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[Climate Change] COP6 [Conference of the Parties] Prep [2]

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Europe Press

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EUROPEAN PRESS OUTREACH

Monday September 4 - Wednesday September 6, 2000

London, England

TABLE OF CONTENTS

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OVERVIEW

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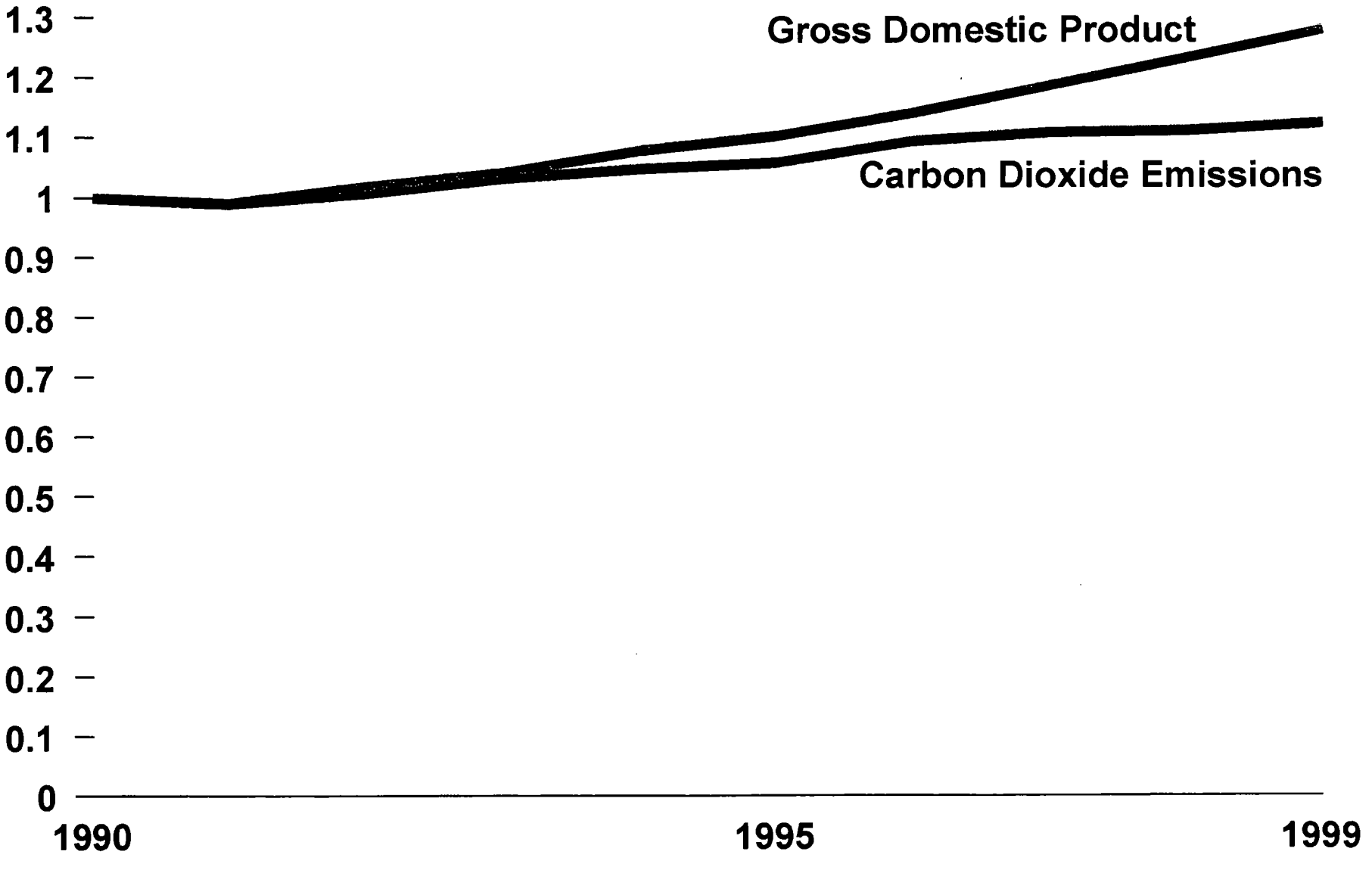
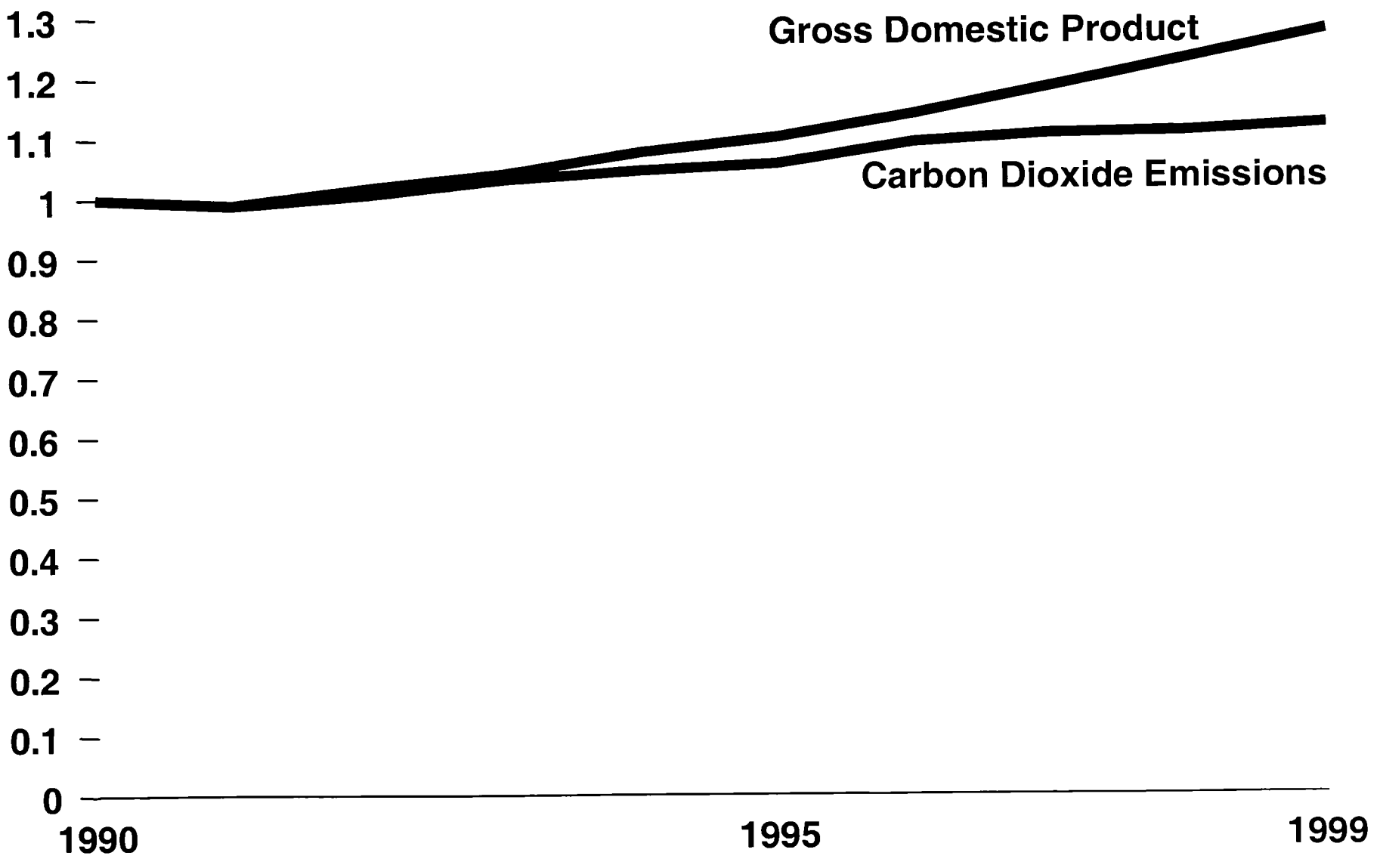
Real Gross Domestic Product and Carbon Dioxide Emissions, 1990-1999 (index, 1990=1.0)



Real Gross Domestic Product and Carbon Dioxide Emissions, 1990-1999 (index, 1990=1.0)



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BIOS

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Dinah Nichols is the most senior civil servant in charge of UK environmental policy and has been in her current position a number of years. While her responsibilities also include domestic environmental issues, she is very well informed on international issues, especially climate change. She headed the UK delegation in the G-8 Ad Hoc Working Group on Climate Change during the UK's G-8 Presidency in 1998. While her Department is quite 'green' by U.S. standards, she brings a much more pragmatic perspective to international issues and is generally well-informed about the U.S. scene and cognizant of the political imperatives which dictate U.S. climate change policy. She is a realist and knows that the U.S. needs to be accommodated if Kyoto is going to succeed. She is well known to me, a good personal friend, and by instinct, pro-American.

Michael Roberts is an up-and-comer in the Confederation of British Industry and was recently promoted to his current position, in which he reports directly to the Deputy Director General (#2) in CBI. He worked on climate change in his previous position and is quite familiar with the issues. He is a firm supporter of the CBI line on climate change, which is to bear a 'fair' share of the domestic pain necessary to cut greenhouse gases, but to do so in the most cost-effective way (emissions trading) and with due regard to international competitiveness. After working with Government to design the UK's climate change levy (due to go into force next April), CBI very recently called for a one year delay in the levy, and there appears to be more and more bad blood between the CBI and Whitehall on this issue, with CBI coming to the view that Whitehall isn't being flexible on the levy and expects industry to bear more than its fair share of the pain.

I'm afraid I don't know Bernard Bulkin, other than having heard him speak at a conference. BP obviously considers itself a pioneer in terms of corporate environmental responsibility and is the first global company to start a CO2 emissions trading scheme. BP is active in the UK's Emissions Trading Group, which is working with Government to design a domestic trading scheme. As I understand it, BP's internal trading regime is almost identical to the U.S. SO2 program. The last time I checked, there had not been a lot of trades, and the clearing price was quite low.

UK Climate Change Scene

The UK probably has the easiest Kyoto target of any 'Western' member of Annex 1. Due to the past shift from coal to gas, and the very recent conversion of two plants which produced the bulk of the UK's industrial gas emissions, the UK should be 13% below 1990 emissions levels this year (the target within the EU bubble is 12.5%). With the moratorium on additional shifting from coal to gas due for lifting later this year, the UK's 'business as usual' scenario should keep emissions close to, if not within, Kyoto targets, right up to the first budget period. Thus, HMG has the luxury of doing only a minimum amount of tinkering to meet the Kyoto target, although the Blair Government remains committed to a 'goal' of a 20% reduction in GHG emissions by 2010.

To keep up the momentum towards further emissions reductions, HMG worked with industry to design the climate change levy, which is a tax on business use of energy. Energy-intensive industries can negotiate voluntary agreements with Government to cut emissions (or energy use), in exchange for an 80% rebate from the levy. The CBI has lobbied to expand the number of industries which might qualify for the rebate, so far without much success. Industry is also concerned that the Government is demanding too much of an emissions reduction in exchange for a rebate, and it appears there is no suitable mechanism to take into account past actions by industry to cut emissions. All voluntary agreements must be negotiated by October, so that the budget implications can be reflected in the Government's November pre-budget. The negotiations have gone so slowly that the CBI has called for a one-year delay in the levy.

Industry is also concerned that Government seems to have put domestic emissions trading on a slower track. Any domestic trading regime would have to co-exist with the climate change levy and is likely to be exceedingly complex. Government and industry also disagree over buyer versus seller liability.

Another part of the Government strategy is promotion of renewables and CHP. HMG had a fairly costly renewables program (picking individual projects and subsidizing the cost of the electricity in order to get it into the grid),

but that was dropped last year, and a new scheme which requires energy producers to eventually source 10% of their electricity from renewable sources is planned. Companies which cannot do so will pay a fine, and it is not clear if the fine will prove cheaper than developing new sources. Some trading is also envisioned, with those who exceed the 10% target getting renewables permits which they can sell to others. Although the UK has decent renewables potential, efforts to expand wind power, for example, are beginning to meet resistance from local communities which consider the turbines unsightly.

Among the domestic public, global warming is taken as a given, and the issue generates more interest and concern than it does in the U.S. There is also broad support for domestic and international action to reduce GHG emissions, although it is not clear how much 'pain' consumers are willing to accept. High gasoline prices has become an issue here, and the Blair Government has been forced to abandon the automatic escalator in gasoline taxes. Taxes on home heating oil were also eliminated when Labour came to power in 1997. The climate change levy was designed to shield consumers from any direct impact. The 'green' lobby will continue to hold Government accountable for any slippage in climate change policy, but here, as in the U.S., there is little appetite among politicians for actions which might directly affect voters.

Bernard J. Bulkin

Dr. Bernard J. Bulkin is **Vice President, Environmental Affairs** at BP Amoco. From 1993-97 he was Director, Manufacturing Supply and Distribution for BP Oil, and prior to that time held various posts in the BP and Sohio technology organisations, including Chief Technology Officer, BP Oil. His main responsibilities within BP Amoco are Climate Change, Clean Fuels, and relationships with automotive manufacturers. He has been active in the European Auto-Oil programme, and chaired the Europia Automotive Fuels Group. Dr. Bulkin is Honorary Professor, Univ. of York, a Fellow, Royal Society of Chemistry; Fellow, Institute of Petroleum; and Fellow, Royal Society of the Arts. He is the author of more than 100 technical papers and two books.

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CDM & Nuclear Power

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FY 2001

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President Clinton's FY 2001 Climate Change Budget

"The greatest environmental challenge of the new century is global warming . . . If we fail to reduce the emission of greenhouse gases, deadly heat waves and droughts will become more frequent, coastal areas will flood, and economies will be disrupted. That is going to happen, unless we act. Many people . . . still believe you cannot cut greenhouse gas emissions without slowing economic growth. In the Industrial Age that may well have been true. But in this digital economy, it is not true anymore. New technologies make it possible to cut harmful emissions and provide even more growth."

-- President Bill Clinton, State of the Union Address, January 27, 2000

Meeting the Challenge of Global Warming. Against a backdrop of growing scientific consensus that the Earth is warming – and that human activities are at least partly to blame – President Clinton's FY 2001 budget is proposing $2.4 billion (a 43 percent increase over FY 2000 enacted levels) in funding to combat global climate change. This includes a series of new initiatives, such as accelerated efforts to develop clean energy sources both at home and abroad and a new Clean Air Partnership Fund to boost state and local efforts to reduce greenhouse gases and air pollution, as well as a five-year package of tax incentives to spur clean energy technologies and increased investment for R&D in energy efficient technology and renewable energy. In addition, the President is proposing more than $1.7 billion for global change research, for a total package for FY 2001 of over $4 billion.

International Clean Energy Initiative. To help accelerate the development and deployment of clean energy technologies around the world, President Clinton is proposing $201 million (a more than 100 percent increase over FY 2000 enacted levels) for a multi-agency initiative to encourage open competitive markets; remove market barriers in developing countries to clean energy technologies; and to provide new incentives for clean energy technology innovation and export. The initiative will promote U.S. clean energy exports, create high-value jobs, and assist developing countries in fighting air pollution and climate change.

Bioenergy & Bio-based Products Initiative. The budget includes $289 million to accelerate the development of bio-based technologies, which convert crops, trees and other "biomass" into a vast array of fuels and products – an increase of $93 million over FY 2000 enacted levels. In addition to helping meet environmental challenges like global warming, this initiative will increase the viability of alternative energy sources, support farm incomes, and diversify and strengthen the rural economy.

Clean Air Partnership Fund. The President proposes $85 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. CCTI investments have risen substantially each of the past two years. The President's new budget proposes a still more accelerated effort.

$4.0 billion in Tax Incentives over 5 years. The proposed package contains $4.0 billion over five years in tax cuts ($201 million for FY 2001) for consumers who purchase energy efficient products and for producers of energy from renewable sources. This year's CCTI tax package is $400 million greater than last year's proposed five-year package. 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 20 percent tax credit for the purchase of selected energy efficient products for homes and buildings; and a $1000-2000 credit for installing a solar energy system.

- Tax credits for fuel-efficient cars. The package extends the current tax credit (of up to $4000) through 2006 for qualified electric and fuel cell vehicles and also includes a tax credit of $500-3000 for the purchase of a qualifying hybrid vehicle from 2003-2006.

- Tax credits for clean energy. The package extends the 1.5 cent per kilowatt hour tax credit for the production of electricity from wind and closed-loop biomass; provides credits for open-loop biomass facilities and coal-biomass cofiring; and provides credits for electricity produced from methane from certain landfills.

$1.4 billion for Energy Efficiency & Clean Energy. The proposed package contains over $1.4 billion in FY 2001 to research, develop, and deploy clean technologies for the four major carbon-emitting sectors of the economy -- buildings, transportation, industry, and electricity – a 30 percent increase over the amount appropriated in FY 2000. 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 2001 budget is $255 million, an increase of $30 million over FY 2000 enacted levels.

- 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 2001 budget request for building efficiency efforts, such as PATH, Energy Star, and Building America, totals $275 million, a 42 percent increase over FY 2000 appropriations.

- Renewable Energy. The President proposes $410 million for the Department of Energy's solar and renewable energy programs, a 32 percent increase over the amount appropriated in FY 2000. The package includes expanded efforts in key renewable technologies, such as wind, bioenergy, photovoltaics, and geothermal energy.

Cleaner Fossil Fuels. The budget request contains $233 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 $22 million increase over FY 2000 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 2001 request includes over $1.7 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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PRESS PHONE #'S

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"MacCurdy, Carol" <maccurdy@pd.state.gov>
08/17/2000 09:50:53 AM

Record Type: Record

To: Paul Bledsoe/WHCCTF/EOP

cc:
Subject: Your Meetings in London

Note: when dialing UK cell phones from outside Europe, use country code.

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Yes - Will attend COP-6

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Yes - will attend COP-6

Please also add the following correspondents from The Guardian to group e-mail lists:
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Paul.Brown@Guardian.co.uk - will attend COP-6
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UK BASED US MEDIA

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Fax:
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BOOKLET PREP

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The U.S. View

U.S. GOVERNMENT ACTIVITIES: TECHNOLOGY COOPERATION & CLIMATE CHANGE

In keeping with its obligations under the United Nations Framework Convention on Climate Change (UNFCCC), the U.S. Government works through a range of agencies to implement technology cooperation activities designed to promote the transfer of climate-friendly technologies to developing and transition countries worldwide. In the U.S. view, technology cooperation extends beyond the simple sale or transfer of hardware. Successfully establishing a program of technology transfer requires the development of in-country enabling conditions and capabilities that support the sustained flow of technologies and expertise.

Since the private sector is the source of most climate-friendly technologies, and the vehicle for their transfer, U.S. technology cooperation activities directly engage the private sector to accelerate the development of markets by removing barriers to investment and facilitating the commercial deployment of technologies. Specific activities focus on policy reform, institutional strengthening, capacity building, information dissemination, technology assessment, technology demonstration and research.

Background

Under the UNFCCC, developed countries have agreed to assist in transferring climate-friendly technologies to developing countries to help them meet their commitments.[1] Technology transfer under the UNFCCC has been defined as both "soft" and "hard" aspects of technology transfer, and address both the mitigation of greenhouse gas emissions, and adaptation to the impacts of climate change.[2]

To promote technology cooperation under the Convention, the Parties are currently engaged in a consultative process to develop a common understanding of technology cooperation models. The U.S. views the consultative process as an important opportunity to establish effective programs that meet UNFCCC goals.

U.S. Government Activities and Projects

Public sector programs can be important vehicles for expanding technology transfer in the area of climate change. In particular, the public sector can play a pivotal role promoting market-based technology transfer by assisting in the removal of market barriers and building human capacity. In recognition of this, the U.S. Government supports a range of bilateral programs that promote the diffusion of climate-friendly technology in developing and transition countries worldwide. Agencies participating in climate technology cooperation activities include the U.S. Agency for International Development, U.S. Department of Energy, U.S. Environmental Protection Agency , U.S. Department of State and U.S. Department of Agriculture.

The U.S. Government also actively participates in multilateral efforts to

strengthen technology cooperation under the UNFCCC. The U.S. Government plays a lead role in the Climate Technology Initiative (CTI), a multilateral initiative of 23 IEA/OECD countries and the European Commission to promote the technology cooperation objectives of the UNFCCC. The U.S. Government is also deeply committed to working to further UNFCCC negotiations on technology transfer and actively participates in the consultative process on technology transfer.

Approach and Tools

Consistent with the role of the private sector as the main vehicle for technology transfer, U.S. government-supported technology cooperation programs focus on creating conditions for expanding markets for clean technology (see "Technology Cooperation Agreement Pilot Project"). Technology markets and institutional conditions, however, are enormously complex and variable from country to country. There is no generic strategy for removing barriers to the diffusion of technology. Rather, measures and activities must be customized to suit the needs and constraints of each country and in many cases the specific technology market within a country. Among the lessons learned by the U.S. from existing programs are the importance of engaging in-country stakeholders, developing public-private partnerships, disseminating information, and ensuring sustainable programs through capacity building.

Public-Private Partnerships. The primary agent of technology transfer is the private sector. Through its technical capabilities, financial resources, and commercial networks, the private sector provides a worldwide mechanism for technology transfer. Public-private partnerships can be important platforms for governments to experiment with various measures and mechanisms for increasing technology transfer. In addition to the removal of policy, economic, legal, and

Technology Cooperation Agreement Pilot Project

Launched in 1997, the ***Technology Cooperation Agreement Pilot Project (TCAPP)*** is an interagency effort that establishes a model for implementing technology transfer under the United Nations Framework Convention on Climate Change (UNFCCC). TCAPP helps developing and transition countries attract investment in clean energy technologies that meet their existing development priorities. Through TCAPP, the U.S. Government has established partnerships between governments, firms, and the donor community. Participating countries include Brazil, China, Egypt, Kazakhstan, Korea, Mexico, and the Philippines. TCAPP is also assisting 14 countries in the Southern African Development Community with a regional technology cooperation needs assessment initiated by the OECD and the Climate Technology Initiative.

technical barriers, governments can help promote private sector technology transfer by sharing information on investment opportunities that can lead to technology transfer.

- ***Capacity Building.*** Effective capacity building focuses on strengthening both human and institutional capacity through training and technical assistance. To ensure success, U.S. Government capacity building programs are country specific, depending on the priorities and needs of a particular country. Participants include members of the regulatory, non-governmental, financial, technical, business, and NGO communities. Training and assistance activities are typically linked to technology priorities that have been developed by in-country stakeholders and show commercial promise.

- ***Information Dissemination.*** Ready access to accurate technical, commercial, and legal information is critical to the technology transfer process. Specific information needs depend on the requirements and priorities of each country, and information centers play an important role in identifying and meeting these needs. U.S. Government programs work to establish comprehensive and effective systems for organizing and coordinating the flow of technology transfer information.

- ***Pilot Projects.*** Establishing new markets for technologies can require in-country technology demonstration and verification. U.S. Government programs identify and implement pilot projects for a range of technology applications worldwide.

[1] Article 4.5 reads in part, "[t]he developed country Partners...shall take all practicable steps to promote, facilitate and finance as appropriate, the transfer of, or access to, environmentally sound technologies to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention."

[2] In a decision adopted under CoP-2 in Geneva, the Parties defined technology transfer for the purposes of Convention activities. In particular, the term "*transfer of technology*...encompasses practices and processes such as 'soft' technologies, for example, capacity building, information networks, training and research, as well as 'hard' technologies, for example, equipment to control, reduce or prevent anthropogenic emissions of greenhouse gases in energy, transport, forestry, agriculture, and industry sectors, to enhance removals by sinks, and to facilitate adaptation."

PRESIDENT CLINTON & VICE PRESIDENT GORE SPEAK OUT ON CLIMATE CHANGE

During 1999, President Clinton and Vice President Gore have spoken out time and time again on global climate change. A few of their remarks follow:

"Our most fateful new challenge is the threat of global warming. 1998 was the warmest year ever recorded. Last year's heat waves, floods, and storms are but a hint of what future generations may endure if we do not act now. 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. And I want to work with members of Congress in both parties to reward companies that take early, voluntary action to reduce greenhouse gases."

—President Clinton, January 19,1999, State of the Union Address

"President Clinton and I are proposing significant new investments in fiscal year 2000 to accelerate our aggressive, common-sense efforts to meet the challenge of global warming...That is why President Clinton and I are proposing a record $4 billion for expanded research and other programs to better understand and protect our climate, and for tax incentives for consumers and businesses to purchase energy efficient cars, homes, and appliances."

—Vice President Gore, January 25, 1999, On Climate Change Budget Proposal

"We must do more to meet our most profound, common global environmental challenge, the challenge of global warming. I have proposed a clean air partnership fund to help communities reduce both greenhouse pollution and smog, as well as tax and research incentives to spur clean energy technologies. I want to work with members of Congress in both parties to reward companies that take early, voluntary action to reduce greenhouse gases."

—President Clinton, March 4, 1999, U.S. Interior Department 150th Anniversary

"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."

—President Clinton, June 3, 1999, Issuing Federal Energy Efficiency Executive Order

"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."

—Vice President Gore, June 29, 1999,
On Introduction of Administration's Energy Efficiency Tax Incentives Into Congress

(over)

PRESIDENT CLINTON & VICE PRESIDENT GORE SPEAK OUT ON CLIMATE CHANGE

"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. I urge Congress to work with us, not against us, to meet the challenges of climate change."

—Vice President Gore, August 2, 1999,
Releasing Declassified Arctic Images to Help Research on Global Warming

"I'm establishing a Cabinet-level council to develop strategic plans to help to bring bio-based technologies from farms, forests and labs to the marketplace...In addition, I am setting a goal of tripling America's use of bioenergy and bio-based products by 2010. That would generate as much as $20 billion a year in new income for farmers and rural communities, while reducing greenhouse gas emissions by as much as 100 million tons a year—the equivalent of taking more than 70 million cars off the road."

—President Clinton, August 12, 1999, Issuing BioEnergy Executive Order

"One of the big ideas the world has to abandon is the idea that the only way to build a modern prosperous economy is with the industrial energy use patterns of a former era. It is not true."

—President Clinton, September 12, 1999, Auckland, New Zealand

"The overwhelming consensus of world scientific opinion is that greenhouse gases from human activity are raising the Earth's temperature in a rapid and unsustainable way. The five warmest years since the 15th century have all been in the 1990s; 1998 was the warmest year ever recorded, eclipsing the record set just the year before, in 1997. Unless we change course, most scientists believe the seas will rise so high they will swallow whole islands and coastal areas. Storms, like hurricanes, and droughts both will intensify. Diseases like malaria will be borne by mosquitoes to higher and higher altitudes, and across borders, threatening more lives—a phenomenon we already see today in Africa."

—President Clinton, September 15, 1999, Auckland, New Zealand

"All of us, developed and developing countries alike, should take action now to halt global climate change...Does this mean developing countries then must sacrifice growth to protect the environment? Absolutely not...The challenge and opportunity for developing countries is to skip the cost of the Industrial Age by using technologies that improve the economy and the environment at the same time."

—President Clinton, September 21, 1999, UN General Assembly

October 1999

NEW CLIMATE SCIENCE FINDINGS

Since the Second IPCC Assessment in 1995, the scientific evidence concerning human influences on the global climate system has continued to accumulate. In particular, recent data and analyses strengthen earlier findings that the surface temperature of the Earth is increasing and that this increase can be attributed, in large part, to human-caused increases of greenhouse gases in the atmosphere. The continuation of these trends is likely to be associated with climatic changes capable of adversely affecting ecosystems, wildlife, and large numbers of people.

Northern Hemisphere Temperatures Warmest in 1,000 years

Recent studies published in *Nature*, *Science*, and *Geophysical Research Letters* have provided additional evidence of 20th century warming. Analysis of tree rings, corals, ice cores, and lake sediments showed this century's surface temperatures for the Northern Hemisphere to be the warmest since at least 1400 A.D. A newer study of Northern Hemisphere temperatures 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 600–1,800-foot deep boreholes in North America, Europe, Africa, and Australia 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.

(Mann *et al.*, *Nature*, Vol. 392 (1998), p. 779; Mann *et al.*, *Geophysical Research Letters*, Vol. 26, No. 3 (1999), p. 759; Pollack *et al.*, *Science*, Vol. 282 (1998), p. 279.)

The 11 Warmest Years Have All Occurred Since 1983

Of the 120 to 140 years for which thermometer records are sufficiently complete to define a global average temperature, the 11 warmest years have all occurred since 1983. The three warmest years on record were 1998, 1997, and 1995, in that order. 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.

(NOAA National Climatic Data Center, UK Meteorological Office.)

Greenhouse Gases from Human Activities Dominant Driver of 20th Century Warming

The 20th century temperature records are consistent with what is expected under human-induced climate change scenarios and cannot be explained solely by other hypothesis, such as solar variability, volcanic eruptions, and El Niño cycles. The case for anthropogenic climate change is further strengthened by the record of regional patterns of temperature changes across the surface of the Earth and the

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vertical patterns of temperature changes as one ascends through the atmosphere.

(Mann *op cit.*; Wigley *et al.*, *Science*, Vol. 282 (1998), p. 1676; Peterson *et al.*, *Geophysical Research Letters*, Vol. 26 (1999), p. 329; Wentz and Schabel, *Nature*, Vol. 394 (1998), p. 661.)

Emerging Scientific Evidence Suggests We May Already Be Seeing Impacts of Climate Change

Changes in species distributions and ecosystem dynamics are likely attributable to multiple causes and stresses, but scientists have deduced that climate change is playing a role in the demise of several frog and toad species in Monteverde, shifts in the growing season in Europe, shifts in growth of grass and forb species in Colorado, changes in bird ranges in western Europe, and alterations in patterns of ocean biodiversity.

(Menzel and Fabian, *Nature*, Vol. 397 (1999), p. 659; Pounds *et al.*, *Nature*, Vol. 398 (1999), p. 611; Parmesan *et al.*, *Nature*, Vol. 399 (1999), p. 579; Alward *et al.*, *Science*, Vol. 283 (1999), p. 229.)

New Study Shows Role of CO_2 in Ice Age Warming

A study of Antarctic ice cores published in the March 12, 1999, issue of *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 CO_2 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.

(Fisher *et al.*, *Science*, Vol. 283, p. 1712.)

FACT SHEET ON THE KYOTO PROTOCOL

At a conference held December 1–11, 1997, in Kyoto, Japan, the Parties to the UN Framework Convention on Climate Change agreed to an historic Protocol to reduce greenhouse gas emissions by harnessing the forces of the global marketplace to protect the environment.

Key aspects of the Kyoto Protocol include emissions targets, timetables for industrialized nations, and market-based measures for meeting those targets. The Protocol makes a down payment on the meaningful participation of developing countries, but more needs to be done in this area. Securing meaningful developing country participation remains a core U.S. goal.

Emissions Targets

A central feature of the Kyoto Protocol is a set of binding emissions targets for developed nations. The specific limits vary from country to country, though those for the key industrial powers of the European Union, Japan, and the United States are similar—8 percent below 1990 emissions levels for the European Union, 7 percent for the United States, and 6 percent for Japan.

The framework for these emissions targets includes the following provisions:

- Emissions targets are to be reached over a five-year budget period rather than by a single year. Allowing emissions to be averaged across a budget period increases flexibility by helping to smooth out short-term fluctuations in economic performance or weather, either of which could spike emissions in a particular year.

- The first budget period will be 2008–2012. The parties rejected budget periods beginning as early as 2003, as neither realistic nor achievable. Having a full 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.

- The emissions targets include all six major greenhouse gases: carbon dioxide, methane, nitrous oxide, and three synthetic substitutes for ozone-depleting CFCs that are highly potent and long-lasting in the atmosphere.

- Activities that absorb carbon, such as planting trees, will be used as offsets against emissions targets. "Sinks" were also included in the interest of encouraging activities like afforestation and reforestation.

  Accounting for the role of forests is critical to a comprehensive and environmentally responsible approach to climate change. It also provides the private sector with low-cost opportunities to reduce emissions.

International Emissions Trading

The Kyoto Protocol allows nations with emissions targets to trade greenhouse gas allowances. Using this mechanism, countries can achieve reductions at the lowest cost. Emissions trading was developed in the United States to reduce sulfur dioxide that causes acid rain and has been successful beyond expectations.

Under an emissions trading regime, countries or companies can purchase less expensive emissions permits from countries that have more permits than they need (because they have met their targets with room to spare). Structured effectively, emissions trading can provide a powerful economic incentive to cut emissions while also allowing important flexibility for taking cost-effective actions.

The Kyoto Protocol established emissions trading. Rules and guidelines—in particular for verification, reporting, and accountability—will be developed.

The inclusion of emissions trading in the Kyoto Protocol reflects an important decision to address climate change through the flexibility of market mechanisms. The Conference rejected proposals to require all Parties with targets to impose specific mandatory measures, such as energy taxes. A number of countries, including Australia, Canada, Japan, New Zealand, Russia, Ukraine, and the United States, reached a conceptual agreement to pursue, through an umbrella group, the implementation of a trading regime. Such a group could further contribute to cost-effective solutions to this problem.

Joint Implementation Among Developed Countries

Countries with emissions targets may obtain credit toward their targets through project-based emission reductions in other such countries. The private sector may participate in these activities.

Additional details may be agreed upon by the Parties at future meetings.

Clean Development Mechanism

Another important market-based component of the Kyoto Protocol is the so-called Clean Development Mechanism (CDM). The CDM embraces the concept of joint implementation for credit in developing countries. With the Clean Development Mechanism, developed countries will be able to use certified emissions reductions from project activities in developing countries to contribute to their compliance with greenhouse gas reduction targets.

This Clean Development Mechanism will allow companies in the developed world to enter into cooperative projects to reduce emissions in the developing world—such as the construction of high-tech, environmentally sound power plants—for the benefit of both parties. The companies will be able to reduce emissions at lower costs than they could

at home, while developing countries will be able to receive the kind of technology that can allow them to grow more sustainably. The CDM will certify and score projects. The CDM can also allow developing countries to bring projects forward in circumstances where there is no immediate developed country partner.

Under the Clean Development Mechanism, companies can choose to make investments in projects or to buy emissions reductions. In addition, Parties will ensure that a small portion of proceeds are used to help particularly vulnerable developing countries, such as island states, adapt to the environmental consequences of climate change.

Importantly, certified emissions reductions achieved starting in the year 2000 can count toward compliance with the first budget period. This means that private companies in the developed world will be able to benefit from taking early action.

Developing Countries

Various Protocol provisions, taken together, represent a down payment on developing country participation in efforts to reduce greenhouse gas emissions.

Developing countries will be engaged through the Clean Development Mechanism noted above.

The Protocol advances the implementation by all Parties of their commitments under the 1992 Framework Convention on Climate Change. For example, the Protocol identifies various sectors (including the energy, transport, and industry sectors as well as agriculture, forestry, and waste management) in which national programs should be developed to combat climate change. The Protocol also provides for more specific reporting on actions taken.

Securing meaningful participation from key developing countries remains a priority for the United States. The Administration has stated that without such participation, it will not submit the Kyoto Protocol to the Senate for advice and consent to ratification.

Compliance and Enforcement

The Protocol contains several provisions intended to promote compliance. These include requirements related to measurement of greenhouse gases, reporting, and review of implementation.

The Protocol also contains certain consequences for failure to meet obligations. For example, a Party that is not in compliance with its measurement and reporting requirements cannot receive credit for joint implementation projects.

Effective procedures and a mechanism to determine and address noncompliance are to be decided at a later meeting. For both environmental and competitiveness reasons, the United States will be working on proposals to strengthen the compliance and enforcement regime under the Protocol.

Entry Into Force

The Kyoto Protocol opened for signature in March 1998. To enter into force, it must be ratified by at least 55 countries, accounting for at least 55 percent of the total 1990 carbon dioxide emissions of developed countries. U.S. ratification will require the advice and consent of the Senate.

Buenos Aires Action Plan

At the Fourth Session of the Conference of the Parties (CoP-4) 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.

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.

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 U.S. 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 percent more than required—and the cost of emissions reductions has been less than 50 percent 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 would bring many benefits. It would:

- Promote ratification of and global compliance with the Protocol by making reductions less costly;

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- 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 U.S. View

GREENHOUSE GAS EMISSIONS TRADING: A COUNTRY'S- AND COMPANY'S-EYE VIEW

The Kyoto Protocol combines ambitious greenhouse gas reduction targets with innovative market-based mechanisms to help country Parties achieve those targets at the lowest possible cost. Recognizing that reducing greenhouse gas emissions is many times more expensive in some countries than in others, the Protocol allows the Parties to use "emissions trading" and other flexibility mechanisms to meet their commitments at much reduced cost. This paper describes how emissions trading could work, from the perspective of a country, and from the perspective of companies and other legal entities.

How Will Emissions Trading Work?

The Kyoto Protocol establishes binding greenhouse gas emissions targets for 39 countries. These targets take the form of an "assigned amount"—the number of metric tons of greenhouse gases (counted as carbon dioxide equivalent) that may be emitted by sources within the country during the five-year commitment period running from 2008 through 2012. Each country must make sure that its emissions during the five-year period do not exceed its assigned amount.

Articles 3 and 17 of the Kyoto Protocol allow countries with binding targets to lower the cost of meeting their targets by participating in international emissions trading. In emissions trading, one country transfers part of its assigned amount to another. This transfer of assigned amount lowers the number of tons of greenhouse gases that the first country may emit between 2008 and 2012, and raises the number of tons that the second country may emit by an equal amount. It is useful to think of each one-ton unit of assigned amount as a tradable allowance for one ton of emissions that may be transferred between countries.

Because the cost of controlling greenhouse gases differs by many times from country to country, emissions trading will allow enormous savings in meeting the Kyoto targets. Countries that have relatively inexpensive ways to control greenhouse gases have incentives to reduce emissions by more than their targets require, because they can sell to others tradable allowances that they will not need. Countries facing the most expensive control measures have incentives to buy less costly allowances from others, and thereby increase the amount they may emit. Since greenhouse gases are global pollutants, the environmental impact of reducing them is the same no matter where the reductions take place. The same overall reduction is achieved, total costs are reduced, and both buyers and sellers gain from the savings allowed by trading.

While countries can benefit by engaging in emissions trading at the government-to-government level, far more savings are possible if countries also authorize their

legal entities (companies, individuals, NGOs, etc.) to trade. The cost of controlling greenhouse gas emissions varies dramatically between companies both within the same country and across borders. The private sector can be much more effective than governments in finding the lowest-cost emission reduction opportunities. The greatest savings can come if private sector companies with the ability to reduce emissions are allowed to buy and sell allowances with other companies in the same country and with companies in other countries.

How Would a Country Engage in Emissions Trading?

Trading rules should require a country that wants to trade to have the necessary capacity and infrastructure to measure and report on its emissions of greenhouse gases, according to the requirements of Articles 5 and 7 of the Protocol. In addition, the rules should require the country to establish a national registry—a computerized system to record who holds tradable allowances; to keep track of changes in allowance holdings due to emissions trading; and to show which allowances have already been used to cover past emissions (these would be permanently retired) and which remain available to be used against future emissions.[1]

A country that wants to increase the number of tons of greenhouse gases that it is allowed to emit could seek out other countries that are willing to sell some of their tradable allowances. Buying and selling countries could arrange their transactions directly or use brokers or exchanges. Trades would be accomplished by removing allowances from the national registry of the selling country and adding them to the national registry of the buying country.

Trading rules should require each country to report to the Secretariat for the Framework Convention on Climate Change in Bonn at least once each year on the trades it has conducted and the appropriate increases or decreases in its assigned amount. These reports would be in addition to the annual reports that countries must make to the Secretariat on their greenhouse gas emissions. Together, this information would serve as the starting point for determining whether a country met its commitment to keep emissions within its assigned amount, as adjusted up or down by trading.

The emissions trading rules could be structured to give countries strong incentives to comply with basic requirements of the Protocol. For example, a country that came out of compliance with the Article 5 and 7 measurement and reporting rules, or that failed to maintain its national registry, could lose its eligibility to trade. The prospect of losing the savings available from trading could be a strong inducement to keep buyer countries in compliance. Likewise, the prospect of losing investment revenue could be a strong encouragement for seller countries to remain in compliance.

How Would a Private Company Engage in Emissions Trading?

In addition to trading at the governmental level, some countries plan to use both domestic and international emissions trading at the company level as part of their program to meet their Kyoto commitments. The highly successful U.S. acid rain program, established in 1990, is a model for how a domestic greenhouse gas trading program could work. The acid rain program sets a strict limit on the total national emissions of sulfur dioxide allowed from electric power plants. There is a fixed number of emission allowances available each year, each one permitting the emission of one ton of sulfur dioxide. These allowances were allocated to power plant owners.[2] Emissions are rigorously monitored, and at the end of each year, each plant owner must turn back to the government enough allowances to cover its emissions during the year.

The sulfur dioxide allowances can be bought and sold. Companies facing high emission control costs have the flexibility to choose their own compliance strategies. They can reduce their emissions by enough to match their allowance allocation (e.g., by installing pollution controls, switching to cleaner fuels, or improving efficiency). They can also choose to purchase more allowances. Companies with inexpensive opportunities to reduce emissions below their allocations can sell allowances they do not need. A national registry records all allowance holdings and trades, and shows which allowances have been used and which remain available for future use. Electric utilities, brokers, and private individuals have accounts in the registry recording their allowance holdings, purchases, and sales. Some allowances have even been purchased by school children and environmentalists, who have taken them "off the market" to further reduce emissions.

The results speak for themselves. Sulfur dioxide emissions are being cut about 30 percent more rapidly than expected, bringing cleaner air to millions of Americans. And the total costs of the acid rain program are now projected to be well under half of original expectations.

Countries could establish similar domestic emissions trading programs for greenhouse gases. While private companies and other legal entities would be able to hold and trade allowances, the country would remain fully responsible for compliance with Kyoto commitments. All legal entity holdings would be recorded in the country's national registry. In setting up their domestic programs, countries would have to address many issues, including which sectors to include in the emissions trading system and which to address through other policies. Other issues include how to distribute allowances (allocation or auction?), and how frequently to require emitters to turn them in (every year, or only at the end of the five-year period?). But the potential savings would make the effort well worthwhile.

GREENHOUSE GAS EMISSIONS TRADING: A COUNTRY'S- AND COMPANY'S-EYE VIEW

Companies and other legal entities subject to these programs would have strong incentives to look constantly for innovative ways to control their greenhouse gas emissions. Those who found inexpensive opportunities to reduce their emissions could sell the allowances they do not need to other companies who face higher costs. These tangible rewards for innovation should result in a steady stream of cost-saving breakthroughs and new technologies.

A country's domestic emissions trading program would also connect seamlessly with the international emissions trading system, using the same system of national registries to keep track of every allowance traded. An international trade between legal entities of different countries would be carried out by moving the traded allowances from the account of the selling entity in the registry of one country, to the account of the buying entity in the registry of the other country. By buying and selling allowances not only within the same country, but also across borders, companies and other legal entities would dramatically reduce the overall cost of meeting the agreed Kyoto targets.

And that is the key to success in meeting the ambitious commitments made in Kyoto, and sustaining and strengthening our efforts to protect the global climate over the coming decades.

1 Allowances would be identified by serial number and country of origin. Those that have been used to cover emissions would be marked in the user country's registry as permanently retired. Those not yet used could be kept for use later in the five-year period, traded to other countries, or "banked" for the country's use in the next commitment period.

2 A country can distribute allowances in several ways: They can be auctioned to the highest bidders, or they can be allocated (given out) by a variety of formulas to the companies that the country makes responsible for emissions, to consumers, or to others.

THE CLEAN DEVELOPMENT MECHANISM

At Kyoto, industrialized and developing nations came together to shape 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

A CDM project 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 create an incentive for environmentally friendly investment in developing countries, contributing to economic growth while providing local environmental and health benefits.
- ***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 on a priority basis, 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 relat-

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ing to how the CDM will function, including determining roles for baselines, verification, institutional structures, and allocation of project proceeds. Work on these issues will continue at the fifth Conference of the Parties in Bonn 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.

LAND USE CHANGE ISSUES

Carbon Sequestration

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—afforestation, reforestation, and deforestation—to be counted toward a party's reduction commitments. Moreover, Article 3.4 allows the Parties of the Protocol to add additional sink activities, such as those related to agricultural soils.

Progress

In 1998, the Parties agreed to move forward with a process to define, measure and verify various categories of carbon sinks. This process includes:

The **IPCC Special Report on Land Use Change Issues**. The Parties tasked the Intergovernmental Panel on Climate Change (IPCC) with conducting a comprehensive study on land-use, land-use change, and forestry activities. Authors of the Special Report include international technical experts. The Special Report will be released in Spring 2000.

Workshops on Land Use Change and Forestry. In addition, the Subsidiary Body for Scientific and Technological Advice (SBSTA) held two workshops on land use, land use change and forestry issues. The first workshop was held in Rome in September 1998 and the second was held in Indianapolis, Indiana in April 1999. The workshops gave the parties the opportunity to discuss methodological and technical issues related to additional sink categories.

Next Steps

Following the release of the IPCC Special Report next Spring, a workshop will be held to consider its results and to prepare the way for decisions on sinks at the Sixth Conference of the Parties to the UNCCC ("CoP-6"). Considering the complexity associated with these issues, it is critical that the Parties work together to lay out a structure for decision-making between CoP-5 and CoP-6, discuss the criteria for decision-making, and the role of data and information within that framework.

LAND USE CHANGE ISSUES

The United States seeks a comprehensive approach to the treatment of sinks that is both environmentally and scientifically sound. Activities added to Article 3.4 should be cost effective, quantifiable and verifiable; cover all relevant sources, sinks, and reservoirs of greenhouse gases; promote sustainable management; and promote sustainable agriculture in light of climate change considerations. The United States looks forward to continuing to engage in a substantive discussion on these land use change issues at CoP-5/SBSTA-11.

COMPLIANCE AND THE KYOTO PROTOCOL

- The Kyoto Protocol contains numerous compliance-related elements, such as stringent reporting requirements and an expert review process to assess implementation and identify potential cases of non-compliance.

- The Protocol calls for further elaboration of the procedure(s) to determine and address cases of non-compliance, as well as the consequences for non-compliance.

- As a result, the Fourth Conference of the Parties (CoP-4) in Buenos Aires established a Joint Working Group on Compliance, whose tasks are to:

  — Identify compliance-related elements in the Protocol;

  — Follow the development of these elements in various groups and identify gaps in order that they are addressed in the suitable forum;

  — Develop procedures by which compliance with obligations should be addressed; and

  — Ensure coherent approaches to developing a comprehensive compliance system.

- At CoP-5, the Joint Working Group will continue to address these issues, taking into account the compliance workshop that was held October 6–7 in Vienna.

- As reflected in its various submissions and interventions, the United States has been a strong proponent of a compliance system that is transparent, credible, and provides reasonable certainty in terms of consequences.

- We have favored a regime that incorporates not only facilitative features (to help prevent non-compliance), but also enforcement features to address non-compliance with emissions targets and related obligations (such as Kyoto mechanisms).

- In terms of the procedural aspects of the regime, we have made proposals as to how compliance questions should be triggered and considered.

- In terms of consequences for non-compliance, the United States has favored binding consequences for cases of non-compliance such as exceeding emissions targets and measurement/reporting violations. Binding consequences should be agreed upon in advance.

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PRELIMININARY NOTES

Divider Title: _____

Notes on Production of COP-6 Report

(based on meeting with Kymberly)

- The Office of Adminstration (OA) can handle the design, and they will pass it along to GPO for printing. Get it to OA as early as possible, even if minor changes need to be made after you submit it. Even before submission, talk to the OA people so they can plan ahead for such a big job.

- The Earth Day Packet cost about $15,000 total. They printed 5,000 booklets of 50 pages each; the price was significantly higher because they handed it in late and requested a rush order.

- One contact person at OA is Ginny (Virginia) LaFranz.

- Funding may be tricky for this report. CEQ simply paid for the Earth Day Packet out of its budget. If we have to obtain funding from multiple agencies, the process will be considerably more difficult, and any requests for additional funding (i.e. if we have to do a rush order and that was not anticipated) will take a long time.

- There should be one, and only one, person in charge of the document's most updated text. Otherwise, it will be easy to lose track of which version is the most recent, and who has made changes.

- The agencies can be a nightmare when it comes to contributions. Kymberly and Elliot asked the agencies for their materials, did the writing themselves, and then showed their reports to the agencies to make sure they got the information right. Even though the agencies' involvement was limited, they slowed down the entire process by missing deadlines for contributing materials. It is crucial to tell them what you need early on, especially when it comes to photos, and give them deadlines that leave room for delays.

- To get photos from the Photo Office, you need to know the date of the event or speech from which you want the picture. Go to the office with dates in hand!

- Someone in the research department of the White House Communications Office can put all the graphs together if you tell them what information you want. Be sure to make a special request for a variety of graph types (bar, pie, line, etc.) or they will give you only one kind of graph.

That is all the basically self-evident information I can provide at the moment.

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MESSAGE

Divider Title: _____

Draft Overall Message for The Hague

Climate change is the premier environmental challenge of the 21st century. There is overwhelming scientific consensus that human activity has begun to affect the climate, and that continuing on our present course may have dire consequences. The evidence of this warming trend has only grown stronger.

The United States is fully committed to meeting this challenge, both through strong domestic actions to reduce greenhouse gas emissions, and by working with other nations to achieve agreement on a sound, cost-effective global strategy.

At home, the United States is committed to a comprehensive program to fight climate change culminating in binding emission targets beginning in 2008, along with a domestic greenhouse gas trading program. To prime the pump for this effort, the Clinton Administration has secured over $1 billion each of the past [3] years for the research, development, and deployment of clean energy and energy efficient technologies. In the last year alone, the President has [list as appropriate]:

- Transport EO
- 21st Century Trucks
- International Energy EM (???) and Trade Missions
- Action on Tax package (???)
- Greening of White House

Beyond action at the federal level, state and local governments and corporate America are also stepping up to this challenge with aggressive goals and targets for reducing emissions. Partly as a result of these efforts, evidence suggests that the American economy has begun to de-couple economic growth and growth in greenhouse gas emissions. [In each of the past two years, economic growth has far outpaced growth in U.S. emissions.]

Three years ago in Kyoto, more than 160 nations agreed on the basic architecture of an international strategy to address the challenge of climate change. Since then – in Buenos Aires, Bonn, and now at The Hague – we have been working to turn Kyoto's broad concepts into working realities. Our task at The Hague is to achieve the kind of steady, solid progress that is necessary to keep this process on track.

The United States is fully committed to completing the work begun at Kyoto and looks forward to addressing the critical issues of cost and developing country participation, so the treaty can be ratified. But much remains to be done.

COP 6 has the potential for being an historic conference, but only if we can make significant progress on key substantive issues:

Environmental Integrity: If we are serious about the fundamental commitments made in the Protocol, we should all be able to agree to binding rules and consequences for:

- Monitoring of emissions;
- Reporting of emissions;
- Tracking of trades and of sink activities;

- Eligibility to participate in the mechanisms;
- Reviewing implementation;
- Non-compliance with targets.

Cost-Effectiveness: Achieving a cost-effective agreement is critically important to the United States. We have an environmental obligation to ensure that the Protocol has integrity and is based on sound science. But we also have an economic obligation to ensure that the Protocol leads to predictable, cost-effective reductions and is based on sound economics. That means:

- Decisions on new sinks activities and the inclusion of sinks in the CDM. Sinks can help slow the accumulation of ghg while we develop additional means to combat the long term problem. Sink projects can also help spur sustainable growth opportunities in developing countries.

- The U.S. expects to be able to meet most of its commitment domestically. But to ensure that implementation can be achieved at a reasonable and predictable cost, the U.S. will also continue to insist on rules that do not encumber use of the Kyoto mechanisms.
  - Limiting this ability would only make reducing greenhouse gases more expensive for everyone, with no gain to the environment.
  - The EU proposal to cap use of the mechanisms is hypocritical. Under EU reallocation, 10 of the 15 countries would not meet the proposed EU formula. They thus allow themselves a measure of flexibility that they propose not to allow to others.
  - Much recent analysis (such as that of the Pew Center) suggests that the US will achieve most of its reductions at home – meaning that the cap will significantly raise costs to address a problem that does not exist.

Developing Countries: On the issue of developing country actions, we fully support their efforts to grow their economies and improve the well-being of their citizens. We also firmly believe that this goal can be achieved without repeating the wasteful and polluting practices of the past century. We are committed to creating sustainable development opportunities through Kyoto's Clean Development Mechanism and through other partnerships between developed and developing countries.

- Each successive COP since Kyoto has seen forward movement on commitments by developing countries to take action on climate change.
- In addition, both India and China have expressed increased commitment to this fight in joint statements with the United States.
- We are hopeful of seeing more progress on this issue at The Hague.

Resolving – or coming close to resolving – these key issues will mean we are well on the way to completing the historic work begun in Kyoto. At a minimum, we must achieve the kind of solid progress necessary to ensure that the process is kept on track. We need to work as quickly as possible for a treaty that is complete, cost-effective, and ratifiable. This we owe to future generations.

COP-6 Press Functions

The press operation at COP-6 will generate favorable international press coverage of U.S. climate change objectives. It will advise the U.S. delegation leadership on a comprehensive press strategy and inform the delegation at large about international press coverage. The team will facilitate two daily **press briefings** and coordinate a minimum of 75 **exclusive interviews** in two weeks. It will manage an up-to-date **website** and feed transcripts, fact sheets, plenary statements, interventions and all other publicly released documents to the IIP and State webmasters. Personnel will administer a **listserv capability** to transmit information to registered journalists, U.S. embassies and other key contacts. The press operation will provide **press guidance** to the Department Spokesman, the White House and the interagency community. In coordination with the White House Communications Team, it will be in regular **contact with U.S. environmental reporters** covering developments from the States. A **media outreach unit** will proactively schedule telephone interviews with environmental reporters and editorial writers reporting on COP-6 from European capitals (a major focus of the press strategy). We will designate a **fast action team** to quickly implement outreach initiatives and respond to developing negative press reports with talking points and press statements. The press operation will conduct numerous **DVC briefings** for foreign journalists hosted by U.S. embassies worldwide. It will prepare regular updates of three distinct press **clips packages** for use by the delegation and Washington. It will provide **press kits** and **Internet research services** for journalists. We will staff a **press information desk** in the international media center that will coordinate interview requests and generally service media requirements.

- COP-6 will be the most important environmental conference since Kyoto. The Dutch government has hired the international firm of Burson Marsteller to handle press relations. They are expecting 5,000 journalists at COP-6. It will be the largest conference ever hosted by The Netherlands, with 10,000 participants anticipated.

- The U.S. press operation will be fully operational on Monday, November 13, and will conduct a full schedule of press activities on a daily basis through Saturday, November 25. We plan to staff the operation on a 24-hour basis during the last two days of negotiations, Thursday, November 23, and Friday, November 24. Officers and support staff with a range of skills will be required for a variety of shifts during a total of 14 days.

- The press operation at COP-5 was supported by a staff of 16 (see attached). The press operation at COP-4 had a total staff of 40 with a new team for the second week (see attached). Also attached is the homepage of the U.S. Delegation COP-5 website.

- The COP-6 press operation will require multiple professionals with the following experience: press officers, press assistants, webmasters and computer specialists, transcribers, DVC and A/V technical support personnel, managers and administrative assistants, CODEL liaison and Dutch translation services. PAO Steve Rounds and APAO Judy Butterman in The Hague are developing the staffing roster for COP-6.

- Press Briefings will be the primary vehicle for communicating U.S. positions to the international media. We will conduct a daily on-the-record press briefing in the main COP-6 press briefing room managed by the UN Secretariat. The briefing will be open to all journalists with UNFCCC press credentials. We have requested the 2:30 – 3:00 PM time slot each day in order to meet European press deadlines. U.S. personnel will coordinate briefing arrangements and schedule shifts with the Secretariat, pre-brief the U.S. spokesmen on earlier press briefings, and record the briefing for transcription. We are working to provide a live audio feed of the briefing via the Internet and this may require U.S. technical and computer specialist support. The target deadline for posting the briefing transcript is 5:00 PM. Digital photographs of the briefing will be posted on the website.

- Each morning we will schedule a background briefing for the resident U.S. press reporting on COP-6. This is by invitation only. U.S. personnel will handle all logistics for the briefing including A/V support. We also will plan to conduct a series of DVC briefings with journalists and opinion leaders hosted by U.S. embassies, and will schedule other press events as warranted. It is probable that the CODEL will ask the press operation to arrange their media briefings and generally provide press support for members and senior House and Senate staff.

- The three press clip packages will cover international media coverage of COP-6, major international news developments, and a summary of host nation press reports about the conference. The package on COP-6 press coverage and the summary of international news need to be copied and ready for distribution by the 7:30 AM senior staff meeting (and the daily 8:00 AM full delegation meeting). Updates need to be prepared prior to the 2:30 PM press briefing.

- Facilities at the Bel Air Hotel will include a press center with eight PCs (LAN with full Internet access), fax capability, and high-capacity copiers. There will be a separate work space for the White House Communications Team with two PCs and printer. In addition, we have identified an interview room (capacity of 15) that will be equipped with DVC and a "Meet the Press" set-up for broadcast media. This interview room will also be used for the daily U.S. press background briefings and will be available for the CODEL.

- At the Congress Center we have requested space in the international press center (that can be secured overnight) to be equipped with PC/printer, fax, and phone. The press operation will also have a briefing room (capacity 15/20) and a small one-on-one interview space/green room as part of the larger U.S. delegation office space. The U.S. delegation office space will be constructed in the enormous (8,000 sq. meter) Staten Hall, the only area in the Congress Center complex available to the delegation on a dedicated basis. Staten Hall is adjacent to the main COP-6 press briefing room.

10/5/1999

COP-5 STAFFING

Liaison with U.S. Delegation -- IO Anne Chermak

Public Affairs Support - Set Up and Coordination – AIO Dennis Wolf and (TBD) Richard Gilbert *in shifts as appropriate*

Press Support – Mary Ann Ignatius, Cologne Public Affairs Officer

IRC Support: News Clips, Reference, Info Desk, Homepage, Tickers, Washington File Posting – Brigitte Tabertshofer (Cologne), Mechthild Hoelker (Cologne), Petra Spitz, (Cologne), Miriam Jaster (Berlin)

Shifts:
05:30-14:30 (to include morning Internet clips for 07:00 briefing)
08:00-17:00
10:00-19:00
12:00-21:00

Press Support: Interview Requests, Press Events, CODEL Liaison – Ute Meyer (Cologne), Jurgen Bodenstein (Cologne), Berndt Herbert (Cologne), Paul Brazell (Berlin)

German Media Reaction Reporting (from Berlin) – Friedhelm Temath

reports sent by 07:30 via fax

Transcribers – Mary-Kay Beckwith and Nancy Rajczak (Frankfurt) -IRC-

in shifts as needed

Administrative Coordination/Set-Up and Take-Down – Wolfgang Meyer

Computer System Set-Up/Troubleshooting Supervision – IM technician to be identified by Steve Taylor (IM/ISC, x1053)

A/V Support – Karl Heinz Johnen (Cologne)

Webmaster.
which website?
Reuters
AP.
translators → 7pm briefings

FILE

S Povenmire

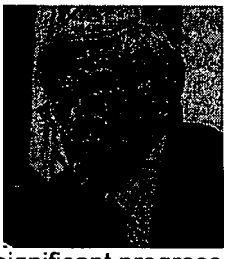
COP-4
USIS Buenos Aires
Telephones

	Direct Line	Residence	Hotel	Mobile
Balmaceda, Luis		701-5894		
Beckett, Ardena	802-0056	318-3000		471-6578
Berrueta, Manuel	802-0056	717-5415		470-8824
Blumenthal, Evelyn	511-4977	784-8181		
Brown, Rebecca	511-4975	775-3311		471-1143
Burton, Guy	511-4971	773-2676		471-7610
Cagnoli, Fedora	511-4937	785-4211		
Chirinos, Guido	801-4626	318-3000		472-8349
Clarke, Veronica	801-4626	318-3000		424-9627
Conners, Mary Deane	801-4626	807-3697		471-9300
Custin, Dick	801-4626	318-3000	377	424-9315
Dramasino, Daniel		541-2880		
Duran, Adela	801-4626	318-3000	690	474-1872
Edwards, Daryl		318-3000	325	471-0252
Farina, Reinaldo	801-4626	383-4139		472-8349
Fuller, James	801-4626	318-3000	426	471-1214
Gomez, Jorge	801-4626	586-2431		
Green, Arthur	801-4626	804-8603	804	471-0151
Hunter, Silvia	802-0056	801-5375		
Johnson, Dee	802-0056	318-3000	828	424-9229
Keener, Gerry	801-4626	318-3000		470-8956
Klopfenstein, Neil		318-3000	604	424-9299
Kozelka, Paul	802-0056	318-3000	361	471-0748
Lopez Recalde, Jaime	801-4626	825-8791		471-0939
Middleton, William	801-4626	777-1137		471-0730
Moore, James	802-0056	801-9869		471-7853
Nis Icardi, Natalia	511-4944	771-9350		470-5665
Povenmire, Susan		804-8603		029-9411
Richter, Jay	802-0056	318-3000	529	471-0148
Rodriguez, Jorge	802-0056	784-4778		471-0789
Rosker, Patricia	801-0056	804-5890		470-7674
Sanchez, Sergio	802-0056	318-3000	320	424-9616
Schmidt, Robert	801-4626	318-3000	525	471-0628
Simmons, Wendy	802-0056	318-3000	671	424-3083
Spedalieri, Graciela	801-4626	432-4348		470-7542
Sprechman, Michele	511-4944	783-2483		471-7977
Vazquez, Rosa	511-4944	784-2551		
Vega, Graciela	511-4977	760-1009		
Vinas, Luis		756-0391		
Wertman, Douglas		318-3000	523	424-9532

USIS FAX: 514-1858
Press Fax: 514-1857
Etoile Fax: 802-0794
Conference Fax: 801-5412

The United States of America
at the Fifth Conference of the Parties (COP-5)
United Nations Framework Convention on Climate Change
October 25 - November 5, 1999
Bonn, Germany

- **Statement of Frank E. Loy**
U.S. Under Secretary of State for Global Affairs
November 4, 1999

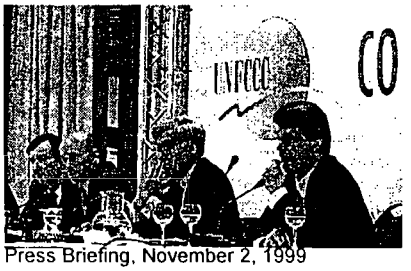


Our goal here in Bonn was to achieve steady progress toward completing the work begun by our nations two years ago in Kyoto – to continue building a truly global, cost-effective agreement that protects future generations from the grave risks of global warming.

In the view of the United States, this Conference has met that goal. We have made significant progress across the full spectrum of substantive issues, from emissions trading to sinks to compliance. We have seen continued forward momentum on developing country efforts. And, perhaps most critically, we have resolved to redouble our efforts between now and next year's Conference in The Hague. In short, we have charted a course for the critical year ahead, and have together demonstrated the kind of political will necessary to resolve the major issues before us. **Full text of statement**

- **Remarks As Delivered by Frank E. Loy**
U.S. Under Secretary of State for Global Affairs & Head of the U.S. Delegation. November 3, 1999 | **Deutsch**

- **Opening Statement by Frank E. Loy,**
U.S. Under Secretary of State for Global Affairs & Head of the U.S. Delegation. November 2, 1999 | **Deutsch**


Press Briefing, November 2, 1999

U.S. Press Briefings

Mon	Tue	Wed	Thur	Fri
no briefing	**Nov. 2**	**Nov. 3**	**Nov. 4**	
Oct. 25	**Oct. 26**	**Oct. 27**	*no briefing*	**Oct. 29**

U.S. Statements at COP- 5

- U.S. Statement on Bunker Fuels - SBSTA, Session 11, Agenda Item 9(c): Emissions Resulting from Fuel for International Transportation, Oct.27.99

- U. S. Statement on "Impact of Single Projects on Emissions in the Commitment Period" - SBSTA, Session 11, Agenda Item 9(b), October 27, 1999

U.S. Delegation

- **Bios**

U.S. Policy

- **COP- 5 Press Kit**
- **United States Taking Action on Climate Change, Oct 1999**
- **Dossier on Climate Change**

Fact Sheets

- New Climate Science Findings.
- Fact Sheet on the Kyoto Protocol: The U.S. View.
- International Emissions Trading: The U.S. View.
- The Clean Development Mechanism: The U.S. View.
- Land Use Change Issues: The U.S. View.
- Compliance and the Kyoto Protocol: The U.S. View.

Backgrounders

- Loy Cites Progress at Climate Change Talks in Bonn (Nov.3, 99)
- U.S. Programs Help Developing Countries Cope with Climate Change (Nov.1,99)
- Leading Businesses Are Taking Climate Change Seriously (Nov.1, 99)
- Decline in U.S. Carbon Emissions Viewed as Positive Sign (Oct.27,99)
- U.S. Officials Reiterate Commitment to Reach Climate Change Agreement (Oct.21, 99)

Mailing List

Subscribe to COP5 Mailing List for latest news and transcripts from the U.S. Government on the UN's COP5 Climate Change conference

Related Websites

- **UNFCC COP5 Website**
- **Climate Change. U.S. Dept. of State, Office of International Information Programs**
- **Environmental Protection Agency. Global Warming Site**
- **U.S. Dept. of State. Climate Change Spotlight**
- **White House Initiative on Climate Change**

- U.S. Statement on "Best Practice" in Policies and Measures - SBSTA, Session 11, Agenda Item 8(b), October 27, 1999

earlier statements ....

Related Press Statements

- Press Announcement by the U.S. Inititative on Joint Implementation, October 26, 1999
- Press Statement by James P. Rubin, Spokesman, U.S. Dept. of State, October 26, 1999

Additional Links & Resources

COP- 4 & COP- 3 Documents

- **COP-4, Buenos Aires 1998**
- **COP-3, Kyoto, 1997**

HOME

John D. Gibson
06/29/2000 03:06:39 PM

Record Type: Record

To: Angela C. Mizeur/WHO/EOP@EOP, Miriam L. Seifter/WHO/EOP@EOP

cc:

Subject: Re: we hold these truths to be self-evident...

This is very, very good information you guys got from Kymberly. We can go thru it more detail at a later point but right now I have one major question:

I assume that the $15000 was strictly for printing? Or did it also include paying OA for their layout, etc.? David and I had been thinking that we'd be better off going with outside contractor for this part of the job and then going (possibly) to GAO. Theory being that we're at the top of the contractor's list (being "White House") as opposed to OA where we are at the bottom of pecking order. But if OA is essentially "free" that's a different matter. Please clarify with her. Next step would be to confirm that we could get the same service from OA that CEQ got (given our slightly different posture (being interagency task force). Our funding from this will probably come entirely from EPA.

Overall, her experience reconfirms my view that we should take the first cut at this and give it to agencies to supplement, supply photos, additional success stories, updates, etc.

- No cost for layout
(they did lay out charts)
- $ similar if same
- GPO additional

schedule plenty of time is
no later than beg. August

2 color inside, 4 color outside

Clinton Presidential Records
Digital Records Marker

This is not a presidential record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

This marker identifies the place of a tabbed divider. Given our digitization capabilities, we are sometimes unable to adequately scan such dividers. The title from the original document is indicated below.

OUTLINE / PHOTOS

Divider Title: _____

DOMESTIC ACTION BOOK OUTLINE

I. INTRODUCTION: US moving forward on climate change at the federal, local and private sector levels. Movement can be seen across diverse sectors covering entire economy. President's program part of larger 3 stage program. De-coupling of US emissions growth and economic growth.

Basic Structure: To look across sectors of the economy and in each one highlight federal, state and private initiatives and programs with success stories and interesting graphics woven in.

II. TRANSPORTATION

- Federal Fleet EO
- 21st Century Truck Initiative
- PNGV advances
- Major automakers leaving GCC
- Announcements by Ford, DC and others on cleaner cars
- CAFE language in DOT bill (maybe)
- DOE clean fuels research
- CMAQ?
- Any other positive stats available about broad movement/improvement in sector?
- Success stories:
  - South Coast Air Quality Management District, Southern California
  - Others?

III. BUILDINGS

- PATH
- Energy Star/Energy Star Buildings
- Energy Smart Schools/Energy Star Label for Schools
- Federal Buildings EO
- Appliance standards
- Success stories:
  - New Jersey Affordable Housing Initiative
  - New York State Energy Research and Development Authority
  - others

IV. ELECTRICITY

- Bioenergy (EO and generally)
- Windpower & Windpowering America
- Million Solar Roofs
- Brightfields
- Restructuring movement and legislation
- DOE new energy source research (hydrogen, superconductivity, etc.)

- DOE cleaner coal and natural gas research
- Climate Challenge
- Success stories:
  - Growth of green power choice for consumers (California, etc.)
  - Trigen & other individual companies
  - others

V. AGRICULTURE & CARBON SEQUESTRATION

- Biomass/Bioenergy (need to decide where best to put)
- DOE sequestration research (box story?)
- USDA programs and movement generally to explore climate friendly farming/forestry techniques

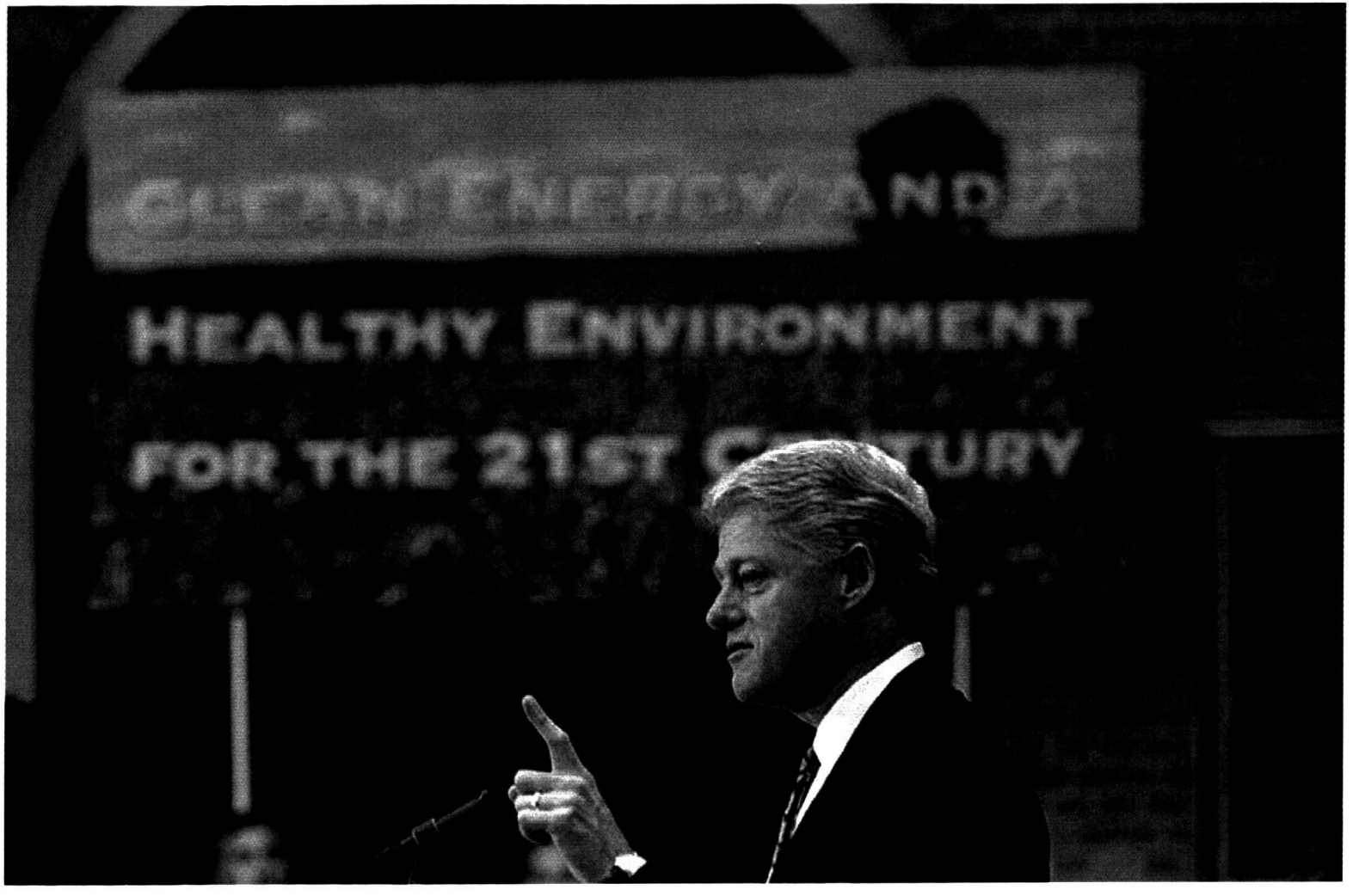
VI. INDUSTRY

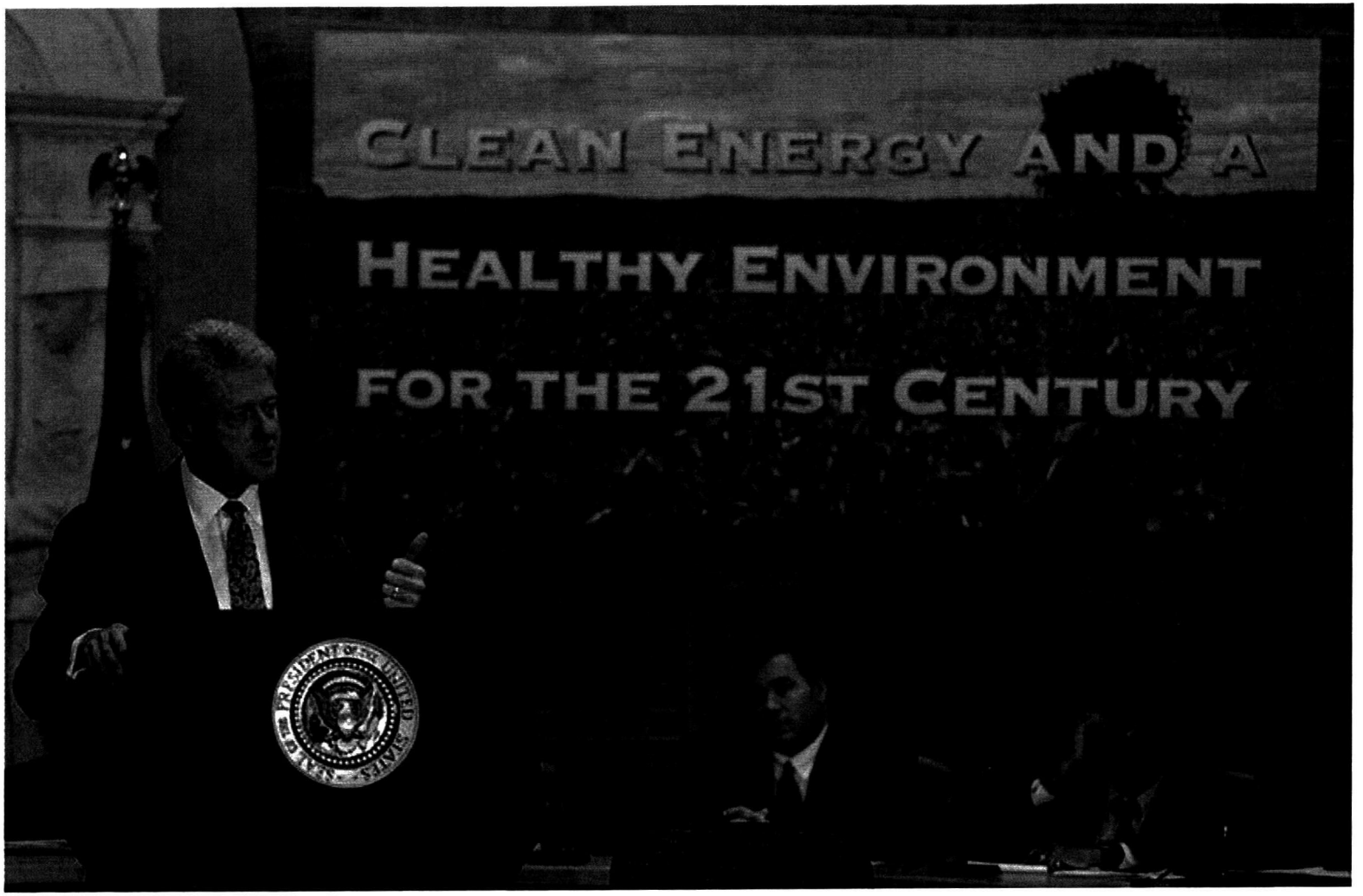
- Broad movement (GCC's dwindling membership; PEW; individual company announcements)
- Sector movement: Steel, cement, aluminum, chemical, semiconductors
- Carbon accounting/valuation
- Industries of the Future
- Climate Wise

VII Conc

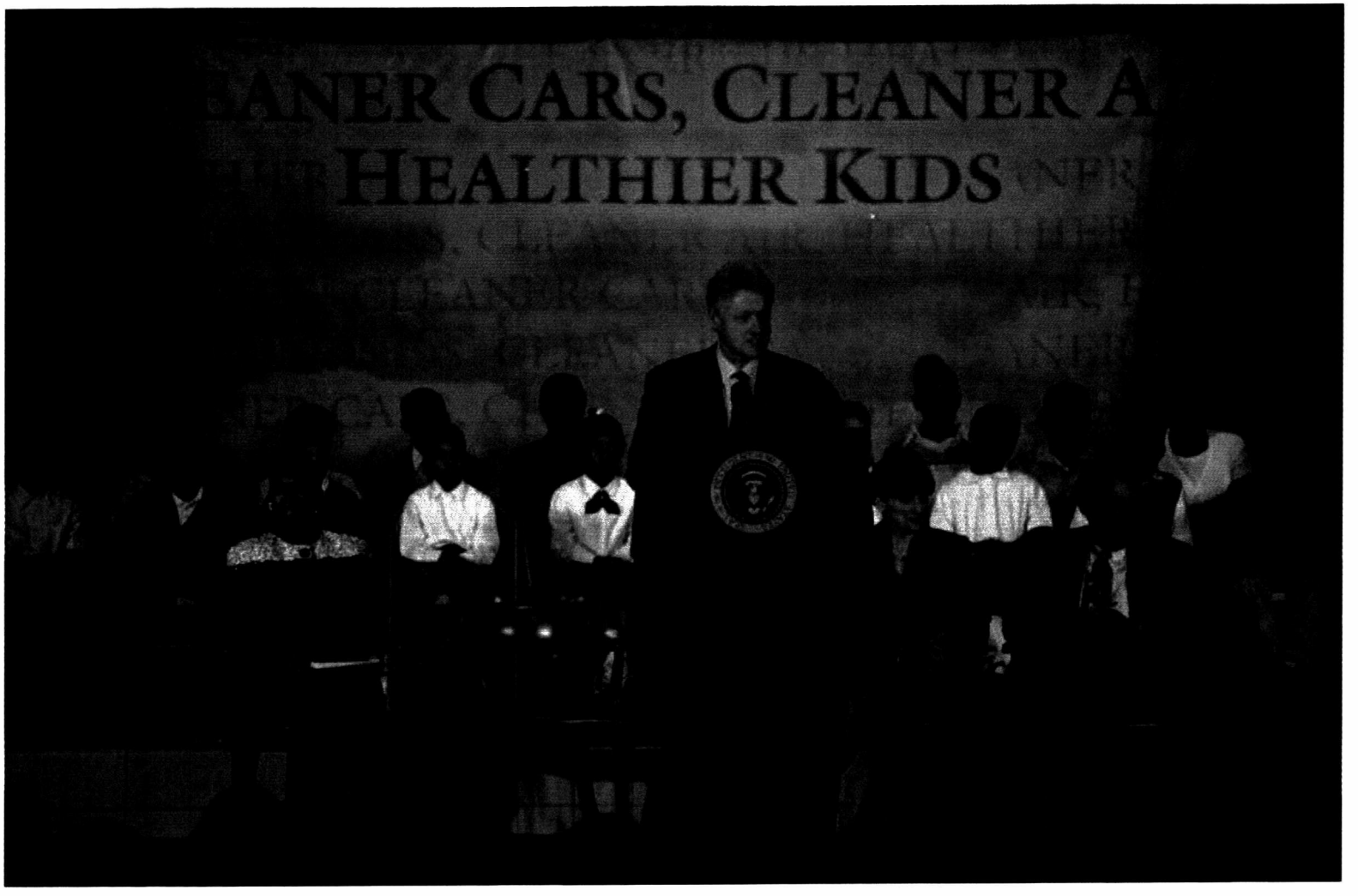
Funding

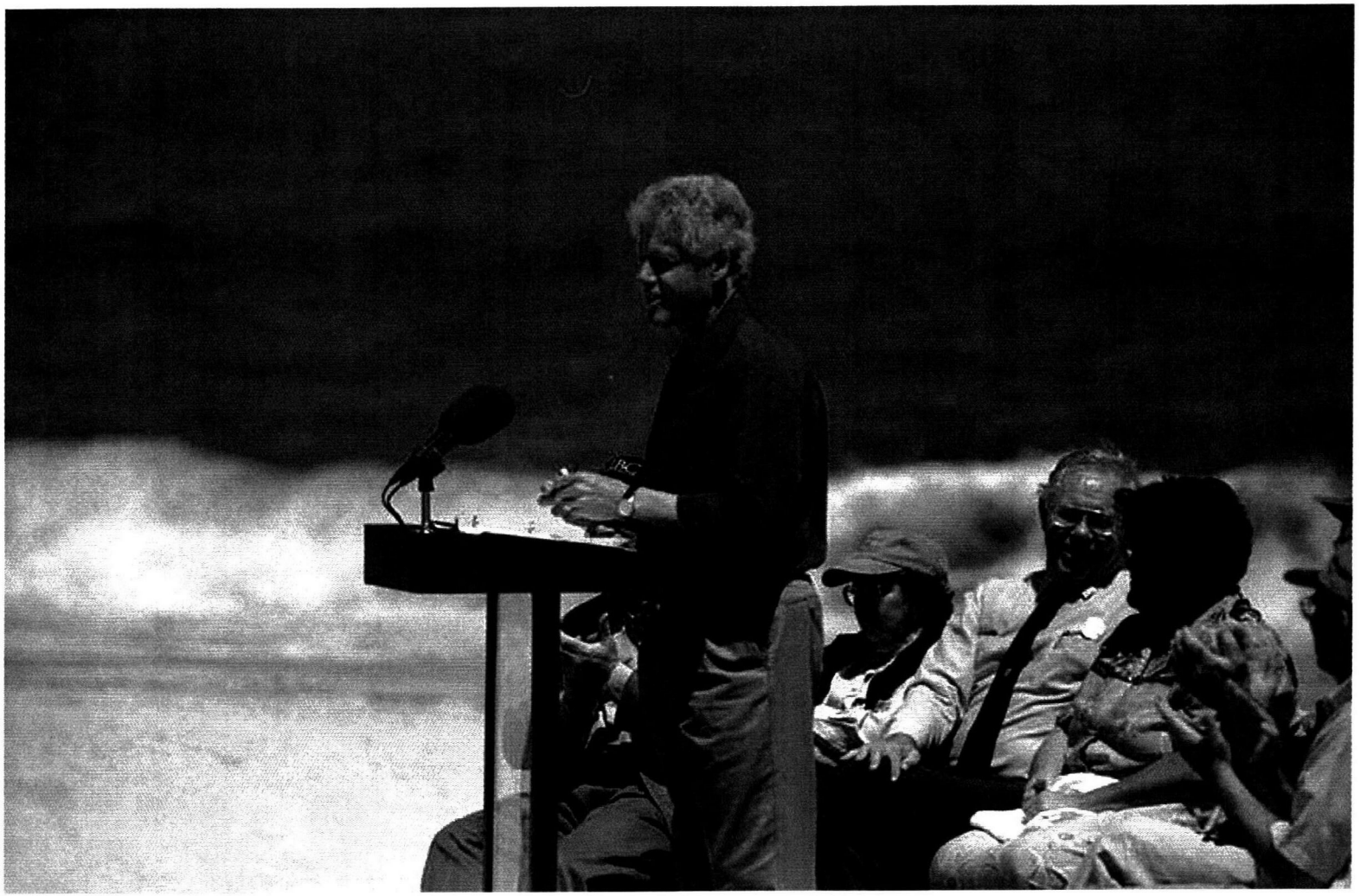
Folder	$????? for production (ICF?) $5,000 for printing
Domestic action book	$45,000 for production $7,000 for printing
Fact Sheets	$????? for production (ICF?) $????? for printing (awaiting bid from Hague)
Stuffing	$????? (awaiting bid from Hague)
Total:	$57,000 plus
Secured:	$30,000 from EPA
Seeking:	$12,000 from State for printing $25,000 from DOE & USAID


HEALTHY ENVIRONMENT



Cleared for Earth Day

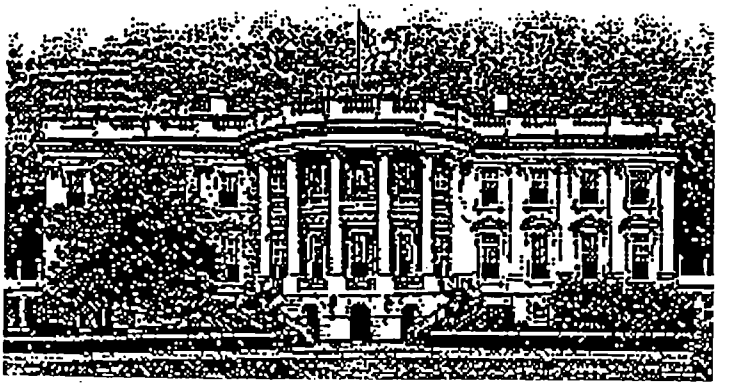

ANER CARS, CLEANER A
HEALTHIER KIDS



UNFC Convention Climate Change

ons Framework Convention on Climate Change
d Session, Conference of the Parties
UNFCCC-COP3
Kyoto, 1-10 December 1997
地球温暖化防止京都会

we think words can covered



THE WHITE HOUSE

ANGIE MIZEUR
SPECIAL ASSISTANT

Fax Transmission

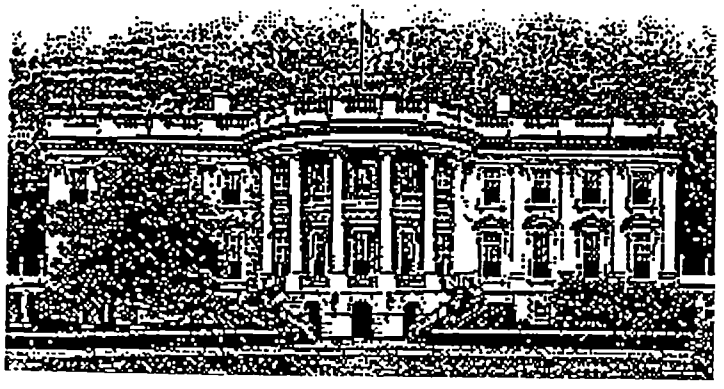
Office of Environmental Initiatives
OEOB 115
Washington, DC 20502
(202) 456-1782
Fax: (202) 456-1736

TO: Lower Press **DATE:** 8/30

FAX: b-6210 **PAGES:** 2
INCLUDING COVER SHEET

COMMENTS

request for photo release



THE WHITE HOUSE

ANGIE MIZEUR
SPECIAL ASSISTANT

Fax Transmission

Office of Environmental Initiatives
OEOB 115
Washington, DC 20502
(202) 456-1782
Fax: (202) 456-1736

TO: _____ **DATE:** _____

FAX: _____ **PAGES:** _____
INCLUDING COVER SHEET

COMMENTS

_____

_____

_____

_____

_____

To Whom It May Concern:

We are putting together a booklet on domestic actions for the next round of negotiations on the Kyoto Protocol in November. It will be similar to the Earth Day packet CEQ did in April with graphs, charts and photos. We will be highlighting various achievements in both the public and private sector, and would like to include one or two photos of the President. I understand that we need clearance from you office, and would deeply appreciate a phone call as soon as possible as our deadline is but a week away. Thank you.

Angie Mizeur
6-1782

JOHN – any

EXECUTIVE SUMMARY

Graphics: Use larger font for following text

Climate change is the premier environmental challenge of the 21st century. There is widespread consensus among the world's leading atmospheric scientists agree that the Earth is warming and that human activities are contributing to this trend.

The United States is fully committed to meeting this challenge, both through domestic actions to reduce greenhouse gas emissions and by working with other nations to achieve agreement on a sound, cost-effective global strategy and binding agreement that can be ratified.

There is a growing awareness throughout U.S. society that the problem of global warming is serious and that serious action is required. State and local leaders, religious and scientific organizations, and businesses large and small throughout the Nation are joining the Federal government in pursuing creative, cost-effective steps that reduce greenhouse gas emissions.

Most importantly, these efforts are yielding tangible results in terms of tons of greenhouse gas emissions avoided due to specific, concrete actions taken by governments and businesses. Moreover, there is significant evidence that the United States is beginning to decouple economic growth and greenhouse gas emissions growth – an achievement that would be truly historical in magnitude and represent an important landmark in the world's fight against climate change.

End large font

> *"The greatest environmental challenge of the new century is global warming . . . If we fail to reduce the emission of greenhouse gases, deadly heat waves and droughts will become more frequent, coastal areas will flood, and economies will be disrupted. That is going to happen, unless we act."*
>
> *President Bill Clinton*
> *State of the Union Address*
> *January 27, 2000*

Photo of Clinton and Gore to come from WHCCTF

Put these in order mentioned at top

Decoupling Economic Growth and Emissions Growth

careful here – not same

Recent years have produced a widening gap between the robust growth in the U.S. gross domestic product (GDP) and much slower growth in the nation's greenhouse gas emissions. The disparity between GDP and carbon dioxide (CO_2) emissions was greater in the second half of the 1990s than it was in the first half.

- In 1999, the U.S. GDP grew by 4.2 percent while CO_2 emissions grew by only about 1 percent.
- In 1998, the U.S. GDP grew by 4 percent while CO_2 emissions grew by only 0.4 percent

DRAFT

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Prohibit Establishing Kankakee River (IL/IN) National Wildlife Refuge (NWR) **Rep. Buyer (R-IN)**	Would prohibit funds to be used to establish a NWR in the Kankakee River watershed in northern Illinois and Indiana that is inconsistent with Corps of Engineers flood control and siltation efforts. Identical to the final FY 2000 provision. (Sec. 119).	Identical to House provision (Sec. 119).	Infringes on the Interior Department's ability to protect and preserve migratory bird species by circumventing the public process for establishing refuges.	
Prohibit Establishing North Delta/Yolo Bypass (CA) National Wildlife Refuge (NWR) **Rep. Ose (R-CA)**	Would prohibit funds to be used to establish a NWR in the Yolo Bypass in the North Delta area of the San Francisco Bay. (Sec. 122). During June 2000 House floor debate, Rep. Ose dropped this rider, following a discussion between the Rep. and Fish and Wildlife Service Director Jamie Clark, who reportedly told him the FWS is not going to establish the refuge until flood control issues were worked out.	Not included.	Infringes on DOI's ability to protect and preserve migratory bird species by circumventing the public process for establishing refuges.	

- Overall, during the 1990s, the U.S. GDP grew almost three times more quickly than did energy-related CO_2 emissions.

Graphics: Insert graph, Growth in the U.S. Economy and CO_2 Emissions
Caption: *Recent years have produced a widening gap between the robust growth in the U.S. gross domestic product (GDP) and much slower growth in the nation's greenhouse gas emissions.*

Underlying these overall numbers are some encouraging data about U.S. energy intensity – the amount of energy needed to support the nation's economic activity. From 1960 to 1996, energy intensity declined by an average rate of 1.3 percent per year. From 1996 to 1999, however, the nation's energy intensity declined at a rate of 3.2 percent annually. In absolute terms this is significantly greater than the 2.6 percent rate of decline that occurred during the oil crisis years of 1973 to 1986.

What is remarkable about this trend in the last three years is that it has occurred in the absence of either major price signals or fundamental shifts in energy policy. Instead, new investments, averaging about 17 percent of GDP over the last three years, appears to be driving much of the decline in energy intensity. Others have speculated that the rise of e-commerce lies behind these numbers and predict continued progress in reducing energy intensity as e-commerce continues to thrive. (Do we need to cite?) no, clear that overall US has gotten better

Regardless of the underlying causes behind this data, it is clear that many U.S. businesses, states and localities, and the Federal government are achieving real results in reducing greenhouse gas emissions. It is also clear that there is the depth of commitment at all levels needed to assure that these results ~~multiply~~ in the years ahead. This paper represents a progress report detailing both those results and that commitment. Some particular projects and commitments that deserve highlighting are set forth below.

Corporate America Stepping Forward WC?

U.S. industry is undergoing a sea-change in its attitude towards the issue of climate change. This reflects the basic economic fact ~~that saving~~ energy and reducing waste is in corporate America's interest. More and more companies are realizing that saving energy and reducing waste make sense not just for the environment, but also for their bottom line.

In 2000, **Johnson & Johnson** and **IBM** became the first two companies to join the **World Wildlife Fund's** *Climate Savers*, a new partnership to help businesses voluntarily lower energy consumption and reduce emissions of greenhouse gases. In joining Climate Savers, companies make specific commitments to reduce those emissions and participate in an independent verification process. In so doing, these companies host of major U.S. companies ~~that~~ own stepping forward with real plans to address climate change – often saving themselves and their shareholders money in the process. A sampling of this list includes: **DuPont, Motorola, United Technologies, Boeing, Shell, Weyerhaeuser** and **Amoco** and **Arco**, subsidiaries of British Petroleum.

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- July 17, 2000 DRAFT

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
American Heritage River (AHR) **(Rep. Chenoweth - Hage, R-ID)**	Would prevent funds from being used to support CEQ in coordinating the AHR Program; would cover this and previous appropriations for agencies funded in this bill. The rider is identical to the FY 2000 enacted compromise provision. (Sec. 327). On June 15, a Rep. Kelly (R-NY) amendment was adopted by voice vote to modify the rider bill language to make it acceptable to the Administration.	Identical to House Appropriations Committee language before Floor amendment (Sec. 326).	House Committee/Senate Committee version would unnecessarily restrict coordination of a major Administration initiative to improve waterways, coordinate federal actions, and enhance river communities.	
Kyoto Protocol **Rep. Knollenberg (R-MI)**	Bill and report language prohibit funds from being used to propose or issue rules, regulations, decrees or orders for the purpose of implementing or in preparation for implementing the Kyoto Protocol prior to Senate ratification. Same as enacted FY 2000 language (Sec. 330).	Bill and report language prohibit funds from being used to propose or issue rules, regulations, decrees or orders for the purpose of implementing or in preparation for implementing the Kyoto Protocol prior to Senate ratification. Same as enacted FY 2000 language. (Sec. 329)	May well be unconstitutional if read to prevent DOE or DOI from assisting the President in carrying out his constitutional authority to conduct international negotiations. The language is unnecessary since the Adm. has no intent to implement the Protocol prior to Senate ratification.	

In addition, the automobile industry is starting to show important progress in reducing emissions from automobiles. Thanks in part to the public-private *Partnership for a New Generation of Vehicles (PNGV)*, **General Motors, Ford Motor Company**, and **Daimler-Chrysler** have all unveiled concept cars that are capable of traveling 70-80 miles per gallon. The vehicles were partly developed under the PNGV program. To encourage consumer interest in these new types of vehicles, the Administration is proposing tax credits of up to $3,000 for the purchase of a hybrid vehicle (see box). In addition, all three major Detroit automakers also have announced production plans for fuel-efficient sport utility vehicles (SUVs) using technologies developed in part under PNGV.

spell out the first time

Real Actions, Real Results

For the past seven years, the hallmark of the Clinton-Gore Administration's strategy for reducing U.S. greenhouse gas emissions has been to use R&D investments and tax incentives to increase energy efficiency and spur the broader use of renewable energy, and to work with industry to promote voluntary, cost-effective reductions. Many U.S. climate protection programs can now show real, tangible results, including:

make clear this is the one showing window

- Minimum efficiency standards on residential appliances such as furnaces, water heaters, air conditioners, and refrigerators, have saved consumers a total of nearly $25 billion through 1999, avoiding cumulative emissions of nearly 50 MMTCE. Four pending appliance standards (clothes washers, ballasts, water heaters, and central air conditioners) are expected to save a total of 10 quads of energy through 2030.

- The ENERGY STAR label promotes the voluntary use of highly efficient products by making it easy for consumers to identify high-quality, energy-efficient products for their homes and offices. In 1999 alone, Energy Star programs reduced electricity consumption by more than 44 billion kilowatt-hours. It is estimated that in 2010 Energy Star programs (for both buildings and products) will reduce U.S. greenhouse gas emissions by an amount equal to over 100 million metric tons of carbon (MMTCE) – the equivalent of taking some 85 million cars off the road.

- Programs designed to halt the growth in emissions of high GWP (spell out) gases are achieving significant progress. Investments already made by partners in these programs will reduce cumulative emissions by an estimated 80 MMTCE by 2010.

- Any others in the report that deserve special highlighting? Substitutes suggested?

Growing Commitment by U.S. Government

Over the past two years, the Clinton-Gore Administration has secured more than $6 billion in overall funding to fight climate change. For clean energy technologies alone, the President has secured $2 billion to research and develop technologies in the four major carbon-emitting sectors of the U.S. economy:

- Industry
- Buildings

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- July 17, 2000 DRAFT				
RIDER	**FY 2001 HOUSE**	**FY 2001 SENATE**	**ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE**	**CONFERENCE/ FINAL**
Interior Columbia Basin Ecosystem Management Project (ICBEMP), affecting WA/OR/MT/ID watersheds. **(Rep. Nethercutt, R-WA)**	Would prohibit ICBEMP Supplemental Environmental Impact Statement (SEIS) and Record of Decision (ROD) from being issued before the end of FY 2001, by subjecting ICBEMP to the Small Business Regulatory Enforcement Fairness Act (SBREFA) , and therefore requiring (1) a regulatory flexibility analysis, and (2) the proposal being sent to Congresss for a 60-day review period -- before publication of the final supplemental SEIS and ROD. (Sec. 334) During separate votes on June 15, the House first deleted (221-206) and then restored (197-180) this rider.	No provision.	Would block completion of ICBEMP, and therefore improvement of Federal agency land/environmental management in these WA/OR/MT/ID watersheds. USDA/DOI have invested $50 million in scientific analyses and public outreach, responded to thousands of public comments, and worked over seven years to complete ICBEMP, the most ambitious, comprehensive, and inclusive Federal land management planning effort ever undertaken by the Federal Government. Also, adverse precedent in applying SBREFA to Forest Service (and BLM) land-use planning.	

- Electricity generation
- Transportation

why not add ag since we examine it?

As of this writing, the President and Vice President are seeking funding for even more ambitious funding levels for climate protection programs. The President's FY 2001 budget proposal includes $2.4 billion in funding for renewable energy, energy efficiency, agricultural- and forest-based bioproducts and energy, research and development, and tax incentives for the purchase of clean cars, homes, and appliances. These investments represent a 43 percent increase over FY 2000 enacted levels.

This year's budget proposal builds on the Administration's consistent record of fighting for – and achieving – higher funding levels for climate programs. (see chart below)

Graphics: Insert graph, Funding for Technology Programs to Combat Climate Change

Funding for Technology *Programs to Combat Climate Change*
(in millions of dollars)

Year	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000 (Estimated)*	*2001 (Proposed)*
$$	*603*	*796*	*960*	*785*	*764*	*825*	*1,009*	*1,095*	*1,432*

Norah – make this a box – ignore different colors
Targeted Tax Credits to Fight Global Warming
As part of his Climate Change Technology Initiative, President Clinton has proposed $9.3 billion in tax incentives over 10 years 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 20 percent tax credit for the purchase of selected energy efficient products for homes and buildings; and a $1000-2000 credit for installing a solar energy system.
- Tax credits for fuel-efficient cars. The package extends the current tax credit (of up to $4000) through 2006 for qualified electric and fuel cell vehicles and also includes a tax credit of $500-3000 for the purchase of a qualifying hybrid vehicle from 2003-2006.
- Tax credits for clean energy. The package extends the 1.5 cent per kilowatt hour tax credit for the production of electricity from wind and closed-loop biomass; provides credits for open-loop biomass facilities and coal-biomass cofiring; and provides credits for electricity produced from methane from certain landfills.

End of box

New Federal Initiatives

In addition to fighting for increased funding for climate programs, the Administration has proposed or implemented four major climate initiatives in the past year:

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
National Monuments **(Rep. Hansen, R-UT)**	Would prohibit funds to be used for the purposes of design, planning, or management of Federal Lands as Nat'l Monuments under the 1906 Antiquities Act that have been designated Monuments since FY 1999. (Sec. 335). By a 243-177 margin, the House on June 15 deleted the rider, approving an amendment offered by Rep. Dicks (D-WA).	No provision.	Undermines long-standing Presidential authority to establish national monuments to protect significant natural, prehistoric, historic, and scientific resources on Federal Lands. Would affect eight new designations, including the Sequoia and Hanford National Monuments, (plus one expanded monument -- Pinnacles).	

- **Cutting Fuel Use by Federal Fleets.** An Executive Order from President Clinton requiring Federal government agencies to reduce the amount of petroleum used by their vehicle fleets by 20 percent below 1999 levels by 2005. This action is expected to reduce greenhouse emissions by an amount equal to 0.16 ~~million metric tons of carbo~~n (MMTCE) per year. This Executive Order is especially important because the U.S. government is the largest consumer of energy in the world.

- **21st Century Truck Initiative.** A10-year research and development partnership between the U.S. government and nine major U.S. corporations that manufacture trucks, diesel engines, and transmissions. (get the title right)

- **International Clean Energy Initiative.** The President is seeking $201 million for FY 2001 (a more than 100 percent increase over FY 2000 enacted levels) for a multi-agency initiative to accelerate the international development and deployment of clean energy technologies.

- **Clean Air Partnership Fund.** The President is seeking $85 million for FY 2001 for a new fund to provide grants to state and local governments and tribes for projects that reduce greenhouse gases and ground-level pollutants like soot, smog, and air toxics.

Begin Box

The programs and policies set forth in this report are part of a three-stage plan to respond to the challenge of climate change. In 1993, following the U.S. ratification of the UN Framework Convention on Climate Change, President Clinton launched the Climate Change Action Plan (CCAP), emphasizing a series of voluntary initiatives for reducing greenhouse gases. These efforts were expanded significantly in 1997, prior to the Kyoto conference, when the President outlined a more comprehensive plan for reducing U.S. emissions:

- *Stage 1: Priming the pump* through R&D investments and tax incentives aimed at increasing energy efficiency and spurring the broader use of renewable energy; working with industry and others to promote sensible solutions; and employing market-based mechanisms to ensure cost-effective reductions.
- *Stage 2: Review and evaluation* in preparation for a domestic emissions trading system. When this stage begins around 2004, emissions trading will harness the power of the market to achieve a national greenhouse gas target at the lowest possible cost. The United States is using emissions trading successfully to reduce the pollution that causes acid rain, exceeding environmental objectives while reducing the costs to 50 percent below the expected level.
- *Stage 3: Binding targets through a domestic emissions trading program.* Beginning in 2008, this program would be implemented in the major sectors of the U.S. economy discussed in this report: industry, buildings, electricity generation, and transportation.

This three-stage plan recognizes the long-term nature of the challenge and allows us to monitor our progress and re-assess our success in reducing emissions, the state of scientific knowledge, and the response of the U.S. economy.

End Box

FY 2000 EMERGENCY SUPPLEMENTAL APPROPRIATIONS -- July 17, 2000

RIDER	FY 2000 HOUSE	FY 2000 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
EPA's Total Maximum Daily Load (TMDL) Water Pollution Rule **(Sen. Crapo, R-ID)** **(Sen. Lincoln, D-AR)** **(Rep. Dickey, R-AR)**	No provision.	No provision.	The Conference provision will significantly slow the cleanup of the almost 40% of the nations waters that are still polluted for fishing and swimming. The President announced the proposed TMDL rule in Aug. 1999. The final rule (expected to be promulgated in FY 2000) would clarify and strengthen the existing TMDL water pollution planning program, while giving states flexibility in cleaning up waters. The rider will encourage further litigation, which the rule was attempting to avoid, and potentially put the courts in charge of the cleanup process. (Note: EPA has signed consent decrees requiring it to do TMDLs in approximately 20 states if the state doesn't.)	**No FY 2000 or FY 2001 funds can be used to make a final determination on or implement any new EPA TMDL water pollution rule; enacted on 7/13/00.** **The EPA on 7/11 signed a final TMDL rule, effective 30 days after the congressional rider expires. The rider currently ends on 10/1/01. In the interim, states will develop their clean-up plans under existing clean water rules.**

Thinking Globally, Acting Locally

In addition to Federal government and major U.S. corporations, states and localities throughout the United States are also coming to increasingly recognize the effects that climate change could have on their lives and economic well-being. Many are stepping forward both individually and in concert with other jurisdictions to take real steps to reduce emissions:

- The **International Council for Local Environmental Initiatives' (ICLEI),** *Cities for Climate Protection Campaign (CCP),* offers training and technical assistance to cities, towns, and counties for projects that focus on reducing emissions through improving energy efficiency, expanding the use of renewable energy, enhancing waste management practices, better land use planning, and improving transportation systems. A total of 78 U.S. cities and counties currently participate in the Cities for Climate Protection Campaign.

- In June 2000, the U.S. Conference of Mayors passed a resolution recognizing the seriousness of ~~the climate change~~ and calling for increased cooperation between cities and the Federal government in taking action to address the challenge.

- In 1999, a group of more than 530 local officials in the United States issued a "Statement on Global Warming," expressing concern about the impacts of climate change on their communities and urging accelerated Federal efforts to assist them in reducing global warming ~~pollution~~. Signatories included the mayors of Atlanta, Baltimore, Chicago, Cincinnati, Denver, Honolulu, Las Vegas, Madison, Milwaukee, Minneapolis, Newark, New Orleans, Portland, Salt Lake City, San Francisco, Seattle, St. Louis, and Tampa.

- To date, 35 states and territories have completed voluntary greenhouse emissions reports with technical assistance from the U.S. government's *State and Local Climate Change Program.* Of the states that have completed emissions inventories, 26 have initiated voluntary action plans and 17 have completed those plans.

Graphics: Insert state and local map if room (state action plans and cities in Cities for Climate Protection Campaign: Caption: *Twenty-six states have initiated voluntary action plans to address climate change, and 78 cities and counties currently participate in the Cities for Climate Protection Campaign.*

"We have learned that a strong economy and a safe environment go hand in hand."
Vice President Al Gore, April 21, 2000

Photo of Gore

The United States understands that domestic progress on climate change is important in itself – in short, it is important that our nation does its part ~~so that we may~~ pass on a livable world to our children and our grandchildren. Yet it is also important ~~for~~ to setting the stage ~~so that~~ so that more progress may be made internationally – both in and outside of the Kyoto Protocol. In the long

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FY 2000 EMERGENCY SUPPLEMENTAL APPROPRIATIONS -- July 17, 2000

RIDER	FY 2000 HOUSE	FY 2000 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Hazardous Fuels Reduction Language Issues **(Sen. Domenici, R-NM)**	Never included in the House supplemental.	Draft bill language would: authorize the use of hazardous fuels reduction funds for timber production; require the Administration to submit reports, including list of communities that may not receive hazardous fuels reductions because of the presence of endangered species; and publish a pending Forest Service Cohesive Fire Strategy report in the Federal Register with a 30-day comment period, along with analysis on the Strategy's relationship to pending Administration policy efforts, like the FS roadless proposal and ICBEMP. [The draft language was never formally included in the Senate FY00 supp, but was a candidate for inclusion in the conference version of the supp.]	Section 2 of the draft Sens. Domenici/Bingaman bill included environmental riders that were unacceptable to USDA and CEQ. The comment period for the explanation of policy differences with the Cohesive Fire Strategy could have resulted in priority Administration proposals (i.e., the final roadless rule) being delayed. Also, expanding the contracting authorities for hazardous fuels reductions could have opened up new funding sources for the timber program, causing the fuels reduction program to lose focus, targeting priority fuels risks less (e.g., wildland/urban interface), and more toward lands with timber harvest potential.	Not included in the final supplemental bill. **On July 12, Sen. Domenici added this rider to the FY01 Interior Appropriations Bill on the Senate Floor. The amendment was adopted by voice vote.**

run, President Clinton's balanced approach to addressing climate change will allow the United States to continue to grow our economy and protect the environment at the same time. It is the President's fundamental belief that all nations must meet this essential challenge.

"Many people . . . still believe you cannot cut greenhouse gas emissions without slowing economic growth. In the Industrial Age that may well have been true. But in this digital economy, it is not true anymore. New technologies make it possible to cut harmful emissions and provide even more growth."

President Bill Clinton
State of the Union Address
January 27, 2000

Photo of Clinton

Graphics: keep the following box at the end of Ch 1 and set it off in some special way.

Measuring Greenhouse Gas Emissions and Emissions Reductions

Greenhouse gas emissions typically are expressed either in terms of metric tons of carbon equivalent (MTCE) or in metric tons of carbon dioxide equivalent. This report uses MTCE or million MTCE (MMTCE). To convert carbon equivalents to carbon dioxide equivalents, multiply by 3.67.

This report focuses on progress the United States is making ~~at~~ combating climate change on multiple fronts. Each chapter provides an overview of programs and accomplishments within key sectors of the U.S. economy. The greenhouse emissions from each sector—industry, buildings, electricity, transportation, and agriculture ~~and forestry~~—are not mutually exclusive. For example, buildings house industrial processes; thus, GHG emissions related to the production of goods and services might be viewed as deriving from either the buildings or the industrial sector. Because of this overlap, it would not be appropriate to add together emissions or emission reductions for each sector to produce an estimate of total U.S. emissions or emission reductions.

Likewise, because of the interactions among programs that are designed to reinforce each other, an estimate of aggregate U.S. reductions cannot be produced by adding up emission reductions for all of the programs discussed in this report. Furthermore, estimates from different Federal government agencies, private sector entities, and state and local governments may rely on different baselines and cannot be directly compared. Finally, substantial uncertainty is associated with any of these projections because many of the estimates attempt to quantify the adoption of projected technologies and practices more than a decade into the future.

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FY 2000 EMERGENCY SUPPLEMENTAL APPROPRIATIONS -- July 17, 2000

RIDER	FY 2000 HOUSE	FY 2000 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Hardrock Mining Surface Management Rule, "Section 3809" (Sen. Murkowski, R-AK) **(Sen. Craig, R-ID)**	No provision.	Limits modifications to the current rules to only the specific regulatory gaps identified at pages 7 through 9 of the NRC report, preventing Interior from adopting all of the NRC's recommendations. (Sec. 3105)	Would result in weakened and inadequate rules governing the management of hardrock mining on public lands. Similar riders in the last four Interior and Related Agencies appropriations bills have delayed this rulemaking.	Dropped in Conference.
Central Arizona Project (CAP) **(Sen. Kyl, R-AZ)**	No provision	Limits the Interior Secretary's CAP authority to reallocate Central Arizona Project water or to complete related NEPA analyses. (Sec. 3103)	Creates adverse precedent of interfering with Sec. of the Interior's existing authority. Undermines NEPA process, recent courrt-approved settlement, and Secretary's Tribal trust responsibilities.	Objectionable bill language included in the final supp.
Glacier Bay National Park (AK) Fishing Compensation **(Sen. Stevens, R-AK)**	No provision.	Requires interim compensation be made by June 15, 2000, to anyone negatively affected by the crabbing closures and fishing restrictions in Glacier Bay park waters. (Sec. 3107)	Administratively unattainable to make interim payments before a process to determine eligibility has been completed. The process is estimated to be finished by 12/00, with payments made by 6/01. The timing of the process was determined in part by the fishing industry.	Final Conference included a modified version that was acceptable, since the interim payments were now limited to a defined set of recipients that Interior already knows would qualify for compensation, rather than the undefined universe included in the Senate version.

JOHN What is our layout? Too early to tell?

The Kyoto Protocol: The Road to Ratification

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Introduction

Climate change is the premier environmental challenge of the 21st century. The United States is committed to meeting this challenge, both through domestic actions to reduce greenhouse gas emissions and through environmentally sound, cost-effective international cooperation under the United Nations Framework Convention on Climate Change (UNFCC) and its 1997 Kyoto Protocol. Simply put: the U.S. is committed to the Kyoto Protocol and to its ratification and entry into force as soon as possible.

In the view of the United States, there are three spotlight issues that must be resolved in order to achieve this goal:

Environmental Integrity. The Protocol exists to serve an environmental purpose: to begin to reduce the emissions of the gases that will alter the global climate in an unprecedented manner. Any elaboration and implementation of the Protocol must assure the world that the reductions and removals of greenhouse gases from the atmosphere have actually occurred. Toward this end, the United States has taken the lead in proposing comprehensive, effective and binding rules to monitor and report emissions and removals, to track trades and to encourage compliance with the obligations of the Protocol. The United States has also supported legally binding consequences for exceeding emissions targets. We believe such consequences should make the atmosphere whole, and thereby help improve the environment. Furthermore, the U.S. believes these measures should be agreed in advance.

Cost Effectiveness. Over the long run, predictable cost-effective reductions will allow for the greatest environmental benefit possible for every dollar spent on climate change. Cost-effective action is only possible if the Kyoto mechanisms and sinks can be implemented as widely and as simply as possible while preserving the environmental integrity of the Protocol. Overly bureaucratic requirements or artificial limits on these important tools will only restrict the ability of the Parties to act and undermine support for the Protocol.

Participation by Developing Countries. Climate change is a global problem that requires a global solution. Industrialized countries must take the lead, but other countries must also contribute in ways that promote their sustainable development. Many developing countries are already making significant strides to improve energy efficiency, slow deforestation and otherwise stem their emissions growth. The Clean Development Mechanism ~~will~~ provide the means for many countries to take additional action while growing their economies.

These three broad issues emerge in a variety of specific contexts throughout the Protocol, including those outlined below.

ENVIRONMENTAL SCORECARD -- FY 2001 BUDGET

(Discretionary budget authority and tax incentives unless otherwise noted; in millions of dollars)

	1999	2000	2001					
	Actual	Enacted	Budget	House Action	Mark-up Status	Senate Action	Mark-up Status	Conf
Army Corps of Engineers:								
Clean Water Action Plan	106	117	145					
Everglades	45	114	158					
Salmon	95	68	91					
TREASURY:								
Global Environmental Facility (GEF)	168	36	176			50	FC	
STATE/AID:								
Multilateral and Bilateral Assistance	278	279	301					
NASA:								
Earth Science (Global Change Research)	1,155	1,173	1,149	1,149	SC			
CEQ:	2.7	2.8	3.0	2.9	SC			

Mark-up Status
SC -- Subcommittee mark-up
FC -- Full Committee mark-up
F -- Floor action

Notes:
1/ Estimate based on pro-rata reduction in IO&P account.
2/ FY 2000 enacted and the FY 2001 request is adjusted for comparability purposes to reflect the budget structure adopted by the House, rather than the structure proposed in the budget.

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 to other flexibility mechanisms (such as Article 4 "bubbling" of emissions from several countries, Joint Implementation, and the Clean Development Mechanism) to meet their commitments.

In an emissions trading system, Annex B countries and their authorized private entities will be able to buy and sell emission allowances from one another. 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. Thus, trading will allow the overall reduction required by the Kyoto targets to be achieved at a lower cost. [In fact, in the United States emissions trading in sulfur dioxide – the pollution that causes acid rain – has allowed emissions to be reduced 30 percent more than required, at less than half of the expected cost.] [update of EPA nos. needed]

Greenhouse gas emissions trading will:

- ***Promote ratification of and global compliance with the Protocol*** by making reductions less costly;
- ***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.

In order to provide real environmental benefits, a trading system must have mechanisms for verification, reporting and accountability that meet high standards. 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 Clean Development Mechanism

At Kyoto, industrialized and developing nations came together to shape an innovative, market-based approach to promoting sustainable development and providing cost-effective reductions of greenhouse gas emissions. The Clean Development Mechanism

ENVIRONMENTAL SCORECARD -- FY 2001 BUDGET

(Discretionary budget authority and tax incentives unless otherwise noted; in millions of dollars)

	1999	2000	2001					
	Actual	Enacted	Budget	House Action	Mark-up Status	Senate Action	Mark-up Status	Conf
AGENCY PROGRAMS								
EPA:								
Operating Program	3,496	3,532	3,917	3,692	SC			
State Revolving Funds (SRFs):								
Clean Water	1,350	1,345	800	1,200	SC			
Drinking Water	775	820	825	825	SC			
Superfund	1,492	1,400	1,450	1,270	SC			
Polluted Runoff Control Grants (Sec. 319)	200	200	250	220	SC			
Clean Air Partnership Fund	---	0	85	0	SC			
Great Lakes Initiative	18	17	67	17	SC			
Superfund Orphan Share (mandatory)	0	0	150	0	SC			
Total, EPA	7,589	7,563	7,257	7,151	SC			
DOI:								
National Park Service Operating Program	1,286	1,364	1,454	1,426	FC			
Bureau of Land Management Operating Program	708	743	819	775	FC			
Fish and Wildlife Service Operating Program	660	715	762	731	FC			
USDA:								
Forest Service Operating Program	1,595	1,585 2/	1,711 2/	1,632	FC			
Nat. Resources Conservation Serv. Op. Program	641	661	747	677	FC	714	FC	
Water/Wastewater Grants and Loans	645	631	648	669	FC	634	FC	
NOAA (DOC):								
Fisheries and Protected Species	350	396	431					
Oceans and Coastal Management	178	188	314					
Ocean and Atmospheric Research	287	301	303					
DOE:								
Cleanup (Env. Mgmt. Program)	5,843	5,878	6,318					
Solar and Renewable Energy R&D (net)	336	315	410					
Energy Conservation and Efficiency (gross)	692	745	851	731	SC			
DOD:								
Cleanup	1,962	1,634	2,136	2,146	FC	2,179	FC	
Env. Compliance/Pollution Prevent/Conserv	2,434	2,337	2,180	2,180	FC	2,215	FC	

(CDM) is a win-win proposition in which industrialized countries or their companies could earn emission credits while developing countries acquire technology and capital and earn emission credits that could be banked or sold.

The potential benefits of CDM are many. It will:

- ***Promote Sustainable Development***
- ***Encourage Meeting Environmental Goals***
- ***Spur Technology Investment***
- ***Help Meet the Costs of Adaptation*** (since, under the Protocol, a "share of the proceeds" from qualifying projects is to go towards assisting countries in meeting the costs of adaptation).

The United States is committed to working with the international community to develop operational rules so that CDM activities can begin at the earliest possible date. In the view of the United States, these operational rules should reflect 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.

Land Use Change Issues

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 protections, also have the added benefit of absorbing carbon.

The Kyoto Protocol recognizes that sinks must be included as part of an economically and environmentally sound approach to climate change -- an approach the United States worked hard to achieve. Specifically, Article 3.3 of the Protocol requires certain forestry activities – afforestation, reforestation, and deforestation – to be counted toward a party's reduction commitments. Moreover, Article 3.4 allows the Parties of the Protocol to add additional sink activities, such as those related to agricultural soils.

In the past year, the Parties have moved forward with a process to define, measure and verify various categories of carbon sinks. In addition to the ~~release in the~~ Spring 2000 of the IPCC Special Report on Land Use Change Issues, and a workshop in Poznan, Poland

ENVIRONMENTAL SCORECARD -- FY 2001 BUDGET

(Discretionary budget authority and tax incentives unless otherwise noted; in millions of dollars)

	1999	2000	2001					
	Actual	Enacted	Budget	House Action	Mark-up Status	Senate Action	Mark-up Status	Conf
Endangered Species Act								
DOI	91	108	115	112	FC			
NOAA	38	44	55					
Total	129	152	170					
Salmon								
NOAA	0	68	160					
Corps	95	68	91					
DOI	0	5	0	0	FC			
State	0	10	0					
Total	95	151	251					

~~in July~~, on August 1 the Parties submitted their views on the elaboration of Articles 3.3 and 3.4. In its August 1 submission, the United States outlined its support for:

- Broad and comprehensive inclusion (based on sound science) of land use, land use change, and forestry activities;
- Inclusion of forest management, cropland management and grazing land management under Article 3.4;
- Rules – including definitions of key terms such as "reforestation" – that help protect forests and avoid creating "perverse incentives" (for example, to log old growth forests);
- A strict accounting system that looks at the total impact of land management on carbon stock changes, including both emissions and removals, and that requires Parties to be able to accurately monitor and verify emissions and removals.

The United States strongly believes that a comprehensive, broad-based approach to sinks provides the greatest long-term incentive to protect existing carbon reservoirs, increase carbon removals, and reduce greenhouse gas emissions through better land management practices. It will also be easier to monitor and verify than "activity-based" accounting, minimize leakage and double counting, and best reflect "what the atmosphere sees."

Compliance

The Kyoto Protocol contains numerous compliance-related elements, such as stringent reporting requirements and an expert review process to assess implementation and identify potential cases of non-compliance. The Protocol also call for further elaboration of the procedures to determine and address cases of non-compliance, as well as the consequences for non-compliance.

As part of the Buenos Aires Plan of Action, the Parties have been working to develop a compliance regime by COP 6.

The United States has been a strong proponent of a compliance system that is transparent, credible, and provides reasonable certainty in terms of consequences.

We have favored a regime that incorporates not only facilitative features (to help prevent non-compliance), but also enforcement features to address non-compliance with emissions targets and teo ensure that Parties are meeting the eligibility requirements to use the Kyoto mechanisms.

The United States has supported binding consequences for exceeding emissions targets. Such consequences should be restorative (rather than punitive) and should be agreed to in advance.

ENVIRONMENTAL SCORECARD -- FY 2001 BUDGET

(Discretionary budget authority and tax incentives unless otherwise noted; in millions of dollars)

	1999	2000	2001					
	Actual	Enacted	Budget	House Action	Mark-up Status	Senate Action	Mark-up Status	Conf
Partnership for a New Generation of Vehicles								
DOE	134	135	149	134	FC			
NSF	40	42	47					
EPA	28	26	40	26	SC			
DOC	30	23	16					
DOT	3	0	4	0	FC			
Total	235	226	256					
Clean Water Action Plan								
EPA	605	603	762	767	SC			
USDA								
Agriculture & Rural Development	1	20	91	29	FC	40	FC	
Interior and Related Agencies	503	542	627					
DOI	348	362	395	363	FC			
NOAA	17	15	22					
Corps	106	117	145					
Everglades	221	284	334					
-- DOI	(144)	(145)	(144)	(75)	FC			
-- Corps	(45)	(114)	(158)					
-- Other	(32)	(29)	(34)					
California Bay-Delta Ecosystem Restoration	75	60	60					
Total (minus double counts)	1,870	1,997	2,431					
Montreal Protocol								
EPA	11	12	21	12	SC			
State	34	28	28			23 1/	FC	
Total	45	40	49					
GLOBE								
NASA	5	5	5	5	SC			
NOAA	3	3	5					
EPA	0	1	1	0	SC			
NSF	2	2	2	2	SC			
Total	10	11	13					

Developing Country Participation

The United States strongly believes that the COP needs to foster a new, constructive dialogue about developing country efforts to address climate change. A few developing nations have either announced or stated their intention to announce appropriate emissions targets – they are to be commended and encouraged. Many others have begun making impressive progress towards cutting their greenhouse gas emissions below "business as usual," while maintaining strong economic growth. We need to build on these successes and look for market-oriented strategies that will reap rewards (in terms of technology and investment) for developing countries ~~that~~ who voluntarily reduce emissions. The COP should make it a priority to explore ~~at a high-level~~ the progress that has already been made and how developed and developing countries can cooperate to broaden and strengthen this encouraging trend.

what does this mean?

Technology Cooperation

In support of its obligations under the UNFCC, the United States implements a range of technology cooperation activities designed to promote the transfer of climate friendly technologies to developing and transition countries worldwide. In ~~the U.S.~~ view of the US, technology cooperation extends beyond the simple sale or transfer of hardware. Successfully establishing a program of technology transfer requires the development ~~on~~ of in-country enabling conditions and capabilities that support the sustained flow of technlogies and expertise.

But we stress a great deal ~~of~~ US support private partnerships

Because the private sector is the source of most climate-friendly technologies and the vehicle for their transfer, U.S. technology cooperation activities directly engage the private sector to accelerate the development of markets by removing barriers to investment and facilitating the commercial deployment of technologies. Specific activities focus on policy reform, institutional strengthening, capacity building, information dissemination, technology assessment, technology demonstration and research.

I see your point, but it's awk

Conclusion

The United States is committed to doing its part to protect our climate and pass on a livable world to our children and grandchildren. Domestically, awareness is growing throughout U.S. society that global warming is a serious problem and that serious action is required. Most importantly, specific, concrete actions by citizens, businesses, and governments are yielding tangible results. In fact, recent data show that growth in U.S. greenhouse gas emissions has begun to decline, even as the U.S. economy grows at an unprecedented rate – an important measure of progress in the fight against climate change.

Franciscans International - North America Region Office

A Non-Governmental Organization in General Consultative Status with the Economic and Social Council of the United Nations

3195 South Superior Street
Milwaukee, WI 53207-3074

September 13, 2000

The White House
1600 Pennsylvania Ave NW
Washington DC 20500
FAX: 202-456-1736

Dear President Clinton and Vice President Gore:

On behalf of Franciscans International – North America Region, I ask for your leadership at the global warming negotiations in Lyon, France. I was privileged to be part of our FI delegation to the COP5 last fall in Bonn, Germany and am currently involved at the local level connecting the faith community with this important issue.

Currently, U.S. State Department representatives are advocating several measures that would undermine the Kyoto Protocol. Please instruct them to withdraw these harmful proposals and instead pursue treaty rules that will result in meaningful pollution reductions, genuinely clean development, and lasting environmental protection.

Clean development rules must promote truly clean technologies such as energy efficiency and renewable energy projects. However, the current U.S. proposal even allows coal-burning power plants to be considered as "clean" development.

U.S. negotiators are working with the Russian delegation to create a "hot air" loophole that would credit emission reductions that would have occurred in Russia anyway as a result of their economic stagnation. Only intentional pollution reductions should qualify under the treaty.

Your team is proposing that up to half of U.S. reductions come from "business-as-usual" forestry activities. This approach avoids real cuts in pollution and also avoids opportunities to promote improved forestry activities and protect forests.

The Lyon negotiations on the Kyoto Protocol are your administration's only chance prior to the November elections to demonstrate that you are serious about an international agreement to cut pollution and slow global warming. The actions of U.S. negotiators in France need to reflect your commitment. Our world and future generations depend on it!

Peace and All Good,

Michelle Balek, OSF

Michelle Balek, OSF
FI-NA Region Coordinator

Internationally, the United States is strongly committed to working in concert with other nations -- both inside and outside of the Kyoto Protocol -- to addressing this epic challenge. Shaping the rules and procedures of the Kyoto Protocol is a highly complex and complicated process. But it is one at which we must succeed, relying on science to guide our negotiations and taking strength in our common commitment to protect this earth for future generations.

The United States has taken strong and proactive positions on the Kyoto Protocol precisely because we intend to negotiate the best possible agreement and to ratify it. We are confident that the United States will ratify an agreement that has environmental integrity, that has economic integrity, and that is fair to all. That is our goal, and every position we take is meant to further that goal. We are fully committed to making this a reality.

Est. ——— 1958

Our Lady of Lourdes
Catholic Church

Sept. 13, 2000

The White House
1600 Pennsylvania Ave NW
Washington DC 20500
FAX: 202-456-1736

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Sincerely,

JoAnn M. Schulling

3850 Lourdes Drive Decatur, Illinois 62526 Phone: 217-877-4404 Fax: 217-877-5257

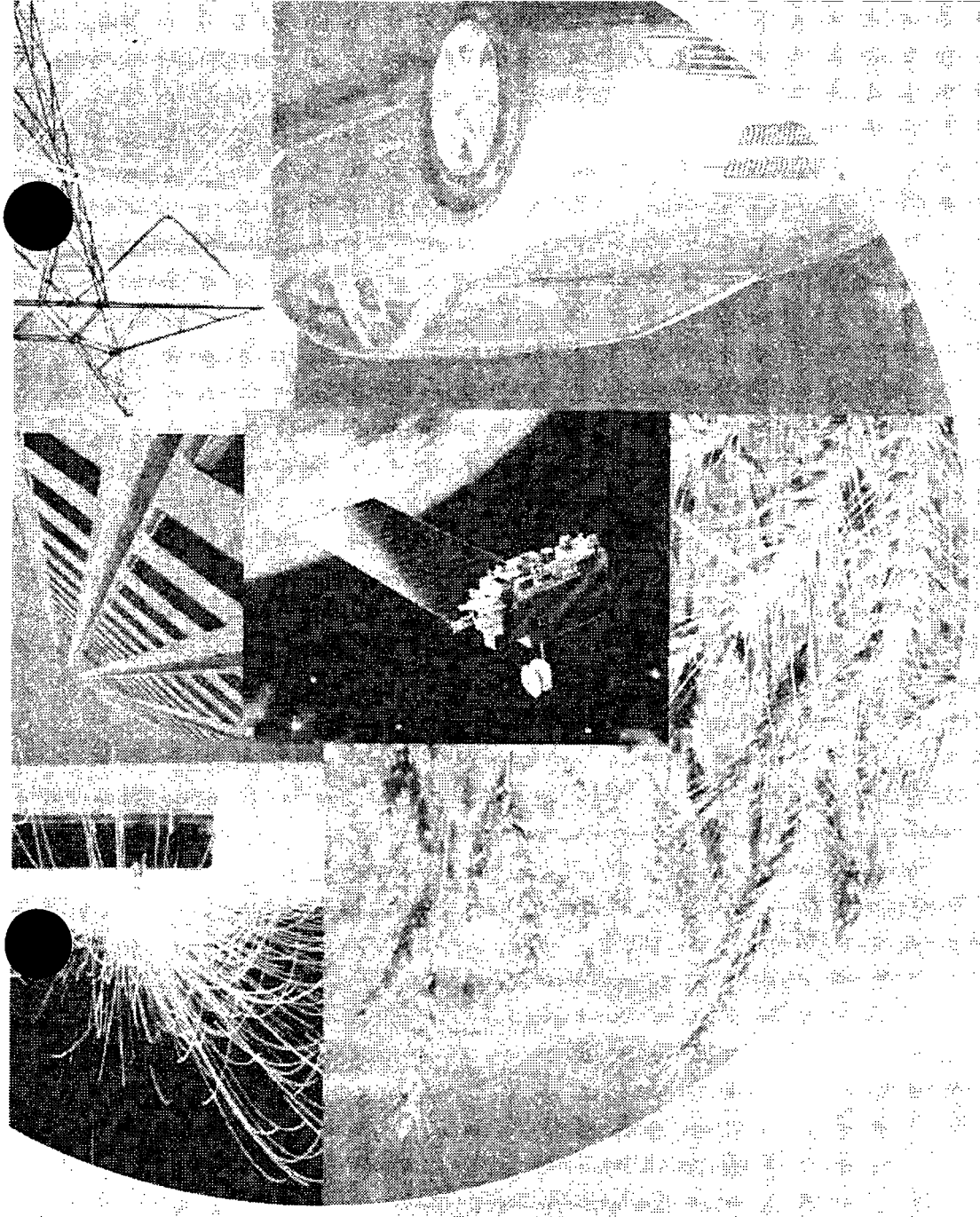
Roger &
Angie

205

Please give feedback to
John Gibson ASAP

Not very uniform
photo heavy

Contents



Executive Summary

Addressing climate change is the premier environmental challenge of the 21st century. Among the world's leading atmospheric scientists, agreement is now widespread that the Earth is warming and that greenhouse gas emissions from human activities are at least partly to blame.

The United States is committed to meeting this challenge, both through domestic actions to reduce greenhouse gas emissions and through environmentally sound, cost-effective international cooperation under the United Nations Framework Convention on Climate Change and its 1997 Kyoto Protocol.

Awareness is growing throughout U.S. society that global warming is a serious problem and that serious action is required. Most importantly, specific concrete actions by citizens, businesses, and governments are yielding tangible results. In fact, recent data show that growth in U.S. greenhouse gas emissions has begun to decline, even as the U.S. economy grows at an unprecedented rate—an important measure of progress in the fight against climate change.

"The greatest environmental challenge of the new century is global warming...If we fail to reduce the emission of greenhouse gases, deadly heat waves and droughts will become more frequent, coastal areas will flood, and economies will be disrupted. That is going to happen, unless we act."

President Bill Clinton
State of the Union Address
January 27, 2000

Challenging the Historic Link between GDP and Carbon Emissions

Historically, U.S. CO_2 emissions have grown at roughly half the rate of the gross domestic product (GDP). In recent years, however, very robust growth in the nation's GDP has been accompanied by a slowdown in the growth of U.S. greenhouse gas emissions. This trend grew even more pronounced in the late 1990s.

- Over the 1990s, the U.S. GDP grew almost three times faster than energy-related CO_2 emissions.
- In both 1998 and 1999, U.S. GDP grew by more than 4 percent each year while CO_2 emissions grew by less than 1.5 percent per year.

In addition, recent data demonstrate that from 1960 to 1996, energy intensity—the amount of energy used per unit of GDP—declined by an average of 1.3 percent per year. Even more telling, from 1996 to 1999, the nation's energy intensity declined at a rate of 3.2 percent annually. Finally, the carbon intensity of the U.S. economy—the amount of CO_2 emitted per unit of GDP—declined by 15 percent over the course of the 1990s.

Factors contributing to these trends may include a high rate of new investments and the rise of the digital economy. What is clear is that U.S. businesses, states and localities, and the Federal government are achieving real results in reducing growth in greenhouse gas emissions. There is also a commitment at all levels to ensuring that these positive results multiply in the years ahead.

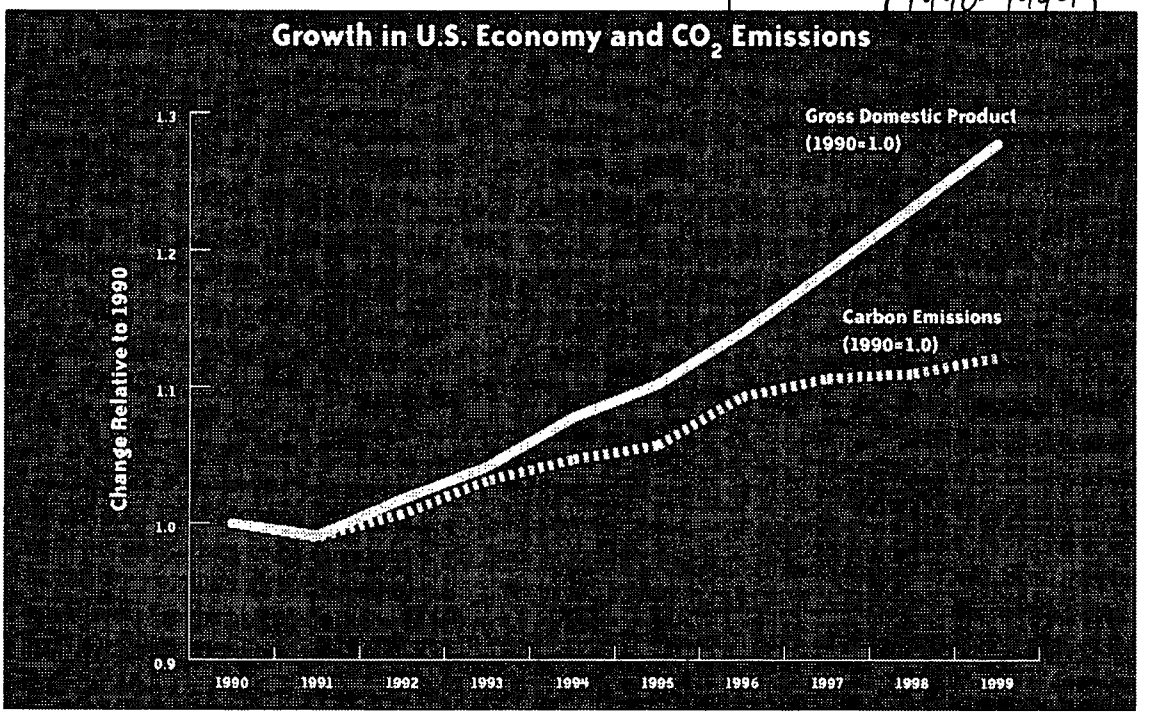
> ***"We have learned that a strong economy and a safe environment go hand in hand."***
>
> ***Vice President Al Gore***
> ***April 2000***

U.S. Business Community Stepping Forward

U.S. industry is undergoing a sea change in its attitude towards climate change. This, in part, reflects a realization by more and more companies that saving energy and reducing waste make sense not just for the environment, but also for their bottom line. The automobile industry, for example, is making important progress in reducing emissions from vehicles.

- **Ford** and **GM** announced production plans for sport utility vehicles (SUVs) that are 15 to 25 percent more fuel-efficient than today's SUVs. Preliminary estimates by the U.S. Environmental Protection Agency indicate that these commitments could result in cumulative emissions reductions of up to 100 MMTCE through 2020.
- Thanks in part to the public-private *Partnership for a New Generation of Vehicles (PNGV)*, **General Motors (GM)**, **Ford Motor Company,** and **Daimler-Chrysler** have all unveiled diesel-battery hybrid concept cars that are capable of traveling 70-90 miles per gallon (mpg).
- **Honda** and **Toyota** introduced gasoline-battery hybrids into the U.S. market with fuel economy ratings of up to 70 mpg on the highway.

Also, this year **Johnson & Johnson** and **IBM** became the first two companies to join a new partnership with the conservation community to help businesses voluntarily lower energy consumption. Under this partnership, companies make specific commitments to reduce their emissions and participate in an independent verification process. In so doing, these two companies join a host of major companies that are stepping forward with real plans to address climate change, including **DuPont, Motorola, United Technologies, Boeing, Shell, Weyerhaeuser,** and **Amoco** and **Arco**, subsidiaries of **British Petroleum**. And in May 2000, 11 major U.S. corporations, calling themselves the *Green Power Market Development Group*, began purchasing green energy and otherwise providing support to the development of green energy markets.



The rise in good corporate citizenship is further evidenced by the decline of business organizations dedicated to opposing international action to address climate change, and the rise of other, more constructive voices, such as those of the **Business Council for Sustainable Energy,** the **International Climate Change Partnership,** and the **Pew Center for Global Climate Change.**

Real Actions, Real Results

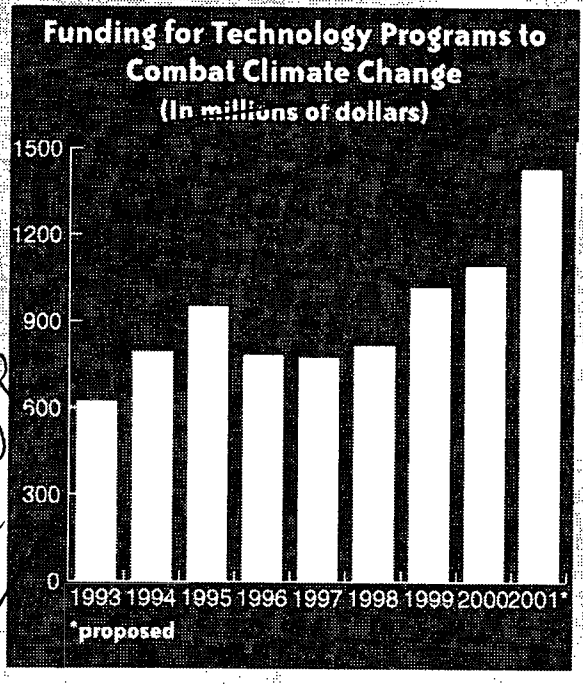
For the past seven years, the hallmark of the Clinton-Gore Administration's strategy for reducing U.S. greenhouse gas emissions has been to use R&D investments and tax incentives to increase energy efficiency, spur the broader use of renewable energy, and work with industry to promote voluntary, cost-effective reductions. Among the many U.S. climate protection programs showing tangible results are the following:

■ Minimum efficiency standards on residential appliances have saved consumers nearly $25 billion through 1999, avoiding cumulative emissions by an amount equal to almost 50 million metric tons of carbon (MMTCE). Four pending appliance standards (clothes washers, fluorescent light ballasts, water heaters, and central air conditioners) are expected to save consumers more than $10 billion and reduce cumulative emissions by 22 MMTCE through 2010.

■ The ENERGY STAR® program promotes energy efficiency in U.S. homes and buildings. It is estimated that by 2010 ENERGY STAR will reduce cumulative U.S. greenhouse gas emissions by more than 100 MMTCE.

■ Public-private partnership programs to reduce methane emissions are expected to hold methane emissions at or below 1990 levels through 2010. Partners in the methane programs will reduce cumulative emissions by an estimated 120 MMTCE by 2010.

■ Programs designed to halt the growth in emissions of the most potent greenhouse gases—the so-called "high global warming potential (GWP) gases"—are achieving significant progress. Investments already made by partners in these programs will reduce cumulative emissions by an estimated 80 MMTCE by 2010.



Targeted Tax Credits to Fight Global Warming

As part of the *Climate Change Technology Initiative*, President Clinton has proposed $9.3 billion in tax incentives over 10 years for consumers who purchase energy-efficient products and for producers of energy from renewable sources. Highlights include the following:

- *Tax credits for fuel-efficient cars.* The package extends the current tax credit (of up to $4,000) through 2006 for qualified electric and fuel cell vehicles and also includes a tax credit of $500-3,000 for the purchase of a qualifying hybrid vehicle from 2003-2006.

- *Tax credits for energy-efficient homes.* Consumers can receive a $1,000-2,000 credit toward the purchase of a new energy-efficient home; a 20 percent tax credit for the purchase of selected energy-efficient products for homes and buildings; and a $1,000-2,000 credit for installing a solar energy system.

- *Tax credits for clean energy.* The package extends existing tax credits for the production of electricity from wind and closed-loop biomass and creates credits for electricity from open-loop biomass facilities, coal-biomass co-firing, and landfill methane.

Growing Commitment by the U.S. Government

Over the past two years (FY 1999 and FY 2000), the Clinton-Gore Administration has secured more than $7 billion in overall funding to fight climate change. This includes more than $2 billion for the research and development of clean energy technologies in the four major carbon-emitting sectors of the U.S. economy: Industry, Buildings, Electricity Generation, and Transportation.

The President's FY 2001 budget proposed $2.4 billion in funding for renewable energy, energy efficiency, agricultural- and forest-based bioproducts and energy, research and development, and tax incentives for the purchase of clean cars, homes, appliances, and clean energy production. This represents a 43 percent increase over FY 2000 enacted levels and builds on the Administration's consistent record of fighting for—and achieving—higher funding levels for climate programs.

New Federal Initiatives

In addition to fighting for increased funding for existing climate programs, the Administration has proposed or implemented several major climate initiatives in the past year, including:

- **Cutting Fuel Use by Federal Fleets.** An Executive Order from President Clinton requiring U.S. government agencies to reduce the amount of petroleum used by their vehicle fleets by 20 percent below 1999 levels by 2005. This action is expected to reduce greenhouse emissions by an amount equal to 160,000 metric tons of carbon (MTCE) per year.

- **21st Century Truck Initiative.** A 10-year research and development partnership aimed at doubling—and, in most cases, tripling—the fuel economy of U.S. trucks.

- **International Clean Energy Initiative.** The President proposed $201 million for FY 2001 (a better than 100 percent increase over FY

2000 enacted levels) for a multi-agency initiative to accelerate the international development and deployment of clean energy technologies.

States and Localities Taking Action

Many states and localities throughout the United States are coming to recognize the effects that climate change could have on their communities and economic well-being and are stepping forward to take real steps to reduce emissions:

- A total of 78 U.S. cities are participating in the **International Council for Local Environmental Initiatives' (ICLEI)** *Cities for Climate Protection Campaign (CCP)*, a program that offers training and technical assistance to cities, towns, and counties for projects focusing on reducing emissions.

- In June 2000, the **U.S. Conference of Mayors** passed a resolution recognizing the seriousness of global warming and calling for increased cooperation between cities and the Federal government in taking action to address the challenge.

- To date, **26 states have initiated voluntary climate action plans** and 17 have completed those plans.

Conclusion

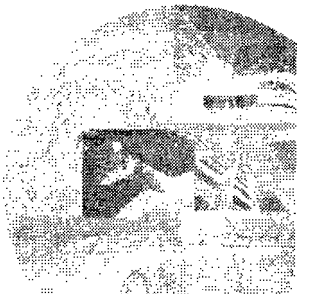
The United States is committed to doing its part to protect our climate and pass on a livable world to our children and grandchildren. The United States understands that domestic progress in reducing emissions is an important part of that commitment. We must also make more progress internationally—both inside and outside of the Kyoto Protocol. In the long run, the United States' balanced approach to addressing climate change will allow us to continue to grow our economy and protect the environment at the same time—the essential challenge facing all nations.

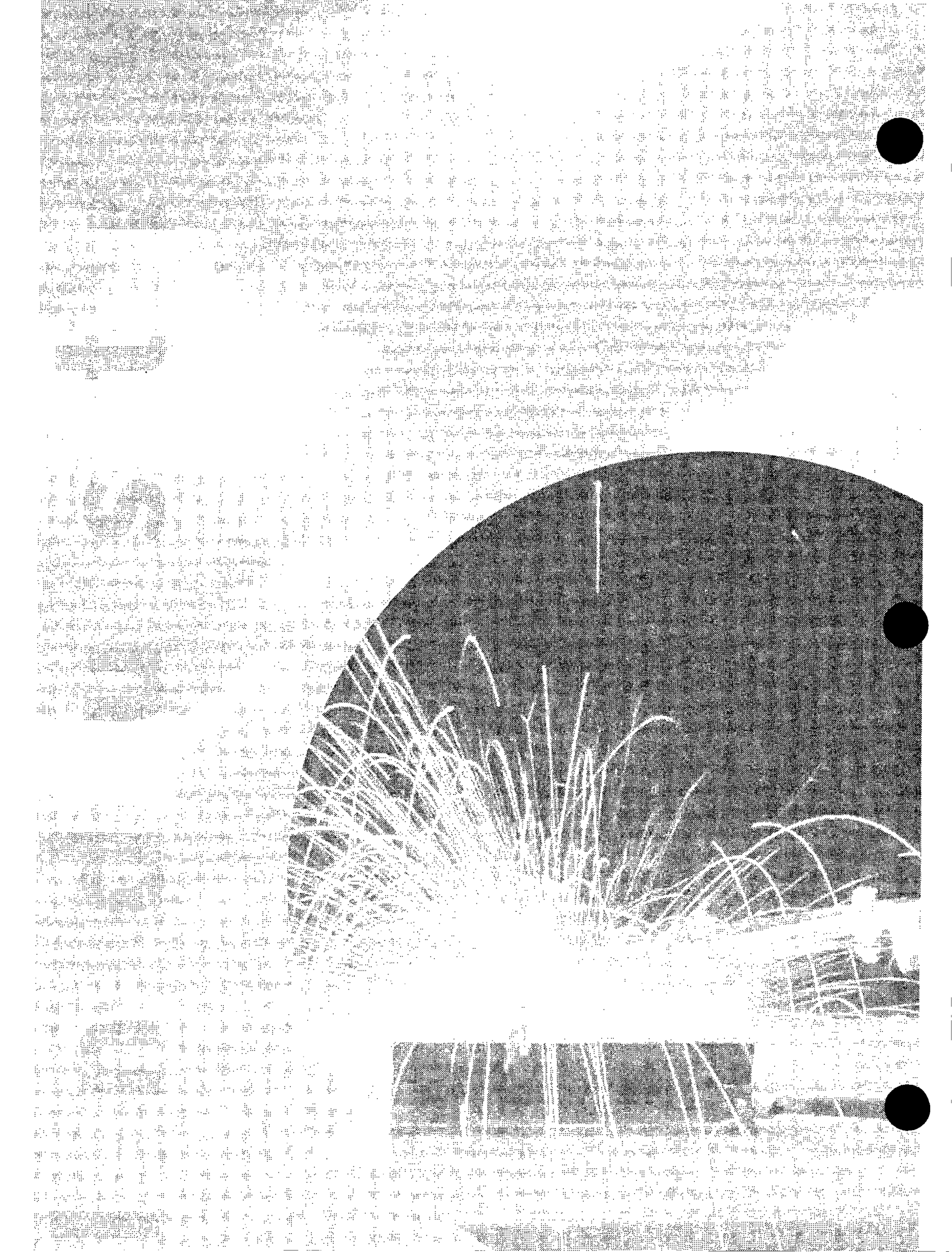
Measuring Greenhouse Gas Emissions And Emissions Reductions

Greenhouse gas emissions typically are expressed either in terms of metric tons of carbon equivalent (MTCE) or in metric tons of carbon dioxide equivalent. This report uses MTCE or million MTCE (MMTCE). To convert carbon equivalents to carbon dioxide equivalents, multiply by 3.67.

This report focuses on progress the United States is making at combating climate change on multiple fronts. Each chapter provides an overview of programs and accomplishments within key sectors of the U.S. economy. The greenhouse emissions from each sector—industry, buildings, electricity, transportation, and agriculture and forestry—are not mutually exclusive. For example, buildings house industrial processes; thus, greenhouse gas emissions related to the production of goods and services might be viewed as deriving from either the buildings or the industrial sector. Because of this overlap, it would not be appropriate to add together emissions or emission reductions for each sector to produce an estimate of total U.S. emissions or emission reductions.

Likewise, because of the interactions among programs that are designed to reinforce each other, an estimate of aggregate U.S. reductions cannot be produced by adding up emission reductions for all of the programs discussed in this report. Estimates from different Federal government agencies, private sector entities, and state and local governments may rely on different baselines and cannot be directly compared. Finally, substantial uncertainty is associated with any of these projections because many of the estimates attempt to quantify the adoption of projected technologies and practices more than a decade into the future.

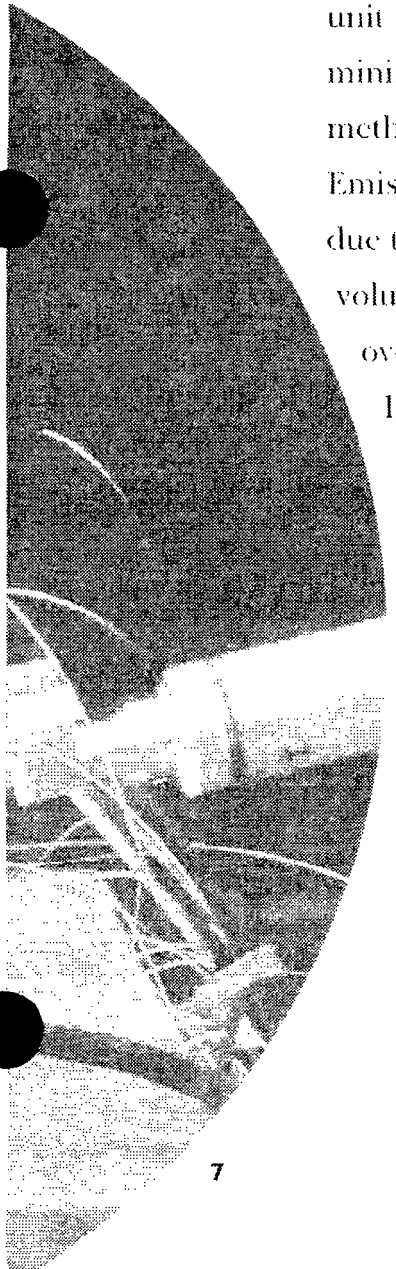




Chapter 1. Industry

Several positive trends characterize greenhouse gas emissions from the U.S. industrial sector, reflecting the basic economic fact that saving energy and reducing waste is in corporate America's interest. More and more companies are realizing that saving energy and reducing waste make sense not just for the environment, but also for their bottom line.

After 1997, carbon dioxide emissions from the combustion of fossil fuels by the U.S. manufacturing sector began to decrease, partly due to increasing efficiency, as measured by a reduction in emissions per unit of gross domestic product. Methane emissions from U.S. coal mining also are decreasing, owing at least in part to investments in methane recovery from coal mines and projects to use that methane. Emissions from natural gas systems are decreasing as well, primarily due to greater use of plastic piping for distribution. In fact, through voluntary public-private partnership programs and other actions, overall U.S. methane emissions are expected to be at or below 1990 levels through 2010.



Public-private partnerships are substantially reducing emissions of the "high global warming potential" (GWP) gases—perfluorocompounds (PFCs) and several hydrofluorocarbons (HFCs)—from industrial operations. These initiatives are underway in the semiconductor industry, aluminum production, the chemical industry, electric transmission and distribution systems, and the magnesium industry.

Johnson & Johnson: A Win-Win

Johnson & Johnson, the pharmaceutical company, estimates that its efforts to improve energy efficiency in its manufacturing processes are saving $3.8 million a year. Since 1991, the company has cut energy use by 8 percent while production has soared by 330 percent.

On top of that, Johnson & Johnson is saving an estimated $9.7 million as a partner in the U.S. government's ENERGY STAR® buildings program through the company's effort to improve energy efficiency in its facilities. (See Chapter 2, "Buildings.")

A Quick Recovery

Centerplex, a small business located in Seattle, Washington, found that energy efficiency helped cut its annual energy bill in half in 1993. By switching to more energy-efficient products, the company is saving $23,000 and preventing more than 58 MTCE per year. Centerplex estimates it was able to recover the cost of its environmentally and economically sound investment in only 18 months.

Majestic Metals

Majestic Metals, a precision sheet metal manufacturer in Denver, Colorado, achieved a 15 percent annual reduction in its natural gas bill—saving some $40,000 per year—through energy efficiency improvements. Efficiency measures include the development of a cost-effective closed-loop rinse system in its metal pre-paint processing area. Other energy efficiency improvements included enhanced insulation and an upgraded heating system.

Industry Initiatives on Climate Change

Awareness is growing among U.S. corporations that climate change is a serious issue deserving serious action. As a result, a number of companies are undertaking forward-looking initiatives:

In May 2000, 11 major U.S. corporations, calling themselves the *Green Power Market Development Group (GPMDG)*, began purchasing green energy and otherwise providing support to the development of green energy markets. (See Chapter 3, "Electricity.")

In 2000, **Johnson & Johnson** and **IBM** were the first two companies to join *Climate Savers*, a new partnership to help businesses voluntarily lower energy consumption and reduce emissions of greenhouse gases. In joining Climate Savers, companies make specific commitments to reduce those emissions and participate in an independent verification process.

In 1999, the *Business Roundtable*, a group of CEOs from leading U.S. corporations, released a report advocating "the deployment of more energy-efficient and breakthrough technologies" and called on government and industry to work together to find answers to the challenges of climate change.

The **Pew Center on Climate Change** launched a $5 million campaign in 1998 to build support for taking action on climate change. **Boeing, DuPont, Shell, Weyerhaeuser,** and 17 other major corporations joined the center's *Business Environmental Leadership Council*, agreeing that "enough is known about the science and environmental impacts of climate change for us to take actions to address its consequences."

Energy Efficiency in Industrial Processes

A cornerstone of the U.S. strategy to reduce greenhouse gas emissions from the industrial sector is the development of partnerships between the Federal government and private

Greening the Cement Industry

Cement manufacturing accounts for approximately 5 percent of U.S. CO_2 emissions from industrial sources. Companies representing more than 70 percent of U.S. cement production are taking advantage of the latest methods for improving energy efficiency. These companies have produced action plans in which they have committed to reducing their CO_2 emissions by more than 736,364 MTCE by the end of 2000 with an expected cost savings of around $2.3 million.

industry to improve efficiency and reduce waste.

One Federal program, *Industries of the Future*, works in partnership with the nation's most energy-intensive industries, enhancing their long-term competitiveness, and accelerating research, development, and deployment of technologies that increase energy and resource efficiency. For example, steel scrap generated in steelmaking plants is now being recycled at a rate close to 100 percent. By 2010, participating industries are projected to avoid 15 MMTCE and realize $3 billion in energy savings annually.

The Federal government's *Best Practices Program* helps participating U.S. manufacturers lower energy bills with little to no added capital investment through the careful selection and adoption of new processes and component technologies. One best practice program, *Steam Challenge*, helps industrial partners retrofit, operate, and maintain their steam systems more efficiently and profitably. The program expects to achieve a 20 percent efficiency improvement by 2010, saving some 2 quads of energy annualy.

A similar program, *Motor Challenge*, stresses a systems approach to the engineering, specification, and maintenance of motors, drives, and motor-driven equipment. Funded at just over $5 million a year, Motor Challenge helps industry realize electricity cost savings of $25 million per year and avoid emissions of 130,000 MTCE.

> ***"We recognize that the debate over climate change goes well beyond the matter of the U.S. economy. We also believe that protracted debate about the adequacy of the science is something Texaco wishes to move beyond."***
>
> ***J.G. Metzger***
> ***Vice President, Texaco***
> ***February 2000 announcement of***
> ***Texaco's withdrawal***
> ***From the Global Climate Coalition***

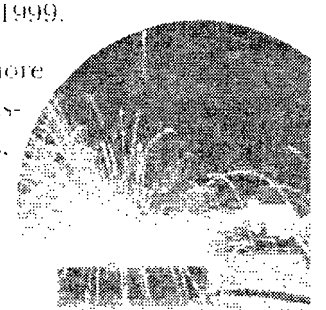
Recovering Useful Methane

U.S. industry works in concert with the Federal government through a variety of voluntary partnerships that are directed toward eliminating market barriers to profitable collection and use of methane that otherwise would be released to the atmosphere. Collectively, these programs are expected to hold methane emissions at or below 1990 levels through 2010. Partners in the methane programs will reduce cumulative emissions by an estimated 120 MMTCE by 2010.

One of these partnerships, the *Landfill Methane Outreach Program (LMOP)*, has assisted more than 140 planned and operational projects by providing decision support software, identifying potential partners, and addressing specific technical or regulatory issues.

The *Coalbed Methane Outreach Program (CMOP)* works with coal mines and project developers to develop technical and cost evaluation models. As a result, methane recovery by the coal industry has more than doubled since 1993. Nearly $50 million in direct gas sales were generated in 1999.

Natural GasSTAR works with more than 70 gas production, transmission, and distribution companies.

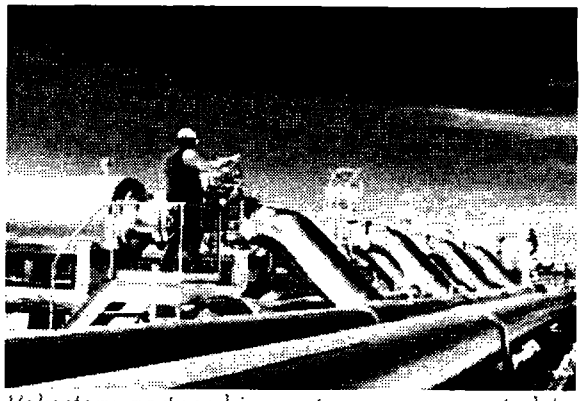


Lucent Shines with Clean Energy

Working with the *Landfill Methane Outreach Program*, **Lucent Technologies** found it could save approximately $100,000 a year on fuel bills at its Columbus, Ohio, plant by using captured landfill gas instead of fossil fuels to power boiler operations that generate steam for space heating and hot water. Lucent's new fuel source is reducing annual greenhouse gas emissions by 100,000 MTCE—equivalent to removing more than 80,000 automobiles from the road. And because landfill gas is less expensive and easier to maintain than traditional fuels like coal and oil, Lucent saves money on fuel costs and operating expenses.

Company Gets Wise to Waste

Herman Miller, a Zeeland, Michigan, furniture manufacturer, saved $422,000 in 1998 by switching to returnable packaging and changing its packaging design. The company also eliminated 40 tons of panel textiles and 27.5 tons of textiles for chairs through a life cycle analysis process and saved $407,300. In 1998 the company prevented 725 tons of waste, collected 10,273 tons of recyclables, and purchased 37,423 tons of recycled-content products.



Voluntary partnership programs are expected to hold methane emissions at or below 1990 levels through 2010.

providing partners with detailed technical and economic information on how to reduce emissions. The program has identified more than 50 previously unrecognized ways of economically reducing methane emissions, which now are being widely adopted by industry.

Reducing Emissions by Reducing Waste

The U.S. government's *WasteWise* program works to reduce municipal solid waste and greenhouse gas emissions through energy savings, increased carbon sequestration, and avoided methane emissions from landfills. WasteWise has grown from 361 partners in 1994 to its current membership of more than 1,000. The partners reported total reductions of 7.8 million tons of solid waste in 1998. Avoided disposal cost savings grew from $38 million in 1994 to $280 million in 1998. Since the program's inception, partners have avoided an estimated 19 MMTCE.

Reducing High GWP Gases

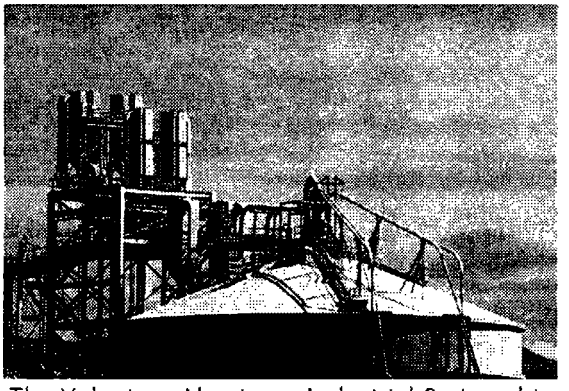
Public-private *Environmental Stewardship Partnerships* are substantially reducing U.S. emissions of PFCs and several HFCs, the "high global warming potential" (GWP) gases, which are released as byproducts of industrial operations. Investments already made by partners in these programs will reduce cumulative emissions by an estimated 80 MMTCE by 2010.

The *PFC Emission Reduction Partnership for the Semiconductor Industry* has served as a catalyst for companies in Europe, Japan, Korea, Taiwan, and the United States to join together to set the first global target for reducing greenhouse gas emissions: Participating countries will reduce PFC emissions to at least 10 percent below 1995 levels by 2010.

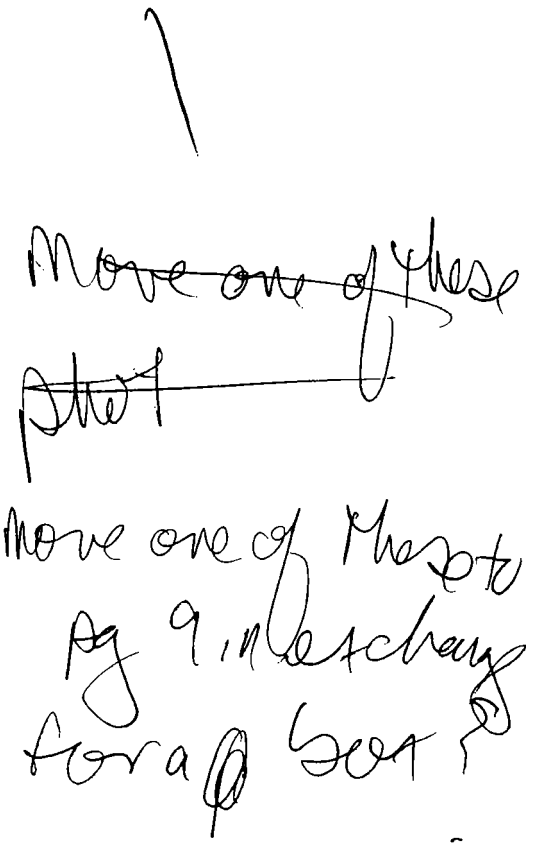
Since the launch of the *Voluntary Aluminum Industrial Partnership (VAIP)* in 1995, the program's membership has grown to include 11 of the nation's 12 primary aluminum producers, representing 22 smelters and 94 percent of U.S. production capacity. As of 1998, VAIP partners cumulatively achieved a dramatic 44 percent in PFC emissions from 1990 levels.

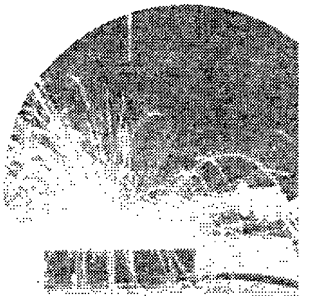
In the chemical industry, all four of the U.S. manufacturers that emit HFC-23 during the manufacture of HCFC-22 are significantly reducing emissions of this highly potent greenhouse gas through process optimization.

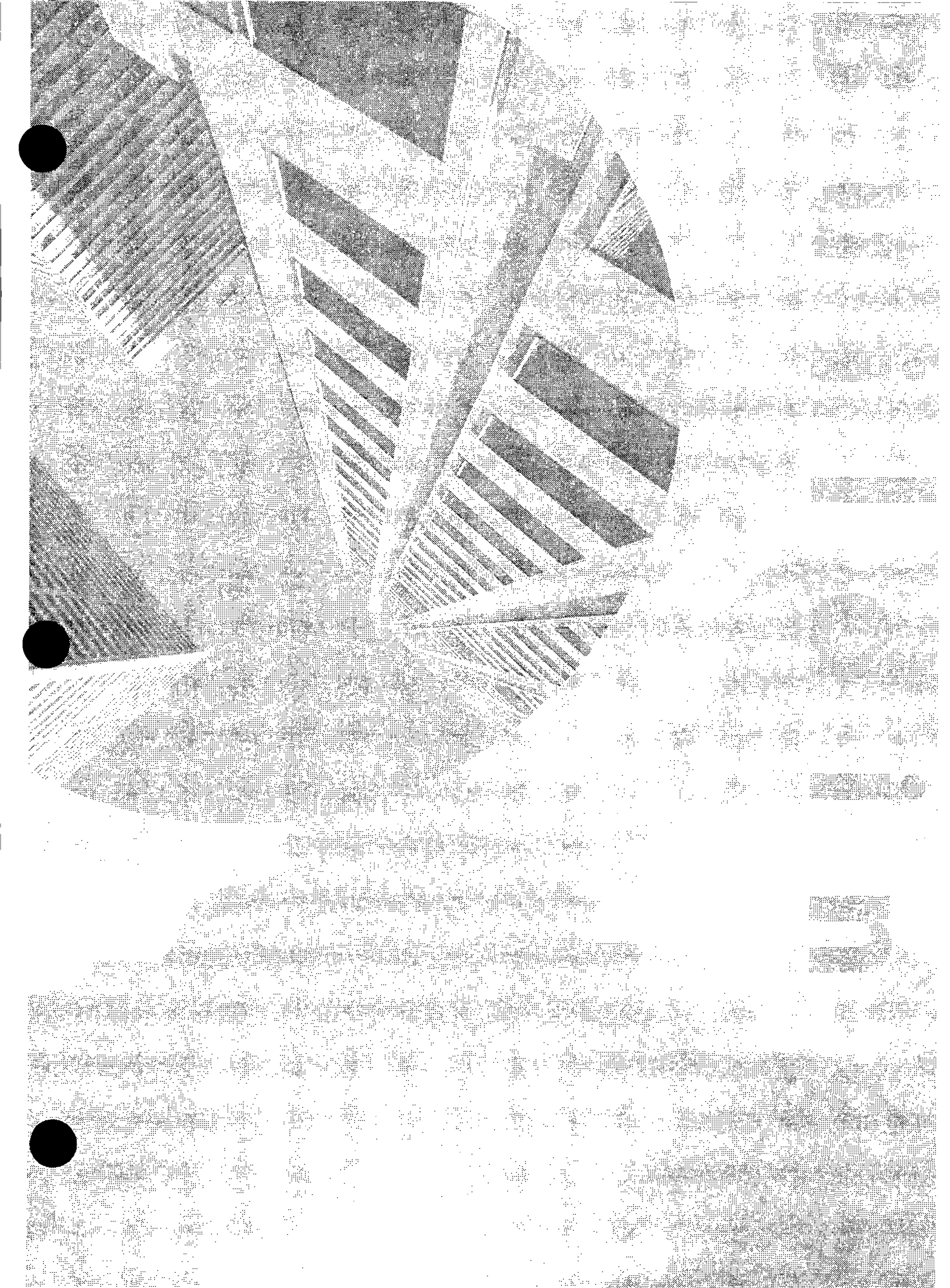
Two new partnerships, the *SF_6 Emission Reduction Partnership for Electric Power Systems* and the *SF_6 Emission Reduction Partnership for the Magnesium Industry*, are identifying and encouraging adoption of best management practices for reducing emissions of sulfur hexafluoride (SF_6), a highly potent greenhouse gas. The program to reduce emissions from electric power systems now represents approximately 25 percent of the companies within this industry. The program to reduce emissions from magnesium production already represents 60 percent of U.S. magnesium industry emissions.



The Voluntary Aluminum Industrial Partnership (VAIP) *is reducing PFC emissions while increasing the efficiency of primary aluminum production.*



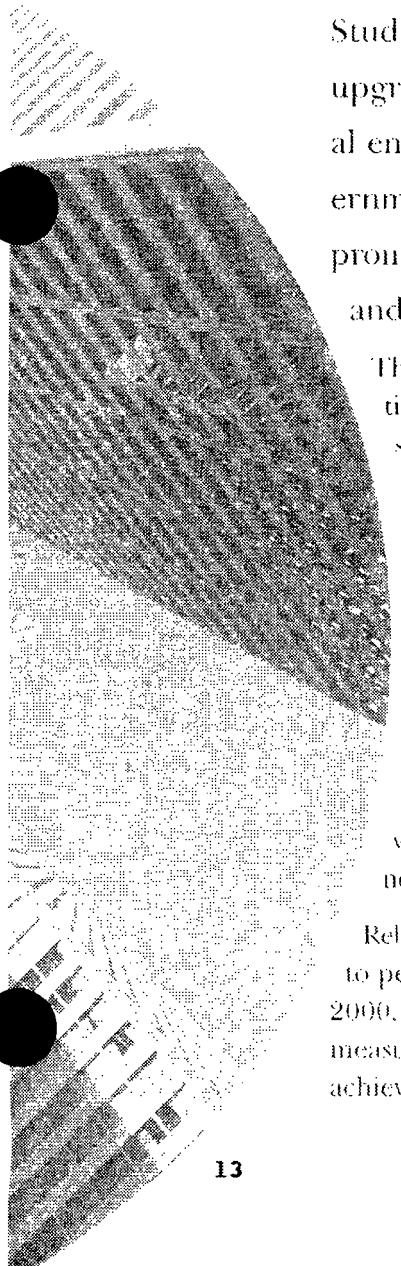




Chapter 2. Buildings

There are several promising trends for reducing emissions from the U.S. buildings sector, including the increasing deployment of energy-efficient technologies and the growing application of whole-building and whole-community approaches. The sector has other good news to report as well. From 1984 to 1997, energy consumption per housing unit in the United States decreased, primarily as a result of a large reduction in energy consumption for space heating. Total energy consumption in commercial buildings remained roughly constant from 1989 to 1995, as did energy use per square foot.

Studies show that by investing in simple profitable building upgrades, many U.S. homes and businesses could reduce their annual energy use by nearly 30 percent. To meet this need, the U.S. government created a variety of programs that focus on developing and promoting the broader use of cleaner and more efficient building and appliance technologies.



The buildings sector, comprising primarily residential and commercial facilities, is responsible for approximately 35 percent of U.S. greenhouse gas emissions. Electricity consumption for lighting, heating, cooling, and operating appliances accounts for the majority of greenhouse gas emissions from both types of buildings.

Community Actions on Energy Use in Buildings

Improving the energy efficiency of buildings is a priority for U.S. state and local governments. One program, *Rebuild America*, helps communities identify clean energy opportunities by providing on-site technical assistance, training, and access to resources. The program's network of community partnerships—made up of municipalities, state agencies, schools and universities, nonprofit organizations, and businesses—tailors programs to local needs, choosing the buildings to renovate and the technologies to use.

Rebuild America partnerships in 51 U.S. states and territories are committed to performing energy retrofits on 469 million square feet of space. By August 2000, the number of partners was nearing 300. By 2005, energy efficiency measures undertaken by Rebuild America partnerships are expected to achieve savings of $1 billion annually and double that amount by 2010.

Rebuild Duke University Facilities

In 1998 the *Rebuild Duke University Facilities* partnership completed lighting and water conservation improvements in 114 academic buildings with 3.2 million square feet. This Rebuild America partnership is presently renovating inefficient and aging heating, ventilation, and air conditioning systems in the campus buildings that consume the greatest amount of energy. During fiscal year 1998-99, the partnership saved the university an estimated 10 million kilowatt-hours of electricity, 42 million pounds of steam, and 7 million cubic feet of water.

Daniel Boone High School

Since 1995, *Daniel Boone High School*, located in Washington County, Tennessee, has realized a 34 percent reduction in annual energy costs due to the installation of a geothermal heating and cooling system. Annual savings have averaged $82,000. With the installation of the geothermal system, the school also reduced maintenance costs, improved indoor air quality, and gained control over individual classroom temperatures. Because the geothermal system was sized to allow for changes, the school is able to add electric loads easily.

In addition, local governments that participate in ICLEI's *Cities for Climate Protection* program use various methods to promote building energy efficiency, not only within their own facilities, but also in the commercial and residential building stock. Over the past year, participating governments have implemented a range of measures that are reducing emissions from both municipal and private sector buildings.

> ***"Energy conservation not only reduces global warming pollution, it also helps local businesses save money and remain competitive. That's a win-win for the city, and it's just one of the measures we're pursuing to meet our pledge to cut the emissions that cause global warming."***
>
> ***The Honorable Paul Schell***
> ***Mayor, City of Seattle, Washington***

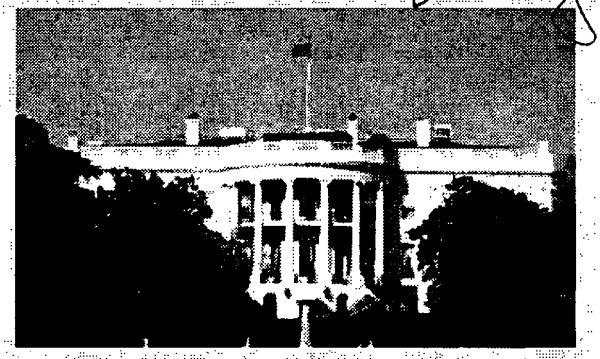
Schools Saving Energy

America's schools spend more than $6 billion each year on energy. Schools could save 25 percent by reducing energy consumption through better building design, widely available energy-efficient and renewable energy technologies, and improvements to operations and maintenance. In addition to saving money, the *EnergySmart Schools* program is reducing greenhouse gas emissions through gains in energy efficiency and the use of clean energy technologies. So far, more than 240 such community partnerships have been formed, involving 2,000 schools.

In addition, the *ENERGY STAR® label for school buildings*, provides tools for schools to evaluate their own energy use, find ways to reduce it, and meet indoor air quality standards. A 25 percent reduction in schools' energy use will cut annual U.S. greenhouse gas emissions by 3 to 4 MMTCE.

yea Shel!
Looks good.

Teaching Old Buildings Some New Energy Tricks



On Earth Day 1993, President Clinton launched a new initiative, *The Greening of the White House*, to improve the energy and environmental performance of the White House complex with steps that can be taken in any home. Measures implemented include replacement of standard light bulbs with more efficient compact fluorescents, installation of weather-tight windows, heating and air conditioning upgrades, and composting of yard trimmings from the White House grounds for use as fertilizer. The recently released status report on *The Greening of the White House* found that the initiative is saving $300,000 a year and reducing annual carbon emissions by 800 MTCE—the equivalent of removing more than 600 automobiles from the road.

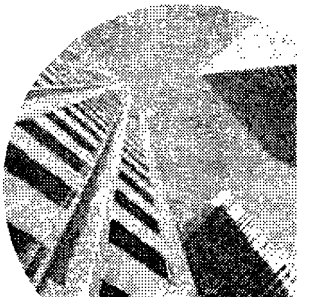
Three of the buildings that house the **U.S. Department of Agriculture** in Washington, D.C., are designated as historic structures—a circumstance that means many of the simple solutions for reducing energy consumption, such as installing energy-efficient windows or using window awnings, are not options. The solution was to implement an *Energy Management Program* that involves the continuous evaluation of existing conditions, a facility-wide energy tune-up, load reduction, equipment replacement, building façade restoration, and indoor air quality programs. The results are impressive. In 1992, electricity usage, which had been climbing by roughly 3 percent per year over the preceding decade, exceeded 41 million kilowatt-hours (kWh) and was expected to approach 50 million kWh by 2000. Instead, energy consumption had declined by more than 24 percent by 1997—for a cumulative savings of 2 million kWh per year, or 1,758 MTCE.

Federal Government Leading By Example

The Clinton-Gore Administration has set aggressive goals for curbing greenhouse gas emissions by U.S. government agencies. In 1999, President Clinton issued Executive Order 13123 requiring all Federal agencies to take steps to cut greenhouse gas emissions from energy use in buildings by 30 percent below 1990 levels by 2010. At present, the U.S. government is the single largest energy consumer in the world. Its annual energy bill exceeds $8 billion, including $4 billion to heat, cool, and power 500,000 buildings.

As a result of the President's leadership, the Federal government's energy bill is $2 billion less (in constant dollars) than it was in 1985. Implementing the measures needed to comply with the Executive Order will result in an annual reduction in greenhouse gas emissions of 2.4 MMTCE and save U.S. taxpayers approximately $750 million a year.

The Executive Order requires agencies to opt for purchases from cleaner, more efficient power generators. Agencies are directed to adopt policies to increase the use of electricity generated from renewable energy sources and to consider off-grid electricity opportunities that provide energy and environmental benefits, while allowing agencies



PATH Makes Waves in California

Rooftop photovoltaic solar panels and the first units of a new generation of high-efficiency gas absorption chillers are standard equipment in a new development in the San Fernando Valley outside Los Angeles, California. At Village Green, the homes of the future are here today. In 1999 families began moving into the first 22 of 186 planned homes, just about a year after President Clinton visited the site to launch the *Partnership for Advancing Technology in Housing (PATH)*. Village Green is one of five PATH pilot projects around the country.

The homes will use less than half of the electricity of a home built to the state's current energy-efficient building standards. Heating and cooling costs are guaranteed to be no more than $38 per month. Most of the homes will have photovoltaic panels that will provide 90 percent of the electrical needs from the sun. Village Green will be on a mass transit line, making it the largest transit-based affordable housing development in the Los Angeles area.

"Village Green is living proof," says Los Angeles Councilwoman Ruth Galanter, "that the building industry can combine new environmental technologies with affordable housing right here in one of the largest housing markets in the nation."

to avoid the costs of building new transmission lines or digging up existing lines.

Energy Efficiency in Private Buildings

Public-private partnerships are producing important benefits in greenhouse gas abatement in buildings. What all of the partnerships have in common is that they all strive to lower costs for builders, developers, and homebuyers while reducing energy and environmental impacts and improving building durability and worker safety. One suite of programs, ENERGY STAR, promotes energy efficiency in the nation's homes and buildings. Based on actions already taken by partners, ENERGY STAR estimates that by the year 2010 more than 100 MMTCE of greenhouse gas emissions cumulatively will be avoided, and consumers and businesses will save more than $38 billion.

ENERGY STAR labeled homes incorporate such features as improved insulation, sealed ducts, high-performance windows, and high-efficiency heating and cooling equipment. These homes are generally 30 percent more energy efficient than is called for by local building codes. Currently, more than 800 industry partners, including about 40 utilities, have signed agreements to promote ENERGY STAR qualified homes.

ENERGY STAR also collaborates with a wide range of building owners and users—retailers, healthcare organizations, real estate investors, state and local governments, schools and universities, and small businesses. Each partner commits to improving the energy performance of its facilities and to using the performance metrics and tools provided by ENERGY STAR. A new energy performance rating system for commercial buildings allows the most efficient buildings across the country to be awarded the ENERGY STAR label. More than 1,000 buildings were rated in 1999 using this new system, and 90 qualified for the new label.

More than 15 percent of the U.S. commercial, public, and industrial building market is enrolled in ENERGY STAR. Cumulatively, partners have invested more than $3.6 billion in energy-efficient technologies and, in 1999 alone, saved more than 20 billion kWh of energy.

Going forward, the recently introduced Building Benchmarking Tool, now allows building owners and managers to know whether their buildings have good or poor energy performance. Similar to a miles-per-gallon rating for automobiles, this new tool provides tenants and potential buyers with a better understanding of the operating expenses of buildings and thus produces additional incentives for energy efficiency via the marketplace.

Partnering with Home Builders

The *Partnership for Advancing Technology in Housing (PATH)* is a public-private partnership including the National Association of Home Builders as a charter member, along with building product and equipment manufacturers, individual home builders, developers, and members of the finance community. PATH aims to cut the environmental impact and energy use of new housing by 50 percent or more, and reduce energy use in at least 15 million existing homes by 30 percent or more by 2010.

Along with the contributions of such Federal programs as *Building America* and Energy Star *Homes*, accomplishing these objectives would save consumers $11 billion in annual energy costs and reduce annual carbon emissions in 2010 by nearly 21 MMTCE—roughly the amount that is produced by 20 million automobiles. There are more than a dozen field evaluation and demonstration sites across the nation. In addition, PATH projects are now underway in pilot communities in Denver, Los Angeles, Pittsburgh, San Fernando Valley, and Tucson, as well as an additional 25 demonstration and field evaluation sites nationwide.

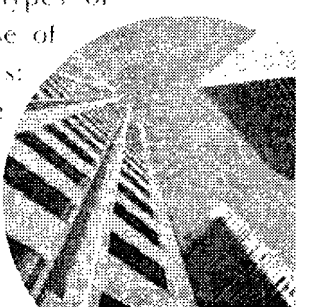
The *Building America* program is a cost-shared partnership for incorporating whole-building design improvements. To date, more than 1,200 houses have been completed under this partnership program that achieve ENERGY STAR or greater savings in heating and cooling energy usage. In the near future, an additional 4,100 houses will be built under this contribution to PATH. The energy saved annually by these 1,200 houses is more than 43,000 MBtu with a savings of more than 250 MTCE, 10,000 pounds of sulfur dioxide emissions avoided and 11,000 pounds of nitrogen oxide emissions eliminated.

Solar Buildings

The Federal government's *Solar Buildings* program has provided $2 million in funding to help develop *Transpired Solar Collectors*. Transpired solar collectors, located on building walls, are capable of converting 60-75 percent of the solar energy striking them into usable heat. Building owners and operators are finding them to be a reliable, low-cost technology that is well-suited for pre-heating the large quantities of ventilation air that most industrial and commercial buildings must pull in during the fall and winter. **Ford Motor Company, General Motors, Federal Express**, and **McDonnell Douglas** are on the growing list of industrial users of this technology.

Energy-Efficient Products Help Consumers Fight Global Warming

Using more energy-efficient appliances and other products helps reduce overall energy use in buildings and thus carbon emissions from the buildings sector. Two types of Federal programs promote the use of more energy-efficient products: Appliance standards increase the



ENERGY STAR Cumulative Benefits through 2010 for Buildings and Products ($Billions)

	ENERGY STAR Buildings	ENERGY STAR Products
Private Sector Investments	$7.0	$0.7
Savings on Energy Bills	$19.8	$26.3
Net Savings on Energy Bills	$12.8	$25.6
MMTCE Avoided	*45*	*60*

(measured since the early 1990s)

minimum level of efficiency of products on the market, while the ENERGY STAR program promotes the voluntary use of highly efficient products.

Minimum efficiency standards on residential appliances such as furnaces, water heaters, air conditioners, and refrigerators saved consumers nearly $25 billion through 1999, avoiding cumulative emissions of nearly 50 MMTCE. In 1999 alone, appliance standards saved the equivalent of the total annual energy consumption of more than three million American households. Four pending appliance standards (clothes washers, fluorescent light ballasts, water heaters, and central air conditioners) are expected to save consumers more than $10 billion and reduce cumulative emissions by 22 MMTCE through 2010.

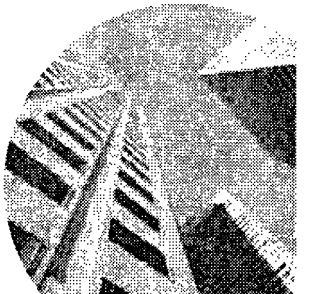
Based on one study, the ENERGY STAR label is recognized by 30 percent of the American public. As of the close of 1999, more than 1,200 manufacturers were producing 7,000 product models with the ENERGY STAR label in 31 consumer product categories, and the public had purchased 380 million ENERGY STAR products to date. The list of products is continuing to grow. Recent additions include DVD players, CD players, and compact fluorescent light bulbs.

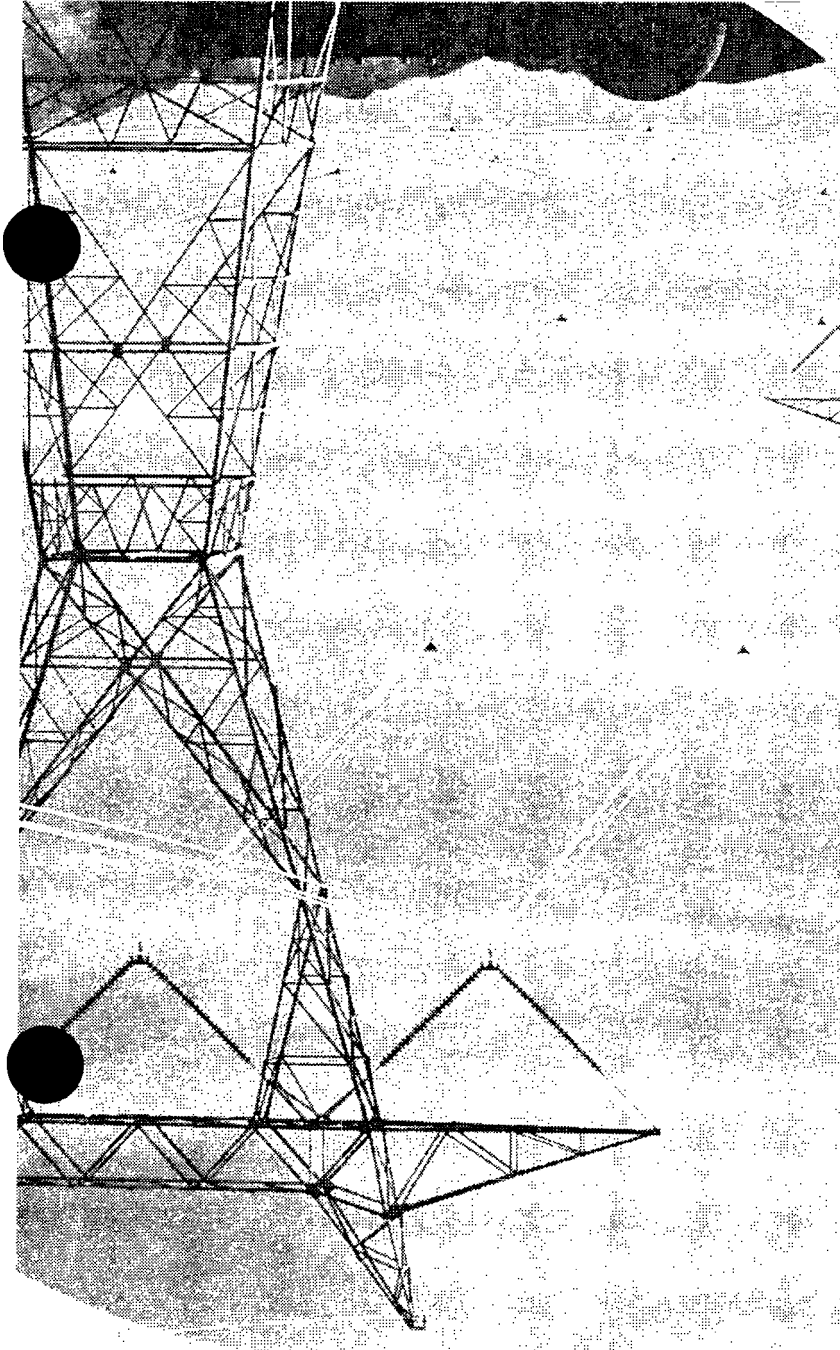
"Newmark Homes joined the ENERGY STAR homes program because, like our consumers, we feel that energy efficiency is important. We wanted our energy-efficiency program to be . . . several notches above our competitors, and being an ENERGY STAR builder guarantees that goal."

Mick Beckett
Senior Vice President
Newmark Homes

Helping Low-Income Families Save Energy

The *Weatherization Assistance Program (WAP)* provides energy-efficiency services to low-income families and individuals who might not otherwise have access to energy-saving technologies. Created in 1976, WAP focuses on households with elderly members, persons with disabilities, and children. Since the program's inception, WAP has retrofitted almost 5 million homes, saving an estimated 7 MMTCE annually. In 2001, the Federal government expects to provide state grants to weatherize 74,751 homes, saving 110,000 MMTCE annually and $1.80 in energy costs for every $1.00 invested over the life of the measures.





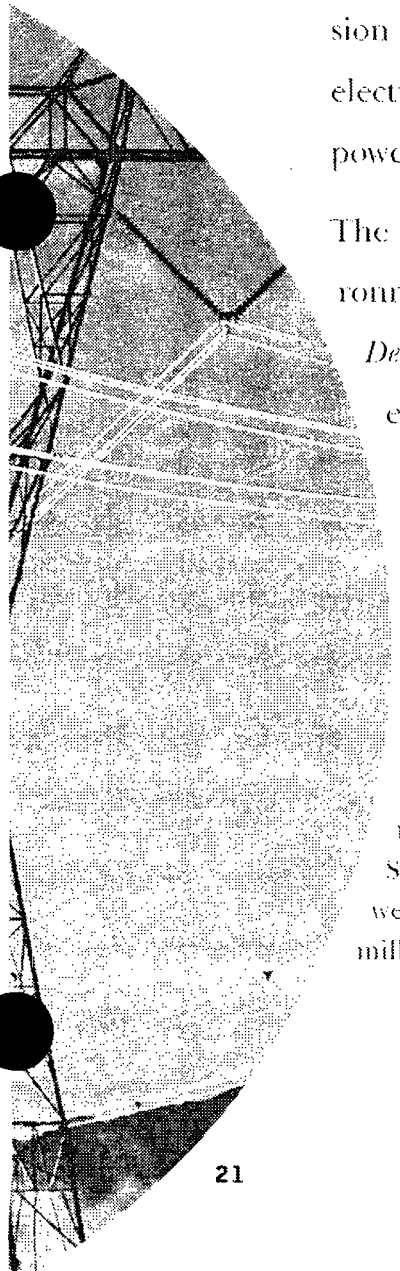
TOO MANY

Chapter 3. Electricity

Reducing greenhouse gas emissions from the electricity sector is a national priority in the United States. U.S. climate efforts in this area include improving the efficiency of electricity generation, substituting lower carbon fuels and carbon-free renewables, reducing the demand for electricity through greater end-use efficiency, and restructuring the electric power industry.

At the Federal level, these efforts are being accomplished through a variety of voluntary partnerships. In addition, Federal funding is sponsoring research and development of promising low- or no-emission technologies for generating electricity from fossil power, hydroelectric power, wind power, solar power, biomass gasification, nuclear power, and geothermal heat pumps.

The U.S. private sector is also demonstrating its leadership and environmental stewardship with initiatives such as the *Green Power Market Development Group*, a group of 11 major corporations that is exploring a variety of green energy options. (See page 22.)



Electric utilities account for approximately 29 percent of U.S. emissions and are, collectively, the single largest source of the nation's greenhouse gases. Carbon dioxide (CO_2), a byproduct of the combustion of fossil fuels, accounts for the majority of the sector's emissions, but methane (CH_4), nitrous oxide (N_2O), and sulfur hexafluoride (SF_6) also are emitted during the generation, transmission, and distribution of electricity.

Carbon-free technologies such as nuclear energy, hydroelectric, and other renewables, supply 30 percent of the electricity produced in the United States while generating almost no greenhouse gas emissions. If these sources were not available, greenhouse gas emissions would be greater by at least 250 million metric tons of carbon (MMTCE) each year.

Growing Green Power

A prime example of leadership by example in the corporate world is the **Green Power Market Development Group (GPMDG),** which was organized in May 2000 to support the development of green energy markets in the United States. The members, a number of private corporations not directly involved with the electric utility industry, are exploring a variety of green energy purchase opportunities to identify those that are cost-competitive. This is a long-term process with companies hoping to support market development over a 10-year period.

As members of the GPMDG, 11 major U.S. businesses are working with the **World Resources Institute** and **Business for Social Responsibility** to purchase 1,000 megawatts of new green energy capacity and otherwise provide support to the development of green energy markets. The GPMDG believes that such markets are essential to provide competitively priced energy that also protects the Earth's climate and reduces conventional air pollutants. Corporate members of the group include **Alcoa, Cargill-Dow, Delphi, DuPont, General Motors, IBM, Interface, Johnson & Johnson, Kinko's, Oracle, and Pitney Bowes.** Together, these companies account for about 7 percent of industrial energy use in the United States.

Electricity Sector Restructuring

A core element of President Clinton's climate change program involves restructuring the electricity industry in a manner that will reduce greenhouse gas emissions while cutting consumers' energy bills. The Administration's restructuring proposal involves using market forces to obtain the greatest amount of energy from each unit of fuel. Most states have restructuring activities underway.

The President's proposal also calls for a *Renewable Portfolio Standard* to increase the use of electricity from non-hydro renewable sources to at least 7.5 percent of sales by 2010. It also provides for a *Public Benefits Fund* of $3 billion per year, some of which will be used to spur greater investment in energy efficiency and renewable energy technologies. This plan is projected to reduce carbon emissions by roughly 40 to 60 million MMTCE in 2010 while saving consumers at least $20 billion per year on their electricity bills. The plan is now under consideration by the U.S. Congress.

"We have a corporate goal of 10 percent of our energy supply from renewable sources. We're excited about participating in [the Green Power Market Development Group] because we hope it will help us to meet that commitment."

Paul Tebo
Vice President for Safety, Health and Environment
DuPont

Bioenergy

Biomass is plant matter such as trees, grasses, agricultural crops, and other material derived from living matter that can be used as a solid fuel or converted into liquid or gaseous fuels to supply electricity, heating, transportation, and other energy markets.

Switchgrass to Reduce Coal Emissions

Switchgrass once grew abundantly in southern Iowa's rolling hills. The Chariton Valley Biomass Project, which was initiated in 1996, is evaluating the possibility of growing switchgrass on marginal land as a biomass crop to replace a portion of the coal burned at a local generating station. A public-private initiative that is expected to be complete in 2004, the Chariton project is also looking at the economic benefits of growing switchgrass as a profitable alternative to row crops. Other benefits include the fact that the plant's massive root system sequesters carbon and filters pesticides and herbicides. One of the project's additional goals is to ensure minimal or no effect on wildlife when harvesting occurs. Co-firing 5 percent switchgrass with coal can reduce emissions by almost 44,000 MTCE per year.

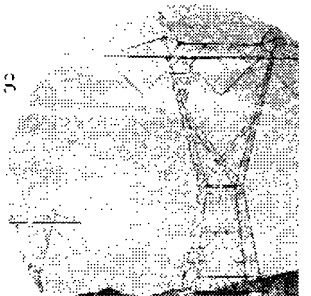
Next to hydropower, more electricity is generated from biomass than from any other renewable energy resource in the United States. The 37 billion kilowatt-hours of electricity produced each year from biomass are more than the entire state of Colorado uses annually.

Vermont biomass gassification plant

On August 12, 1999, President Clinton issued Executive Order 13134 on *Bioproducts and Bioenergy*, coordinating Federal efforts to accelerate biobased technologies to convert sustainably grown crops, trees, and other biomass into fuels, power, and products. The goal is to triple U.S. use of bioproducts and bioenergy by 2010. Meeting this goal could create $15 to $20 billion in new income for farmers and rural America, and reduce annual greenhouse gas emissions by as much as 100 MMTCE—the equivalent of taking more than 70 million cars off the road.

In addition to aggressively sponsoring bioenergy, this initiative supported the development of the world's first efficient, low-pressure biomass gasifier capable of producing a high-quality fuel. The gasifier, which is operating in Vermont, can convert 200 tons of solid biomass per day into a clean-burning gas with an energy content that is high enough for electricity generation. In addition to providing clean energy (with extremely low emissions of SOx and NOx), gasifiers increase the number and types of biomass fuels suitable for power systems.

Another promising avenue being pursued is co-firing biomass with coal. Co-firing involves substitut-



From Brownfields to Brightfields

The *New Center for Green Industry* in Chicago, Illinois, is an alliance between the City of Chicago, Commonwealth Edison, the Spire Corporation, and the U.S. government. The goal is to develop one of the city's brownfields by building a factory for manufacturing solar panels and constructing a solar energy system that will supply some of the company's electricity needs and serve as a demonstration site. The project will create 100 jobs in Chicago in manufacturing and supporting industries when the plant opens in the winter of 2000.

The New Center for Green Industry solar systems will produce more than 22 million kilowatts of power annually and spare the region's air almost 3,093 MTCE over the next five years. The plant will produce enough panels to meet local solar demand, and local production will lead to cost reductions for consumers in the region in addition to stimulating the market for photovoltaics.

ing biomass for a portion of coal in an existing power plant furnace. It is the most economic near-term option for introducing new biomass power generation. Compared to the coal it replaces, biomass reduces SO_2, NOx, and net greenhouse gas emissions. There is little or no loss in efficiency from adding biomass, which allows the energy in biomass to be converted to electricity with the high efficiency (in the 33-37 percent range) of a modern coal-fired power plant. By the year 2010, the potential market for biomass power systems could approach 10,000 megawatts—enough electricity for 10 million households. (For more on bioenergy, see Chapter 4, Transportation, and Chapter 5, Agriculture and Forestry.)

Distributed Energy

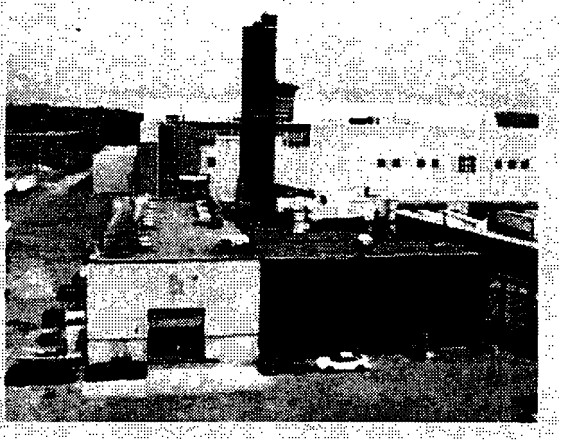
Utility restructuring, emerging technology, environmental concerns, and an expanding electricity market are important drivers facilitating the emergence of distributed generation as an important new energy option. Public-private partnerships such as the *Distributed Energy Resources* program offer the promise of producing electricity in a fundamentally different way through a dispersed fleet of small-scale electric generators providing power at or near customer sites to meet specific needs. The power also is to be produced near the grid to support economic operation of existing power stations.

Mostly fueled by natural gas, liquid fuels, or renewables, these dispersed generation resources can bypass congested portions of the electric transmission and distribution system. On-site cogenerated electricity and heat production, for example, can allow consumers to use the heat byproduct of electricity production, saving dollars as well as reducing primary energy loads.

Distributed systems include combined cooling, heat, and power systems, biomass-based generators, combustion turbines, concentrating solar power and photovoltaic systems,

Leading the Way with CHP

Malden Mills, a fabric manufacturer in Lawrence, Massachusetts, installed a cogeneration system to replace generating and heating equipment destroyed in a fire. When completed, the combined heat and power system—developed with the assistance of the *Advanced Turbine Systems (ATS)* program—will lower the company's annual energy costs and reduce emissions of sulfur dioxide by 99.6 percent, NOx by 83 percent, and CO_2 by 26 percent compared with grid-supplied power.



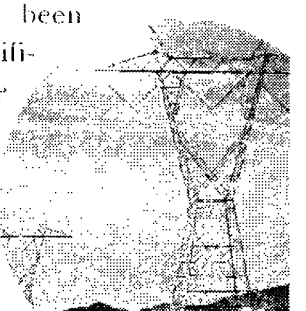
fuel cells, microturbines, engines/generator sets, and wind turbines storage and control technologies.

Combined Heat and Power

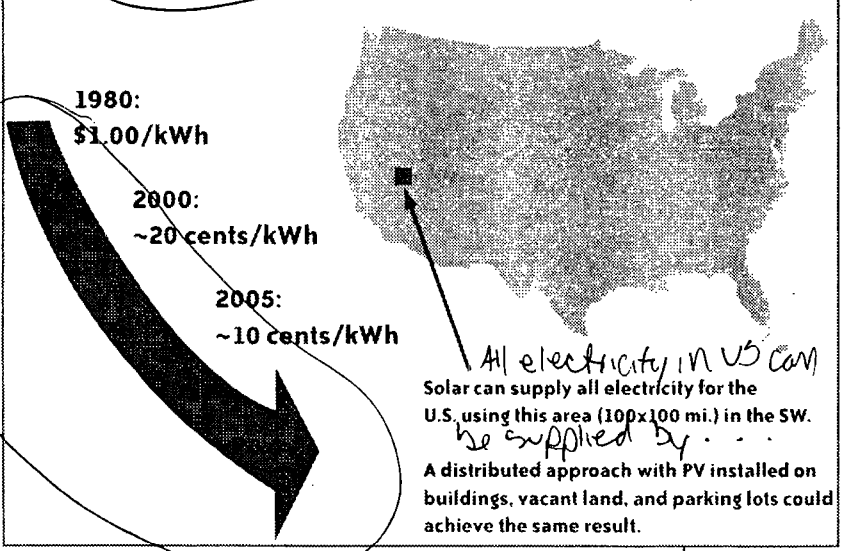
The U.S. government is actively supporting research, development, and deployment of combined heat and power (CHP) systems. Combined heat and power systems generate electricity and capture waste heat and use it to heat and cool buildings, or provide steam in industrial processes. The use of waste heat results in total system efficiencies of 70 to 90 percent—a considerable performance gain over the 33 percent average efficiency of conventional central electricity generating plants. In 1998, the U.S. government launched the *Combined Heat and Power Challenge* program with the goal of doubling U.S. combined heat and power capacity by 2010. By substituting 46 gigawatt of CHP capacity for conventional capacity, annual greenhouse emissions will be reduced by 30 MMTCE and annual NOx emissions by hundreds of thousands of tons. Recent analyses have concluded that this goal can be achieved through electric utility restructuring and modifications to tax policy and air regulations.

Solar Power Equals Emission Free Electricity

The United States is capitalizing on opportunities to expand the use of solar energy. This greenhouse gas-free technology promises to make a significant contribution to the nation's energy economy in the future. By 2010, solar power could help avoid emissions totaling 1.5 MMTCE. Although the cost of solar technologies has been reduced significantly in the last 15 years,

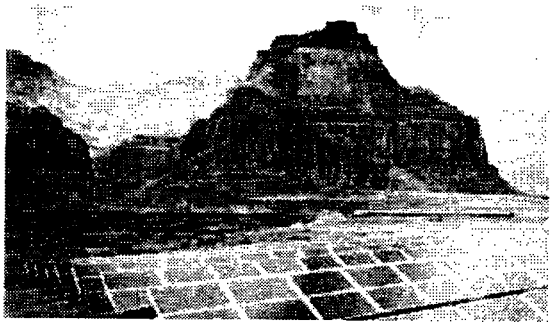


Photovoltaics: Increasingly Competitive



Solar can supply all electricity for the U.S. using this area (100x100 mi.) in the SW.

A distributed approach with PV installed on buildings, vacant land, and parking lots could achieve the same result.



Catching Rays by the Lake

The Dangling Rope Marina, on the northern shore of Glen Canyon's Lake Powell in the state of Utah, is a popular rest stop for travelers and tourists. The facility was once run using a power system that consumed about 65,000 gallons of diesel fuel annually. To find a greener alternative, several private and public organizations teamed up on a $1.5-million renewable energy project. In 1996, the marina replaced the old diesel power system with a new 115-kilowatt photovoltaics-hybrid system with 384 PV panels.

During the new system's 20-year operating life, it is expected to save as much as $2.3 million in energy costs while dramatically reducing greenhouse gas emissions and other pollutants. The project at Dangling Rope Marina on Lake Powell is just one example of more than 30 U.S. government projects in 15 states that are producing electricity from photovoltaics.

One goal of GeoPowering the West partnership is to double the number of states with geothermal facilities to eight by 2008.

Should you move to geopower?

more technical advances are needed to compete with low-priced fossil fuels in major energy markets. Toward this end, the U.S. government's solar energy program is providing support for research by world-class scientists and engineers in industry, universities, and the national laboratories.

Over the past 20 years, Federal support for *Photovoltaic Energy Systems R&D* has resulted in a 90 percent reduction in the cost of producing electricity from photovoltaics (PV). As a result, between 1994 and 1998, energy produced by PV modules more than doubled, growing from 26 megawatts in 1994 to more than 61 megawatts in 1998.

The lowest-cost solar power option available today is *Parabolic Trough* technology. These systems use curved mirrors to focus sunlight on a receiver pipe. Parabolic-trough technology is being used in California's Mojave Desert at nine power plants that sell their power to the local utility, **Southern California Edison.** The plants, which total 354 megawatts of installed capacity, generate enough power to meet the needs of approximately 500,000 people with no emissions of greenhouse gases.

President Clinton's *Million Solar Roofs* initiative seeks to place solar energy systems on one million roofs by 2010. To date, commitments for one million systems have been made, and more than 100,000 have been installed, indicating the potential for widespread market penetration of solar technologies. The President's *Climate Change Technology Initiative* includes $132 million in proposed tax credits over five years to support this program. Meeting the initiative's 2010 goals will reduce carbon emissions by an amount equivalent to removing 850,000 automobiles from the roads.

The U.S. government's *Brightfields* initiative, launched in 1999, is aimed at using abandoned industrial sites—known as brownfields—for producing pollution-free solar

A New "Crop" Sweeps the Plains

Since 1998 more than 260 megawatts of new wind generating capacity have been installed on farmlands in the Great Plains region of the United States. This new capacity is not only helping to satisfy the growing demand for clean electricity, it is also generating benefits in the form of substantial economic gains for farmers, landowners, and local communities. Wind farming creates construction and service jobs in rural regions and provides a new source of income for U.S. farmers, Native Americans, and other rural landowners, as well as a new source of tax revenues for local municipalities.

One example is the Lake Benton Wind Power Plant, which was the world's largest wind-generation facility when it was completed in 1998 by **Enron Wind Corporation**. This 107-megawatt plant can generate enough electricity to power 43,000 homes. The facility displaces greenhouse gases equivalent to removing 50,000 new cars and light trucks from the road.

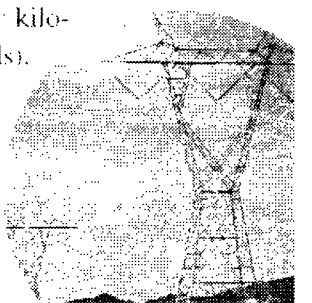
energy. Currently, Brightfields projects are underway in cities across the United States, including Chicago, Miami, New Haven, and San Diego. The Brightfields model has proven extremely successful: Redeveloping brownfield sites with solar energy manufacturing benefits local communities through economic development and environmental protection.

The Million Solar Roofs *initiative seeks to place solar energy systems on one million roofs.*

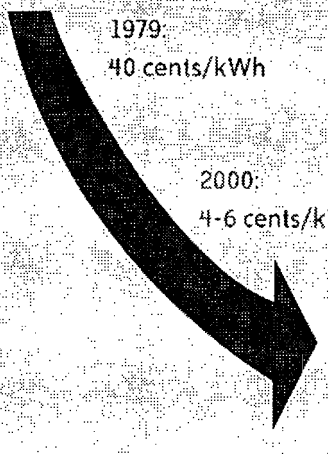
Wind Power

In the 1990s, wind power was the world's fastest growing source of energy. Worldwide, wind-generating capacity grew 36 percent (3,600 megawatts) in 1999, bringing global wind-generating capacity to 13,400 megawatts. In the United States, more than 700 megawatts of new capacity was added, representing a 41 percent increase in capacity.

The U.S. wind industry is completing the research, testing, and field verification needed to develop fully advanced wind energy technologies that lead the world in cost-effectiveness and reliability. The U.S. government's *Wind Energy Systems* program was established to develop advanced wind turbine technologies capable of reducing the cost of wind energy to 2.5 cents per kilowatt-hour (in 15 mile-per-hour winds).



Wind: New Cash Crop for the 21st Century



- Increased turbine sizes
- R&D advances
- Manufacturing improvements

I can't we get by windmills? where are #'s from CITE

Green Technology Invades the Army

In 1994 Fort Polk, Louisiana, adapted 4,003 U.S. Army housing units to use geothermal heat pump (GHP) energy. The resulting energy savings are extraordinary. Fort Polk achieved a reduction of 43 percent or 7.5 megawatts of peak summer load and improved its load factor from 52 percent to 62 percent. In addition, service calls on hot summer days dropped from 90 per day to virtually none, testifying to the reliability of GHP systems. The U.S. Army saved about 22 percent compared with previous maintenance costs. The Fort Polk project received Vice President Gore's "Hammer Award" for "hammering away at building a better government"—one that works better and costs less.

Another Federal initiative, *Wind Powering America*, was announced in June 1999 with a goal of supplying 5 percent of U.S. electricity through wind technologies by 2020. Meeting this goal will avoid greenhouse gas emissions of more than 30 MMTCE.

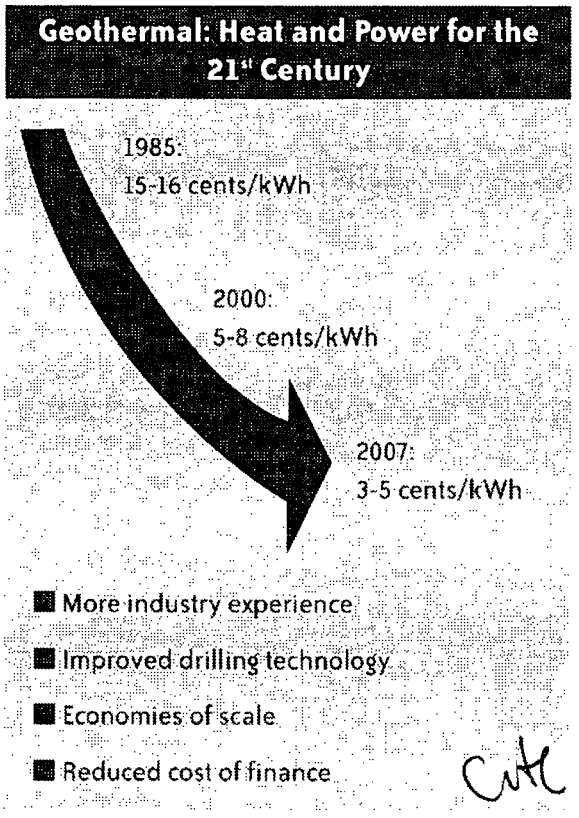
Geothermal Power

Geothermal heat pump (GHP) technology extracts heat from the ground during the heating season and discharges waste heat into the earth during the cooling season. The *Geothermal Heat Pump Consortium (GHPC)* is a partnership working to inform the public about the technology and to expand the GHP market in the United States.

GHPs can reduce energy consumption and corresponding emissions by 63 to 72 percent when compared with electric resistance heating using standard air-conditioning equipment. In addition, GHPs reduce peak demands. For that reason, some electric utilities offer special financing, rebates, or electric rates for customers who use GHPs.

Approximately 400,000 GHPs are in use today for heating and cooling of residential, commercial, and institutional buildings throughout the United States. Savings from GHP units installed between 1995 and 1998 are estimated to be $29 to $39 million. The growth target of the GHPC and the Federal government is to install 2 million GHPs by the year 2005. Achieving this goal will reduce greenhouse gas emissions by about 1.2 MMTCE per year.

In January of 2000, the public-private *GeoPowering the West* partnership was launched to increase dramatically the use of geothermal energy in the western United States. The goals are to convert 10 percent of electricity use in the western states to geothermal energy by 2020, increase the number of homes using geothermal energy to seven million by 2010, and double the number of states with geothermal facilities to eight by 2008. The benefits will include 20 MMTCE displaced in 2020.



Advanced Technologies for Fossil Fuels

The U.S. government sponsors a number of R&D programs to develop more efficient generating technologies and high-efficiency coal-fired generating plants.

The U.S. government's new *Power Systems Program* is developing more efficient coal and natural gas power generating technologies that can produce power with about 40 percent fewer carbon emissions than conventional technologies using those fuels. The program will result in "power-plexes" that can use multiple feedstock materials (coal, gas, biomass, and opportunity fuels like petroleum coke) to produce a slate of market-relevant energy products, including electricity, steam, chemicals, and alternative fuels.

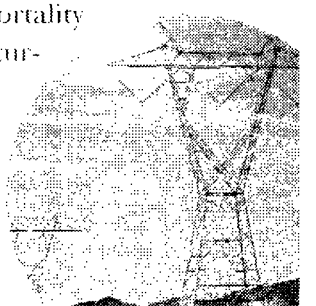
Research is now underway on combining power-plexes with carbon sequestration in geological formations. The research itself will require a little over a decade to complete, followed by a period for market acceptance of the new technology. As a result, benefits will not begin to accrue until 2015 but will be quite substantial by 2030. Deployment of the new coal and gas systems in the United States is expected to yield reductions of 5 MMTCE by 2015 and 75 MMTCE by 2030.

Nuclear Power

Nuclear energy provides approximately 20 percent of all U.S. generated electricity, and its continued role in electricity production is important for our economic and energy security. The Administration's policy focuses on the safety of existing reactors, advancing nuclear power plant designs, and safe long-term storage of spent nuclear fuel. Three programs are implementing these policies. The *Nuclear Energy Plant Optimization Program (NEPO)* is applying new technologies to increase plant life, reliability, availability, and productivity. The *Nuclear Energy Research Initiative (NERI)* is researching breakthroughs in nuclear fission and reactor technology. *Generation IV Nuclear Power Systems* is developing the next generation of reactors that are more economic, resistant to proliferation, produce less waste, and have improved safety features.

Hydropower

Hydropower currently generates about 10 percent of the nation's electricity. Maintaining existing hydropower generation, however, is at risk due to a mix of environmental, regulatory, and economic pressures. The federal government is supporting the development of advanced technology that will allow the nation to maximize the use of hydropower resources while minimizing adverse environmental impacts. The main focus is on the development of a "fish-friendly turbine" that will decrease fish mortality to 2 percent, compared with the current 5 to 30 percent mortality.



Utilities Reducing Emissions Now

Climate Challenge is a voluntary effort between the Federal government and the electric utility industry for identifying and implementing cost-effective activities to reduce, avoid, or sequester greenhouse gases. Currently, Climate Challenge's partner utilities number more than 600 and represent 71 percent of 1990 U.S. carbon emissions from electricity generation. Utilities estimate that pledged Climate Challenge actions will reduce emissions by as much as 47 MMTCE in 2000

Superconductors

High-temperature superconductors (HTS) conduct electricity with high efficiency and very little loss when cooled to liquid nitrogen temperatures. A *Superconductivity Partnership Initiative (SPI)* stands at the forefront of worldwide efforts to advance research and development of high-temperature superconducting power equipment for energy transmission, distribution, and industrial use.

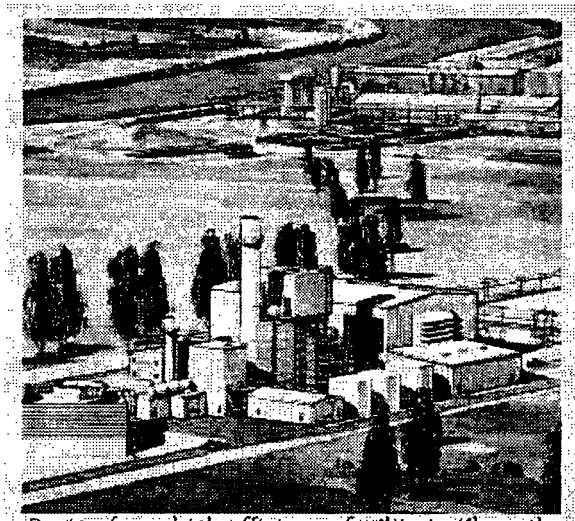
Among the accomplishments of the partnership is a new industrial HTS motor that is smaller, lighter, and more efficient than conventional motors. Other applications include current controllers that protect utility equipment, improve reliability, and increase stability of the distribution grid, and underground transmission cables that can double the power capacity of current technology. The potential global market for HTS products by the year 2020 might reach as high as $100 billion, saving 5 MMTCE in 2015 and 9 MMTCE by 2030.

SF_6 Emissions

The *SF_6 Emissions Reduction Partnership for Electric Power Systems*, initiated in early 1999, provides a forum for the electric power industry to work together with the U.S. government to reduce SF_6 emissions to technically and economically feasible levels. SF_6, a gaseous dielectric used in circuit breakers, gas-insulated substations, and switchgear, allows for the safe transmission and distribution of electricity. As of May 2000, 58 electric utility companies had joined the partnership. (See Chapter 1, Industry.)

State and Local Initiatives in the Electricity Sector

Many state and local governments have initiated their own programs to address climate change issues. Programs in Oregon, Idaho, and California are highlighted here.



Design for a high-efficiency facility in Klamath, Oregon

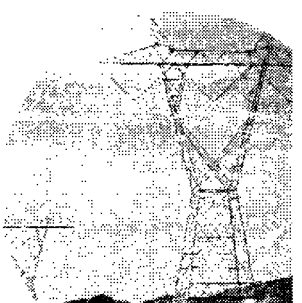
Ambitious Goals—Flexible Means

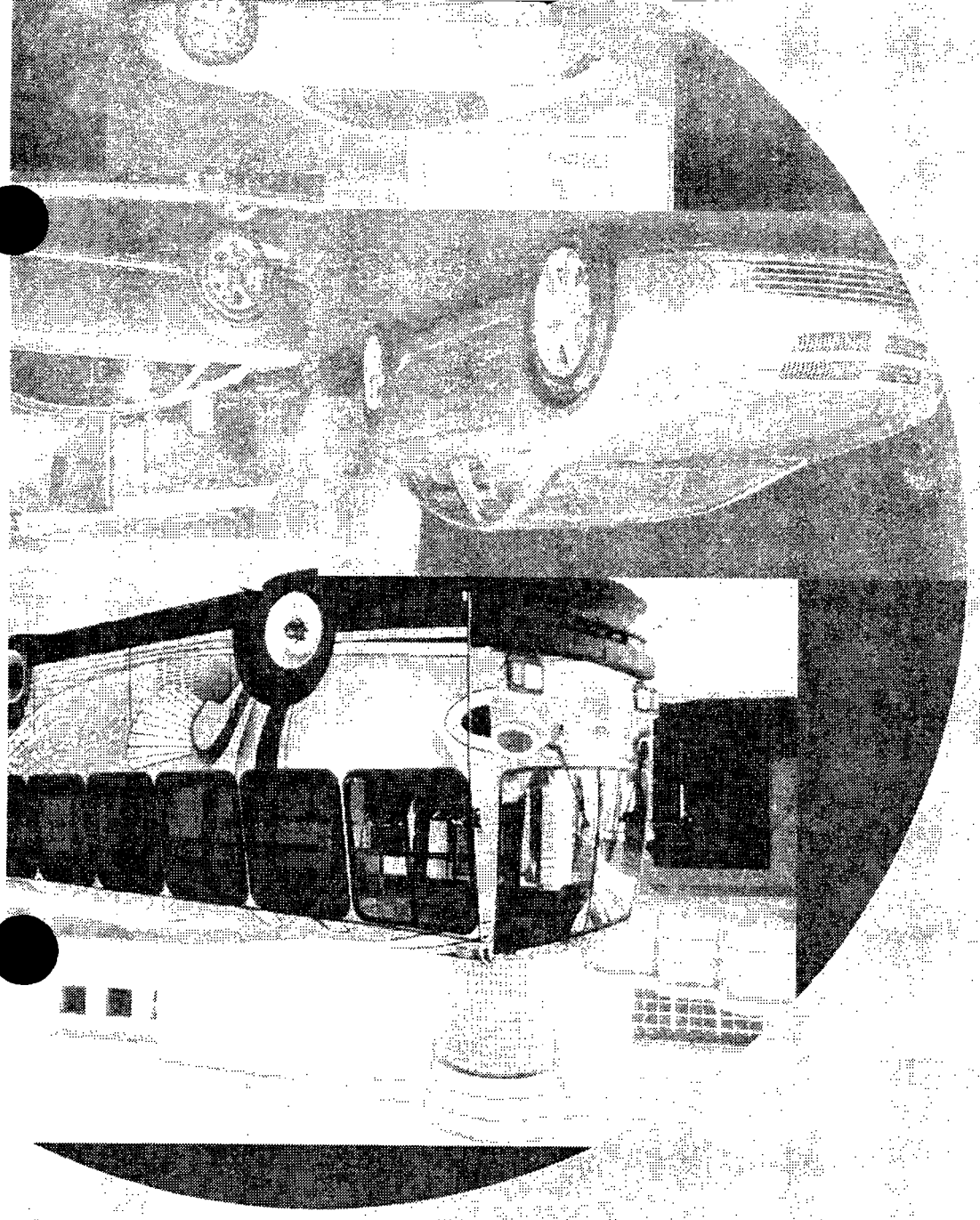
According to an **Oregon** law enacted in 1997 and updated in 2000, energy facility developers may choose from several options to meet the CO_2 emission standards. These include building high-efficiency facilities using cogeneration, providing offset projects that avoid, reduce, or sequester CO_2 emissions, or paying a fee of $2.30 per MTCE. A developer using the "monetary path" must provide funds to the **Climate Trust,** an independent, nonprofit organization that qualifies under the statutory requirements to receive offset funds and acquire CO_2 offsets.

In 1997 **Oregon** enacted legislation that authorizes the state's Energy Facility Siting Council to set *CO_2 Emission Standards for New Energy Facilities*. Facilities for which the council has set standards include base-load plants, non-base load (peaking) plants, and non-generating energy facilities. The standard for base-load gas plants requires a net emissions rate of 0.675 pounds of CO_2 per kilowatt-hour, which is 17 percent below the most efficient plant in operation in the United States in 1999.

Geothermal energy has been used in **Idaho** to provide heat and water since 1892. Following the energy crisis of the mid-1970s, geothermal heating gained recognition as a viable alternative to petroleum-based energy generation. To ensure the sustainability of this resource, the Idaho Department of Water Resources created the *Base Point Low Temperature Geothermal Resource Ground Water Management Area*. Currently, the ground water management area has geothermal projects at four locations, and the projects are saving an estimated 50.4 gigawatt-hours of electricity per year, which equates to an annual cost savings of $1 million.

In 1997 **California** created a *Renewable Resources Trust Fund*, administered by the California Energy Commission, with the purpose of promoting renewable generation and developing a strong consumer market for renewable energy. The law authorizes the collection of $540 million from investor-owned utilities to be used as incentives or rebates for buyers, users, producers, and promoters of renewable energy in the state. The fund provides financial incentives for 10 million megawatt-hours of renewable power per year, equating to a reduction of approximately 1.6 MMTCE of greenhouse gases, along with 140 metric tons of SO_2 and 1,727 metric tons of NOx, if the electricity were generated via conventional means.

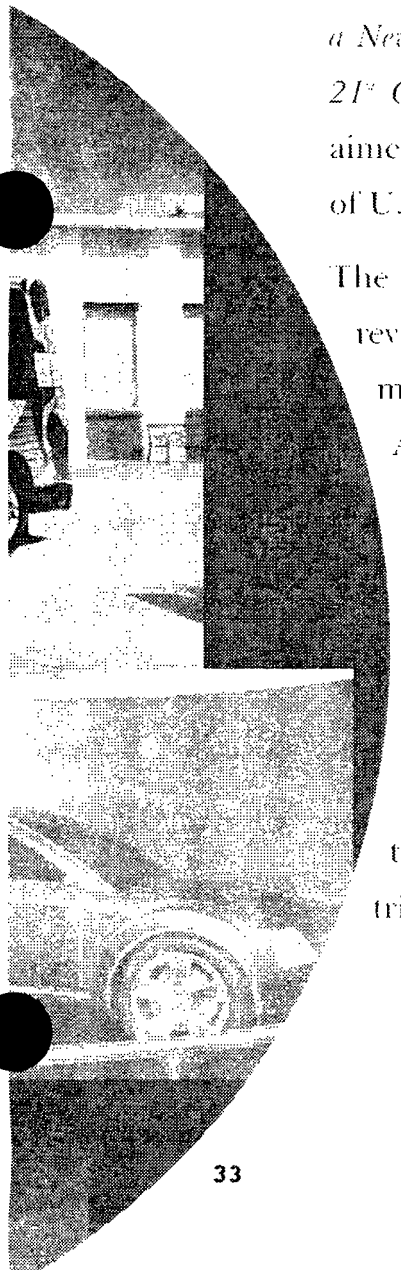




Chapter 4. Transportation

The United States is pursuing an array of strategies to reduce transportation-related greenhouse gas emissions. In 2000, the "big three" U.S. automakers all announced a number of important breakthroughs in the development of new more fuel-efficient vehicles. Among these were the unveiling of diesel-battery hybrid concept cars that are capable of traveling 70-90 miles per gallon (gasoline-equivalent) and commitments to more fuel-efficient Sport Utility Vehicles (SUVs).

Many of these breakthroughs depend on technology developed, at least in part, with the Federal government through the *Partnership for a New Generation of Vehicles (PNGV)*. In 2000 a new partnership, the *21st Century Truck Initiative*, was launched to develop heavy trucks aimed at doubling—and, in most cases, tripling—the fuel economy of U.S. trucks.



The Federal government also is seeking to lead by example by revamping its procurement policies to help stimulate markets in more fuel-efficient and alternative fuel vehicles. For example, the Administration recently issued an Executive Order that requires Federal agencies to reduce annual gasoline and diesel fuel consumption by at least 20 percent by the end of 2005.

At the state and local levels, governments are implementing a host of programs directed toward reducing transportation sector emissions by motivating consumer interest in fuel-efficient vehicles and promoting development patterns that reduce transportation demand and increase transit, bicycle, and pedestrian access.

New diesel-battery hybrid vehicles achieve 70 to 90 miles per gallon.

Revving Up Hybrid Vehicle Incentives

On May 11, 2000, **Maryland** Governor Parris Glendening signed into law a new package of tax incentives for energy efficiency and renewable energy technologies. The Clean Energy Incentive Act is structured to increase the state's market for advanced technologies that save energy or generate electricity from renewable sources. Among the specific provisions included in this legislation is a $2,000 reduction in the state titling taxes for buyers of new electric or qualified hybrid vehicles.

Accounting for 32 percent of all U.S. emissions, the transportation sector is the second largest and fastest growing source of greenhouse gases. Collectively, passenger cars and light-duty trucks contribute 58 percent of all of the sector's greenhouse gas emissions, and heavy-duty trucks contribute another 16 percent. Other sources—aviation, marine, recreational vehicles, rail, and farm equipment—account for the remaining greenhouse gas emissions.

"Now is the time to lead the world in the emerging market for more fuel-efficient vehicles of all kinds."

Vice President Al Gore
April 2000

Fuel-Efficient Trucks

The *21st Century Truck Initiative* is a 10-year research and development partnership that was announced by Vice President Gore in April 2000. This initiative between the U.S. government and corporate partners will seek to increase the fuel economy of four classes of vehicles that, together, account for more than 90 percent of all fuel used by U.S. trucks. The program's cost-share investments in advanced technologies will lead, within 10 years, to production prototypes that will do the following:

- Triple the fuel economy (measured in ton-miles/gallon) of heavy pickups, large delivery vans, and full-sized passenger buses (relative to today's comparable vehicles).
- Double fuel economy of 18 wheeler long-haul trucks.
- Improve safety (technologies will be designed to cut truck fatalities in half).
- Achieve superior operational performance and lower costs for truckers.
- Exceed expected emission requirements for 2010 (likely to be much more stringent than today's standards).

Fuel-Savvy Sedans

The *Partnership for a New Generation of Vehicles (PNGV)* is a major 10-year research and development program to develop revolutionary new technologies that could triple the fuel economy (and cut carbon dioxide emissions by 67 percent) of midsize family sedans. PNGV aims to meet this stretch fuel economy goal as well as stringent criteria emissions standards by 2004 without sacrificing performance, safety, aesthetics, or affordability.

In 2000, the program achieved an important milestone when each of the participating automakers introduced concept cars that go a long way toward meeting the program's visionary goals:

- **General Motors** introduced the Precept diesel-battery hybrid vehicle, which achieves 90 mpg using diesel fuel (equivalent to 80 mpg using gasoline).
- **Ford Motor Company** introduced the Prodigy diesel-battery hybrid, which gets about 80 mpg using diesel fuel or the equivalent of 70 mpg with gasoline.
- **Daimler-Chrylser** introduced the ESX3 diesel-battery hybrid, which achieves more than 70 mpg in gasoline equivalent.

To further promote the development of a market for advanced technology vehicles, the Administration has proposed a federal income tax credit of up to $3,000 per vehicle for consumers who purchase hybrid vehicles that meet certain design criteria. This proposal has been introduced in the U.S. Congress.

More Fuel-Efficient SUVs

Recently, U.S. automakers announced a series of commitments to improving the fuel efficiency of SUVs:

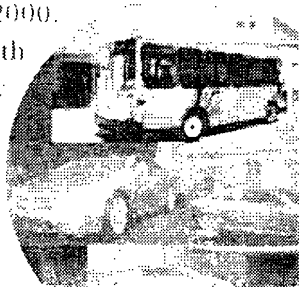
- In April 2000, **Ford Motor Company** announced production plans for the gasoline-battery hybrid Escape, a small SUV with a target city fuel economy of 40 mpg. The Escape is slated for introduction to the market in 2003. In July 2000, Ford also announced that, between 2000 and 2005, it will voluntarily commit to improve the average fuel economy of its SUVs by 25 percent.
- In August 2000, **General Motors** announced that a hybrid version of its Silverado/Sierra full-size pickup will be offered to consumers in 2004. The new vehicle is expected to be at least 15 percent more fuel-efficient than the company's conventional version. GM further announced that it intends to be the industry leader on overall fuel economy for light trucks in 2005.

Preliminary estimates by the U.S. Environmental Protection Agency indicate that these commitments could result in cumulative emissions reductions of up to 100 MMTCE through 2020. In addition, **Daimler-Chrysler** announced that, if the Federal government offers tax incentives to make the vehicle cost-effective, it is prepared to bring out a hybrid version of its Dodge Durango SUV that would be 20 percent more fuel-efficient than its current model.

Other Advances in the U.S. Automobile Market

Two Japanese automakers recently introduced advanced technology vehicles into the U.S. market, setting the stage for further progress in reducing greenhouse gas emissions from the U.S. transportation sector.

- **Honda** introduced Insight, a gasoline-battery hybrid, in 1999. The Honda Insight offers fuel economy ratings of 61 mpg city and 70 mpg highway. Honda plans to sell approximately 6,500 of the cars during 2000.
- **Toyota** introduced Prius, a compact, gasoline-battery hybrid, in August 2000. Toyota anticipates that the Prius, with fuel economy ratings of 45 mpg city



Brewing Motor Fuel in Louisiana

Ground was broken for the first commercial biomass-to-ethanol plant in October 1998 in Jennings, Louisiana. **BC International Corporation** will use a patented, genetically engineered microorganism in its process of converting organic material to ethanol, a form of alcohol used as clean-burning motor fuel. The ethanol produced by the Jennings plant is expected to displace almost 0.5 million barrels of imported oil annually. The U.S. government invested $11 million to help with the retrofit of an existing industrial site in Jennings. The total renovation cost is estimated to be $90 million, for which the private sector is providing about 88 percent of the total capital investment.

Powering Vehicle Fleets with Biodiesel

A blend of 20 percent biodiesel (an alternative motor fuel produced from renewable resources such as vegetable oil or animal fats) and 80 percent diesel fuel is referred to as B20. A one-year demonstration at a **U.S. government research center in Beltsville, Maryland,** began August 1999. Currently, all 64 diesel-powered vehicles on the east side of the facility use the B20 fuel blend. The vehicles include pick-up trucks, tractors, ride-on lawnmowers, and a compost turner.

Fuel blending is achieved on-site in underground storage tanks, and no engine conversion is required to use B20. Replacing petroleum diesel with B20 reduces carbon dioxide emissions 16 percent. B20 also reduces emissions of carbon monoxide (13 percent), particulate matter (18 percent), and sulfates (20 percent)—three pollutants that pose health risks in certain areas of the nation.

and 52 mpg highway, achieve sales on the order of 1,000 cars per month.

In addition, Honda announced plans to offer a fuel cell vehicle in 2003.

Putting Clean Vehicles on the Streets

Over the past six years, nearly 80 communities across the country have joined the *Clean Cities* program. This voluntary, locally based, public-private partnership is accelerating the deployment of alternative fuel vehicles (AFVs) and building local AFV fueling infrastructure that can supply alcohol fuels, liquefied petroleum gas, electricity, and natural gas. The Clean Cities program counts among its successes approximately 170,000 AFVs in both public and private fleets, plus more than 4,000 alternative fuel refueling stations. In 1999, these vehicles and alternative fuels displaced approximately 170 million gallons of gasoline and diesel fuel and 310,000 MTCE.

Leading by Example with Federal Fleets

On April 21, 2000, President Clinton signed Executive Order 13149, *Greening the Government through Federal Fleet and Transportation Efficiency*. By the end of Fiscal Year 2005, all Federal agencies operating 20 or more motor vehicles within the United States must implement a strategy for reducing their entire fleet's annual petroleum consumption by at least 20 percent, relative to FY 1999 petroleum consumption levels.

The Executive Order further directs the agencies to establish fleets by 2005 that use alternative fuels a majority of the time. In addition, agencies must increase the average fuel economy rating of their light-duty vehicle acquisitions by at least 1 mile per gallon (mpg) by 2002 and 3 mpg by 2005. They are required to explore a variety of other approaches to reducing fuel consumption, such as substituting cars for light-duty trucks, increasing vehicle load factors, and reducing vehicle miles traveled.

By reducing America's consumption of petroleum by some 14 million gallons and reducing greenhouse gas emissions by an amount equal to 160,000 MTCE, greening the Federal fleet will enhance U.S. energy security and reap significant environmental benefits.

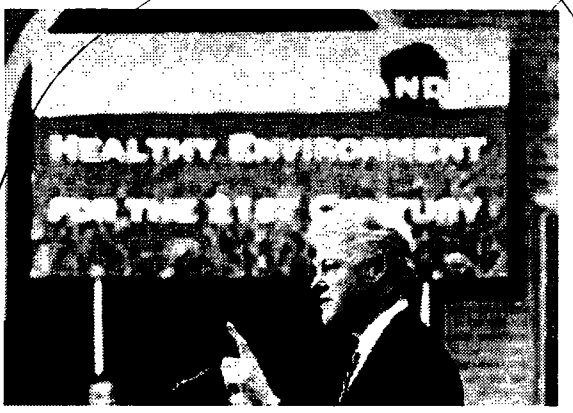
Developing Cleaner Fuels

In 1999, President Clinton issued the Executive Order that accelerates federal efforts to develop bioproducts and bioenergy. In the transportation sector, program goals include the development of low-cost biomass feedstocks and cost-competitive conversion technologies for producing liquid fuel from agricultural residues, forestry wastes, and energy crops. Since biofuels produce almost no net carbon on a life cycle basis, they are a promising supply side option for reducing carbon emissions in transportation.

Through 1998, the use of ethanol blends in gasoline is estimated to have displaced 1.2 quads of oil-based fuels (worth $12 billion), thereby reducing carbon emissions by as much as 4 MMTCE. If Federal biofuels goals are met by 2010, annual emission reductions from using clean fuels will approach 3.4 MMTCE.

Through the *Ultra Clean Transportation Fuels Program*, U.S. government offices are researching near-term petroleum-based transportation fuel options, intermediate options that are based on petroleum and other fossil fuel feedstocks, and long-term options for renewable fuels such as biofuels.

Through the *Hydrogen Research Program*, the Federal government is accelerating advances in producing low-cost hydrogen production and storage systems—prerequisites to the widespread use of hydrogen as a fuel. Given the recent demonstration of high-performance Proton Exchange Membrane fuel cell systems by **Daimler-Chrysler, Ford Motor Company,** and other companies, hydrogen has the potential to create niche fuel markets in the near future.



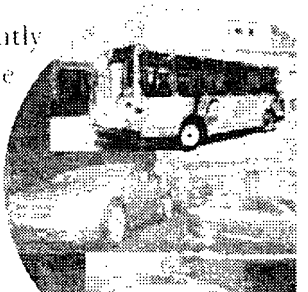
On April 21, 2000, President Clinton signed two Executive Orders aimed at reducing pollution generated by Federal fleet vehicles and Federal commuting.

Commuter Choice Benefits Package

The Federal government's $1.6 billion *Commuter Choice Leadership Initiative*, launched in 2000, encourages employers to offer a broad range of commuting options to their employees as part of company benefits packages. Some of the options include teleworking, carpooling and vanpooling services, transit vouchers, and cash in lieu of parking spaces. In support of the Commuter Choice Leadership Initiative, the U.S. government is launching a partnership program with employers with the goal of achieving partnerships with 500 businesses by the end of 2002 and 1,000 businesses by the end of 2003.

On April 21, 2000, President Clinton signed Executive Order 13150, *Federal Workforce Transportation*, which will reduce Federal employees' contribution to traffic congestion and air pollution. This order directs that Federal agencies in the Washington, D.C., area offer their employees up to $65 per month in transit and vanpool benefits.

As part of the President's recently announced *Livability Agenda*, the Administration is increasing substantially the investment in trans-



Intel-igent Commuting

The **Intel Corporation's** comprehensive and aggressively promoted *RideShare* program is a model for companies nationwide. The program promotes the use of transit, biking, walking, skating, and telecommuting. Participation is encouraged at Intel's facilities in Arizona, California, New Mexico, Oregon, and Washington. By taking the initiative in promoting transportation alternatives, Intel has reduced traffic congestion in the communities where its facilities are located.

The program provides preferential parking for carpools and vanpools, free or subsidized access to transit, and shuttles to and from transit and between Intel facilities. In addition, employees are encouraged to work from home or switch to compressed schedules to reduce the number of their commutes.

Employee response has been remarkable. Forty percent of the employees in Arizona and Washington and 32 percent in Santa Clara, California, participate. Collectively, these programs have avoided 20 million miles of vehicle travel and the resulting pollution. The success of Intel's RideShare program demonstrates the influential role that major corporations can play in environmental policy and in making it easy and convenient for employees to use alternative modes of transportation.

Mixed-Use Approach

The city of **Portland, Oregon,** is taking a holistic approach to reducing emissions from transportation. By developing new housing units in the central city area, the city aims to decrease the number of commuter trips by suburban dwellers. Portland officials estimate that for each 2,500 units of housing created in the downtown area, a total of 303 MTCE will be reduced. This translates into a total reduced fuel cost of $180,000 for those households.

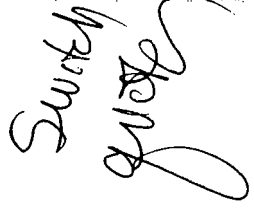
portation programs that will help reduce greenhouse gas emissions by improving transportation and land use planning, strengthening existing transportation systems, and promoting broader use of transportation alternatives. These investments include $6.1 billion for public transit.

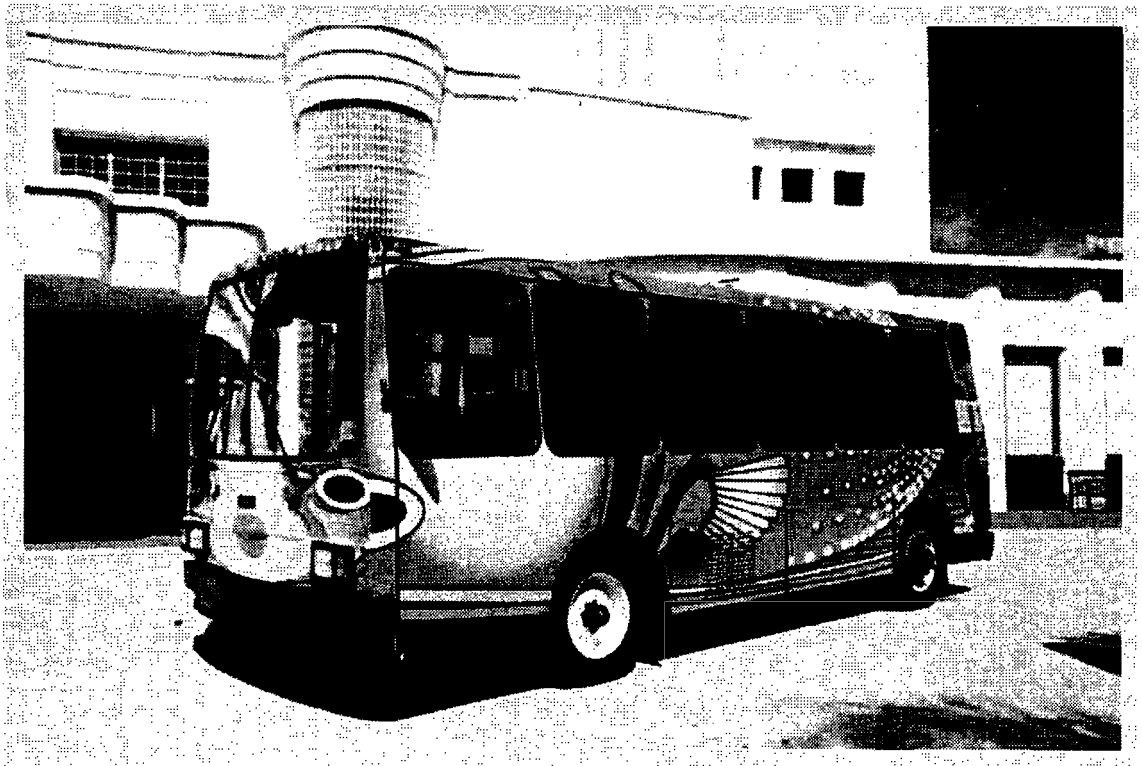
Relieving Congestion and Reducing VMT

The $1.6 billion per year *Congestion Mitigation and Air Quality Improvement (CMAQ)* program funds projects that reduce congestion and greenhouse gas emissions, as well as other air pollutants. Under CMAQ, the cities of Dallas and Fort Worth, Texas, converted their public sector vehicles to alternative fuels. The Philadelphia Bicycle Network designed and constructed a city-wide network of bicycle routes. New York City obtained $1.9 million in CMAQ matching funds to purchase a ferry and provide operating assistance for freight operations to remove 54,000 truck trips annually from the New York and New Jersey streets.

"Through public-private partnerships and a new agenda supporting the future production and use of rail rather than automobiles, the City of New Orleans is aggressively working to showcase progressive energy-saving efforts."

The Honorable Marc H. Morial
Mayor of New Orleans, Louisiana



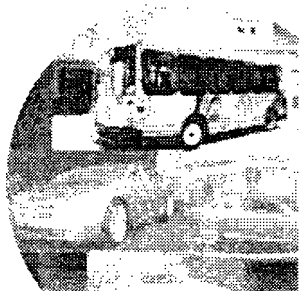


Ride the Wave of the Future—the Electrowave

The easy availability of **Florida's** first electric transit system in the rapidly growing South Beach community has residents and tourists abandoning their cars in favor of the nonpolluting *Electrowave* shuttle. The Electrowave, which was introduced in 1998, is a project of the City of Miami Beach, the Miami Beach Transportation Management Association, and business and community leaders who are concerned about the impact of increasing traffic congestion and resulting pollution on scenic South Beach, the state's second largest tourist attraction.

A recent rider survey documented that the availability of Electrowave is enabling nontransit users to change their traveling habits, with 90 percent stating that they did not use public transportation in the past. The Electrowave consists of a fleet of 11 electric buses with amenities such as air conditioning and state-of-the-art handicapped accessibility.

The Electrowave's unqualified success has exceeded all expectations. In its first year of operation, the emission-free shuttle buses carried 1.5 million one-way passengers, resulting in the avoidance of 900,000 vehicle miles, substantial reductions in the emission of both CO_2 and NOx, and less traffic congestion.



Chapter 5. Agriculture and Forestry

Agricultural activities contribute about 7 percent of all U.S. greenhouse gas emissions (not including fuel used on farms) and are sources of methane and nitrous oxide as well as carbon dioxide. Greenhouse gas emissions from the agriculture sector can be reduced through implementation of technologies that improve land and resource management practices; improve energy efficiency on farms, forests, and ranch lands; abate methane emissions directly from ruminant animals and manure handling; and reduce nitrous oxide emissions from soils.

Unlike other sectors of the U.S. economy, agricultural and forestry activities can also actively remove carbon from the atmosphere. In its submission to the United Nations Framework Convention on Climate Change Secretariat, August 1, 2000, the U.S. government reported that based on updated inventory data for 1997, 310 million metric tons of carbon (MMTCE) were sequestered in managed forests and 24 MMTCE on crop and grazing lands, for a total of about 18 percent of the U.S. greenhouse gas emissions for the year. Most of the carbon sequestration occurred in the forestry sector (approximately 90 percent), primarily from tree growth and forest soils.

Bioproducts and Bioenergy

Scientific advances in agriculture, forestry, and other biological sciences are making bioproducts and bioenergy technically feasible and economically viable. In 1999, the President issued the Executive Order on *Bioproducts and Bioenergy* coordinating Federal efforts to accelerate these 21st century technologies, which can convert sustainably grown crops, trees, and other biomass into fuels, power, and products. The Administration set a goal of tripling U.S. use of bioproducts and bioenergy by 2010. Meeting this goal could create $15 to $20 billion in new income for farmers, forest landowners, and rural America, and reduce annual greenhouse gas emissions by 100 MMTCE—the equivalent of taking more than 70 million cars off the road. (See also Chapter 3, Electricity, and Chapter 4, Transportation.)

Complementing the President's Executive Order is the *Biomass Research and Development Act*, signed on June 20, 2000. The Act authorizes $49 million in funding and establishes a technical advisory committee and agency board to coordinate activities related to biobased products and bioenergy.

The U.S. government's *Commodity Credit Corporation (CCC)* will accelerate commercial investment in innovative bioproduct and bioenergy technologies by providing up to $100 million in FY 2000 and up to $150

Biotechnologies: Real Products, Real Applications

A number of biobased products are already on the market. For example:

- U.S. government scientists married cornstarch to a synthetic chemical to create a product so thirsty, it can absorb 2,000 times its own weight in water. The absorbent compound, called SuperSlurper, is used as an electrical conductor in batteries, as well as fuel filters, baby powders, and wound dressings. Superabsorbents are now a $2 billion per year market.

- Xanthan gum is a natural polymer fermented from glucose, by the action of a microorganism, *Xanthomonas campestris*. A small amount of the gum is sufficient to turn a free-flowing liquid into a viscous solution, which is widely used as a thickening agent in foods and also in non-food uses. Sales of xanthan are approximately $80 million a year.

- U.S. government scientists are working with **Lambent Technologies Corporation** of Norcross, Georgia, to develop new biodegradable hydraulic fluids made from oil seeds such as soybeans and sunflowers. This new lubricant has the industrial quality and performance characteristics of current petroleum-based hydraulic fluids.

Many others are in the pipeline, such as the following:

- Fantesk is a starch-based chemical that can replace the resins used to make particle board, reducing or eliminating formaldehyde emissions, making the product safer for the consumer and the environment.

- Hypoallergenic latex made from the domestic guayule plant could have a significant impact on the $3.1 billion U.S. latex glove market. Guayule, a native plant of the desert Southwest, could stimulate economic development on Native American lands.

million in FY 2001 and 2002 in incentive payments to ethanol and other bioenergy producers to expand production of biobased fuels.

Methane and Nitrous Oxide Mitigation

The U.S. government also is engaged in a variety of activities directed toward reducing emissions of methane and nitrous oxide associated with agricultural production. The *AgSTAR* Program provides important tools, guidance, and methods to encourage the use of methane recovery (biogas) technologies at certain confined animal feeding operations.

The *Ruminant Livestock Efficiency Program (RLEP)* promotes livestock management strategies that result in lower methane emissions per unit of milk or meat produced. In addition, many of the practices recommended by the RLEP for improving forage production remove carbon dioxide from the atmosphere by storing carbon in the soil as organic matter.

The *Nitrogen Fertilizer Efficiency* program is exploring alternative systems of nitrogen management for a variety of crops including corn, cotton, potatoes, and rice in order to reduce nitrous oxide emissions.

Carbon Sequestration

Carbon sinks will play a critical role in helping the world meet the challenge of climate change. Significant gains in carbon sequestration and environmental co-benefits can be made through improved management of our forest resources. Research priorities include developing forestry practices that conserve soil carbon; increasing the potential for soils, forests, and forest products to sequester carbon; developing sustainable biomass production and management systems; and improving forest carbon inventory and accounting systems. The U.S. government has begun to analyze the net carbon effects of various conservation and environmental programs and to determine how they can be enhanced

to foster greater sequestration. Below are descriptions of some of these programs.

From its inception in 1985, the *Conservation Reserve Program (CRP)* has planted 3.5 million acres (1.4 million hectares) of trees on cropland. The entire 36.4 million acres enrolled in the CRP is estimated to be sequestering 11.3 MMTCE per year. Additional benefits from eliminating nitrogen fertilizer applications have been estimated at 1.8 MMTCE per year.

The *Wetlands Reserve Program (WRP)* offers private landowners financial incentives to restore wetlands in exchange for discontinuing the land's use for crop production. The *Swampbuster* program has preserved more than 5.8 million acres of wetlands that would otherwise have been converted to agricultural use.

From 1991 to 1997, more than 1 million acres of trees were planted through the *Forestry Incentives Program (FIP)* program. Another 273,000 acres of trees were planted through the *Stewardship Incentives Program (SIP)* program.

Research indicates that improved management of cropland soils through reduced tillage, erosion prevention, and cropping systems can sequester significant quantities of carbon. Improved management of grazing lands also can contribute significant sequestration benefits. Increasing soil organic content not only provides climate change benefits, but also improves water holding capacity, fertility, and productivity—helping soils resist erosion, keeping nutrients and pesticides from washing into water bodies, and reducing flooding.

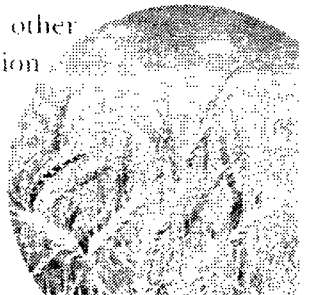
Helping Farmers Second-Guess Mother Nature

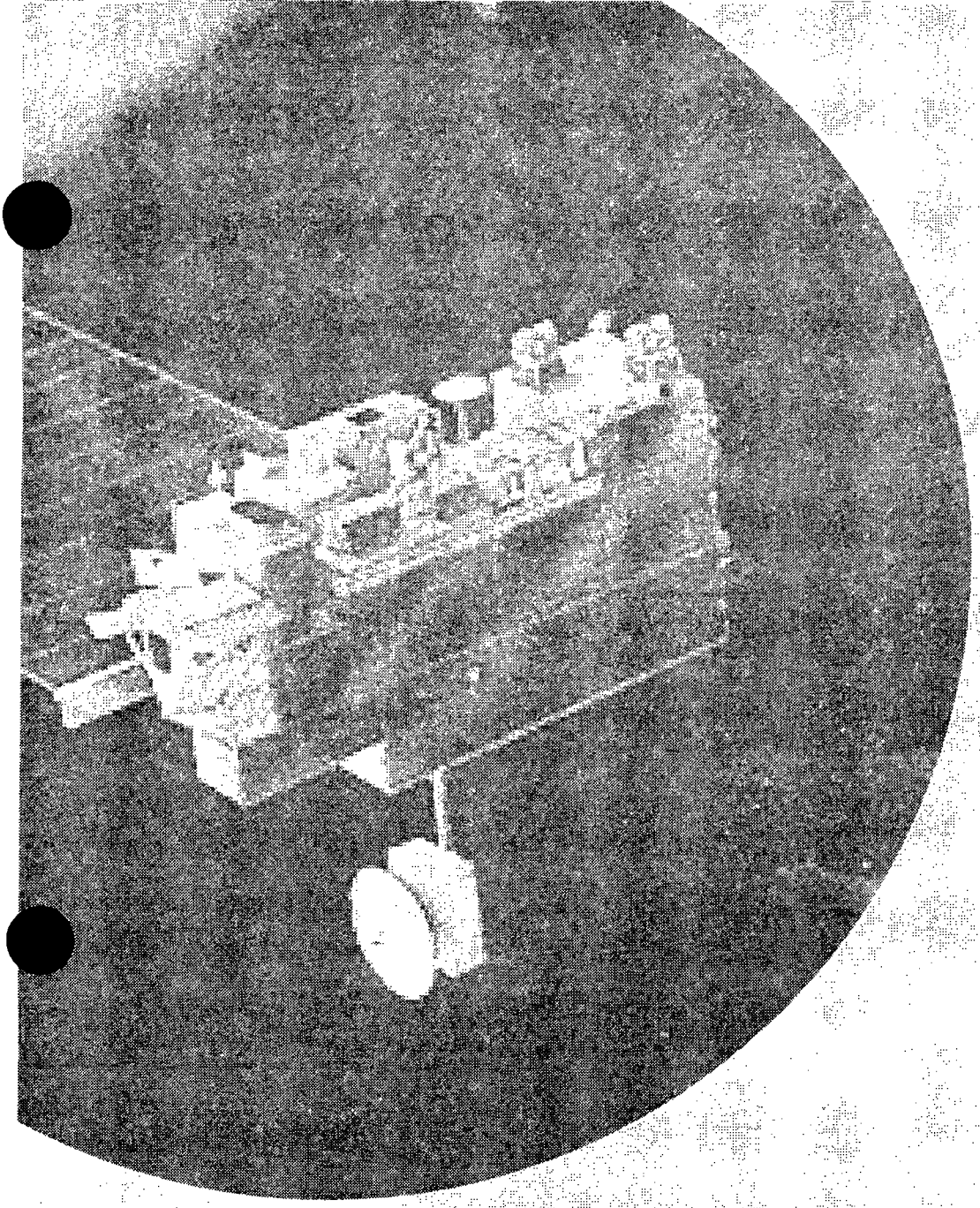
Unpredictable variations in weather and climate hinder efforts to manage resources effectively for agricultural uses. The U.S. government is working to adapt seasonal climate forecasts intended for a general audience to forecasts that will be specific to agriculture. The primary challenges are to apply the predictions to farms at time periods that are relevant to agricultural decision-making and to establish impacts on soil water and plant productivity. This information will provide opportunities for proactive planning to exploit favorable climate conditions and mitigate adverse climate extremes. The result will be information that can be used to determine the number of livestock that a farm can support during an upcoming season, the need for purchase of outside forage, decisions on winter wheat or other grains, fertilizer needs, and erosion protection.

Conservation Practices for Storing Carbon

Resource conservation practices on farms produce environmental benefits such as improving soil, water, and air quality on and off the farm. Economic benefits accrue from reducing the number and intensity of field operations, saving money, time, and labor. These practices, which also can enhance carbon storage in soil, include the following:

- Using conservation tillage and no-till conservation systems
- Rotating crops and incorporating small grains, hay, legumes, or other crops into rotations
- Planting cover crops
- Managing nutrients and irrigation efficiently and effectively
- Installing permanently vegetated conservation buffers, such as windbreaks, grass waterways, filter strips, and riparian buffers
- Restoring or protecting wetlands
- Converting marginal agricultural land to perennial grassland or forest





Chapter 6. U.S. Global Change Research Program

The U.S. Global Change Research Program (USGCRP) seeks to provide a sound scientific understanding of the human and natural forces that influence the Earth's climate system, and thus provide a sound scientific basis for national and international decision-making on global change issues. The USGCRP seeks to observe, understand, predict, and assess the critical natural and human-induced dynamic states and trends of the Earth's global environmental systems across a wide range of time and spatial scales.

This multi-agency National Research Program is overseen by the National Science and Technology Council, the Office of Science and Technology Policy, and the Office of Management and Budget.

FY 2001 Budget Highlights

For FY 2001, the President is requesting $1.74 billion for the USGCRP, an increase of $41 million above the amount enacted for FY 2000. Of this, $845 million is for scientific research and improvements to surface-based monitoring. Another $897 million is for development of Earth-observing satellites and associated data systems to monitor climate change and other global changes. Important highlights include the following:

- $28 million to enhance surface-based climate observations, including creation of a climate reference network to provide for the first time automated, simultaneous, and ideally located measurements of changing temperatures, precipitation, and soil moisture. Measurements of atmospheric trace gases, aerosols, ocean temperatures, and ocean currents also will be expanded.

- $508 million for research on changes in the Earth's water cycle, which is one of the primary determinants of the Earth's climate. The launch of the EOS Aqua spacecraft in December 2000 will provide new global measurements of humidity, cloud properties, sea ice, precipitation, soil moisture, runoff, and snow to support this research.

- $221 million for research on the potential impacts of climate change and other stresses on forests, coastal areas, croplands, and other ecosystems. New studies will improve our understanding of the relationships among land cover, land use, climate, and weather, and on identifying "thresholds" for significant changes in ecosystems.

- $229 million for the multi-agency carbon cycle science initiative begun in FY 2000. This request includes funds to study how carbon cycles between the atmosphere, the oceans, and land, and the role of farms,

Objectives of the USGCRP

- Determine the origins, rates, and likely future course of natural and anthropogenic global changes.
- Increase understanding of the combined effects of multiple stresses on ecosystems.
- Understand and model global environmental change and its processes on finer spatial scales and across a wide range of time scales.
- Address the potential for surprises and abrupt changes in the global environment.
- Understand and assess the impacts of global environmental change and their consequences for the United States.

forests, and other natural or managed lands in capturing carbon.

- $485 million for research on the Earth's climate system. This includes funds to study the interaction of long-term climate change and shorter-term patterns of climate variability, investigation of the radiative effects of clouds on climate, improving model simulations of the Earth's climate, and collection and analysis of new satellite observations of clouds, aerosols, trace gases, land surface and ocean properties, ice extent and topography, and the Earth's radiation budget.

Other USGCRP-sponsored research focuses on the long-term climate record of the Earth, the human dimensions of global change, and changes in atmospheric chemistry.

The National Assessment

The National Assessment of the potential consequences of climate variability and change undertaken by the USGCRP over the past several years has examined the potential ecological and socioeconomic impacts of climate change on the United States, and the degree to which particular regions and sectors of the nation are vulnerable to such change. Thus the National Assessment is providing important information to support decisions on how best to adapt and prepare for both the next few decades and the next century. In addition, the National Assessment will identify key information gaps and research needs (i.e., information that is still required to answer questions of interest to decision-makers).

The initial major product of the assessment process is a *National Assessment Synthesis Report*. This report has completed multiple layers of peer-review by technical experts and U.S. government agencies, and was posted on the World Wide Web for a 60-day public comment period. The assessment included regional workshops with a broad range of stakeholders, plus regional and sector analyses (Human Health, Water Resources, Coastal Areas, Forests, and Agriculture).