenhouse pollution is reduced, and taxpayers will save over $200 million.

I want to express my thanks to Secretary Cohen and Secretary Richardson for turning the idea of these win-win energy contracts into a reality. And I want to urge Congress, again, to pass the new research investments and the new tax incentives I have proposed in my balanced budget, so that America's consumers and businesses can reap the benefits of energy-saving technologies that exist today, and the new, better technologies that are soon to be developed.

So, in closing, let me say we have some encouraging news on Kosovo, but we should be cautious, and we should see real results.

We have presented a good budget to the Congress; the one they have come back with won't work. We've got to work together to give the American people one that will. The problem of climate change and global warming is real, but we don't have to have an economic breakdown to deal with it; what we need is a vigorous embrace of effective technologies -- first by the federal government and then by all the American people.

Thank you very much.

Q Mr. President, can you assure the Serbs that retreating troops will not come under attack, sir?

END 3:00 P.M. EDT

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Divider Title: _____

PRESIDENT CLINTON: LEADING THE FIGHT AGAINST GLOBAL WARMING
JUNE 3, 1999

President Clinton, in a Cabinet meeting today, issued an Executive Order to help meet the challenge of global warming by significantly improving energy efficiency in Federal buildings. By 2010, the resulting energy savings will reduce annual greenhouse gas emissions by 2.4 million tons – the equivalent of taking 1.7 million cars off the road – and save taxpayers over $750 million a year. As a prime example of the savings that can be achieved, the President also announced a major contract to retrofit over 800 buildings at five military installations in the Washington, D.C. area, saving over $219 million in energy and related costs.

Leading By Example. The Federal Government is the nation's largest energy consumer with an annual bill of over $8 billion – more than $4 billion to heat, cool, and power its 500,000 buildings. Federal agencies have already reduced energy consumption 17% per square foot relative to 1985 levels. Today's Order builds on that progress by:

Setting Aggressive Goals – The Order requires Federal agencies to achieve by 2010:
- **35% greater energy efficiency** in buildings relative to 1985 levels; and,
- **30% cut in greenhouse gas emissions** from building-related energy use relative to 1990.

Mobilizing Cutting-Edge Strategies – The Order directs agencies to maximize the use of:
- **Energy Saving Performance Contracts and Utility Contracts**, in which private companies make energy improvements on Federal facilities at their own expense and receive a portion of the resulting savings;
- **Life-cycle cost analysis**, so agencies see the long-term savings from energy investments;
- **ENERGY STAR & other energy efficient products**, everything from light bulbs to boilers; and,
- **Renewable energy** technologies and sources (solar, wind, geothermal, and biomass).

Strengthening Accountability – The Order requires that annual scorecards evaluating agency progress be submitted to the President; gives OMB, in consultation with the Department of Energy (DOE), oversight authority; and directs agencies to appoint energy management teams to help meet the goals of the Order.

Concrete Steps, Concrete Savings. The partnership announced today between the Department of Defense and Viron/Pepco Energy Services – the largest-ever Energy Saving Performance Contract – will cut energy use in 837 buildings at Ft. Belvoir, Ft. A.P. Hill, Ft. Meyer, Ft. McNair, and Ft. Meade. Other examples of energy-saving actions of the kind today's Order is designed to promote include:
- The Defense Logistics Agency (DLA) and the DOE have teamed up to offer high efficiency compact florescent light bulbs at half price to Federal purchasers;
- 18 Federal agencies (including the Smithsonian Institution, NASA, and the Postal Service) will receive DOE funding for more than 100 renewable energy systems;
- A New York GSA building housing the FBI and the IRS has been retrofitted to ENERGY STAR Building standards, with an annual energy cost savings of $1.3 million; and,
- Environmental Protection Agency's laboratory in Richmond, California has become the first major Federal facility supplied 100% with renewable energy (geothermal and biomass).

Incentives For Businesses and Consumers, Too. To help American businesses and consumers reap the same kinds of energy and cost savings, the President today also called on Congress to enact his proposed **$3.6 billion package of tax incentives** for the purchase of energy efficient homes, appliances, cars, and energy from renewable sources.

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Divider Title: _____

THE PRESIDENT'S NEW ENERGY EFFICIENCY EXECUTIVE ORDER

JUNE 3, 1999

The Executive Order issued by President Clinton today helps meet the challenge of global warming by significantly improving energy efficiency in Federal buildings. By 2010, the resulting energy savings will reduce annual greenhouse gas emissions by an amount equal to 2.4 million metric tons of carbon (MMTCE) – the equivalent of taking 1.7 million cars off the road – and save taxpayers over $750 million a year. The Order will also expand markets for renewable technologies, reduce air pollution, and serve as a powerful example to American businesses and consumers who can reap substantial benefits from energy improvements.

Aggressive New Goals

The Federal Government is the nation's largest energy consumer with an annual bill of over $8 billion – more than $4 billion to heat, cool, and power its 500,000 buildings. Federal agencies have already reduced energy consumption 17% per square foot relative to 1985 levels. Today's Order builds on that progress, extending current energy efficiency goals and setting new goals for greenhouse gas reductions, renewable energy use, and water conservation.

- ***New Energy Efficiency Goal for Facilities.*** The Order requires each Federal agency to improve its energy efficiency in Federal buildings by 35% relative to 1985 levels by 2010.

- ***New Energy Efficiency Goal for Industrial and Laboratory Facilities.*** The Order requires each Federal agency to improve its energy efficiency in industrial and laboratory facilities by 25% relative to 1990 by 2010.

- ***New Greenhouse Gas Reduction Goal.*** The Order requires each Federal agency to reduce greenhouse gas emissions that result from building energy use by 30 % below 1990 levels by 2010. This is the Federal Government's first-ever goal tied to greenhouse gas reductions.

- ***Expanded Use of Renewable Energy.*** The Order requires Federal agencies to expand their use of renewable energy technologies and electricity from renewable energy sources, such as solar, wind, geothermal, and biomass. Building on the President's commitment to install 20,000 Federal solar energy systems by 2010, the Order calls for new investments in renewable energy through applications of solar, wind, geothermal, and biomass technologies at Federal facilities and through the purchase of electricity from renewable energy sources.

- ***Water Conservation.*** The Order calls for Federal agencies to improve their water efficiency, not only to reduce water consumption, but also to reduce associated energy use. The Order requires the Department of Energy (DOE) to work with other Federal agencies to develop water consumption baselines and then set appropriate goals for water conservation.

- ***Fewer Exempt Facilities.*** Under current practice, a large number of facilities (accounting for 17% of building energy use) are exempt from meeting Federal energy goals. Under this Order, all facilities are subject to these goals and requirements unless they meet new exemption criteria to be developed by DOE. In addition, in their Annual Report to the President, each agency must report all exempt facilities and explain the rationale for excluding them from Federal energy goals.

Cutting-Edge Tools and Strategies

The Order calls for agencies to use a wide range of energy management tools and strategies to fulfill the new energy efficiency, renewable energy, and greenhouse gas reduction goals.

- ***Alternative Financing.*** Financing options, like Energy Savings Performance Contracts (ESPCs) and utility energy efficiency service contracts, offer Federal agencies a powerful tool for leveraging private sector financing to fund cost-saving energy improvements at no net cost to taxpayers. Under ESPCs, private sector energy service companies finance the up-front cost of purchasing and installing new energy efficient equipment. The Federal government uses a portion of the savings it accrues through reduced energy bills to repay the energy service company over the life of the contract. Contractors then receive a predetermined share of the value of the energy savings generated by their efforts, and may be paid only if actual savings result from the reduced energy use. All additional savings accrue to the government. The government benefits from new equipment, reduced energy costs, improved energy efficiency, reduced greenhouse gas emissions, and conservation of nonrenewable fuels.

  To date, DOE and the Department of Defense (DOD) have put into place over $8 billion in ESPC contract authority -- available for all Federal agencies to fund energy improvements. In addition, many of these contracts are "Super ESPCs" which rely on the same principles as regular ESPCs but offer an umbrella contract to allow expedited service. The Order calls for agencies to maximize their use of ESPCs and utility energy efficiency service contracts to realize energy and cost savings.

- ***Life-Cycle Cost Analysis.*** It is critical that Federal agencies consider the full cost of their investments, including energy, operation and maintenance costs, not simply the purchase cost of projects or products. By taking all costs into account, agencies can save money and energy. To that end, the Order requires agencies to consider life-cycle costs – that is, investment costs, capital costs, installation costs, energy costs, operating costs, maintenance costs, and disposal costs, over the life of the project or product.

- ***ENERGY STAR® and Other Energy Efficient Products.*** The Order calls for agencies to purchase ENERGY STAR® and other energy efficient products. These products, ranging from compact fluorescent light bulbs to highly efficient boilers, can save Federal agencies hundreds of millions of dollars.

- ***Electricity from Renewable Energy and Energy Efficient Sources.*** Given that over 70% of the Federal government's energy costs in buildings comes from electricity, the Order requires agencies to consider the source of their electricity and opt for cleaner, more efficient electricity generation. Specifically, the Order calls for agencies to minimize the greenhouse gas intensity of purchased electricity. In addition, agencies should adopt policies to increase the use of electricity from renewable energy sources.

- ***Highly Efficient Energy Systems.*** This Order calls for agencies to make greater use of highly efficient energy systems, including combined heat and power systems that use "waste" heat from industrial processes to supply power to other needs. These types of systems can offer not only tremendous energy and cost savings, but also significant environmental benefits.

- ***Off-Grid Electricity Generation.*** This Order requires agencies to consider off-grid electricity opportunities that often provide energy and environmental benefits, while allowing agencies to avoid the costs of building new transmission lines or digging up existing lines. Off-grid options can be particularly effective in remote locations, including in our National Parks. The systems range from solar outdoor lighting to small wind turbines and fuel cells.

- ***Sustainable Building Design.*** In July 1998, as part of the President's radio address on Federal energy issues, a number of Federal agencies committed to constructing sustainably-designed buildings. This Order requires all Federal agencies to apply sustainable design principles to the siting, design, and construction of new facilities and thereby save energy, save taxpayer dollars, and reduce pollution.

Strengthening Agency Accountability

The Order provides a framework to hold agencies accountable for their progress in Federal energy management. The following new management strategies and reporting requirements will help ensure that all Federal agencies manage energy use wisely, reaping substantial fiscal and environmental benefits for years to come.

- ***Annual Reports to the President and Annual Score Cards.*** Under the Order, each Federal agency must submit an Annual Report to the President describing its progress in meeting the goals of the Order. In addition, the Deputy Director for Management of the Office of Management Budget will evaluate each agency's performance and submit agency score cards to the President. The score card evaluations will consider agencies' progress toward the energy efficiency, renewable energy, and greenhouse gas goals. The score cards will also take into account how effectively agencies have used key energy management tools and strategies.

- ***President's Management Council.*** The President's Management Council, which generally consists of Deputy Secretaries from all agencies, will monitor agencies' progress on Federal energy management and provide a high-level forum for identifying ways to accelerate improvements.

- ***Agency Energy Teams.*** Each agency must form a technical energy support team within 90 days to ensure that energy management strategies are implemented across all facilities. These energy teams will bring together legal, procurement, and other essential agency representatives to overcome barriers to realizing energy and cost savings.

- ***New Public/Private Advisory Committee.*** The Order calls for DOE to organize an advisory committee to bring together private and public sector experts who can advise agencies on how to improve their energy management practices. The Committee will include representatives from energy service companies, utility companies, equipment manufacturers, and other private, non-profit, and public sector organizations that focus on energy issues.

Concrete Steps, Concrete Savings

In conjunction with the signing of a new Executive Order to promote energy efficiency, President Clinton announced today the Pentagon's intent to award (by the end of June) **the Federal government's largest-ever Energy Saving Performance Contract (ESPC)**, under which Viron Energy Services/Pepco Energy Services will upgrade the energy performance of 837 Federal buildings at no up-front cost to taxpayers. The 18-year service contract, covering five military installations in the Washington, DC area, will reduce annual energy consumption by 17%, saving DOD over $219 million in energy and related costs and reducing annual greenhouse gas emissions by 24,000 metric tons of carbon (MTC) – equivalent to taking over 19,000 cars off the road.

Other examples of energy-saving actions of the kind the President's Order is designed to promote include:

- ***Energy Efficient Procurement.*** The Defense Logistics Agency (DLA), which supplies almost 20% of all light bulbs purchased by the Federal government, has teamed up with DOE to offer half price compact florescent light bulbs to any Federal purchaser with a maximum purchase of 400 bulbs per order.

  Last year, the DLA supplied 1.5 million bulbs to Federal purchasers. If they had all been compact florescents savings would have totaled $7.5 million. Just last week DOE added compact florescents to the ENERGY STAR product rating program providing consumers with specifications for the purchase of such bulbs. A compact florescent bulb can last up to five years, saving $67 over the its lifetime.

- ***Renewable Energy Projects.*** Some 18 Federal agencies – from the Departments of Agriculture, Interior, and Transportation to the Smithsonian Institution and the U.S. Postal Service – will soon receive a combined $1.5 million in DOE funding for more than 100 cost-effective renewable energy projects at government sites. The technologies include more than 50 new or renovated solar water heating systems, large and small photovoltaic systems, PV-powered lights and "solar walls" which preheat outside air for building heating, and wind power.

- ***Buying Renewable Power.*** The Environmental Protection Agency's Richmond, California laboratory has become the first major Federal facility supplied 100% with renewable energy. Initially, 60% of the power supplied will come from geothermal sources and 40% will come from biomass. Eventually power will be supplied by a new landfill gas facility expected to begin service in the fall of 1999. The General Service Administration (GSA) and DOE provided support to EPA in this effort. This green power purchase will produce environmental benefits equivalent to reducing over 2 million passenger car miles driven in California each year.

- ***Energy Star Buildings.*** GSA's Foley Square Federal Office Building in New York City has been retrofitted to achieve the ENERGY STAR Building Label by EPA. The ENERGY STAR Building Label signifies that the building is in the top 25% of similar buildings with regard to energy efficiency. Opened in 1994, the building encompasses 1.2 million square feet and houses offices of the Federal Bureau of Investigation, the Internal Revenue Service and the Environmental Protection Agency. By deploying equipment and products that qualify the building for the ENERGY STAR label, Foley Square saves taxpayers $1.3 million annually in energy costs.

Prior Federal Energy Efficiency Efforts

Today's Order builds upon previous efforts to improve Federal energy efficiency. The Energy Policy Act of 1992 established a goal of improving energy efficiency in Federal office buildings by 20% on an energy-per-square-foot basis by the year 2000, compared to a baseline year of 1985. In March of 1994, President Clinton issued Executive Order 12902, which extended the energy-efficiency goal to 30% below 1985 by 2005. Today's Order extends these goals still further, while also tightening provisions on exempted facilities and setting forth the first-ever Federal goal tied specifically to greenhouse gas reductions.

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DOD-VIRON/PEPCO ENERGY SAVING PERFORMANCE CONTRACT

JUNE 3, 1999

In conjunction with the signing of a new Executive Order to promote energy efficiency, President Clinton announced today the Pentagon's intent to award (by the end of June) the Federal government's largest-ever Energy Saving Performance Contract (ESPC), under which Viron Energy Services/Pepco Energy Services (Viron/Pepco) will upgrade the energy performance of 837 Federal buildings at no up-front cost to taxpayers. The 18-year service contract, covering five military installations in the Washington, DC area, will reduce annual energy consumption by 17%, saving the Department of Defense (DOD) over $219 million in energy and related costs and reducing annual greenhouse gas emissions by 24,000 metric tons of carbon (MTC) – equivalent of taking over 19,000 cars off the road.

Energy Saving Performance Contracts – Energy Savings at No Up-front Cost to Taxpayers

The new Executive Order directs Federal agencies to maximize their use of ESPCs -- innovative financing mechanisms that mobilize private sector investment and expertise to save energy and save money in Federal facilities. Under ESPC authority, Federal agencies hire private energy service companies to conduct energy audits of facilities, propose energy saving retrofits, and privately finance, install, and maintain retrofits. There are no up-front payments by the government and contractors are paid from a share of the savings, with the remaining savings accruing to the agency.

The DOD-Viron/Pepco ESPC is the largest by far of any ever awarded by the Federal government and serves as a model for other agencies to replicate in implementing the President's new Executive Order.

Real Savings and Real Environmental Benefits

Under the new contract, some $70 million in private investment will fund energy upgrades at five installations in the Army's Military District of Washington – Ft. Belvoir, Ft. A.P. Hill, Ft. Meyer, Ft. McNair, and Ft. Meade. These measures will save money and improve the environment. In particular, they will:

- Avoid almost 24,000 MTC of greenhouse gas emissions annually – a 26% reduction;
- Save DOD a total of over $219 million in energy and related costs
- Reduce annual energy costs by 17%;
- Reduce annual electricity use by 89 million kilowatt hours (kWh) of energy annually;
- Reduce fuel use by 294,000 million British Thermal Units (MMBTUs) annually;
- Reduce pollutants that cause smog and acid rain by more than 600 metric tons annually; and,
- Save over 50 million gallons of water annually.

These improvements to buildings and equipment will support Army operations well into the next century, without the need for additional funding, and will provide more comfortable living conditions and improved quality of life for those who live and work at the five installations.

Energy Efficiency Measures to be Taken

Expected energy efficiency measures include:

- ***Cooling system retrofits.*** Some 888 cooling units will be replaced or retrofitted, cutting energy use in 343 buildings, reducing associated energy costs by over $1 million annually and annual greenhouse gas emissions by 4,900 MTC.

- ***Air Handling Units.*** Replacement and retrofitting of air handling units in 126 buildings will reduce annual energy consumption by 14 million kWh. This will mean annual savings of $742,000 and 3,500 MTC of greenhouse gas emissions avoided each year.

- ***Lighting Retrofits or Replacement.*** Some 142,600 light fixtures will be replaced or retrofitted in 714 buildings, reducing annual energy consumption by 29.8 million kWh, saving $1.4 million annually, and reducing annual greenhouse gas emissions by 4,800 MTC.

- ***Central Heating Plant Upgrade.*** Two central steam plants will be replaced with new gas fired boilers, reducing annual fuel use by 138,000 MMBTU, saving $655,000 annually, and reducing annual greenhouse gas emissions by 2,900 MTC.

- ***Central Cooling Plant Upgrade.*** A new absorption chiller and chilled water distribution line will be installed at one site, reducing annual electricity use by approximately 270,000 kWh and saving $21,000 annually.

- ***Water Conservation.*** Water consumption and waste water will be reduced in 213 buildings through replacement of existing plumbing equipment with ultra low-flow units, saving approximately 50.5 million of gallons annually, or $195,000.

DOD's Partnership With Viron/Pepco

With the assistance of the Department of Energy's (DOE's) National Renewable Energy Lab, DOD sought bids from private sector experts to provide solutions to the energy needs of the Military District of Washington. After a competitive bid process, DOD's Defense Energy Support Center has decided to award a contract to Viron/Pepco to provide a range of services including energy engineering, equipment installation, construction supervision, and measurement and verification. Under the contract, all capital investments will be made within the first three years of the contract and Viron/Pepco will be paid from a share of the verified energy savings resulting directly from its conservation measures.

More than 2,100 buildings on the five installations were surveyed for possible energy improvements. Under the contract, almost 40% of the buildings currently in use will benefit from one or more of the slated improvements and upgrades in the initial task order. The contract is also structured so that either the government or Viron/Pepco can suggest additional conservation measures for the remaining buildings.

Administration Efforts to Expand ESPC Use

While ESPC authority has existed since 1992, President Clinton has taken significant steps to streamline and promote greater use of this tool. Streamlined contracts – known as "Super ESPCs" -- put in place by DOE and DOD have accelerated large investments in energy projects at hundreds of Federal facilities. Super ESPCs allow all agencies and facilities to place delivery orders under umbrella contracts, substantially reducing the lead time to contract with an energy services company. There are two types of Super ESPCs: regional and technology specific. Regional specific contracts cover a designated geographic area; technology specific contracts are in effect nationwide for a particular emerging technology, such as solar collectors.

In the last year, DOE has provided over $5 billion in ESPC contracting authority to 44 private contractors to perform energy and cost saving work. Projects have been designed and awarded that will mobilize $28.7 million of private investment to perform energy saving work in Federal agencies. The contractors will be paid from the $62.5 million projected savings. Well over a hundred agreements are currently under negotiation as this alternative financing tool for energy and taxpayer savings becomes more commonly used by Federal agencies. Other agreements are also under negotiation with utility contractors and under the DOD contracts (worth over $3 billion) which are also available for use by the rest of the Federal government.

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Divider Title: _____

THE WHITE HOUSE

Office of the Vice President

For Immediate Release
Tuesday, June 29, 1999

Contact:
(202) 456-7035

ENERGY EFFICIENT TAX INCENTIVES INTRODUCED INTO CONGRESS BY REPRESENTATIVE MATSUI

Washington, DC -- Today, Representative Bob Matsui introduced the Administration's package of energy efficiency tax to help America meet the profound challenge of global climate change in a way that opens new economic opportunities for our nation. The five-year, $3.6 billion package will provide real incentives for consumers to buy more energy efficient homes, cars and other selected products, such as high-efficiency water heaters and rooftop solar systems. It will also encourage more production of renewable energy, such as wind power and power from farm and forestry resources.

STATEMENT BY THE VICE PRESIDENT

This legislation is a win-win-win proposition. For American families and consumers this legislation will mean lower energy costs and the potential for new economic opportunities. For our nation, it will mean more jobs, more innovation, increased competitiveness, and greater energy security. And for our environment, the gains in energy efficiency will mean better air quality and fewer emissions of the greenhouse gases contributing to global warming.

All those who helped make this bill responsive to the needs of our environment and our economy deserve our thanks and appreciation, including General Motors, Ford, and DaimlerChrysler, who helped develop the incentives for qualifying electric and hybrid vehicles. I especially want to thank Representative Matsui for his hard work in turning a set of good ideas into sound legislation.

For American families, consumers, and businesses, this legislation is about saving dollars and cents. For our environment, it is about common sense. This past year, a growing body of scientific evidence on global warming has thrown into sharp relief the magnitude of the challenge before us. 1998 was far away the single warmest year on record and it was punctuated by some of the severest weather of the century. I now urge Congress to pass this legislation into law.

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Divider Title: _____

POWERFUL PARTNERSHIPS:

THE FEDERAL ROLE IN INTERNATIONAL COOPERATION ON ENERGY INNOVATION

A REPORT FROM THE

PRESIDENT'S COMMITTEE OF ADVISORS ON SCIENCE AND TECHNOLOGY

PANEL ON INTERNATIONAL COOPERATION IN
ENERGY RESEARCH, DEVELOPMENT, DEMONSTRATION, AND DEPLOYMENT

JUNE 1999

About the President's Committee of Advisors on Science and Technology

President Clinton established the President's Committee of Advisors on Science and Technology (PCAST) by Executive Order 12882 at the same time that he established the National Science and Technology Council (NSTC). The PCAST serves as the highest level private sector science and technology advisory group for the President and the NSTC. The Committee members are distinguished individuals appointed by the President, and are drawn from industry, education and research institutions, and other non-governmental organizations. The Assistant to the President for Science and Technology co-chairs the Committee with a private sector member selected by the President.

The formal link between the PCAST and the NSTC ensures that national needs remain an overarching guide for the NSTC. The PCAST provides feedback about Federal programs and actively advises the NSTC about science and technology issues of national importance.

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Panel on International Cooperation in
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This was a Panel of fourteen persons of diverse backgrounds and viewpoints, tackling an immensely complex subject. Inevitably, not every member of the Panel is entirely happy with every formulation in the report. But we are unanimous that the main messages and overall balance in this joint product are correct and appropriate.

EXECUTIVE SUMMARY

This Panel has reviewed the U.S. stake in international cooperation on energy innovation, the complementary roles of the public and private sectors in pursuing such cooperation, and the existing array of activities being carried out by the Federal government to this end. Based on that review, we conclude that existing Federal programs for energy cooperation—which were funded in FY 1997 at less than $250 million per year—are not commensurate with either the needs or the opportunities. We therefore recommend substantially strengthening these programs—expanding their coverage, increasing their funding, improving the processes for their evaluation, and providing for them an over-arching strategic vision and a mechanism for coordinating its implementation.

We propose specific initiatives for strengthening the foundations of energy-technology innovation and international cooperation relating to it (including capacity building, energy-sector reform, and mechanisms for demonstration, cost-buy-down, and financing of advanced technologies); for increased cooperation on research, development, demonstration, and deployment (RD^3) of technologies governing the efficiency of energy use in buildings, energy-intensive industries, and small vehicles and buses, as well as of cogeneration of heat and power; and for increased cooperation on RD^3 of fossil-fuels-decarbonization and carbon-sequestration technologies, biomass-energy and other renewable-energy technologies, and nuclear fission and fusion.

Most importantly—for without this none of the other initiatives we propose are likely to achieve their potential—we recommend creation of a new Interagency Working Group on Strategic Energy Cooperation, under the auspices of the National Science and Technology Council, to provide a strategic vision of and coordination for the government's efforts in international cooperation on energy-technology innovation. The government's contribution to this expansion of international energy cooperation activities would be provided by a new Strategic Energy Cooperation Fund, amounting to $250 million for FY2001 and increasing to $500 million in FY2005, the proposed allocation of which to the relevant agencies in the President's budget request would be determined with the help of the Interagency Working Group.

U.S. interests and values at stake in energy can only be effectively addressed in a global context

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The U.S. Stake in International Cooperation on Energy Innovation

Energy is tightly linked to U.S. economic, environmental, and national-security interests.

- U.S. economic interests in energy-technology innovation include controlling costs of energy to U.S. consumers and industries; avoiding inflation and recession (in this country and worldwide) from oil-price shocks; limiting the impact of energy imports on the U.S. balance of trade; expand-

ing the market share of U.S. companies in the multi-hundred-billion dollar per year global energy-technology market; and enhancing long-term markets for other U.S. exports by building the energy basis for sustainable prosperity in developing and transition economies.

U.S. economic interests in energy-technology innovation include expanding the market share of U.S. companies in the multi-hundred-billion dollar per year global energy-technology market

- Environmentally, accelerated energy-technology innovation can increase the pace and decrease the cost at which high-environmental-impact technologies and practices are replaced with low-impact ones in the United States and abroad. This will reduce the health impacts of air pollution and the ecological effects of acid deposition in this country and elsewhere, improve the safety of nuclear reactors everywhere, reduce oil spills in the world's oceans, slow the pace of greenhouse-gas-induced climate change, and help create a framework for long-term cooperation on the energy/climate challenge in which developing, transition, and industrialized countries alike will participate.

- U.S. security interests in energy-technology innovation include reducing the potential for conflict over access to oil and gas resources; minimizing links between the use of nuclear-energy technologies and the acquisition of nuclear-weapons capabilities by nations of proliferation concern or by subnational groups; and avoiding, for all countries, energy problems with economic, environmental, or political consequences severe enough to aggravate or generate possibilities for armed conflict.

- Not only U.S. interests but also basic U.S. values—respect for human dignity and human rights, belief in equity and opportunity, commitment to assistance for the least fortunate and to stewardship for future generations and for the environment—dictate U.S. leadership in international cooperation on energy innovation for sustainable development.

U.S. interests and values at stake in energy can only be effectively addressed in a global context.

- The problems and opportunities related to oil, energy-technology markets, nuclear proliferation, climate change, and development/security interactions are all inherently global.

- Effective responses to these issues must take into account the globalization of capital markets, manufacturing, innovation capacities and activities, and information flow.

A "business as usual" energy future—without rapid technological innovation and increased cooperation to diffuse the results worldwide—would be problem-plagued and potentially disastrous.

- World energy demand under business-as-usual would double from its 1997 value by 2025 or 2030, triple by 2050 or 2060, and more than quadruple by 2100; by far the largest part of this growth would take place in the countries currently classified as developing.

- Oil imports, oil prices, and the potential for oil-induced economic disruption and conflict would all rise.

- U.S. understanding of, access to, and creation of products for global energy-technology markets all would become increasingly inadequate.

- U.S. withdrawal from nuclear energy-technology innovation and cooperation would reduce U.S. leverage to minimize nuclear energy's global safety and proliferation risks.

- Attempts to fuel the bulk of developing-country economic growth with conventional coal and oil technologies would create a collision between economic aspirations and the environmental underpinnings of well-being, with the potential to wreck both.

- The atmospheric concentration of carbon dioxide under business-as-usual would be likely to reach 3 times its pre-industrial level by 2100, an increase regarded by most climatologists as well beyond the bounds of prudence.

U.S. security interests in energy-technology innovation include avoiding, for all countries, energy problems with economic, environmental, or political consequences severe enough to aggravate or generate possibilities for armed conflict

Although aspects of the energy future are inevitably uncertain, within a wide range of possibilities the acceptable outcomes all require major innovations in energy technology in order to:

- lower the energy intensity of economic activity, thus reducing chances that constraints on expanding energy supply will constrain economic growth, reducing the pressure of high energy growth to use higher-environmental-impact sources along with lower-impact ones, and reducing environmental impacts of the energy-supply system overall in proportion to its size;

- lower the emissions intensity of energy supply with respect to greenhouse gases, particulate matter, and gaseous precursors of regional smogs, hazes, and acid deposition (SO_x, NO_x, hydrocarbons);

- reduce, below what they would otherwise be, the monetary costs of delivering energy services in environmentally sustainable ways;

- broaden the range of energy options available to the United States and other countries, thus increasing the capacity of the national and global energy system to cope with the inevitable surprises.

U.S. participation in international cooperation in pursuit of these innovations is clearly needed to:

- increase the pace and lower the cost of U.S. acquisition of the innovations it needs for itself;

- gain access for U.S. firms to the large overseas markets for innovative energy technologies;

- address the global dimensions of energy challenges by accelerated development and deployment of innovations worldwide.

Private-Sector & Public-Sector Roles in International Energy Cooperation

The private sector already plays a large role in energy-technology innovation and in international cooperation relating to it, and this role is growing over time.

- The large role is evident in the size of the private shares in U.S. total R&D (about 65 percent private in 1997), U.S. energy-technology R&D (about 60 percent private in 1997), and global North-South capital flows (about 85 percent private in 1997).

- Growth in these private roles over time reflects trends in privatization and globalization of the world economy and in the privatization, deregulation, and restructuring of the energy industries.

There remains a need for government involvement because the public interest in energy outcomes goes beyond the sum of perceived private interests.

- Privatization, deregulation, and restructuring of energy industries help bring private capital into the energy sector, but these same forces can lead to neglect of the ways the composition and operation of energy systems affect the wider public interest (including meeting the basic needs of the poor, as well as addressing the other macroeconomic, environmental, international-security, and values issues listed above).

- Many of these public interests will only be adequately addressed if investments in energy-technology innovation are made with longer time horizons (lower discount rates) and less risk aversion than the discount rates and degrees of risk aversion prevailing in the commercial marketplace.

- The gap between what the private sector does and what society's interests require is further enlarged by a variety of barriers to efficient market performance, which may include inadequate information, excessive concentration or fragmentation in markets, high transactions costs, and more.

- Additional rationales for government engagement include complementarity of government and private capabilities and the desirability of reducing the deleterious effects on international energy-technology cooperation of existing government policies (including not only those focused on energy and environmental issues *per se* but also trade policy, foreign policy, intellectual property rights policy, and so on).

Government interventions should nonetheless always be cognizant of the large and growing role of the private sector, whose resources for energy-technology R&D somewhat exceed, and whose resources for energy-technology deployment far exceed, those of governments. This means that government initiatives in ERD^3 should be:

- structured to encourage, catalyze, and complement the corresponding activities of the private sector, not replace them;

- focused on lowering specific barriers or addressing specific shortfalls relating to the private sector's incentives and capacity to fully address society's interests in energy innovation;

- designed to be limited in the rate and duration of the government's investment, with specific criteria for terminating projects that fall short and for handing off successful ones to the private sector.

There is a wide array of mechanisms through which the government can support international ERD^3 cooperation, including participation in, funding for, or other encouragement of cooperative efforts in:

- the conduct of fundamental energy-related research and applied energy-technology R&D;

- demonstration and niche and pre-commercial deployment of innovative energy technologies;

- shaping the environment for commercial deployment of innovative energy technologies—increasing incentives, lowering barriers (especially in relation to finance), and setting appropriate standards—to reflect their public benefits;

- capacity building, integrated assessment, and institutional innovation in support of these approaches.

Existing U.S. government activities in international ERD³ cooperation are significant and often effective, but they are insufficient in relation to the challenges and the opportunities. The deficiencies are in scale, comprehensiveness and appropriateness of matching mechanisms to needs, coordination, and evaluation.

- A study conducted by RAND for this Panel indicates that Federal government spending on international ERD³ activities by DOE, USAID, EPA, and the Nuclear Regulatory Commission in FY1997 was about $230 million, more than half of it on fusion and fission.

- The international ERD³ activities of these agencies, while generally well focused and effective, are inadequate in relation to the opportunities and insufficiently coordinated with each other and with the efforts of the other Federal agencies engaged in the financing of energy-technology deployment, which include the Ex-Im Bank, the Trade and Development Agency, and the Overseas Private Investment Corporation.

- There is neither an over-arching strategic vision integrating and ensuring the comprehensiveness of the array of Federal activities on international energy RD³ cooperation nor a mechanism for implementing such a vision in a coherent and efficient way.

Initiatives

We believe that initiatives in four categories—foundations of energy innovation and cooperation, energy end-use efficiency, energy-supply technologies, and management of the government's activities in support of ERD³ cooperation—are required to narrow the gap between the Federal programs that exist and the needs they seek to address.

- Each category contains three to four initiative clusters. The elements that the Panel agreed deserve highest priority in each cluster are described in this Executive Summary. The body of the report expands on these high-priority elements and presents other elements that the panel regarded as important.

Existing Federal Programs for energy cooperation are not commensurate with either the needs or the opportunities

- All of our recommendations proceed from the presumption that the recommendations of the 1997 PCAST study of U.S. domestic energy R&D programs are being implemented. Effective international outreach must have sturdy domestic roots.

- Estimated budgets are provided here at the level of the initiative clusters—covering both the "high priority" and "other important" elements in each—in the form of an initial funding level for FY2001 and a level for FY2005 (in as-spent dollars). These figures are intended to be supplemental to existing budgets for international ERD³ activities and to the budgets proposed in the 1997 PCAST study for domestic energy R&D programs; and they are intended to cover both the "high priority" and "other important" initiative elements described.

- The great diversity of technical options and even greater diversity of geographic, economic, and institutional environments in which these options might be applied made it impractical, within the limited time and resources available for a study of this kind, to develop a fully comprehensive and prioritized set of recommendations for all of the cooperative activities that could and should be done in the decades ahead. But we believe what we are proposing here constitutes the core of a sensible program for the next five years.

- The list of high-priority opportunities we present here is based on a preliminary attempt to take into account the potential leverage of different options against U.S. interests and values affected by the energy challenges in different regions and worldwide, the likelihood of success based on the strengths and experience the partners would bring to the prospective cooperative efforts, the timeliness of the efforts in terms of windows of opportunity and maturity of needed technical and institutional ingredients, complementarity with private-sector efforts, and likely cost-effectiveness.

- Success in international cooperation depends strongly on engagement of all of the partners and technology users, from the beginning, in defining goals, outlining tasks, and setting priorities. While our recommendations have been developed in consultation with experts from many other countries, the details of what specific projects should go forward at what levels, under the auspices of what U.S. agencies, with what partner countries and institutions will need to be worked out with the help of an interactive process in which the agencies, the Interagency Working Group described further below, the foreign partners, and the users are all involved.

The first category of initiatives comprises measures to build stronger ***foundations for energy-technology innovation and international cooperation relating to it.*** *It consists of initiative clusters focused on capacity building, energy-sector reform, demonstration and cost buy-down, and financing.*

- The capacity-building cluster, designed to prepare the ground for rapid and sustainable energy-technology innovation, is recommended for funding at $20 million per year in FY2001, increasing to $40 million per year in FY2005. It contains as high-priority elements:

  (1) increased support for existing regional centers for RD[3] of sustainable energy options (such as the PROCEL national electricity-conservation program in Brazil, energy-efficiency centers in Eastern Europe and Russia, and other centers in Africa, Asia, and Latin America) and establishment of new sustainable-energy centers in regions with significant need that cannot be met by other means; and

  (2) expansion of existing—and development of new—training programs for energy analysts and managers, to include traveling workshops and internet-based courses and expert assistance, as well as a requirement that in-country technical and managerial training be a component of NGO technology demonstration and deployment projects supported by the U.S. government.

Government initiatives should be structured to encourage, catalyze, and complement the corresponding activities of the private sector, not replace them

- The energy-sector reform cluster is designed to support and shape energy-sector reform and restructuring—moving towards open competitive markets with improved financial performance—while retaining incentives for energy-technology innovation that address public goods and externalities. Recommended for funding at $20 million per year in FY2001, increasing to $40 million per year in FY2005, it has as high-priority elements:

  (1) technical and policy advice—including through direct provision of personnel to the relevant partner-country organizations or through multilateral institutions—to countries considering or undergoing energy-sector reform, with emphasis on (a) "getting prices right"

through elimination of price controls and subsidies for conventional energy sources and through internalizing environmental costs, and (b) creating Public Benefits Funds (PBFs) to provide resources for advancing public benefits in the restructured energy sector—with funds raised through non-bypassable wires/pipes charges or by other means, including initial support from debt swaps in appropriate cases; and

(2) assistance in establishing evolutionary regulatory frameworks for natural gas grids, beginning with simple pipeline systems linking large gas producers with large users and growing into grids serving a much wider range of producers and consumers.

- The cluster on demonstration and cost buy-down mechanisms is designed to facilitate the demonstration, in foreign contexts, of advanced energy technologies with significant public benefits and to provide the means to "buy down" to competitive levels the costs of technologies in this category that have learning-curve characteristics making this practical. Recommended for funding at $40 million per year in FY2001, increasing to $80 million per year in FY2005, it has as high-priority elements:

  (1) provision of assistance in establishing a Demonstration Support Facility (DSF), preferably at the Global Environment Facility (GEF), to provide a framework for clean-energy demonstration projects that would attract support from the private sector as well as from various public-sector sources (including the GEF and PBFs and government grants in host countries);

  (2) awarding of energy-production tax credits to U.S. firms participating in demonstration projects that are carried out under the DSF and that meet approved criteria (including being formulated so as not to conflict with U.S. opposition to tied aid); and

  (3) provision of assistance in establishing a Clean Energy Technology Obligation (CETO), preferably at the GEF, that would use competitive instruments to "buy down" the costs of targeted innovative technologies with incremental cost support provided by the GEF and by the host country through PBFs or government grants.

- The financing cluster, aimed at overcoming financial barriers to deployment of clean and efficient energy technologies in developing and transition economies, is recommended for funding at $40 million per year in FY2001, increasing to $80 million per year in FY2005. Its high-priority elements are:

  (1) measures to encourage increased financing for clean and efficient energy technologies from the Multilateral Development Banks (MDBs), including (a) establishing or expanding "trust funds" through the relevant U.S. agencies (such as DOE, USAID, EPA, and the U.S. Trade and Development Agency), which the MDBs can draw upon to support agency-approved technical assistance for project planning work, and (b) developing contingency plans and mechanisms for reinforcing, if necessary, the transition in World Bank and other MDB energy-project funding away from conventional energy technologies in favor of clean energy technologies (which is being driven by the ability of reformed energy markets to attract private capital for conventional technologies and the desirability of not distorting these markets with publicly supported MDB funds); and

  (2) additional measures implemented by U.S. agencies to facilitate market-based finance of clean and efficient energy technologies, including creating a fund administered by the Overseas Private

Investment Corporation (OPIC) to provide financing for these types of projects (to be phased out as the MDBs complete the transition to supporting clean energy technologies and advancing other public benefits).

The second category of initiatives addresses specific opportunities for ***international cooperation for innovation on energy-end-use technologies****. It consists of initiative clusters focused on energy-efficient buildings, improved small vehicles and buses, factories of the 21st century, and cogeneration of heat and power.*

- The buildings cluster has the goal of reducing energy use in new appliances, homes, and commercial buildings in developing and transition countries by 50 percent over the next two decades compared to current performance. Recommended for funding at $20 million per year in FY2001, increasing to $40 million per year in FY2005, its high-priority elements are:

  (1) technical and policy assistance—with participation from DOE, EPA, and USAID—for the development and implementation of efficiency standards for, and ratings and labeling of, building equipment and appliances, including cooperation in setting up appliance and equipment testing laboratories and programs, in developing and analyzing standards, in harmonizing test procedures and standards where there is U.S. interest in doing so, and in implementing voluntary energy-efficiency labeling and promotion programs similar to the DOE/EPA "Energy Star" program;

  (2) similarly organized technical and policy assistance for development, distribution, and training in the use of building-design software that minimizes energy use in residential and commercial buildings while enhancing building livability and amenity value; for development and monitoring of building design competitions to push the envelope of building energy performance; and for development, analysis, and implementation of building energy codes and standards, including assistance with training, monitoring, compliance, and enforcement programs and with software tools;

  (3) U.S. encouragement for the GEF, World Bank, and other multilateral financing institutions to support development and adoption of the measures described here as part of an aggressive pursuit of building-energy efficiency improvements throughout their grant and lending programs.

- The vehicles cluster is aimed at research, development, and demonstration of cleaner, more energy-efficient buses and two- and three-wheeled vehicles and at accelerating the deployment of such vehicles in developing and transition countries. Recommended for funding at $20 million per year in FY2001, increasing to $40 million per year in FY2005, its high-priority elements are:

  (1) integration and expansion of activities of DOE, EPA, and USAID, and encouragement of the same in the GEF, on cooperative RD^3 of low-cost, clean, efficient power sources for transportation—particularly fuel-cell systems for two- and three-wheeled vehicles and hybrid and fuel-cell systems for buses, as well as electric and alternative-fuel propulsion systems where appropriate, and encouragement of joint ventures involving U.S. and foreign companies to manufacture these vehicles and fuel-production systems;

  (2) U.S. encouragement for the GEF, International Finance Corporation, World Bank, and other multilateral development banks to help finance the vehicle-manufacturing capacity, infrastructure, and consumer-credit systems necessary for large-scale deployment of these advanced vehicles;

(3) EPA assistance to developing and transition countries for the analysis and implementation of emissions standards, including establishment of vehicle testing and inspection programs for all types of motor vehicles.

A "Business-as-Usual" energy future would be problem-plagued and potentially disastrous

- The factories of the 21st century cluster aims at engaging U.S. industry in partnerships to reduce the energy intensity of major energy-using industrial processes in key developing and transition countries over the next two decades by 40 percent compared to their current performance, while improving labor and capital productivity. This effort will be guided by the on-going U.S. "Industries of the Future" program, focusing on areas of high foreign market growth in energy-intensive materials. Recommended for funding at $10 million per year in FY2001, increasing to $20 million per year in FY2005, its high-priority elements are:

  (1) cooperation between the U.S. public and private sectors and foreign counterparts to develop "technology roadmaps" for more productive and energy-efficient industrial processes geared to local circumstances, with emphasis on energy-intensive basic-materials industries such as iron and steel, chemicals, pulp and paper, and cement;

  (2) cooperative development and implementation, starting from these roadmaps, of RD^3 workplans including human and institutional capacity building, precompetitive research and development, technical exchanges, and pilot demonstration programs;

  (3) support by U.S. and partner governments for project development and implementation, joint-venture creation, and licensing to facilitate technology transfer between U.S. firms and their partners.

- The cogeneration cluster is aimed at promoting the use of combined-heat-and-power (CHP) technologies for new power supply, with a goal of providing 20 percent of new generating capacity in developing countries over the next few decades using CHP. Recommended for funding at $10 million per year in FY2001, increasing to $20 million per year in FY2005, it contains as its high-priority elements:

  (1) cooperation between the U.S. public and private sectors and foreign counterparts on CHP information and education programs, including regional workshops, for public- and private-sector participants;

  (2) collaborative assessments of power and heat loads and output ratios at potential CHP sites in order to identify favorable conditions for CHP, address potential regulatory and market barriers, help attract funding for demonstrations, and help secure financing for deployment; and

  (3) support of reforms in domestic regulatory structures, through assistance by U.S. experts from DOE, AID, and EPA, to "level the playing field" for CHP and for U.S. CHP equipment, including provision for power sales to the grid at market rates, nondiscriminatory power buy-back rates, interconnection and emissions standards, and nondiscriminatory international standards for CHP equipment.

The third category of initiatives addresses specific opportunities for ***international cooperation for innovation on energy-supply***

***technologies**. It consists of initiative clusters focused on widespread use of renewable energy technologies, fossil-fuel decarbonization and CO_2 sequestration, and nuclear fission and fusion.*

- The widespread renewables cluster is aimed at accelerating the development and deployment of biomass, wind, photovoltaic, solar thermal, and other renewable energy technologies, including tailoring and deploying these to support rural development in developing countries, such that in the second quarter of the 21st century renewables could make contributions to world energy supply comparable to the contributions from fossil fuels today. Recommended for funding at $40 million per year in FY2001, increasing to $80 million in FY2005, its high-priority elements are:

  (1) promotion of collaborative RD^3 on industrial-scale biomass energy conversion technologies, emphasizing those that provide both electricity and one or more co-products (heat, fluid fuels, chemicals, food, fiber), as well as collaborative research on the restoration of degraded lands and their use for growing crops optimized to yield multiple products;

  (2) expansion of existing programs with selected developing- and transition-country partners to develop integrated systems involving renewable energy technologies and their hybrids with fossil energy to provide complete energy services for agricultural, residential, and village-scale commercial and industrial applications in rural areas;

  (3) collaboration in measures to accelerate the deployment of grid-connected intermittent renewable electric technologies and their hybrids with fossil energy using competitive instruments (such as CETO competitions), including facilitation of participation of U.S. firms in this process; and

  (4) development, in collaboration with appropriate partners, of assessments of renewable energy resources on a region-by-region basis.

Basic U.S. values—respect for human dignity and human rights, belief in equity and opportunity, commitment to assistance for the least fortunate and to stewardship for future generations and for the environment—dictate U.S. leadership in international cooperation in energy innovation

- The fossil-fuel decarbonization and CO_2 sequestration cluster is designed to develop, via a broad multinational collaborative effort, fuels decarbonization and carbon-sequestration technologies that would eventually make possible the economic use of fossil fuels with near-zero lifecycle CO_2 emissions and near-zero pollutant emissions, as well as to advance, in developing and transition countries in the near term, syngas-based technologies that would facilitate the transition toward near-zero lifecycle CO_2 emissions. This initiative would build on activities under DOE's "Vision 21". Recommended for funding at $20 million per year in FY2001, increasing to $40 million per year in FY2005, its high-priority elements are:

  (1) cooperation to promote energy-sector and environmental reforms in developing and transition countries, making it more advantageous to produce multiple clean products from syngas derived from natural gas, coal, and other carbonaceous feedstocks;

  (2) collaborative R&D and demonstrations of technologies designed to reduce the cost of making hydrogen from carbonaceous feedstocks while facilitating the

recovery of byproduct CO_2 for ultimate disposal; and.

(3) collaborative efforts on CO_2 sequestration to develop standards for security of CO_2 storage, conduct environmental impact studies, carry out both region-by-region assessments of sequestration potential and detailed reservoir-by-reservoir analyses of storage capacity and other characteristics, and carry out demonstrations with monitoring of storage security;

- The nuclear cluster, aimed at preserving and enhancing the possibility that nuclear energy could play an expanding role in addressing climate change and other energy-related challenges in the next century, is recommended for funding at $10 million per year in FY2001, increasing to $20 million per year in FY2005. It contains as high-priority elements:

  (1) addition of an explicit international component to the DOE's new Nuclear Energy Research Initiative (NERI), promoting bilateral and multilateral research focused on advanced technologies for improving the cost, safety, waste management, and proliferation resistance of nuclear fission energy systems;

  (2) expansion and strengthening of international cooperative efforts in studies and information exchange on geologic disposal of spent fuel and high-level wastes, to include expanded participation, studies of international interim-storage facilities, and development of a consistent and rigorous international regulatory framework for both interim storage and geologic disposal of these materials;

  (3) pursuit of a new international agreement on fusion R&D that commits the parties to a broad range of collaborations on all aspects of fusion energy development, while selectively enhancing U.S. participation in existing fusion experiments abroad and inviting increased foreign participation in new and continuing smaller fusion experiments in the United States.

Our last category of initiatives addresses ***mechanisms and institutions through which the U.S. government, in cooperation with the private sector, can more effectively develop, manage, and coordinate a portfolio of governmental activities in support of international ERD[3] cooperation*** *consistent with an overarching vision of what this portfolio is to accomplish. Our high-priority recommendations in this category are as follows:*

- The President should establish a new Interagency Working Group on Strategic Energy Cooperation in the National Science and Technology Council (NSTC) to further develop and promote a strategic vision of the role of the government's contributions to international ERD[3] cooperation in support of this country's interests and values. This NSTC working group would:

  (1) have an interagency secretariat and an Advisory Board drawn from the private, academic, and NGO sectors;

  (2) be responsible for continuing assessment of the government's full portfolio of activities in international ERD[3] cooperation—building on this study and in consideration of the overarching strategy of the effort, the needed components of the innovation "pipeline" and links between these, and appropriate diversity and public-private-interface criteria—and for using the results of such portfolio assessment to help guide and coordinate the evolution of the relevant agency programs;

  (3) assist the agencies to strengthen their internal and external mechanisms for monitoring and reviewing projects, for terminating unsuccessful ones, and for

handing off successful ones to the private sector at the appropriate time.

- In addition to these strengthened review procedures and the interagency portfolio assessment effort, needed improvements in the mechanisms for development and management of international ERD[3] cooperation programs within the agencies include

  (1) use of competitive solicitations by the agencies, in cooperation with foreign counterparts, to identify the most promising approaches to achieving portfolio and program goals, with a well developed business plan for moving a technology through the RD[3] pipeline a prerequisite for winning a competition;

  (2) identification, by the Cabinet Secretaries or administrators of the key agencies implementing the ERD[3] cooperation portfolio, of appropriate accountable management chains with authority and budgets for implementing international ERD[3] programs;

  (3) strengthening these agencies' international capabilities through training, targeted hiring, and rotating national laboratory staff and outside academic and industrial technical experts through the agencies on a systematic basis, giving these persons senior professional status with significant responsibility for guiding program planning and policy.

- The costs of the U.S. government contributions to the initiatives described in this report would be covered by a new Strategic Energy Cooperation Fund, supplementing existing budgets for international ERD[3] activities and the budgets proposed in the 1997 PCAST study for U.S. domestic energy R&D programs. The amounts estimated for the four "foundation", four "end-use-efficiency", and three "energy-supply" initiative clusters we have recommended sum to $250 million per year in FY2001 and $500 million per year in FY2005. (The increment for FY2001 adds an amount of new money for these types of activities approximately equal to the total that was spent on them in FY1997.) The money from the Strategic Energy Cooperation Fund would be

  (1) allocated to the relevant agencies in the President's budget request as the outcome of a process engaging the agencies, the Office of Management and Budget, and the Interagency Task Force on Strategic Energy Cooperation and its Advisory Board;

  (2) multi-year in duration in most instances, to diminish the influence of annual funding cycles on project selection and continuation and to promote the continuity of commitment that has often been lacking in U.S. international-cooperation efforts.

Money made available, within the program's indicated FY2001-2005 trajectory, by phasing out support for projects that either fail or that succeed and get taken over by the private sector could be used for further high-leverage projects identified through the continuing interactions of agencies, the Interagency Task Force and its Advisory Board, foreign partners, and other energy-technology users.

Conclusion

The United States and the world face an historic window of opportunity.

- Processes of energy-sector restructuring and regulatory reform that will be completed largely over the next decade will "lock in" the mechanisms that will determine success or failure in the dual aims of attracting the private capital needed to meet energy needs for economic development while addressing the huge public-goods and externality issues that the energy sector presents.

- Continuing processes of rapid urbanization in the developing countries mean that decisions made in those countries in the next few decades about the interaction of urban energy supply, transportation networks, information infrastructure, land-use planning, and building characteristics will likewise substantially "lock in", for the next century and even beyond, important aspects of the energy requirements and quality of life of the large majority of the world's inhabitants living in these urban agglomerations.

- The time requirements for moving new technologies through the innovation pipeline mean that much of the research intended to affect deployments in the 2020s, 2030s, and 2040s needs to be underway in the next decade. And the long service lifetimes of most energy-supply technologies and much of the equipment and infrastructure governing energy end-use efficiency means that much of what is deployed in the 2020s, 2030s, and 2040s will still be in place toward the end of the next century.

- Thus the energy technologies and related infrastructures that are developed and deployed over the next few decades—supporting rapid energy growth in developing and transition economies and replacing existing capital stock in industrialized ones—will strongly influence the trajectories of energy costs and end-use efficiencies, greenhouse-gas emissions, public-health impacts of air pollution, oil-import dependence, nuclear-energy-system safety and proliferation resistance...and much else of importance about the world energy system for most of the next century.

- The globalization of innovation capacities, together with tightening constraints on domestic R&D spending, have sharply increased the attractiveness of cooperation to the United States for purposes of developing the energy technologies this country will require for domestic use. Simultaneously, the globalization of energy markets has increased the necessity of cooperation to gain access for United States energy companies to many of the largest markets for new technologies; and the globalization of environmental and security risks from inadequacies in the global portfolio of deployed energy options is sharply increasing the benefits to the United States of cooperation to improve that portfolio.

- Strengthening North-South cooperation on advanced energy technologies that can lower greenhouse-gas emissions while fueling sustainable economic development is by far the most promising available approach to securing developing-country participation in a larger collaborative framework for addressing the global energy-climate-development challenge.

The energy technologies and related infrastructures that are developed and deployed over the next few decades will strongly influence the world energy system for most of the next century

The needs and opportunities for enhanced international cooperation on energy-technology innovation supportive of U.S. interests and values are thus both large and urgent. The costs and risks are modest in relation to the potential gains. Now is the time for the United States to take the sensible and affordable steps outlined here to address the international dimensions of the energy challenges to U.S. interests and values that the 21st century will present.

Table ES-1: INITIATIVES AND BUDGETS

(Budget in $Millions of Supplemental Spending Above Current Agency or PCAST 97 Levels)

Initiative	FOUNDATIONS OF ENERGY INNOVATION	Page	FY01	FY05
Capacity Building	--Increase support for regional centers of ERD[3]	3-14	$20 M	$40 M
	--Expand existing and develop new training programs on energy			
	--(Interdisciplinary research—monitoring/evaluation/institutional change)*	3-15		
Energy Sector Reform	--Technical/policy assistance for sector reform that gets "prices right," including externalities, and advances public benefits	3-20	20	40
	--Assistance establishing evolutionary regulatory frameworks for gas grids			
Demonstration And Buy-down	--Encourage development of a Demonstration Support Facility	3-26	40	80
	--Award production tax credits for demonstrations that meet criteria			
	--Assist in establishing a Clean Energy Technology Obligation			
Finance	--Encourage MDBs to increase financing for clean/efficient energy technology; support activities with trust funds for using US experts	3-34	40	80
	--Facilitate market-based finance of clean/efficient energy technologies, including creating a fund administered by OPIC			
	--(Technical, Financial, and Feasibility Analysis Assistance for US Firms)*	3-38		
	A PORTFOLIO OF ENERGY EFFICIENCY RD[3]			
Buildings	--Technical/policy assistance to develop/adopt efficiency standards, ratings, labeling of building equipment; assist testing programs, etc.	4-11	20	40
	--Testing/policy assistance to develop/apply building design tools/design competitions/energy codes/standards for new buildings; training; etc.			
	--Encourage MDBs/GEF to support building/equipment efficiency			
	--(Develop/Disseminate Improved Cookstoves)*	4-15		
Transport	--Integrate/expand RD[3] on low-cost, efficient, clean power for vehicles	4-19	20	40
	--Encourage GEF/MDBs to help finance production/use of clean vehicles			
	--Assist in analysis/implementation of vehicle emissions testing/standards			
	--(New Technologies for Public Transport Systems)*	4-22		
Industry	--U.S. Public/private/foreign cooperation to develop technology roadmaps for energy-efficient processing of energy-intensive materials	4-28	10	20
	--Cooperative development/implementation of technology roadmaps			
	--Support for joint-venture creation, licensing, between U.S. firms/partners			
Combined Heat and Power (CHP)	--Public/private U.S./foreign cooperation on information programs, etc.	4-29	10	20
	--Collaborative assessments of potential CHP sites, address regulatory and market barriers, attract funding for demonstrations, help secure finance			
	--Support reforms to "level the playing field" for CHP and U.S. equipment			

Initiative	A PORTFOLIO OF ENERGY SUPPLY RD^3	Page	FY01	FY05
Widespread Renewables	--RD^3 on industrial-scale biomass power/coproducts; restore degraded land	5-11	$40 M	$80 M
	--Develop integrated renewable/hybrid systems for rural areas			
	--Accelerate deployment of grid-connected intermittent/hybrid systems			
	--Assess renewable energy resources by region			
	--(RD^3 on solar thermal electric; support strong domestic RD^3 efforts)*	5-14		
Fossil Fuel	--Promote energy/environment reforms in support of coproduct strategies	5-21	20	40
	--RD&D on low-cost hydrogen production and byproduct carbon recovery			
	--Carbon sequestration standards/regional assessments/ reservoir analyses			
	--(R&D to exploit energy of methane hydrates in climate-friendly ways)*	5-23		
Nuclear Energy	--Add international component to Nuclear Energy Research Initiative	5-27	10	20
	--Expand/strengthen international studies of spent fuel/high-level waste			
	--Pursue new international agreement on fusion R&D			
	--(Improve safety and security of nuclear facilities worldwide)*	5-28		
	A SET OF MANAGEMENT RECOMMENDATIONS			
Agency Management	Establish NSTC working group (WG) on Strategic Energy Cooperation	6-13		
	--NSTC WG would have interagency secretariat/external Advisory Board			
	--WG would assess the IERD^3 portfolio, guide/coordinate agency programs			
	--WG would strengthen agency internal/external review capabilities			
	--Agencies to use competitive solicitations to identify best approaches	6-14		
	--Agencies identify accountable management chains with authority/budgets			
	--Strengthen agency international capabilities by training/detailing staff			
	--Establish Strategic Energy Cooperation Fund			
TOTAL			$250 M	$500 M

* Initiatives in parentheses are described in the chapters but not in the Executive Summary; budget totals include these initiatives.

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Divider Title: _____

Statement by
Ambassador Harriet Babbitt, Acting Administrator
U.S. Agency for International Development

Senate Foreign Relations Committee
Subcommittee on International Economic Policy, Export and Trade Promotion
July 28, 1999

Thank you, Mr. Chairman. I'm glad to be here today to discuss an issue of great interest to us all, that of global climate change.

I know we all agree on the importance of protecting and preserving our environment. We in the United States take pride in our initiatives to limit pollution, improve energy efficiency and preserve the world's resources.

We believe that from an environmental and economic, global climate change is of the utmost importance. It poses profound threats to international economic development and ecological balance.

Although the United States remains the world's leading emitter of greenhouse gases, developing countries make up an increasingly large share of the global emissions problem. Their emissions are expected to surpass those of the industrialized nations in the next twenty years. As countries like India and China bring dozens of new coal-fired power plants on line each year, their emissions of carbon dioxide will grow greater and greater.

The predictable impact of global climate change endangers our best efforts to build sustainable economic and social progress in developing nations. And obviously the threats to our own country, in terms of our people's health and our national economy, are a most serious concern.

A worldwide issue of this complexity demands a cooperative approach. We at USAID believe that our relationships with Congress, the private sector, nongovernmental organizations and the developing nations have been open and productive, and we are proud of the support we have received in this decade and the successes we have achieved.

We believe that climate-related programs are essential to our development mission, that they promote our national interests, and that they are consistent with our national obligations under the Framework Convention on Climate Change (or FCCC) and with Congress' approach to international action on climate change. Let me state emphatically that USAID's climate related activities are fully consistent with the administration's pledge not to implement the Kyoto Protocol before the Senate has given its advice and consent and it has been ratified by the President. We are carrying out a climate-change

strategy that was developed and announced before the Kyoto Protocol was negotiated. Our programs stand on their own merits, and in our view they advance the goals of Byrd/Hagel in that they build capacity in developing countries to take further action to address global climate change.

In addition, USAID has been an active participant in the interagency policy process, and in multilateral activities of the Framework Convention on Climate Change, working to strengthen the mechanisms under the Convention that promote wise development and environmental protection.

Looking back, we see that in 1990, USAID submitted its first report to Congress on Global Climate Change and Developing Countries, and the agency was active in support of the negotiations of the FCCC. Our approach has consistently focused on opportunities to advance economic development goals while curbing greenhouse gas emissions. More efficient use of energy, renewable energy applications and sustainable forestry practices are good examples of this common sense approach to climate change and development.

In 1994, responding to the FCCC and to Congressional requests, we issued our first climate strategy. In June, 1997, prior to the negotiation of the Kyoto Protocol, President Clinton announced to the United Nations General Assembly Special Session on Environment a renewed U. S. effort to help developing countries address climate change. Called the Developing Country Climate Change Initiative, it is a five-year, $1 billion commitment to work with developing countries to encourage "climate-friendly" energy and natural resource management policies and practices in developing countries.

USAID is carrying out this initiative, which focuses on mitigation of emissions by targeting clean energy applications, forest conservation and support for policy reform and privatization. This year, the agency is funding approximately $150 million in climate-related activities in energy and forestry in 44 countries.

Our worldwide efforts have met with a great deal of success. For example:

- The USAID forest management program in Mexico has reduced the deforestation rate on 3.1 million hectares of protected land by more than 30 percent.

- The agency's Sustainable Forestry Practices Initiative, worldwide, has reduced by 70 percent the damage caused by poor land management on over 3.4 million hectares of forests.

- A rural electrification program in the Philippines has reduced power line losses by three percent and reduced carbon dioxide emissions by 250,000 metric tons.

Promoting the balancing of economic growth with sound environmental practices is central to our mission and serves the US national interest. In the long term, economic development will be enhanced, not compromised, by efforts to reduce greenhouse gas emissions. Our efforts promote a "win - win" approach by addressing the impact of

climate change through long-term partnerships with developing countries that engage market forces and produce mutual economic and environmental benefits for all involved.

Meeting the challenges of climate change and encouraging sound energy policy will create significant opportunities for U.S. business and vast new markets for U.S. technology worldwide. The potential market for climate friendly technologies is enormous. The world market for energy efficient technologies has been estimated at almost $1.8 trillion over the next 40 years. The potential market for renewable energy is also vast and incentives for cleaner production will help to create new markets overseas in an area where the U.S. is highly competitive.

The technology, capital and innovation of the private sector are the driving forces that will make a lasting difference in the carbon intensity of development in the next century. USAID's role is to help enable the private flows of capital and technology by supporting appropriate polices, privatization, capacity building measures, and efforts to overcome market barriers in the developing world.

Ours is a practical approach. We promote energy efficiency by encouraging integrated resource planning and demand side management, creating financing mechanisms for energy efficiency, developing standards and codes for efficient buildings and appliances, and carrying out pilot and demonstration projects for steam, lighting and motor efficiency. We encourage privatization and work to reform inefficient state-controlled energy systems. We encourage market-based incentives for the application of clean technologies and practices (natural gas, energy efficiency, renewable energy, low impact logging) to meet the growing demands of industrializing economies. And we address foreign legal and policy constraints to cleaner energy production and use, and improved natural resource management.

Mr. Chairman, as you know, we have notified Congress of our intent to continue to invest in several important energy programs in India which are related to climate change.

India is the sixth largest and second fastest growing emitter of greenhouse gases in the world. India has serious air pollution problems; air pollution will cause an estimated 2.5 million premature deaths there this year. India's environmental challenges have global implications.

USAID's global climate change program in India targets the development of clean energy policies and projects. The program helps encourage India to take practical steps to reduce emissions. With our assistance, India has made impressive progress in improving the efficiency of its power plants, reducing pollution in key industries, and expanding the use of renewable energy technologies nationwide. These actions have resulted in a two million ton reduction of annual carbon dioxide emissions by power plants of the National Thermal Power Corporation and by the Gujarat Electricity Board.

Our activities in India are good for U.S. business. The program is a decade old and is reaching maturity with regard to its results. For example, the recent signing of a new

partnership agreement between leading Indian and U.S power utilities and regulatory agencies provides a long-term mechanism for the transfer of U.S. technology and experience. Moving forward with the global climate change program will enhance U.S. commercial interests in India, as well as addressing our concerns about the global environment.

We believe that our efforts, in India and throughout the world, directly promote Congressional goals, especially the engagement of developing countries in aggressively combating climate change. And, finally, we believe that these programs are good, common sense development – and that they are effective.

Thank you. I'll be glad to take your questions.

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THE WHITE HOUSE

Office of the Vice President

For Immediate Release
Monday, August 2, 1999

Contact:
202-456-7035

VICE PRESIDENT GORE ANNOUNCES RELEASE OF DECLASSIFIED ARCTIC IMAGES TO HELP RESEARCH GLOBAL WARMING

Calls on Congress to Fully Fund the Administration's Climate Change Initiatives

Washington, D.C. – Vice President Gore today announced the declassification and release of 59 satellite images of the Arctic Ocean that will be used by scientists to better understand the interaction between polar ice caps and global warming.

Release of the high-resolution images was approved by the National Imagery Mapping Agency at the request of the National Science Foundation (NSF). NSF is the primary U.S. sponsor of SHEBA, an international expedition to the Arctic that has documented changes in the ice pack consistent with those expected as a result of global warming.

"No place on Earth is more sensitive to global warming than the Arctic, and these satellite images provide scientists with valuable data for understanding how climate change affects this complex region," Vice President Gore said. "By making these satellite images available to the scientific community, we take another important step toward meeting the challenge of global warming."

The Vice President announced the release at the National Geographic Society, where he led a discussion on climate change with a group of youngsters attending the Better World Science Camp. He was joined by Bill Nye, the host of Disney's *Bill Nye the Science Guy*, who helped teach the campers about the study of ice cores.

In his remarks today, the Vice President also noted the recent drought and heat wave gripping much of the country.

"We had heat waves long before there was any threat of global warming," Vice President Gore said. "But global warming is real and we should act together now so that in the future our families will not have to suffer more extreme weather of all kinds."

SHEBA – formally known as the Surface Heat Budget of the Arctic Ocean Project – is jointly sponsored by the governments of the United States, Canada, and Japan. As part of the project, a Canadian icebreaker was deliberately trapped in Arctic ice for a full year in 1997 and 1998 so that more than 100 scientists could take measurements of the atmosphere, ocean, and ice. Over the course of the year, the ship drifted 1500 miles with the shifting ice.

Preliminary findings from SHEBA show that the Arctic ice sheet is roughly five percent smaller, and one meter thinner, than in the 1970s. Scientists believe that continued shrinkage of the ice pack could accelerate global warming because ice reflects more incoming solar radiation than the ocean does.

The newly released satellite images show the area around the trapped icebreaker over a period of several months. SHEBA scientists will use the images, in conjunction with data gathered on the ice, to develop a better understanding of changes in the ice's surface and reflectivity.

Declassification of the images, taken by U.S. intelligence satellites, was facilitated by MEDEA, a group of scientists that works closely with the intelligence community to examine and use national security data for scientific research. MEDEA was established in 1991 as an outgrowth of discussions initiated by then-Senator Gore.

"By working in partnership, our intelligence and scientific communities are advancing vital research that will help us understand, and meet, critical challenges like global warming," the Vice President said.

Vice President Gore also called on Congress to fully fund the President's Climate Change Technology Initiative and to drop legislative "riders" that would hamper the Administration's efforts to address global warming.

The Administration, which secured a record $1 billion this year for clean energy research and development, is proposing an increase to $1.37 billion in fiscal year 2000. So far, Congress has appropriated almost none of the proposed increase. In addition, several appropriations bills include language that could block ongoing initiatives, including voluntary programs with industry that reduce energy waste and greenhouse gas emissions.

"The evidence of global warming grows stronger every day, yet Congress is trying to strangle common-sense programs that save energy, save consumers money, and reduce global warming pollution," Vice President Gore said. "I urge Congress to work with us, not against us, to meet the challenge of climate change."

One of the newly released satellite images can be viewed today on the Web at www-nsidc.colorado.edu/TEST/NTML.

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Congress and Global Warming:
Short-Changing Our Future

While the evidence of global warming continues to mount, some in Congress are trying to strangle common-sense programs that save energy, save consumers and businesses money, and reduce global warming pollution. Appropriations bills working their way through Congress deny funding increases proposed by President Clinton to accelerate research and development of clean energy technologies for the 21st century. What's more, many of the bills include legislative "riders" that would throw roadblocks in the way of any Administration efforts to address climate change.

Special-Interest Assaults on Common-Sense Programs. Restrictive language attached to a number of fiscal year 2000 spending bills would put climate policy in a straitjacket. The Administration recently fought off or weakened some of the most far-fetched of these special-interest "riders." One sought to suppress scientific research on climate, and another tried to bar implementation of the President's new executive order to reduce federal energy use and save taxpayers $750 million a year.

Still alive, however, is the Knollenberg rider. Building on a similar provision in last year's VA-HUD Appropriations bill, the language purports merely to prohibit implementation of the Kyoto Protocol in advance of Senate ratification. In practice, though, it would give naysayers in Congress a toe-hold to object to virtually all aspects of Administration climate policies, even when they clearly save money for consumers and businesses. Potential impacts include:

- ***Rolling back voluntary programs to reduce energy waste and greenhouse gas emissions.*** Report language from the House VA-HUD Appropriations Subcommittee seeks to vastly expand the prohibition on Kyoto-related activities to cover "non-regulatory actions, such as programs and initiatives." This undoes an agreement reached last year to ensure continuation of successful voluntary programs such as Green Lights and Energy Star, which have a proven track record of saving money for both consumers and businesses. In addition, it would block legitimate climate research and policy analysis.

- ***Dictating Scientific Process.*** The Report language also would require that a small minority of critics be given equal standing with mainstream scientists in educational seminars or activities -- even on questions about which there is broad scientific consensus. This is the kind of "balance" that tobacco companies used to fight for on the dangers of smoking.

- ***Unconstitutional interference?*** This year the rider has been attached to a wide range of spending bills, including those funding the State Department, the Agency for International Development, the Department of Energy, the Department of the Interior, the Environmental Protection Agency, NASA, the National Oceanic and Atmospheric Administration, and the National Science Foundation. Applying these restrictions to international negotiations and activities raises serious Constitutional concerns and could prevent the Administration from advancing bipartisan objectives of engaging developing countries and reducing the cost of addressing climate change.

Smart Investments At Risk. The Administration secured a record $1 billion in fiscal year 1999

for the Climate Change Technology Initiative (CCTI), a package of investments to research, develop and deploy energy efficiency technology and renewable energy. For fiscal year 2000, the Administration is proposing $1.37 billion for investments in forward-thinking clean energy technologies -- a 34 percent increase over. So far, Congress has appropriated almost none of this increase. Examples where CCTI and other climate-related investments are being under-funded include:

- ***Weatherization Assistance and State Grants.*** *FY 2000 request: $191 million; Congress under-funding by $25 million.* The same week dozens of older Americans are dying from the heat, Congress is short-changing this program to deliver conservation services, such as insulation, to millions of low-income families. The program improves health and safety, reduces carbon emissions, and reduces energy costs for those least able to afford them.

- ***Renewable Energy.*** *FY 2000 request: $399 million; Congress under-funding by about $90 million.* Federal R&D investments can help make clean energy technologies such as wind, solar, bioenergy, and geothermal energy affordable for American consumers. Current spending bills, however, would *cut these efforts below FY 1999 levels* by some $27 million-$35 million.

- ***Partnership for a New Generation of Vehicles.*** *FY 2000 request: $264 million; Congress currently under-funding by $58 million.* PNGV is a partnership between the federal government and automakers to develop cars with three times the fuel economy of today's models with no sacrifice in comfort or performance. At current House and Senate levels, the program would not meet its technical objectives and would have to terminate a number of promising efforts, such as developing highly efficient high-power energy storage devices and the development of advanced fuel cells.

- ***Clean Air Partnership Fund.*** *FY 2000 request: $200 million; Congress under-funding by $159 million.* This initiative would provide grants to state and local governments for projects that reduce both greenhouse gases and pollutants like soot, smog and air toxics.

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VP Statement on Report of the President's Committee of Advisors on Science and Technology

I am very pleased to release today the new report by the President's Committee of Advisors on Science and Technology, *Powerful Partnerships: The Federal Role in International Cooperation on Energy Innovation.* Prepared by distinguished leaders in business, academia, and science, this report recommends a strengthened partnership between American business and the federal government to step up to the global energy and environmental challenges of the next century.

International energy markets, already worth hundreds of billions of dollars a year, are growing dramatically to meet exploding demand in developing countries. This translates into big market potential for competitive U.S. energy technology companies. But it also poses a critical environmental challenge. If developing countries rely only on traditional energy technologies, we will lose the battle to limit greenhouse gas emissions and assure a livable environment in the coming century.

This report to the President highlights the strategic importance to the United States of maintaining scientific and market leadership in energy technology, and identifies many opportunities to improve energy efficiency in buildings, industry, transportation, and clean energy generation. The redoubled effort called for in this report will help reduce dependence on imported oil and spur economic growth in developing countries while minimizing emissions of greenhouse gases.

An earlier PCAST report provided the foundation for the Administration's Climate Change Technology Initiative. This new report extends that work and provides a global strategic vision for energy innovation. It comes at a time when increasing numbers of Americans and American businesses are recognizing the need to accelerate clean energy technologies for economic and environmental gains. This Administration is committed to active international engagement to address climate change and build new markets for American technology companies. I urge Congress to join with us in fully funding our Climate Change Technology Initiative and implementing key recommendations in this vital report.

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PRESIDENT CLINTON AND VICE PRESIDENT GORE: GROWING CLEAN ENERGY FOR THE 21ST CENTURY

August 12, 1999

Today, President Clinton will announce new steps to spur bio-based technologies that can help grow the economy, enhance U.S. energy security, and meet environmental challenges like global warming. The President will issue an Executive Order coordinating Federal efforts to accelerate these 21st century technologies – which can convert crops, trees, and other "biomass" into a vast array of fuels and materials – and set a goal of tripling U.S. use of bioenergy and bioproducts by 2010. Meeting this goal could create $15 billion to $20 billion in new income for farmers and rural America, and reduce annual greenhouse gas emissions by up to 100 million tons – the equivalent of taking more than 70 million cars off the road. In addition, the President will call on Congress to approve his proposed research funding and tax credits to promote energy efficiency, bioenergy, and other clean energy sources.

New Economic Opportunities for a New Century. Advances in farm, forestry, and other biological sciences are fueling a revolution in the use of biomass (trees, crops, and agricultural and forestry wastes) to make low polluting products, such as:

- ***transportation fuels***, like cellulosic ethanol from agricultural waste;
- ***electricity***, by burning willows and switchgrass along with coal in existing plants and by converting paper industry by-products into fuel gases; and,
- ***commercial products***, such as chemicals, glues, paints – even furniture and textiles.

By creating high-tech jobs and new economic opportunities, meeting the President's goal of tripling U.S. use of bioenergy and bioproducts could add $15 billion to $20 billion in new income for farmers and many rural communities.

Cleaner Energy, Cleaner Environment. Bioenergy and bioproducts can dramatically reduce greenhouse gas emissions that contribute to global warming. Since crops absorb carbon during growth, their use for energy and other applications results in near zero net carbon release.

- Tripling our use of bioenergy and bioproducts by 2010 will reduce annual greenhouse gas emissions by up to 100 million tons – the equivalent of taking over 70 million cars off the road.
- In addition, the deep-rooted plants commonly used for biomass are helpful in controlling erosion, filtering chemicals from water runoff, and slowing floodwaters.

Energy Security. Meeting the President's goal of tripling our use of bioproducts and bioenergy will allow us to cut back on the almost 4 billion barrels of oil we are projected to import in 2010.

Federal Leadership. Leading scientific and industry groups are calling for a stronger Federal role to help move these promising technologies from the laboratory to the marketplace. Today's Executive Order creates a powerful new research management team focused on an ambitious set of goals. It:

- Establishes a permanent council consisting of the Secretaries of Energy and Agriculture, the EPA Administrator, the Director of the National Science Foundation, and other agency heads to develop a detailed biomass research program to be presented annually as part of the Federal budget.
- Directs the council to review major agency regulations, incentives and programs to ensure that they effectively promote the use of bioproducts and bioenergy.
- Creates an outside advisory group with representatives from bio-based industries, farm and forestry sectors, universities, and environmental groups.

In a separate Executive Memorandum, the President instructed the Secretaries of Energy and Agriculture to prepare a report within the next 120 days on options for modifying existing DOE and USDA programs with a goal of tripling U.S. use of bio-based products and bioenergy by 2010.