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[Meeting the Challenge of Climate Change] [2]

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Executive Summary

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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.~~ *shg's* *can't do part to listen & identify the cause*

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.~~ *with 1 international*

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~~ *US* 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.~~ *extensive* 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.

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"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

Decoupling Economic Growth and Emissions Growth

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 (CO₂) 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 CO₂ emissions grew by only about 1 percent.
- In 1998, the U.S. GDP grew by 4 percent while CO₂ emissions grew by only 0.4 percent

- Overall, during the 1990s, the U.S. GDP grew almost three times more quickly than did energy-related CO₂ emissions.

Graphics: Insert graph, Growth in the U.S. Economy and CO₂ 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.

so called "energy crisis"

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.

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

"good corporate citizenship"

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 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.

Gov't efforts still too early to tell

another thing is gov't nuclear

it would not mention we've been very critical of J&J

established by
Vice President Gore with

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~~ ^{recently} have announced production plans for fuel-efficient sport utility vehicles (SUVs) using technologies developed in part under PNGV.

Ford & GM

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:

- 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

(in text)

- Buildings
- Electricity generation
- Transportation

As of this writing, ~~The President and Vice President are seeking funding for even more ambitious funding levels for climate protection programs.~~ ^(int ext) 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:

- **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 carbon (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.** A 10-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

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Local Action in the US

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 setting the stage so that more progress may be made internationally – both in and outside of the Kyoto Protocol. In the long 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 *Report not needed*

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.

Separate 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.

Projected Carbon Impact of the Ford and GM Commitments to Increase Fuel Economy

Year	Ford-annual (MMTCe)	GM-annual (MMTCe)	Ford+GM-annual (MMTCe)	Ford+GM-cumulative (MMTCe)
2005	1	1	2	4
2010	3	3	6	19
2015	4	4	8	53
2020	5	5	10	102
2025	6	6	12	158
2030	7	6	13	220

Key Points

- Assumes that today's status quo continues--VMT grows by 2-2.5% per year and fuel economy of individual categories remains stagnant--except that Ford and GM SUV fuel economy grows by 25% by 2005 (phased in beginning in 2003)
- The values above would be 25-30% larger if expressed on a total fuel life-cycle basis, i.e., using less fuel in the vehicle also means less carbon lost in drilling, refining, distribution, etc
- The carbon reductions could be much larger if:
 - the market share of Ford and GM SUVs grows faster than assumed and if the buyers of these higher fuel economy SUVs would have otherwise bought lower fuel economy vehicles
 - the technologies used by Ford and GM in SUVs are also used by Ford and GM to improve average fuel economy in pickups, minivans, or cars
 - the fuel economy improvements by Ford and GM promote average fuel economy improvements by other automakers
- The carbon reductions could be much smaller if:
 - Ford and GM offset some or all of the overall light truck CAFÉ fuel economy gains from these SUVs by shifting model mix to sell more high profit, low fuel economy full-size pickups
 - if higher SUV sales result in more people shifting from cars to SUVs (even with these commitments, the average SUV will still have lower fuel economy than the average car)
 - if Ford and GM use the CAFÉ loopholes such as E85 flexible fuel vehicle credits or GVWR ratings so high as to be excluded from CAFÉ (though they have pledged not to do so)

How Do The Ford and GM Fuel Economy Commitments Compare to the Voluntary Commitments in the European Union?

- The voluntary commitment by the European-based automakers (including Ford of Europe and GM of Europe) in 1998 was to reduce new car CO₂ emissions to 140 grams per kilometer by 2008; this commitment represents a 25% reduction in CO₂ and about a 30% increase in fuel economy; this commitment yields fuel economy targets of about 40 mpg for gasoline cars and about 45 mpg for diesel cars in 2008
- The Ford and GM commitments in the US represent a higher rate of improvement (25% over 5 years, or 5% per year) than the EU (30% over 10 years, or 3% per year)
- The Ford and GM commitments in the US only address the SUV portions of their fleets (15-20% of their personal vehicle sales), while the EU commitment includes all personal vehicle sales
- The GM and Ford commitments in the US will save far more carbon per vehicle, both because of the lower starting fuel economy and the higher % improvement, but the EU commitment will lead to a much lower average personal vehicle carbon dioxide emission level
- A very preliminary calculation based on incomplete EU vehicle data suggests that the overall annual carbon benefits of the EU voluntary commitment might be about 30-35 MMTCe once the fleet is turned over, higher than the 13 MMTCe annual carbon reductions estimated for the Ford and GM commitments on SUVs

Recent Commitments by Ford and General Motors to Increase SUV Fuel Economy

Ford's Commitment

- July 27, 2000 press release: "will increase the fuel economy of its Sport Utility Vehicle fleet in the United States by 25 percent by the 2005 calendar year" (from a CAFE average of about 18 to 23 mpg or in-use from about 15.3 to 19.6 mpg); covers all SUVs including Explorer/Mountaineer, Expedition/Navigator, Excursion (currently not counted in CAFE), Land Rover, and the new Escape (Ford sold about 800,000 this year and expects to sell about 1 million next year); about 70% of the gains will be through technology (such as more efficient engines and transmissions, weight reductions, and aerodynamics) and about 30% through sales of smaller SUVs like the new Escape
- pledged to not use loopholes such as CAFÉ credits for E85 flexible fuel vehicles and the fact that the largest SUVs are excluded from CAFÉ calculations (Keith Bradsher, New York Times, July 27, 2000)
- did not explicitly address non-SUVs; "first step" in longer term strategy
- Ford had previously committed to bring a hybrid Escape SUV to market in 2003 with a target city fuel economy of 40 mpg (compared to 20-28 mpg for the non-hybrid)

General Motors' Commitment

- August 2 press release: "It's simple. We lead in truck fuel economy today and General Motors intends to remain the leader in five years," Vice Chairman Harry Pearce; pledged to bring a hybrid Chevrolet Silverado/GMC Sierra full-size pickup to market in 2004 with 15% better fuel economy
- "I want to set the record straight. GM leads Ford in truck fuel economy. GM will still be in the lead five years from now and 10 years from now. End of story." Harry Pearce quoted in Detroit News on August 4, 2000
- GM specifically cited cylinder deactivation and continuously variable transmissions as two of its innovative technologies and also pledged not to use the CAFÉ loopholes (Keith Bradsher, New York Times, August 3, 2000)

DaimlerChrysler declined to make any commitments, but stated that it "supports fuel economy improvements across the board in light trucks"

Overall Reaction

- These commitments, if met in the future, will be the first meaningful efforts to improve overall fuel economy since average personal vehicle fuel economy peaked in 1987 and 1988 at an average CAFÉ level of 25.9 mpg; since then, average personal vehicle fuel economy has dropped about 2 mpg, most of which is due to the explosive popularity of sport utility vehicles, pickup trucks, and minivans, all of which have lower average fuel economies than the average car
- Ford's commitment, both because of its more explicit nature and because it is clearly backed by Chairman Bill Ford, seems firmer than GM's (e.g., after Ford's commitment but before GM's response, a top GM official was quoted as saying "I don't think we're going to be making any commitments, but we're going to make progress")



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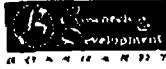
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2000 ENERGY STAR® Homes Special Recognition Awards



Bosshardt Realty Services, Inc., Gainesville, Florida

Bosshardt Realty Services, Inc.'s Research & Development Division is recognized for demonstrating that ENERGY STAR Homes reduce utility bills and recapture the initial investment through future energy savings. Senior officials of Bosshardt frequently speak at builder conferences throughout Florida about ENERGY STAR Homes. These efforts have led to the development of a new company, *GreenSmart™*, which features a sales and marketing tutorial called *How to Pioneer an ENERGY STAR Market*. This training offers the first green certification for building industry professionals who wish to succeed in selling and marketing homes using green building technologies.



Town & Home, Inc., Simi Valley, California

Town & Home, Inc. has designed family housing on military bases for over 15 years. Through a rigorous quality control program, Town & Home significantly decreased the federal government's utility bills in military communities. In 1999, Town & Home successfully completed 423 ENERGY STAR Homes in bases across California and Texas.



2000 ENERGY STAR® Awards: Product Labeling

RICOH

PRODUCT LABELING

Ricoh Corporation, Pinebrook, New Jersey

Since becoming a charter member of the ENERGY STAR Program in 1994, Ricoh Corporation has led the office equipment industry in promoting energy efficiency. Ricoh promotes advanced energy-saving features in all company products, aggressively educates and certifies sales staff and dealers worldwide in the application and use of power-saving technologies, and delivers the message that energy-efficient technologies are high performance technologies. Ricoh has also invested over \$1 million in energy efficiency educational promotions. In addition to these achievements, Ricoh is a proud Partner in EPA's ENERGY STAR Buildings and Waste Wise Programs.

SEARS

RETAIL

Sears, Roebuck & Company, Hoffman Estates, Illinois

Sears, Roebuck & Company, the largest appliance retailer in the U.S., is bringing ENERGY STAR to consumers across the country. With over 850 stores, Sears works with appliance retailers and others to incorporate ENERGY STAR into their corporate operations. In 1999, they introduced ENERGY STAR into corporate sales training and listed energy efficiency as a key product feature in all stores. Sears embarked on a wide range of activities aimed at educating customers on the benefits of purchasing products that carry the ENERGY STAR label. Their efforts have increased the sales of ENERGY STAR products. Sears' two top selling refrigerators are ENERGY STAR and Sears is the largest seller of ENERGY STAR washing machines. Sears has set a goal of selling over 1 million ENERGY STAR appliances in the year 2000.



2000 ENERGY STAR® Awards: Product Labeling

HOME ELECTRONICS

Panasonic. Panasonic, Secaucus, New Jersey

Panasonic continues to lead the industry in offering a complete line of ENERGY STAR home electronics, including televisions, video-cassette recorders, DVD products, and home audio equipment. More than 400 of Panasonic's products prominently feature the ENERGY STAR label, including 98 percent of Panasonic televisions. In addition to a variety of employee education efforts, Panasonic incorporates a marketing primer on ENERGY STAR into nationwide training sessions for its sales force. Panasonic spread the ENERGY STAR message in 1999 by airing public service announcements (PSAs) on its Astrovision screen above Times Square in New York City. The 30-second PSA aired hourly for four months, including a showing on New Year's Eve 1999.

APPLIANCES



Whirlpool Corporation, Benton Harbor, Michigan

Whirlpool Corporation continues to lead the major appliance industry by combining innovative products with energy efficiency. Last year, Whirlpool Corporation designed and built a new line of dishwashers to qualify specifically for the ENERGY STAR label. The dishwasher, marketed under the Whirlpool Corporation and KitchenAid brand names, carries the ENERGY STAR label directly on its console. Whirlpool also announced plans to introduce the "Conquest," a new ENERGY STAR refrigerator which will exceed federal efficiency standards by 35 percent. Whirlpool Corporation continues to actively promote ENERGY STAR to consumers on their Web site and in advertising, and highlights ENERGY STAR through promotional displays and consumer brochures.



2000 ENERGY STAR® Awards: Product Labeling

RICOH®

OFFICE EQUIPMENT

Ricoh Corporation, Pinebrook, New Jersey

In the past year, Ricoh Corporation's commitment to innovation put it at the forefront of designing, manufacturing, and marketing ENERGY STAR imaging products. The energy-saving features of these products help reduce the operating costs for the end user as well as help improve the environment. As a technology leader, Ricoh's product design and engineering expertise led the industry by developing new technology that could drastically reduce the power consumption of output devices in future generations of products. In addition, Ricoh incorporates ENERGY STAR educational information into its sales and service training programs and consumer outreach.

Alside
WINDOW SYSTEMS

NATIONAL WINDOW

Alside, Cuyahoga Falls, Ohio

Alside highlights ENERGY STAR as a fundamental feature of their windows marketing approach. In 1999, Alside undertook an intensive review of their entire product line and redesigned casement and awning windows and patio doors to ensure these met the ENERGY STAR rating in all climate zones when produced with high performance glass. Alside carries the ENERGY STAR message to customers and their sales force with equal intensity. As a result, Alside reports that ENERGY STAR windows were 56 percent of their total sales during 1999. They expect this trend to continue into 2000 as their training and customer outreach efforts continue to evolve.



2000 ENERGY STAR® Awards: Product Labeling

Thermal Industries, Inc.

EASTERN REGIONAL WINDOW

Thermal Industries, Inc., Pittsburgh, Pennsylvania

One of the newest window manufacturing Partners, Thermal Industries, Inc., has enthusiastically adopted ENERGY STAR. Currently, 65 percent of their windows are ENERGY STAR products. Thermal Industries Inc. redesigned sales materials to promote ENERGY STAR and began promoting the ENERGY STAR Program to their retailers. Surpassing the corporate commitment of many competitors, Thermal Industries created a management position solely for the purpose of directing their ENERGY STAR efforts. Cultivating and maintaining dealer participation with ENERGY STAR continues to be one of this position's highest responsibilities.

VIKING

WESTERN REGIONAL WINDOW

Viking Industries, Inc., Portland, Oregon

Viking Industries, Inc., a division of Pella Corporation, developed the ThermaStar™ product line in the summer of 1999 specifically to meet the ENERGY STAR performance criteria in all U.S. climate zones. ThermaStar™ promotional materials show the ENERGY STAR logo, along with their tagline "ENERGY STAR Performance. All-Star Support." In addition, Viking Industries, Inc. has implemented a successful and growing staff training program and product promotion strategy. They expect continued, remarkable increases in sales of ENERGY STAR products as the ThermaStar™ brand matures.



2000 ENERGY STAR® Awards: Product Labeling

ROOF PRODUCTS



National Coatings Corporation, Camarillo, California

As a Charter Partner for ENERGY STAR Roof Products, National Coatings Corporation is an industry leader in promoting the environmental and energy benefits of reflective roof products. In 1999, 49 percent of the coatings sold were ENERGY STAR, covering five million square feet of roof systems. As part of their efforts to educate consumers, contractors, utilities, and others, National Coatings developed a Roof Energy Savings tool, a Roof Asset Management Life Cycle Costing analysis, outreach presentations, and product brochures. On its Web site, National Coatings educates the public with information on the Urban Heat Island Effect, including how higher temperatures contribute to air pollution and how reflective roofs help cool buildings.

OUTSTANDING CORPORATE COMMITMENT



Sun Microsystems, Palo Alto, California

As both an ENERGY STAR Office Equipment and Buildings Partner, Sun Microsystems has integrated energy efficiency into all aspects of its business, from product design — including a patent for a power management technology — to building construction and equipment procurement. One hundred percent of Sun's desktop computers and monitors are ENERGY STAR and 81 percent of all the ENERGY STAR workstations sold are manufactured by Sun. Proving that it can be as innovative with its corporate policies as with its technical design, Sun has created an ENERGY STAR group to champion ENERGY STAR issues within the company. An estimated \$1 million was saved in 1999 by encouraging employees to use their monitors' power management features. As a result of these efforts, Sun experienced a 15 percent drop in energy use per employee. As an ENERGY STAR Buildings partner, Sun has aggressively attacked energy waste in its buildings around the world, including installation of advanced lighting systems and heating and cooling plants.



2000 ENERGY STAR Awards: BuildingsSM and Green Lights[®]

PARTNER OF THE YEAR: CORPORATE

Johnson & Johnson

Johnson & Johnson, New Brunswick, New Jersey

Johnson & Johnson has been an active participant in ENERGY STAR since 1991. As an early participant in Green Lights, it was recognized as the Green Lights Large Corporate Partner of the Year in 1995. The company was recognized again in 1998 for outstanding upgrades at the corporate level. Behind its sustained success is a broad corporate commitment providing high-level support and special recognition to its regional teams. It has exceeded its internal goals, saving over \$10 million per year, with 71 percent of its upgrades complete. Johnson & Johnson has gone a step further, incorporating the ENERGY STAR philosophy into company-wide best practices in the design of new facilities, and has made it available through their Intranet worldwide.



PARTNER OF THE YEAR: GOVERNMENT BUILDINGS

State of Wisconsin, Madison

In 1990, Governor Tommy Thompson began the Wisconsin Energy Initiative to improve the energy performance of state-owned facilities. Soon afterwards, the State signed up over 53 million square feet of building space for EPA's Green Lights Program. In 1998, after successfully completing Green Lights upgrades in all of its facilities including state universities, Wisconsin committed to improve other key building energy systems. Because of these upgrades, the State saves \$7.5 million a year and prevents sizable greenhouse gas emissions. The scale of Wisconsin's efforts has played a role in transforming the market for energy-efficient lighting. Through the Wisconsin Focus on Energy program, the State of Wisconsin is also promoting ENERGY STAR to businesses in northeastern Wisconsin by highlighting Lambeau Field, home of the Green Bay Packers, a recent Partner of ENERGY STAR Buildings.



2000 ENERGY STAR Awards: BuildingsSM and Green Lights[®]



PARTNER OF THE YEAR: RETAIL BUILDINGS

ShopKo Stores, Inc., Green Bay, Wisconsin

ShopKo Stores, Inc., is a regional specialty discount retailer operating 317 stores in the Midwest, Mountain, and Pacific Northwest regions. As an ENERGY STAR/Green Lights Partner since 1994, ShopKo has been successful in reducing energy consumption by 20 percent, despite a 22 percent increase in store operating hours. For ShopKo, this equates to nearly \$3 million in energy savings and the annual prevention of 100 million pounds of carbon dioxide. To achieve this success, ShopKo made a commitment to maximize their energy performance by investing in upgrade projects with longer-term paybacks than typically found in the industry. Comprehensive upgrades to lighting and HVAC systems are controlled by a sophisticated energy-management system that additionally allows for humidity and load reduction control.



PARTNER OF THE YEAR: HOSPITALITY BUILDINGS

La Quinta Inns, Inc., Irving, Texas

La Quinta Inns, Inc. operates 302 inns in 28 states. Since 1995, La Quinta has operated an aggressive energy management program which has reduced their annual electricity bill by nearly 20 percent and prevented the annual release of 57 million pounds of carbon dioxide. The ENERGY STAR Partnership has enabled La Quinta to quantify their energy savings and communicate the financial importance of energy-efficiency upgrades to upper management and hotel staff. The national hotel chain encourages employee involvement by conducting regional training seminars and issuing Standard Operating Procedures to all staff, detailing the actions to be taken *each day* to control energy costs. La Quinta actively promotes ENERGY STAR and energy efficiency through conference presentations, case study participation, and advocating for the full integration of energy efficiency into Hotel Administration curriculum.



2000 ENERGY STAR Awards: BuildingsSM and Green Lights[®]



PARTNER OF THE YEAR: COMMERCIAL REAL ESTATE

Arden Realty, Inc., Los Angeles, California

Arden Realty, Inc., a real estate investment trust, is the largest landlord of office buildings in southern California. Since joining ENERGY STAR in 1999, Arden has compared 90 office properties using the ENERGY STAR national performance rating and scale. Thirty-one buildings have earned the distinction of achieving ENERGY STAR status. Arden also actively uses EPA's QuikScope software to determine cost-effective energy-efficiency upgrades across their portfolio. Arden recognizes that improved energy performance results in a more competitive, profitable, and valuable portfolio.



PARTNER OF THE YEAR: COMMERCIAL REAL ESTATE

Harwood Management Services, Dallas, Texas

Harwood Management Services, an early participant in ENERGY STAR Buildings, is an international asset manager and commercial real estate developer. Harwood demonstrated outstanding leadership and commitment to improve the energy performance of its commercial real estate portfolio by benchmarking over 60 percent of its properties. Harwood received the ENERGY STAR label for the Centex Building and promotes the value of ENERGY STAR by displaying signage throughout its buildings. The President of Harwood Management has published several articles in real estate journals describing the benefits of the ENERGY STAR Programs and Harwood's commitment to improved energy performance.



2000 ENERGY STAR Awards: BuildingsSM and Green Lights[®]



PARTNER OF THE YEAR: EDUCATION BUILDINGS

Sachem Central School District, Holbrook, New York

In 1999, Long Island's Sachem Central School District, the third-largest school system in New York, became the first school district in the State to not only complete but exceed their ENERGY STAR commitments in building upgrades. The District upgraded 1.3 million square feet in 18 months, reducing energy costs by \$500,000 per year as a result of installing energy-efficient lighting fixtures, motors, and new boilers. In addition, a newly-installed building management system helps measure, monitor, and manage energy use. The savings will pay for the project over the next ten years. The resulting pollution prevention is equivalent to planting 645 acres of trees. The upgrades were implemented by the New York Power Authority (NYPA) and Johnson Controls, Inc.



PARTNER OF THE YEAR: HEALTHCARE BUILDINGS

North Memorial Health Care, Robbinsdale, Minnesota

Since becoming an ENERGY STAR Partner in 1998, North Memorial Health Care has shown a strong commitment to energy efficiency, lowering its operating costs and communicating its successes. The 546-bed hospital has aggressively adopted the ENERGY STAR Buildings integrated approach, with upgrades in lighting, building automation systems, motors and boiler controls. Their upgrades have resulted in an annual reduction of four million kilowatt hours of electricity, four million cubic feet of gas and six million gallons of water, saving over \$160,000 per year. North Memorial has benefited from their ENERGY STAR partnership by focusing and structuring their energy management efforts for maximum benefit. Equally important, ENERGY STAR has allowed them to communicate the environmental and financial benefits of increased performance to senior management and hospital staff.



2000 ENERGY STAR Awards: BuildingsSM and Green Lights[®]



ALLY OF THE YEAR: LARGE ENERGY SERVICE PROVIDER

Advance Transformer Co., Somerset, New Jersey

In 1999, Advance Transformer Co. recruited four new partners into ENERGY STAR who are committed to improving the energy efficiency of buildings. Advance Transformer Co. has continued upgrades in their own facilities and been an active advocate for the ENERGY STAR mission through inclusion of the ENERGY STAR logo and messages in their marketing materials and press releases. Advance also led industry initiatives including the "Re-electrification of America" and the "National Dimming Initiative."



ALLY OF THE YEAR: SMALL ENERGY SERVICE PROVIDER

Public Service Company of Colorado —

Denver District Cooling, Denver, Colorado

Public Service Company of Colorado - Denver District Cooling (PSCO-DDC) has actively promoted ENERGY STAR since joining in early 1999. They developed a "Building HVAC Efficiency Seminar" that focused on the energy efficiency of HVAC systems and used this forum to educate participants on making buildings more efficient with ENERGY STAR products. PSCO-DDC has incorporated the ENERGY STAR message into their Web site, business cards and letterhead. As a result of its promotional efforts, PSCO-DDC has recruited five ENERGY STAR participants and was instrumental in recognizing four buildings in Denver as achieving ENERGY STAR levels. These achievements brought PSCO-DDC to a Gold Level in the 1999 Ally Challenge.



2000 ENERGY STAR Awards: BuildingsSM and Green Lights[®]



GREEN LIGHTS[®] ALLY OF THE YEAR

GE Lighting, Cleveland, Ohio

Since the launch of Green Lights in 1991, GE Lighting has not only completed its own Green Lights upgrades, it has promoted participation in the program through conferences held annually at the GE Lighting Institute. The organization conducted 12, two-day courses offered to Green Lights participants free of charge. GE Lighting sent out Internal Productivity Priority newsletters to keep their sales force aware of Green Lights activities, and incorporated the Green Lights logo into magazine advertisements and their lamp catalog. In addition, GE Lighting has sponsored a lighting upgrade workshop, has collaborated with other Allies and Partners to implement upgrades, and is a participant in ENERGY STAR.



GREEN LIGHTS[®] PARTNER OF THE YEAR

Pitney Bowes, Inc., Stamford, Connecticut

Since joining the Green Lights Partnership in 1993, Pitney Bowes, Inc., has aggressively managed its energy efforts. Pitney Bowes has upgraded over 90 percent of its lighting infrastructure with energy-efficient technologies — over 2.8 million square feet — saving nearly \$600,000 per year. These efforts not only help improve its competitive advantage and profitability, but also drastically reduce emissions and improve building comfort. Pitney Bowes' efforts in 1999 helped reduce emissions equivalent to planting 1,486 acres of trees. In addition to pursuing additional lighting upgrades, Pitney Bowes' efforts also target lighting control, building management, and improved operational efficiency. The company has even included a 75kW co-generation system in its World Headquarters facility to better meet year-round hot water requirements.

Sep-12-00 11:02A Climate Change Task Force

Ag chapter

To: Janet Anderson
Fax: 395-2342

A blend of 20 percent biodiesel (methyl ^{esters} ~~sebacate~~ from ^{oils and fats} ~~soybean~~ oil) and 80 percent diesel fuel is referred to as B20. Biodiesel is an alternative motor fuel produced from renewable resources such as vegetable oil or animal fats and, typically, blended with petroleum diesel. 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. A visitors center tour bus is also running on the blended fuel.

18 { Fuel blending is achieved on site in underground storage tanks, and no engine conversion is required to use B20. ^{Each gallon of} ~~Replacing petroleum diesel with~~ B20 will reduce carbon dioxide emissions by 16 percent. ~~JOHN DOE says in what timeframe? What are the market penetration conditions for this statistic?~~ B20 will also reduce emissions of carbon monoxide (20 percent), particulate matter (22 percent), and sulfates (20 percent)—three pollutants that pose health risks in certain areas of the United States. B20 reduces unburned hydrocarbons by 16 percent. B20 also reduces levels of two compounds identified as potential carcinogens, PAH (polycyclic aromatic hydrocarbons) ~~by 12 to 20%~~ and nPAH (nitrated PAH) ~~(50 percent)~~ by 12 to 20%.

From: Tien Nguyen - DOE
202 586-7387

John -

Overall is great! I've
made tons of comments, most
of which I understand
will prob. be thrown out.

Two general comments:

- 1) This is a bit much
- 2) All websites seem to be
doe & that puts a lot of
emphasis on defense

Thanks John. Call if
you need anything - I
can work on crap tonight
at home if needed

Amey

EXECUTIVE SUMMARY

Graphics: Use larger font for following text

Climate change is the premier environmental challenge of the 21st century. The world's leading atmospheric scientists agree that the Earth is warming and that human activities are contributing to this trend. The evidence for this warming trend grows stronger day by day.

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. *see?*

sectors
Many segments of U.S. society are embracing the need for action to slow climate change. State and local leaders, religious and scientific organizations, and large and small businesses throughout the United States are joining the Federal government in pursuing creative, cost-effective steps that reduce greenhouse gas emissions.

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

U.S. Domestic Action on Climate Change

Domestic action to reduce greenhouse gas emissions is not only important to overall U.S. climate change policy, it is also a necessary element in setting the stage for ratification of the Kyoto Protocol. Over the past two years, President Clinton and Vice President Gore have increased U.S. domestic efforts dramatically.

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 *(IND)*
- Buildings
- Electricity generation
- Transportation *CO2?*

DRAFT**FY 2001 KYOTO PROTOCOL PROVISIONS -- July 14, 2000**

Bill (sponsor)	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Energy/Water (Knollenberg, R-MI)	Bill language prohibits 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. Bill language is the same as enacted FY 2000 language. A 6/27 House floor amendment (Rep. Visclosky, D-IN) was approved that had the effect of overriding objectionable Committee report language that attempted to expand the scope of the rider. (Sec. 605)	No bill yet.	May well be unconstitutional if read to prevent DOE 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. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	

clear? other R&D? would
The President and Vice President have proposed even more ambitious programs to fight climate change, including targeted tax incentives and investments aimed at increasing energy efficiency and spurring the broader use of renewable energy at home and abroad. The 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.

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:

- Should power? 1st use
- *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. *show w. 1/100 machinery*
 - *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. *same way? fleet*

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. *most serious? or "The D.S."? where?*

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

The President and Vice President are taking strong measures to reduce domestic greenhouse gas emissions. The following four new initiatives represent forward-looking steps for the United States:

- 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 carbon (MMTCE) per year. This Executive Order is especially important because the U.S. government is the largest consumer of energy in the world. *rec? (negatively) isolated*

DRAFT

FY 2001 KYOTO PROTOCOL PROVISIONS -- July 14, 2000				
Bill (sponsor)	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Com/State/Justice (Knollenberg, R-MI)	Bill language prohibits 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. A 6/26 House floor amendment (Rep. Olver, D-MA) was approved 217-181 that had the effect of overriding objectionable Committee report language that attempted to expand the scope of the rider. (Sec. 623)	No bill yet.	May will be unconstitutional if read to prevent State, DOJ, or DOC 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. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	

- why not highlight this instead of in addition to?*
- A 10-year research and development partnership between the U.S. government and nine major U.S. corporations ~~that~~ ^{who} manufacture trucks, diesel engines, and transmissions.
 - A multi-agency initiative to accelerate the international development and deployment of clean energy technologies. (See "New Program: International Clean Energy Initiative.")
 - A new fund to provide grants to state and local governments and tribes for reducing greenhouse gases and ground-level pollutants. (See "New Initiative: Clean Air Partnership Fund.")

New Program: International Clean Energy Initiative

to help
new
level

To help accelerate the development and deployment of clean energy technologies around the world, ~~The Clinton Administration is proposing~~ ^{ed} \$201 million for FY 2001, which is more than a 100 percent increase over FY 2000 enacted levels. ~~The funding is for a multi-agency initiative to encourage open competitive markets, remove market barriers to clean energy technologies in developing countries, and 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.~~ ^{would be}

New Initiative: Clean Air Partnership Fund

on
SA
Conf

In the Administration's FY 2001 budget, President Clinton proposed \$85 million for a new fund to provide grants to state and local governments and tribes for projects that reduce greenhouse gases and ground-level air pollutants like soot, smog, and air toxics. The fund will stimulate integrated, cost-effective pollution control; accelerate pollution reductions; spur public and private sector innovations in next-generation pollution control technology; and support local revolving funds, low-interest loan programs, and matching grants to leverage the original Federal investment.

The fund also will support projects such as building combined heat and power facilities that put waste heat to work, retrofitting municipal buildings to improve energy-efficiency, reducing pollution from electricity generation, and upgrading municipal fleets to make them more fuel-efficient.

U.S. Global Change Research Program

The United States Global Change Research Program (USGCRP) seeks to provide a sound scientific understanding of both the human and natural forces that influence the Earth's climate system. USGCRP science results provide useful information for environmental decision-making on issues such as climate change, ozone depletion, changes in ecosystems, and land use. This multi-agency effort is coordinated through the National Science and Technology Council.

FY 2001 KYOTO PROTOCOL PROVISIONS -- July 14, 2000

Bill (sponsor)	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Foreign Operations (Knollenberg, R-MI)	Bill language prohibits 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. An amendment offered 6/27 in Full Committee (Rep. Knollenberg) was approved (51-1) that had the effect of overriding objectionable report language that attempted to expand the scope of the rider. (Sec. 577)	Bill language prohibits 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. 576)	May will be unconstitutional if read to prevent State or USAID 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. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	

For FY 2001, the President is requesting \$1.74 billion for the USGCRP, an increase of \$39 million above the amount enacted for FY 2000. \$843 million is for scientific research and improvements to surface-based monitoring, (an increase of \$79 million, or about 10 percent). \$923 million is for NASA's development of Earth observing satellites to monitor climate change and other global changes (a decrease of \$34 million, reflecting the phasing of funding for large development projects). Important USGCRP budget highlights include:

- **Improved Climate Observations.** The FY 2001 budget provides \$26 million to enhance NOAA surface-based 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 will also be expanded.
- **The Global Water Cycle.** The FY 2001 budget provides \$308 million (an increase of \$35 million, or about 13 percent) for research on changes in the Earth's water cycle, which is one of the primary determinants of the Earth's climate. The water cycle is emerging as a top research priority because changes appear to be occurring already. The launch of NASA's EOS Aqua spacecraft in December 2000 will support this research by provide new global measurements of humidity, cloud properties, precipitation, snow, and sea ice.
- **Ecosystem Changes.** The FY 2001 budget provides \$224 million for research on the potential impacts of climate change and other stresses on forests, coastal areas, croplands, and other ecosystems (an increase of \$19 million, or 9 percent). New studies will improve our understanding of the relationships among land cover, land use, climate, and weather, and help identify "thresholds" for significant changes in ecosystems.
- **Carbon Cycle Initiative.** The FY 2001 budget request continues strong support for the multi-agency carbon cycle science initiative begun in FY 2000, providing \$227 million (an increase of \$23 million or 11 percent). This request includes funds to study how carbon cycles between the atmosphere, the oceans, and land, and the role of farms, forests, and other natural or managed lands in capturing carbon. Such carbon "sinks" may help the United States and other nations offset greenhouse gas emissions. Key agencies include the Departments of Agriculture (USDA), Energy, Interior, NASA, the National Science Foundation, and the Smithsonian Institution. Included in the request is \$13.5 million (an increase of over \$12 million) to significantly expand USDA Natural Resources Conservation Service soil carbon inventory and analysis efforts.

Leadership by the Private Sector

In addition to these actions at the Federal level, many corporations and sectors of the U.S. economy are moving forward to assume leadership roles in addressing climate change, realizing that the threat is real and that prudent action is called for. In recent months, a growing number of companies have committed to cutting their greenhouse gas emissions:

- **DuPont** announced three goals for 2010: to reduce its greenhouse gas emissions by 65 percent from a 1990 baseline; ~~the second is~~ to hold energy use flat at 1990 levels; and ~~the third~~, to generate 10 percent of DuPont's energy from renewables.

FY 2001 KYOTO PROTOCOL PROVISIONS -- July 14, 2000

Bill (sponsor)	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Interior (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.	May will 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.	
Transportation	No provision.	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. 337).	May will be unconstitutional if read to prevent DOT 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	

- **Motorola** pledged to reduce the company's perfluorocarbon emissions by 50 percent relative to a 1995 baseline by 2010. Motorola's target exceeds the goal for PFC reduction set by most of the other members of the semiconductor industry.
- **Johnson & Johnson** pledged a reduction of 7 percent below 1990 levels by 2010, with an interim goal of 4 percent by 2005. *new to J&J box*

DuPont and Motorola are just the latest additions to the roster of U.S. corporations that are taking action. The following is a sample of the other notable corporations that have stepped up to the challenge:

- **United Technologies** (producers of Otis elevators, Carrier air conditioners, Pratt & Whitney engines, and Sikorsky helicopters) announced a voluntary program to cut emissions by improving its world energy efficiency by 25 percent per unit of production by 2010. *compared to what year?*
- **IBM** announced a corporate-wide annual goal of improving energy efficiency by 4 percent through 2004, having already achieved an estimated 20 percent reduction from 1990 through 1997.
- **British Petroleum** extended its commitment to reduce greenhouse gas emissions by 10 percent below 1990 levels by 2010 to include its newly acquired U.S. subsidiaries, **Amoco** and **Arco**.

Make PNGV section
The public-private *Partnership for a New Generation of Vehicles (PNGV)* is showing important progress in reducing emissions from automobiles. **General Motors, Ford Motor Company, and Daimler-Chrysler** have announced plans to market highly fuel-efficient "hybrid" cars that will get 50 to 70 miles per gallon. Agencies: reviewer said that numbers need to be checked as are below PNGV goal and the prototypes that have been demonstrated. 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. *awk*

Ford Motor Company, General Motors, and Daimler-Chrysler also have announced production plans for fuel-efficient sport utility vehicles (SUVs) using technologies developed in part under PNGV. One vehicle achieves a city fuel economy of 40 mpg and is slated for introduction to the market in 2003. Another will be at least 15 percent more fuel efficient than conventional SUVs and will be on the market by 2004. Another is planning to introduce a fuel cell vehicle in 2003 or 2004.

State and Local Action

In addition to these efforts by government and industry, community leaders throughout the United States are working hard to forge sensible approaches to dealing with climate change. Local governments are in a pivotal position to help encourage climate change mitigation. Together with community leaders, local governments can initiate energy efficiency, transportation, air quality, waste reduction, land use, and risk management activities. Such actions reduce greenhouse gas emissions, enhance a community's livability, and improve the community's economic performance.

FY 2001 KYOTO PROTOCOL PROVISIONS -- July 14, 2000				
Bill (sponsor)	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
VA/HUD (Knollenberg, R-MI)	Bill language prohibits 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. Bill language is the same as enacted FY 2000 language. A House floor amendment (Rep. Olver, D-MA) was approved 314-108 on 6/21 that had the effect of overriding objectionable Committee report language that attempted to expand the scope of the rider. (EPA Env Programs/Mgmt section)	No bill yet.	May well be unconstitutional if read to prevent EPA 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. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	

they meet this or next week in New Orleans

CCAC?

too redundant w/ opening

The **International Council for Local Environmental Initiatives (ICLEI)**, an association of local governments is helping cities, towns, and counties in their efforts to reduce the emissions that contribute to climate change. ICLEI's *Cities for Climate Protection Campaign (CCP)*, which offers training and technical assistance 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. More than 70 U.S. cities and counties currently participate in the *Cities for Climate Protection Campaign*. (See chart) Improving

Participating cities throughout the United States are undertaking initiatives that directly target greenhouse gas emissions. For example, in 1999, Santa Monica, California, became the first municipality in the world to purchase 100 percent of its electricity from renewable sources. Among the many accomplishments that ICLEI reports for 1999 are emission reductions totaling 4.6 million tons of CO₂ equivalent from waste reduction programs; 2.4 million tons of emissions abated as a result of landfill methane recovery activities; and 0.19 million tons of emissions avoided due to transportation related initiatives.

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. The International Council for Local Environmental Initiatives coordinated issuance of the statement.

~~In addition to community action,~~ States also are doing their part to fight climate change. 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. Using weekly updates and information in a *State and Local Climate Change Outreach Kit* that is distributed to state and local leaders, many states are initiating outreach efforts to inform the public about the science and potential impacts of climate change.

but not ex. include counties

Finally, U.S. counties also are taking action. **The International City/County Management Association (ICMA)** is promoting greater understanding of climate change through its recently created *Local Climate Change Network*. To encourage local U.S. actions to reduce emissions of greenhouse gases, the network offers online information, a publication that highlights innovative local, state, and regional solutions, articles in member publications, discussion forums, and practical tools for measuring emissions and reductions. Interest in the program is strong. As of May 2000, more than 8,600 users had availed themselves of the analytical tools offered on ICMA's climate change website.

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 70 cities and counties currently participate in the Cities for Climate Protection Campaign.

DRAFT

FY 2001 KYOTO PROTOCOL PROVISIONS -- July 14, 2000				
Bill (sponsor)	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Agriculture (Emerson, R-MO)	Bill and report language prohibit funds from being used to implement the Kyoto Protocol, including activities specified in the Protocol, such as carbon emissions trading. This provision would become permanent as written. A House floor amendment (Rep. Knollenberg, R-MI) was approved on 7/10 that had the effect of overriding objectionable Committee report language that attempted to expand the scope of the rider. (Sec. 734)	No provision.	Provision may be unconstitutional in restricting the President's authority to negotiate international agreements. Might also limit current law activities to reduce greenhouse gases. Broader and more egregious than enacted FY 2000 "Knollenberg" language. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	

Include a Gore quote

Photo of Gore

Significant Results

From 1960 to 1996, the U.S. economy, measured by gross domestic product (GDP) in 1996 constant dollars grew by an average of 3.4 percent per year. During that period, the nation's primary energy use grew 2.1 percent annually. In effect, the nation's energy intensity—the amount of energy needed to support the nation's economic activity—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 new policy announcements. New investment, averaging about 17 percent of GDP over the last three years, appears to be driving much of the decline in energy intensity. The growing success of voluntary programs also appears to be contributing to lower energy use. The government's ENERGY STAR[®] programs, as but one example, are estimated to have reduced electricity consumption by more than 44 billion kilowatt-hours in 1999 alone.

Showerly
any
~~These efforts by government, industry, and state and local leaders are beginning to show results.~~
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 (CO₂) emissions was greater in the second half of the 1990s than it was in the first half. The President's newest proposed investments in clean energy technology and energy efficiency can further "de-couple" carbon emissions and economic growth.

- In 1999, the U.S. GDP grew by 4.2 percent while CO₂ emissions grew by only about 1 percent.
 - In 1998, the U.S. GDP grew by 4 percent while CO₂ emissions grew by only 0.4 percent
 - Overall, during the 1990s, the U.S. GDP grew almost three times more quickly than did energy-related CO₂ emissions.
- IF graph is shown*

Graphics: Insert graph, Growth in the U.S. Economy and CO₂ 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.

Chapter conclusion to come.

"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*

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
National Monuments (Rep. Hansen, R-UT)	Prohibits funds to be used for the purposes of design, planning, or management of Federal Lands as Nat'l Monuments under the 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).	

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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.

Why end?

FY 2000 EMERGENCY SUPPLEMENTAL APPROPRIATIONS -- June 26, 2000

RIDER	FY 2000 HOUSE	FY 2000 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
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 court-approved settlement, and Secretary's Tribal trust responsibilities.	
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.	

CHAPTER 1

INDUSTRY

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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 of 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. Agencies: reviewer asks: any numbers to put here?

Emissions of greenhouse gases from the industrial sector ^{is being} ~~can be reduced~~ through the use of a number of technologies. Among them are processes to increase energy efficiency, improve industrial processes, switch fuels, and employ combined heat and power systems.

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

End large font

The U.S. industrial sector, which spends more than \$100 billion annually on energy services and emits the equivalent of approximately 480 million metric tons of carbon equivalent (MMTCE), is responsible for approximately 27 percent of U.S. greenhouse gas emissions. Although this sector includes a large and highly diverse set of industries, energy use is concentrated in a relatively small segment. In fact, nine industries—agriculture (see Chapter 5), aluminum, chemicals, forest products, glass, metalcasting, mining, petroleum, and steel—account for roughly two-thirds of industrial energy consumption.

Carbon dioxide emissions from the combustion of fossil fuel for steam and process heat account for 62 percent of all greenhouse gas emissions from the industrial sector. Other significant sources of greenhouse gases—primarily methane in this case—are waste disposal (13 percent), fugitive emissions from natural gas systems (8 percent), and coal mining (4 percent). The remaining 13 percent of greenhouse gas emissions are byproducts of a variety of manufacturing processes that are sources of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocompounds (PFCs).

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 2000				
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)	Prohibits 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 Congress 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.	Blocks completion of ICBEMP, and therefore improvement of Federal land management agencies environmental 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.	

In general, emissions from the industrial sector tend to correlate with economic growth. But certain activities that result in emissions, such as heating and cooling of industrial buildings, also are affected by weather conditions.

Industry Initiatives on Climate Change

A broad movement is growing in corporate America toward recognition of the seriousness of the climate change issue, and a number of companies are undertaking forward-looking initiatives. For example, 11 major U.S. corporations, calling themselves the *Green Power Market Development Group (GPMDG)*, are purchasing green energy and otherwise providing support to the development of green energy markets. (See Chapter 3, "Electricity.")

"We do believe there is something to climate change. There is enough evidence that something is happening that we ought to start looking at this seriously."

*Terry Bresnihan
Ford spokesman*

*December 1999 announcement of Ford's withdrawal
From the Global Climate Coalition*

"As a global company, however, 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 and
Chief Technology Officer*

*February 2000 announcement of Texaco's withdrawal
From the Global Climate Coalition*

In addition, 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 some 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." *Boa*

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.

In 2000, **Johnson & Johnson** and **IBM** were 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. *Other?*

FY 2000 EMERGENCY SUPPLEMENTAL APPROPRIATIONS -- June 26, 2000

RIDER	FY 2000 HOUSE	FY 2000 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Army Corps of Engineers (Sen. Stevens, R-AK) (Sen. Domenici, R-NM)	No provision	Prohibits funds to be spent to restructure, reorganize, abolish, transfer, consolidate, or otherwise modify the organizational or management structure of the Army Corps of Engineers. (Sec. 3102)	Prohibits clarifying accountability of senior Corps officials in accordance with existing law. Also, attempt to micromanage executive agency and impede Administration's ability to implement management reforms and organizational changes.	
Oregon Inlet (NC) Jetty (Sen. Helms, R-NC)	No provision.	Requires, within 60 days of enactment, Interior to transfer lands within a national seashore and a national wildlife refuge to the Army Corps of Engineers for a jetty and sand transfer system. (Sec. 3108)	Prejudges and overrides an ongoing EIS process and ignores potential detrimental environmental impacts to a national seashore and a national refuge.	
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.	

Johnson & Johnson: A Win-Win

Johnson & Johnson, the pharmaceutical company, estimates that its efforts to improve energy efficiency in its facilities and manufacturing processes are saving \$3.8 million a year. Beginning in 1991, the company cut energy use by 8 percent during a period when production soared by 330 percent.

(gov't 1st would go in gov't ch)

Community-Business Partnerships

Local governments participating in *Cities for Climate Protection*, ^{the} a program of the **International Council for Local Environmental Initiatives (ICLEI)**, are working with industries to reduce greenhouse gas emissions. By forming partnerships with local industrial and manufacturing businesses, these governments have found a match between meeting climate protection goals and helping local businesses become energy efficient.

Jurisdictions participating in ICLEI's Cities for Climate Protection program have obtained climate protection commitments from 264 companies that manufacture such products as cement, coffee, ice cream, electronics, and medical supplies, as well as printing companies, universities, hospitals, and grocery stores. A total of 142 of these companies already have developed and are implementing plans to save energy, cut fuel use, and reduce waste.

Energy Efficiency in Industrial Processes

The cornerstone of the U.S. strategy to reduce greenhouse gas emissions from the industrial sector is the development of partnerships between the government and private industry to improve efficiency and reduce waste. Some Federal government industrial energy programs, such as *Industries of the Future*, focus on the most energy-intensive industries, while other Federal programs like *WasteWise* are broader in scope and draw partners from virtually every industry sector. The Federal government is not alone in these efforts. U.S. industry leaders as well as state and local governments also are implementing a variety of innovative approaches to reducing emissions.

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.

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\$1.4 BILLION LANDS LEGACY INITIATIVE

(Discretionary budget authority, in millions of dollars)

Lands Legacy Discretionary Funding By Agency

Department of the Interior	237	240	344
Department of Agriculture (Forest Service)	97	155 ^{1/}	217
Department of Commerce (NOAA)	46	78	165
Total	380	473 ^{1/}	727

Request	House	Senate	Latest Mark	from Request
735	193	190	(545)	-74%
236	94 ^{2/}	137 ^{4/}	(99)	-42%
429	159 ^{3/}	na	(269)	-63%
1,400 ^{1/}	446	327		
971	287 ^{2/}	327 ^{4/}	(644)	-66%
735	193	190	(545)	-74%
236	94	137	(99)	-42%
429	159 ^{3/}	na		
1,400 ^{1/}	446	327		

Lands Legacy Funding By Appropriations Committee

Interior and Related Agencies	334	395	561
<i>Department of the Interior</i>	237	240	344
<i>Department of Agriculture (Forest Service)</i>	97	155 ^{1/}	217
Commerce/Justice/State (NOAA)	46	78	165
Total	380	473 ^{1/}	727

* Federal land acquisition and state conservation grant funds are derived from the Land and Water Conservation Fund (LWCF).

1/ In addition, while part of the Lands Legacy Initiative, USDA's Farmland Protection Program would be funded in 2001 at \$65m in mandatory funding within the Administration's Farm Safety Net Initiative. The 2000 request was \$50m in discretionary funding; \$250k was appropriated.

2/ House Floor action on Interior and Related Agencies.

3/ House Committee on Appropriations

4/ Senate Subcommittee action on Interior and Related Agencies.

The government's *Best Practices Program* is an initiative aimed at improving energy efficiency in U.S. manufacturing plants. The best practices program provides technical assistance services and tools related to motor, steam, and compressed air systems. The 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.

<http://www.oit.doe.gov/bestpractices/>

An example is the *Steam Challenge* program, which helps industrial partners retrofit, operate, and maintain their steam systems more efficiently and more profitably. It is estimated that the Best Practices Program will help industry save more than \$600 million and avoid 2.5 MMTCE in 2010. <http://www.oit.doe.gov/steam/>

per year? **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 465,000 pounds of greenhouse gas emissions a year. Centerplex estimates it was able to recover the cost of its environmentally and economically sound investment in only 18 months.

? — **A similar program, *Motor Challenge***, is an industry-government partnership that increases the market penetration of energy-efficient motor-driven systems. A key element in the Motor Challenge strategy is to encourage a new 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 \$370 million per year based on present electricity costs. Energy savings from just 13 demonstrations are 131 trillion Btu per year, or almost \$2 million per year in cost savings.

not nec w/ IOTF Clean Energy already highlighted
Another program, ~~*Industries of the Future*~~, works in partnership with the nation's most energy-intensive industries and is accelerating research, development, and deployment of technologies that increase energy and resource efficiency. Two key elements of the program's strategy include developing an industry-driven document outlining each industry's vision for the future and a technology roadmap to identify technologies needed to reach that industry's goals. By 2010, participating industries are projected to avoid 15 MMTCE and realize \$3 billion in energy savings annually. <http://www.oit.doe.gov/industries.shtml>
AND a box

An Efficient Steel Industry

Industries of the Future works in partnership with the U.S. steel industry—the fourth largest energy-consuming manufacturing subsector in the country—to enhance its long-term competitiveness. Steel industry partners co-fund projects to increase energy efficiency and reduce waste. Today, steel scrap generated in steelmaking plants and during the manufacture of steel products is being recycled at a rate close to 100 percent. More than 90 percent of obsolete scrap from discarded cars, appliances, and post-consumer products currently is recycled.
<http://www.oit.doe.gov/steel/>

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DRAFT

\$1.4 BILLION LANDS LEGACY INITIATIVE

(Discretionary budget authority, in millions of dollars)

	1993 Actual	1999 Actual	2000 Estimate	FY 2001 Proposed	House Mark	Senate Mark	Latest Mark	from Request
							\$	%
Federal Land Acquisition (LWCF)	255	329	419	450	174 ^{2/}	180 ^{4/}	(270)	-60%
Federal Land Acquisition (DOI)*.....	193	211	263	320	122	103	(217)	-68%
Federal Land Acquisition (FS/USDA)*.....	62	78	95	130	52	76	(54)	-41%
Baca Ranch NM One-time Acquisition (FS/USDA)*.....	0	40	61	0				
DOI/USDA State Conservation Programs	79	67	142	521	113 ^{2/}	147 ^{4/}	(374)	-72%
Subtotal DOI	44	29	81	415	71 ^{2/}	86 ^{4/}	(329)	-79%
LWCF State Conservation Grants (NPS/DOI)*.....	28	0	41	150	31	41	(109)	-73%
State Non-Game Wildlife Grants (FWS/DOI).....	--	--	--	100	--	--	(100)	-100%
State Planning Partnerships (USGS/DOI).....	--	--	--	50	--	--	(50)	-100%
Coop. Endangered Species Conservation Fund (FWS/DOI)	7	14	23	65	23	27	(38)	-59%
North American Wetland Conservation Fund (FWS/DOI)....	9	15	15	30	15	17	(14)	-45%
Urban Parks and Recreation Recovery Grants (NPS/DOI)...	0	0	2	20	2	2	(18)	-90%
Subtotal USDA	35	38 ^{1/}	61	106	42	61 ^{4/}	(45)	-43%
Forest Legacy Program (FS/USDA).....	10	7	30	60	10	30	(30)	-50%
Urban and Community Forestry (FS/USDA).....	25	31	31	40	32	31	(9)	-23%
Smart Growth Partnership (FS/USDA).....	--	--	--	6	--	--	(6)	-100%
NOAA/DOC Coastal Programs	46	78	165	429	159 ^{3/}	na	(269)	-63%
National Marine Sanctuary Program.....	7	14	26	35	26		(10)	-27%
Coastal Zone Management Act (CZMA) Program.....	35	58	59	159	62		(97)	-61%
Coastal Impact Assistance Grants.....	--	--	--	100	--		(100)	-100%
Pacific Northwest Salmon Fund.....	--	--	58	100	58		(42)	-42%
National Estuarine Research Reserves System.....	3	4	12	20	12		(8)	-40%
Coral Restoration.....	0	0	6	15	0		(15)	-100%
Dredging and other NOAA Programs.....	0	2	5	0	2		2	na
Total Lands Legacy Discretionary Funding	380	473 ^{1/}	727	1,400 ^{1/}	446	na		

Greening the Cement Industry

Cement manufacturing accounts for approximately half of U.S. CO₂ emissions from industrial sources. Companies representing more than 70 percent of U.S. cement production are working with the Federal government to take advantage of the latest methods for improving energy efficiency and reducing emissions. These companies have produced action plans to help them reduce annual emissions by 8 percent below their business-as-usual projection, with annual estimated cost savings of \$2.3 million.

Recovering Useful Methane

are we partners?

U.S. industry works in partnership with the 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)*, provides technical information and support to the multiple stakeholders in landfill projects, including state agencies, energy companies, communities, and industry. The landfill program has assisted more than 140 planned and operational projects through such activities as providing decision support software, identifying potential partners, and addressing specific technical or regulatory issues.

Lucky Lucent Saves Big

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. Along with saving the company money, Lucent's new fuel source is reducing annual greenhouse gas emissions by 0.1 MMTCE—an amount equivalent to removing more than 23,000 automobiles from the road. For Lucent, a notable benefit of the landfill gas-to-energy project is a cost savings of more than \$100,000 per year. 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.

The *Coalbed Methane Outreach Program (CMOP)* works with coal mines and project developers to identify attractive opportunities and participants. The government profiles promising projects, develops technical and cost evaluation models, and undertakes studies on specific project implementation issues. As a result of the program, 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 is an initiative that works with more than 70 gas production, transmission, and distribution companies committed to evaluating the applicability of various best management

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	3,687	F		
State Revolving Funds (SRFs):							
Clean Water.....	1,350	1,345	800	1,200	F		
Drinking Water.....	775	820	825	825	F		
Superfund.....	1,492	1,400	1,450	1,270	F		
Polluted Runoff Control Grants (Sec. 319).....	200	200	250	220	F		
Clean Air Partnership Fund.....	—	0	85	0	F		
Great Lakes Initiative.....	18	17	67	17	F		
Superfund Orphan Share (mandatory).....	0	0	150	0	F		
Total, EPA.....	7,589	7,563	7,257	7,144	F		
DOI:							
National Park Service Operating Program.....	1,286	1,364	1,454	1,502	F	1,434	SC
Bureau of Land Management Operating Program.....	708	743	819	772	F	797	SC
Fish and Wildlife Service Operating Program.....	660	715	762	731	F	758	SC
USDA:							
Forest Service Operating Program.....	1,595	1,585 ^{2/}	1,711 ^{2/}	1,642	F	1,682	SC
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	379	FC		
Oceans and Coastal Management.....	178	188	314	173	FC		
Ocean and Atmospheric Research.....	287	301	303	252	FC		
DOE:							
Cleanup (Env. Mgmt. Program).....	5,843	5,878	6,318	5,985	SC		
Solar and Renewable Energy R&D (net).....	336	315	410	303	SC		
Energy Conservation and Efficiency (gross).....	692	745	851	650	F		
DOD:							
Cleanup.....	1,962	1,634	2,136	2,146	F	2,179	F
Env. Compliance/Pollution Prevent/Conserv.....	2,434	2,337	2,180	2,180	F	2,215	F

practices. The program provides partners with detailed technical and economic information on how to reduce emissions, as well as recognition for their efforts. The program has identified more than 50 previously unrecognized ways of economically reducing methane emissions, which now are being widely adopted by industry. In 1999, the partnership expanded into the gas processing sector.

Success in Reducing Methane Emissions

All of the methane recovery programs have secured wide participation from key industry groups. To date, more than 140 landfills, 20 coal mines, and 70 natural gas companies are participating in the methane programs. Key companies, states, and trade associations also are working to promote methane recovery.

Partnerships to Reduce Waste

The *WasteWise* program works with U.S. businesses; Federal agencies; state, local, and tribal governments; and other institutions to reduce municipal solid waste. These partnerships reduce greenhouse gas emissions through energy savings, increased carbon sequestration, and avoided methane emissions from landfills.

Making the Most of Green Waste

Albuquerque, New Mexico, developed a green waste recycling and composting program to recycle a portion of the green waste that would otherwise be placed in the city's landfill sites. Green waste, which is also called yard waste, consists of leaves, tree trimmings, weeds, grass, and other organic material. Albuquerque's program processes these materials into horticultural compost or mulch that is either used in the city's parks or sold to the community through local retailers. The program is reducing carbon dioxide emissions by more than 4,600 tons per year.

The WasteWise program helps participating organizations discover waste reduction opportunities and set waste reduction goals. Program partners voluntarily set goals in three areas: waste prevention, recycling, and the purchase or manufacture of recycled products. Partners track their progress during a three-year period and report annually on their accomplishments.

WasteWise has grown from 361 partners in 1994 to its current membership of more than 1,000. WasteWise 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.

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,

ENVIRONMENTAL SCORECARD -- FY 2001 BUDGET

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

	1999	2000	2001					Conf
	Actual	Enacted	Budget	House Action	Mark-up Status	Senate Action	Mark-up Status	
Endangered Species Act								
DOI.....	91	108	115	112	F	119	SC	
NOAA.....	38	44	55	43	FC			
Total.....	129	152	170	155				
Salmon								
NOAA.....	0	68	160	58	FC			
Corps.....	95	68	91	80	SC			
DOI.....	0	5	0	0	F	0	SC	
State.....	0	10	0	0	FC			
Total.....	95	151	251	138				

collected 10,273 tons of recyclables, purchased 37,423 tons of recycled-content products, and saved \$91,059,300 through its waste reduction efforts.

Reducing High GWP Gases

Public-private partnerships are substantially reducing emissions of PFCs and several HFCs, the "high global warming potential" (GWP) gases. PFCs commonly have atmospheric lifetimes on the order of thousands of years, and PFCs and HFCs are the most potent of all greenhouse gases.

Environmental Stewardship Partnerships are designed to halt the growth in emissions of high GWP gases, which are released as byproducts of industrial operations, and to reduce emissions of high GWP gases used as substitutes for ozone-depleting compounds. 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* is reducing emissions of PFCs and HFCs from semiconductor manufacturing. The program 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.

The *Voluntary Aluminum Industrial Partnership (VAIP)* is reducing PFC emissions while increasing the efficiency of primary aluminum production. Each partner tailors the program to reflect its own particular mix of technology, management structure, and operational practices. Since the program's launching in 1995, its 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. In 1999, the Intergovernmental Panel on Climate Change updated its global estimation methods for HFC-23 emissions using measurement analysis developed through this U.S. partnership.

Two new partnerships, the *SF₆ Emission Reduction Partnership for Electric Power Systems* and the *SF₆ Emission Reduction Partnership for the Magnesium Industry*, are working with other industrial sectors to identify and encourage adoption of best management practices for reducing emissions of sulfur hexafluoride (SF₆), a highly potent greenhouse gas. The program to reduce emissions from electric transmission and distribution systems now represents approximately 25 percent of the U.S. industry. The program to reduce emissions from primary magnesium smelting and magnesium die casting already represents 60 percent of U.S. emissions from this industry.

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	5	F		
NSF.....	40	42	47	42	F		
EPA.....	28	26	40	26	F		
DOC.....	30	23	16	7	F		
DOT.....	3	0	4	0	F	0	F
Total.....	235	226	256	80			
Clean Water Action Plan							
EPA.....	605	603	762	767	F		
USDA							
Agriculture & Rural Development.....	1	20	91	29	FC	40	FC
Interior and Related Agencies.....	503	542	627				
DOI.....	348	362	395	363	F		
NOAA.....	17	15	22	15	FC		
Corps.....	106	117	145				
Everglades.....	221	284	334				
– DOI.....	(144)	(145)	(144)	(73)	F		
– Corps.....	(45)	(114)	(158)	(140)	SC		
– Other.....	(32)	(29)	(34)	(30)	F		
California Bay-Delta Ecosystem Restoration.....	75	60	60	0	SC		
Total (minus double counts).....	1,870	1,997	2,431				
Montreal Protocol							
EPA.....	11	12	21	12	F		
State.....	34	28	28	26 1/2	SC	23 1/2	F
Total.....	45	40	49	38			
GLOBE							
NASA.....	5	5	5	5	F		
NOAA.....	3	3	5	0	FC		
EPA.....	0	1	1	0	F		
NSF.....	2	2	2	2	F		
Total.....	10	11	13	7			

CHAPTER 2

BUILDINGS

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Two of the most promising trends for reducing emissions from the U.S. buildings sector are the increasing deployment of energy efficiency technologies and greater use of combined heat-and-power generation in commercial facilities. The sector has other promising 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.

Studies show that by using proven cost-effective products and 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.

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The buildings sector, comprising primarily residential and commercial facilities, is responsible for approximately 35 percent of U.S. greenhouse gas emissions. Residential buildings account for about 56 percent of those emissions. Electricity consumption for lighting, heating, cooling, and operating appliances accounts for the majority of greenhouse gas emissions from both types of buildings. The remaining emissions are largely due to the use of natural gas and petroleum, primarily for meeting heating and cooling needs.

From 1984 to 1997, total energy consumption by U.S. residential units increased 19 percent. The decrease of emissions from space heating was partially offset by an increase in energy consumption for appliances and lighting. With commercial buildings, however, total energy consumption remained roughly constant from 1989 to 1995, as did energy use per square foot.

Community Actions on Energy Use in Buildings

Improving the energy efficiency of buildings is a priority for state and local governments. One program, *Rebuild America*, helps communities save energy and dollars by improving the energy performance of the built environment and incorporating energy efficiency and renewable energy technologies into the design of new facilities. 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, the technologies to use, and the quantity of energy to save. When building efficiency is increased, the demand for burning fossil fuels decreases and pollution is eased. By investing in energy-efficient buildings, communities can help stimulate economic development through job creation. <http://www.eren.doe.gov/buildings/rebuild/>

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
Greening the Globe Initiative							
USAID.....	60	64	100	64	SC	100	F
Treasury.....	—	13	37			0	F
USDA.....	3	3	10	5	F	5	SC
DOI.....	2	2	3	2	F		
Total.....	65	80	150				
Livability Initiative							
Mass Transit (DOT).....	5,390	5,785	6,321	6,271	F	6,271	F
Congestion Mitigation & Air Quality (DOT).....	1,408	1,509	1,557	1,636	F	1,661	F
Transportation Enhancements (DOT).....	632	685	719	719	F	749	F
Trans. & Comm. & System Presev. Pilot (DOT).....	14	35	52	27	F	25	F
C/FIP							
DOI.....	2	2	32	0	F		
USDA.....	0	0	5	0	F	0	FC
Other.....	15	13	13				
Non-Environmental Components.....	65	125	618				
Total.....	7,526	8,154	9,317				
Climate Change Technology Initiative							
DOE							
Energy and Water.....	345	348	451	341	SC		
Interior and Related Agencies.....	545	632	718	531	F		
EPA.....	109	103	227	103	F		
USDA							
Agriculture & Rural Development.....	0	0	11	0	FC	3	FC
Interior and Related Agencies.....	0	0	13	0	F	5	SC
DOC.....	0	2	0	0	FC		
HUD.....	10	10	12	10	F		
Tax Incentives.....	0	0	(201)	0			
Total (excludes tax incentives).....	1,009	1,095	1,432	985			

The United States wastes \$12 billion every year due to inefficient and outdated building energy technologies. Such waste can be readily avoided given the caliber of building technology available. Rebuild America strives to increase awareness among community leaders about the high price that communities pay for inefficient buildings—and how these wasted energy dollars can be redirected to pay for building improvements. The government actively supports Rebuild America partnerships by providing on-site technical assistance, workshop training, and access to the expertise, analytical tools, guidebooks, and other resources available from the department's national laboratories.

Rebuild America partnerships in 51 U.S. states and territories are committed to performing energy retrofits on 479 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

The *Rebuild Duke University Facilities* partnership completed lighting and water conservation improvements in 1998 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 those campus buildings that consume the greatest amount of energy. The buildings range from 150,000 square feet to 600,000 square feet. 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. Rebuild Duke University Facilities achieved energy savings of \$600,000 and 42.1 billion Btu annually.

Seventy-eight U.S. cities currently participate in the **International Council for Local Environmental Initiatives' (ICLEI) Cities for Climate Protection (CCP)** campaign. Local governments that participate in Cities for Climate Protection 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 measures that are reducing emissions from municipal buildings by more than 0.01 million metric tons of carbon (MMTCE) per year. These localities, in partnership with their local business communities, have generated annual emission reductions in excess of roughly 0.1 MMTCE from buildings owned by the private sector. (See also "Executive Summary" and Chapter 1, "Industry.")

Reducing Emissions Chicago Style

Rebuild Chicago is a city-operated program that reduces energy use by commercial and industrial facilities. City energy department staff members provide free energy audits that outline the most effective energy conservation measures for individual businesses. The city then provides a grant of up to 25 percent for lighting and 50 percent of other projects for energy reducing measures. In 1999, participants in the Rebuild Chicago program eliminated 8,063 tons

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
MULTI-AGENCY INITIATIVES:							
Lands Legacy Initiative							
DOI.....	240	344	735	193	F	190	SC
USDA							
Interior and Related Agencies.....	155	217	236	94	F	137	SC
NOAA.....	78	165	429	159	FC		
Total	473	726	1,400	446			
Farm Conservation Initiative (USDA)							
Conservation Security Program.....	---	---	600	0	FC	0	FC
Wetlands Reserve Program.....	113	165	259	46	FC	46	FC
Conservation Reserve Program.....	1,462	1,477	1,690	1,690	FC	1,690	FC
Environmental Quality Incentives Program.....	174	174	325	174	FC	174	FC
Farmland Protection Program.....	---	---	65	0	FC	0	FC
Wildlife Habitat Incentives Program.....	20	0	50	0	FC	0	FC
Technical Assistance.....	28	35	110	0	FC	0	FC
Total (mandatory)	1,797	1,851	3,099	1,910	FC	1,910	FC
International Clean Energy Initiative							
USAID.....	68	79	109	79	SC	79	F
DOE							
Energy and Water.....	6	3	32				
Interior and Related Agencies.....	---	---	20	13	F		
DOC.....	---	---	4	0	FC		
Trade & Development Agency.....	16	16	21			16	F
Eximbank.....	---	---	15			0	F
Total	90	98	201				
Biobased Products & Bioenergy							
DOE							
Energy and Water.....	99	100	130				
Interior and Related Agencies.....	10	25	44	15	FC		
USDA							
Agriculture & Rural Development.....	60	57	94	62	FC	60	FC
Interior and Related Agencies.....	9	9	19	9	FC	14	SC
Total	178	191	287				

or XXXXXX MMTCE of greenhouse gas emissions through reductions in the use of electricity and natural gas. Agencies: what unit is 8,063 tons in? Carbon or carbon dioxide?

"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 Save Energy As Well As Minds

change text

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. *EnergySmart Schools* helps operators of school buildings create local partnerships to plan and implement cost-saving improvements. 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. <http://www.eren.doe.gov/energysmartschools/>

The government's ~~ENERGY STAR~~[®] label for schools 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.

Daniel Boone High School

Daniel Boone High School, located in Washington County, Tennessee, was constructed in 1973 to serve approximately 1,100 students. The school has realized a 34 percent reduction in annual energy costs since 1995, when a geothermal heating and cooling system was installed. 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.

Improving Energy Efficiency in Federal Facilities

The U.S. government is serving as a model for emissions reductions in its own buildings. In addition, the government works closely with industry through two highly successful public-private initiatives, *ENERGY STAR* and the *Partnership for Advancing Technology in Housing (PATH)* program, as well as a number of other initiatives aimed at reducing emissions from residential and commercial buildings.

ENVIRONMENTAL SCORECARD -- FY 2001 BUDGET

NRES AND NOAA AGENCY TOTALS

AS OF JUNE 23, 2000

(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
USDA (NRD Programs)							
Agriculture & Rural Development.....	7,934	8,259	8,660	8,045	FC	8,407	FC
Interior and Related Agencies.....	2,652	2,812	3,110	2,740	FC		
Total.....	10,586	11,071	11,770	10,785			
DOI							
Interior and Related Agencies.....	7,010	7,392	8,333	7,318	F	7,662	SC
Energy and Water (BuRec & CUP, Net).....	789	764	804	733	SC		
Total.....	7,799	8,156	9,137	8,051			
DOE							
Interior and Related Agencies.....	1,251	1,236	1,298	1,339	F		
Energy and Water.....	16,603	16,104	17,641	16,739	SC		
Total.....	17,854	17,340	18,939	18,077			
EPA (VA/HUD Bill)							
EPA (without Superfund HHS funding).....	7,453	7,433	7,144	7,144	F		
HHS Superfund funding.....	136	130	113	130	F		
EPA (with Superfund HHS funding).....	7,589	7,563	7,257	7,274	F		
ARMY CORPS							
Energy and Water.....	3,990	4,113	4,064	4,124	SC		
NOAA							
Commerce, State, Justice.....	2,212	2,328	2,784	2,231	FC		

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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. 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. <http://www.whitehouse.gov/Initiatives/Climate/fedenergy.html>

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 more than \$750 million a year. In addition to direct benefits from emission abatement, the order will contribute to future emission reductions by expanding markets for renewable technologies and serving as a powerful example to U.S. businesses and consumers.

The Greening of the White House

On Earth Day 1993, President Clinton launched an initiative 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 greenhouse gas emissions by 845 metric tons, or Agencies—what unit is this in—carbon? Carbon dioxide? XXXXXX MMTCE—the equivalent of removing more than 600 automobiles from the road.
<http://solstice.crest.org/environment/gotwh/index.html>

Washington?

Teaching Old Buildings Some New Energy Tricks

One U.S. government agency is housed in three buildings in Washington, D.C., that 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 involved implementing 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, thanks to energy management program, 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.

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The Executive Order calls for agencies to use a wide range of energy management tools to fulfill the new energy efficiency, renewable energy, and greenhouse gas reduction goals. For example, financing options such as *Energy Savings Performance Contracts (ESPCs)* offer Federal agencies powerful tools for leveraging private sector financing to fund cost-saving energy improvements. Under ESPCs, private sector energy service companies finance the upfront cost of purchasing and installing new energy-efficient equipment. 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. Since the signing of the Executive Order, more than \$400 million in investments have been planned for ESPCs and other energy-saving measures.

Greening the Statue of Liberty

The U.S. government made use of energy savings performance contracting (ESPC) to install energy-efficient lighting and energy management controls at the Statue of Liberty National Monument. The project began in 1992 and is contracted for a 15-year period. The project's ESPC has an investment value of \$1 million and is expected to result in annual energy savings of approximately 4 billion Btu per year, or approximately 0.0002 MMTCE.

More than 70 percent of the government's costs for energy used in buildings is related to the use of electricity, so the Executive Order requires agencies to consider the source of their electricity and 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.

The Executive Order also requires government agencies to consider off-grid electricity^{explain} opportunities that provide energy and environmental benefits, while allowing agencies to avoid the costs of building new transmission lines or digging up existing lines. Off-grid options can be particularly effective in remote locations such as some U.S. national parks. Technologies range from solar outdoor lighting to small wind turbines and fuel cells.

Energy Efficiency in Private Buildings

Way
too much
Energy
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.

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"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*

The ENERGY STAR buildings program 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 to achieve significant savings in both dollars and greenhouse gas emissions. A new energy performance rating system for commercial buildings allows the most efficient buildings across the country to be awarded the ENERGY STAR label. This innovation in the commercial marketplace has motivated new sectors to capture the environmental and financial value of improved energy performance.

Cumulatively, ENERGY STAR buildings partners, which represent 15 percent of the U.S. commercial, public, and industrial building market, have invested more than \$3.6 billion in energy-efficient technologies and, in 1999 alone, saved more than 20 billion kWh of energy. - *Howard P.*

Going forward, the recently introduced Building Benchmarking Tool will, for the first time, allow 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. In addition, ENERGY STAR buildings recently developed, and made available a benchmarking tool that is specifically designed for schools.

In 1999, the government introduced a new energy performance rating system for commercial buildings that allows the most efficient buildings across the country to be awarded the ENERGY STAR label. This innovation in the commercial marketplace has motivated new sectors to capture the environmental and financial value of improved energy performance. More than 1,000 buildings were rated in 1999 using this new system, and 90 qualified for the new label, which serves as a good model for market-driven solutions.

Better Quality, Better Earnings, Better Environment

ENERGY STAR started with a program called *Green Lights* in 1991. When airplane manufacturer **Boeing** joined the Green Lights program to improve the company's lighting efficiency, it reduced energy consumption by 200 million kilowatt-hours a year. This move cut Boeing's annual operating costs by \$12 million and produced another unexpected benefit—better quality products. The new lighting in one building boosted the defect detection rate by 20 percent.

DRAFT

Tracking of FY 2001/FY 2000 Supp Environmental Funding and Riders

Second Session/106th Congress

June 26, 2000

**Contacts: Wesley Warren (395-4561)
Ron Cogswell (395-4586)**

(Close hold; not for general distribution; changes in bold)

Partnering with Home Builders

The *Partnership for Advancing Technology in Housing (PATH)* is a public-private partnership with 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. (<http://www.pathnet.org/>) PATH aims to reduce the monthly cost of new housing by 20 percent or more; cut the environmental impact and energy use of new housing by 50 percent or more; reduce energy use in at least 15 million existing homes by 30 percent or more; improve durability and reduce maintenance costs by 50 percent; reduce by at least 10 percent the risk of loss of life, injury, and property destruction from natural hazards; and decrease by at least 20 percent illnesses and injuries from residential construction work. Accomplishing these objectives would save consumers \$11 billion in annual energy costs and reduce annual carbon emissions in 2010 by nearly 24 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, and has an additional 25 demonstration and field evaluation sites nationwide.

Graphics: Insert housing picture here (file: housing_construction)

PATH operates five working groups to gain input from industry and other partners on finance, consumer education, barriers and insurance, and technology roadmapping. In FY 2000, PATH funded more than \$2 million in housing technology research, including key energy efficiency technologies such as super-insulating panels and advanced solar roofing.

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."

*entirely
a part of a full
discussion*

Energy Efficient Products

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Pennsylvania Avenue Improvements (DC) Rep. Norton (D-DC)	Continues the FY 1998 prohibition on planning, design, or construction of improvements to the closed portion of Penn. Ave. without advance Committee approval. (Sec. 325).	Identical to House (Sec. 324).	This rider was accepted in previous years. It could preclude working with all parties to resolve concerns about the closure and review planning and design alternatives, but funding for projects would require Committee approval regardless of the rider.	
Alaska Red Cedar	Attempts to link the export of certain high-value timber from the Tongass National Forest, to attainment of the annual Tongass allowable sales quantity (ASQ). Identical to FY 2000 enacted compromise provision and similar to FYs 1998 and 1999 riders. (Sec. 329).	Same as House provision.	Establishes (under certain complex circumstances) incentives for non-Alaska interests to support reaching Tongass ASQ, by leveraging the amount of Western Red Cedar available for export to the lower 48 (mostly WA) and to international markets. Per Forest Service experts, provision is unnecessary and unmanageable.	

The ENERGY STAR label is helping overcome informational, institutional, and organizational barriers that work against the development and diffusion of energy-efficient technologies. By making it easy for consumers to identify high-quality, energy-efficient products for their homes and offices, ENERGY STAR labels are making it possible for consumers to reduce expenditures on energy services while contributing to climate change mitigation goals. Consumers are informed about the economic and environmental benefits of energy-efficient products through public service advertisements, media events, and the distribution of brochures and other types of outreach materials.

Progress to date is substantial. The ENERGY STAR label is now recognized by 30 percent of the American public. At 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 has 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.

ENERGY STAR Cumulative Benefits through 2010 for Buildings and Products

	ENERGY STAR Buildings	ENERGY STAR Products
Expenditures	\$7.0	\$0.7
Savings on Energy Bills	\$19.8	\$26.3
Net Savings	\$12.8	\$25.6
MMTCE Avoided	45	60
Equivalent Cars Off Road	36 million	49 million

Buildings Research and Technology Dissemination

The U.S. government undertakes energy research and technology dissemination applicable to the building sector through a variety of programs. The *Weatherization Assistance Program (WAP)* provides energy-efficiency services to low-income families and individuals in the United States who might not otherwise have access to emerging energy-saving technologies. Created in 1976 by the Energy Conservation in Existing Buildings Act, 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 for low-income families, saving \$1.80 in energy costs for every \$1.00 invested over the life of the measures and 0.11 MMTCE annually. http://www.eren.doe.gov/buildings/weatherization_assistance/index.html

The government is laying the groundwork for future strengthening of the Weatherization Assistance Program. Through a new strategy called *Weatherization Plus*, which will incorporate advanced technologies in a whole-house approach and adopt a whole-community approach to enhancing program benefits, the WAP program will be able to greatly increase the energy saved and the number of families served. Through this approach, energy savings and the leverage of program funds will increase, while emissions of pollutants will decrease.

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Endangered Species Act Tribal Treaty Rights	No provision included.	The Senate continues a FY00 provision that allows funds to be expended to implement a Secretarial Order, with the exception of two provisions that the managers believe give preferential treatment to Indian activities and tribal lands—when determining conservation restrictions for listed species and designations of critical habitat—at the expense of non-Indians and non-tribal lands (Sec. 122).	The non-legally binding order spells out federal roles and responsibilities conducting ESA requirements that effect Tribes and tribal lands.	
Restrictions on National Forest Management Plans	Limits the use of funds for new or revised plans until the pending final Forest Planning rule (to be promulgated this fiscal year) is completed. Similar riders enacted in FYs 1998, 1999, and 2000. (Sec. 321)	Same as House provision.	Should be moot if the final Forest Planning rule is issued on schedule. Otherwise in FY 2001, the rider would continue to block the Forest Service from incorporating the latest science into its forest plans.	

2. Heat warmer?
The government's *Solar Buildings* program has provided \$2 million in funding to help develop *Transpired Solar Collectors*. This project has created one of the most efficient solar collectors currently available for commercial use. ~~Transpired solar collectors 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 preheating the large quantities of ventilation air that most industrial and commercial buildings must pull in during the fall and winter. <http://www.eren.doe.gov/solarbuildings/> Photo available?

Conserval markets the technology as the Solarwall® and has installed more than 50 systems since 1992. **Ford Motor Company, General Motors, Federal Express, and McDonnell Douglas** are on the growing list of industrial users of this technology. A typical system (6,237 square feet of collector area) saves 1,665 million Btu per year. Current annual energy savings for installed systems is approximately 86,600 million Btu, saving about \$400,000 in avoided fuel costs and reducing annual CO₂ emissions by 10 million pounds. Over their lifetimes, the currently installed systems will displace 2.2 trillion Btu of energy, save \$10 million in avoided fuel costs, and reduce emissions by 0.03 MMTCE.

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FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Limitation of Tribal Priority Allocations (TPA) in the State of Alaska (Sen. Stevens, R-AK)	No provision.	The Senate provision prohibits distribution of TPA funds to tribes in Alaska with memberships of less than 25 individuals. (Sec. 118).	Funds otherwise provided to these small tribes in Alaska would be redistributed to each tribe's regional Alaska Native nonprofit corporation.	
Prohibition on Taking Land into Trust for Shoalwater Indians (Sen. Gorton, R-WA)	No provision.	The Senate continues a FY00 provision prohibiting the use of funds in the Act to transfer land into trust status for the Shoalwater Bay Indian Tribe in Clark County, WA, until legally enforceable tax, zoning, and economic development impact issues between the tribe and the local government are agreed upon (Sec. 121).	Administrative procedures, which allow for state and local input, should determine if land is taken into trust. Provision restricts Secretary's authority and would essentially grant a local government a veto over taking land into trust.	

CHAPTER 3

ELECTRICITY

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Reducing 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 through substituting lower carbon and carbon-free fuels, 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 used to sponsor research and development of promising, low- or no-emission technologies for generating electricity from 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 programs such as the Green Power Market Development Group, a group of 11 corporations that are exploring a variety of green energy options.

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The United States relies on electricity to satisfy a substantial portion of its energy requirements, especially for lighting, electric motors, heating, and air conditioning. Electric utilities account for approximately 29 percent of national emissions and are, collectively, the single largest source of U.S. greenhouse gases.

- how can Fed' l gov't be largest energy consumer? Not gha emitter? I p

Carbon dioxide (CO₂), a byproduct of the combustion of fossil fuels, accounts for the majority of the sector's emissions, but methane (CH₄), nitrous oxide (N₂O), and sulfur hexafluoride (SF₆) also are emitted during the generation, transmission, and distribution of electricity. Both CH₄ and N₂O are byproducts of fossil fuel combustion, while SF₆, which is used as a dielectric in electrical equipment, escapes from transmission and distribution systems.

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The type of fuel used to produce electricity significantly affects the volume of emissions from electricity generation. Coal-fired generators, which supply roughly half of U.S. electricity, are responsible for 85 percent of all greenhouse gas emissions from the electricity sector. CO₂ emissions from the combustion of natural gas and petroleum contribute 9 and 4 percent of total emissions, respectively.

By contrast, 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. In fact, every large new nuclear generating facility will save, at a minimum, 1.5 MMTCE per year. Nevertheless, if U.S. electric utilities instead rely on fossil-fired generation, carbon emissions will continue to rise as electricity demand increases.

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Tribal Contract Moratorium	Prohibits BIA, IHS, and other agencies from entering into new or expanded self-determination contracts or self-governance compacts with tribes. Existing contracts and compacts would not be affected by the tribal contract moratorium. The rider is identical to the FY 2000 Senate rider later dropped in end-game, and an enacted FY 1999 Supplemental rider. (Sec. 331).	No provision.	The rider interferes with the long-standing objective of tribal self-determination and self-governance. It is contrary to the government-to-government policy the Federal Government has with tribes.	
Grazing Permits (Sen. Domenici, R-NM)	Appears to provide the Secretary the discretion to extend BLM/NPS grazing permits expiring in FY 2001 under the current lease provisions, until environmental assessments are completed, at which time DOI can amend, suspend, or cancel the permit. Similar to the enacted FY 2000 provision. (Sec. 116).	Similar to House provision (before House Floor making it discretionary); appears to automatically extend permits and does not provide Secretarial discretion to renew (Sec. 119).	Extends grazing permits that are up for renewal for 10 years, even though all necessary NEPA requirements have not been completed. Could be incentive for grazing operations to delay processing NEPA compliance.	

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Hydropower currently generates about 10 percent of the nation's electricity. Existing hydropower generation is in jeopardy due to a mix of environmental, regulatory, and economic pressures. Current hydropower technology, while essentially emission-free, can have undesirable environmental effects, such as fish injury and mortality from passage through turbines, as well as detrimental changes in the quality of downstream water due to a decrease in dissolved gases. The 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. Deployment of this new turbine can help preserve an important source of renewable electric generation.

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 U.S. green energy markets. 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.

"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*

"We see the development of green energy markets and technologies as the solution to the climate challenge. As a leader in providing these solutions, it is our priority to find ways to reduce the environmental impact of the energy used in our cars and in our manufacturing plants."

Dennis Minano
who is the

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 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)	Prohibits 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)	Prohibits 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.	

Todd Stern@do.hes.
agen

Vice President for Environmental Health and Safety and Chief Environment Officer
General Motors

State and Local Initiatives in the Electricity Sector

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

In 1997 Oregon enacted legislation that authorizes the state's Energy Facility Siting Council to set CO₂ Emission Standards for New Energy Facilities. Facilities for which the council has set standards include base-load plants, non-base load (peaking) plants, and nongenerating energy facilities. The standard for base-load gas plants requires a net emissions rate of 0.675 pounds of CO₂ per kilowatt-hour, which is 17 percent below the most efficient plant in operation in the United States in 1999. Peaking plants must meet a net emissions rate of 0.7 pounds of CO₂ /kWh, and non-generating facilities must meet a comparable rate of 0.522 pounds of CO₂ /kWh. Three power plants have met the standard. One of those is also required to do additional CO₂ offset projects as a result of an earlier proceeding. The three plants are expected to reduce greenhouse gas emissions by 198,000 MTCE per year over a 30-year project life. The total CO₂ offset project costs are \$12.8 million.

The Flexibility of Choice

According to an Oregon law enacted in 1997 and updated in 2000, energy facility developers may choose from several options to meet the CO₂ emission standards. These include building high-efficiency facilities using cogeneration, providing offset projects that avoid, reduce, or sequester CO₂ emissions, or paying a fee of \$0.57 per short ton of excess CO₂, along with an administrative fee. 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 CO₂ offsets.

Geothermal energy produces virtually negligible greenhouse gas emissions and 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 *Boise Front Low Temperature Geothermal Resource Ground Water Management Area*.

Currently, four geothermal projects are in the ground water management area: projects at the City of Boise, the Fort Boise Veteran's Hospital, the Boise Capitol Mall Complex, and the Boise Warm Springs Water District. These projects are saving an estimated 50.4 gigawatt-hours of electricity per year, which equates to an annual cost savings of \$1 million. Depending on the fuel type being burned in a conventional power system, using geothermal energy could reduce greenhouse gas emission by 2,500 to 7,500 MTCE.

FY 2001 DEFENSE AUTHORIZATION BILL

DRAFT

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Environmental Fines and Penalties (Stevens, R-AK)	No similar provision.	Sec.342 of S. 2549 requires DOD to seek specific Congressional authorization to pay legitimately imposed environmental fines and penalties whether assessed by Federal, State, or local jurisdiction, if the fine is greater than \$1.5M or includes an economic benefit provision. Virtually all Federal fines include such a provision.	Strongly oppose. Treats DOD differently than all other Federal agencies with regard to paying environmental fines and penalties. Creates an administrative burden for DOD to request specific authorization. Similar provision enacted in FY 2000.	
NEPA and Low Level Flight Training	Sec. 312 of H.R. 4205 states that environmental impact statements (EISs) prepared by the military are deemed to meet NEPA requirements. Thus foreclosing legal challenge as to their adequacy. Actions may be defined so narrowly as to never trigger NEPA applicability.	No similar provision.	SAP urges deletion of this provision arguing that DOD believes its environmental documents comply with NEPA. It's important that the public has confidence in DOD's military preparedness and environmental concern. Separate application of NEPA will ignore cumulative effects.	

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.

Participation in this program is growing, especially in the new and emerging technology sectors. The fund provides financial incentives for 10 million megawatt-hours of renewable power per year, equating to a reduction of approximately 1.6 million MTCE of greenhouse gases, along with 140 metric tons of SO₂ and 1,727 metric tons of NO_x, if the electricity were generated via conventional means.

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 includes a requirement that utilities open up their distribution and transmission wires to all qualified sellers. The proposal involves using market forces to obtain the most energy from each unit of fuel.

The proposal also calls for a *Renewable Portfolio Standard* to increase the use of electricity from renewable sources to at least 7.5 percent of sales by 2010. To set an example and also to help implement a Presidential Executive Order on *Greening the Government through Efficient Energy Management*, one agency imposed a Renewable Portfolio Standard on itself, calling for 3 percent of its total electricity needs to come from non-hydro renewable energy sources by 2005 and 7.5 percent of its total electricity purchases to come from green power by 2010.

The Administration's restructuring proposal also provides for a *Public Benefits Fund* of \$3 billion per year to spur greater investment in energy efficiency, renewable energy technologies, and nuclear power, and provides a green labeling requirement to inform consumers about clean energy options. 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.

Distributed Energy

The U.S. government continues to work with the private sector to develop public-private partnerships to advance the deployment of renewable energy technologies in the distributed power system. 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 Systems* 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 and near the grid to support economic operation of existing power stations. Mostly fueled by natural gas, liquid fuels, or renewables (solar, wind), these dispersed generation resources could bypass

FY 2001 D.C. BILL APPROPRIATIONS RIDERS -- June 26, 2000				
RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL

major portions of the electric transmission and distribution system. Distributed systems include biomass-based generators, combustion turbines, concentrating solar power and photovoltaic systems, fuel cells, wind turbines, microturbines, engines/generator sets, and storage and control technologies. <http://www.eren.doe.gov/der/>

Traditionally, energy resources are produced or generated centrally and then distributed to end-users. Moving energy supplies closer to the point of end use through rooftop photovoltaic systems or microturbines promises important economic, environmental, and reliability advantages. On-site cogenerated electricity and heat production can allow consumers to use the heat byproduct of electricity production, saving dollars as well as reducing primary energy loads.

Solar 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 and, by 2010, could help avoid emissions totaling 1.5 MMTCE. Although the cost of solar technologies has been reduced significantly in the last 15 years, 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.

The lowest-cost solar power option available today is *Parabolic Trough* technology. These systems use curved mirrors to focus sunlight on a receiver pipe, heating the oil within it, producing steam, and generating electricity. Parabolic-trough technology is being used in nine power plants that comprise the Solar Electric Generating Systems located in California's Mojave Desert. The plants have been operated as commercial peak power facilities since 1985 and sell their power to the local utility, Southern California Edison. The nine 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.

<http://www.eren.doe.gov/femp/prodtech/paraftal.html>

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The *Million Solar Roofs* initiative seeks to place solar energy systems on one million roofs by 2010. To date, commitments for 900,000 systems have been made, indicating the potential for widespread market penetration of solar technologies. President Clinton's *Climate Change Technology Initiative* includes \$120 million in proposed tax credits 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.

<http://www.eren.doe.gov/millionroofs/background.html>

The government's *Brightfields* initiative, launched in 1999, is aimed at using abandoned industrial sites—known as brownfields—for producing pollution-free solar energy. Projects are designed to turn environmental losses into economic gains by taking advantage of restructuring in the electricity sector and making pollution-free solar energy available to consumers. Currently, Brightfields projects are underway in cities across the United States, including Los Angeles, Minneapolis, Chicago, and Washington, D.C. The Brightfields model has proven extremely successful: Redeveloping brownfield sites with solar energy manufacturing benefits local

FY 2001 DEFENSE BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL

communities through economic development and environmental protection.
<http://www.eren.doe.gov/brightfields/>

A Brighter Future

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 with a factory for manufacturing solar panels and a solar energy system that will supply some of the company's electricity needs and serve as a demonstration and educational site. The project will create 100 jobs in Chicago in manufacturing and supporting industries when it opens its plant 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 25 million pounds of carbon dioxide over the next five years—the amount produced by driving an automobile 64.5 million miles. In addition, the project has attracted a major solar assembly plant to Chicago. 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.

Solar R&D

too much

Over the past 20 years, Federal support for *Photovoltaic Energy Systems R&D* has resulted in a 90 percent cost reduction for energy produced by solar 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 53 megawatts in 1998. Today, the government is working to accelerate R&D of the next generation of photovoltaic cells. <http://www.eren.doe.gov/pv/>

In addition, the Photovoltaic Energy Systems R&D program is increasing research into buildings-integrated applications and helping to develop new, unconventional technologies. These R&D investments will enable photovoltaics to make significant contributions to the nation's energy economy in the 21st century. Reducing system costs from about \$7 per watt to \$3 per watt would accelerate growth of the solar energy market and result in a domestic industry with billions of dollars in annual sales.

Photovoltaic Manufacturing Technology (PVMat) is a research and development partnership with members of the U.S. photovoltaics industry. The program, which was initiated in 1990, aims to reduce costs and extend the world leadership role of the U.S. photovoltaics industry in manufacturing and developing commercial PV modules and systems. <http://www.nrel.gov/pvmats/>

The results of this multiphased, cost-shared project are striking. A recent analysis found that from 1992 to 1996, module manufacturing costs fell by 56 percent. During this period, the U.S. manufacturing capacity increased by more than a factor of six. In addition, the U.S. share of the

FY 2001 ENERGY & WATER BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol (Knollenberg, R-MI)	Bill language prohibits 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. Bill language is the same as enacted FY 2000 language. Report language is broader and includes legislation, regulation, programs, and initiatives. (Sec. 605)	No bill yet.	May well be unconstitutional if read to prevent DOE 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.	
National Monuments	Report language states there is no DOE funding in this bill to coordinate, integrate or implement a management plan or any other activity related to a national monument designated in Washington State.	No bill yet.	Would affect the recent Hanford Reach designation, and could affect DOE oversight and clean-up of contaminated lands within the external boundaries of the new Monument.	

world market increased from 31 percent in 1992 to about 42 percent in 1996. Continuing on this course could bring module manufacturing costs down to almost \$1.50 per watt in the near future.

Catching Rays by the Lake

The Dangling Rope Marina, on the northern shore of Glen Canyon's popular 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. Not only was the diesel system old, noisy, and expensive to operate, using it exposed the area to a potential oil spill.

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. This quiet, nonpolluting array of 384 PV panels is accompanied by a 2.4-megawatt-hour battery bank for storage, a propane-fueled engine generator for occasional backup power, and a 250-kilowatt DC-to-AC hybrid power converter.

During the new system's 20-year operating life, it is expected to save as much as \$2.3 million in energy costs. Annual greenhouse gas and air pollutant emissions amount to:

- 2,000 pounds of sulfur dioxide
- 5,180 pounds of carbon monoxide
- 27,000 pounds of nitrogen oxides
- Roughly 0.0001 MMTCE

The success of the project at Dangling Rope Marina on Lake Powell is just one example from more than 30 current government photovoltaics electricity projects in 15 states.

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 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 government launched the *Combined Heat and Power Challenge* program with the goal of doubling U.S. combined heat and power capacity by 2010. <http://www.oit.doe.gov/chpchallenge/>

By substituting the targeted 50 gigawatt of CHP capacity for conventional capacity, annual greenhouse emissions will be reduced by 30 MMTCE and annual NO_x emissions by hundreds of thousands of tons. Recent analyses have concluded that this goal can be achieved by electric utility restructuring and revising tax policy and air regulations to remove barriers.

FY 2001 FOREIGN OPS BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol	Bill language prohibits 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. 576) Report language is broader and specifies that the Kyoto mechanisms (emissions trading, etc.) are not authorized activities under current law and therefore prohibited by the bill language. (Sec. 577)	Bill language prohibits 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. 576)	May well be unconstitutional if read to prevent state or USAID from assisting the POTUS in carrying out his constitutional authority to conduct international negotiations. The Admin. has no intent to implement the Protocol prior to Senate ratification.	

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. Developed with the assistance of the *Advanced Turbine Systems (ATS)* program, the combined heat and power system will lower the company's annual energy costs and reduce emissions of sulfur dioxide by 99.6 percent, NOx by 83 percent, and CO₂ by 26 percent compared with grid-supplied power. http://www.oit.doe.gov/bestpractices/learn_others/pdfs/july_99.pdf

they have a website as well

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, 732 megawatts of new capacity was added, representing a 41 percent increase in capacity for a total of 2,500 megawatts. These wind energy systems are helping the nation meet its electricity needs with no greenhouse gas emissions. Both the Federal government and the private sector are working to capitalize on this technology.

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 *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) by 2002. The program's goal is to achieve 10,000 megawatts of installed wind-powered generating capacity in the United States by 2010, which could displace as much as 10 MMTCE per year. <http://www.eren.doe.gov/wind/>

Wind Power America started 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. In addition, the Wind Power America program will provide a source of income for U.S. farmers, Native Americans, and other rural landowners. As of April 27, 2000, some 30 Federal agencies had committed to purchase a significant portion of their electricity needs from wind energy. <http://www.eren.doe.gov/windpoweringamerica/>

what is that?

Harnessing the Great North Wind

The Lake Benton Wind Power Plant 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. U.S. facilities totaling more than 160 megawatts in generating capacity that are using Enron Wind's 750-kilowatt and 550-kilowatt turbines have generated 122 gigawatt hours of electricity (equivalent to 1.3 trillion Btu of primary energy). Over their lifetimes, the turbines will displace 110 trillion Btu of primary energy, save \$246 million in energy costs, and reduce emissions by 2.1 MMTCE.

FY 2001 COMMERCE, STATE, JUSTICE BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol (Knollenberg, R-MI)	Bill language prohibits 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. 623) Report language is broader and includes legislation, regulation, programs, and initiatives.	No bill yet.	May well be unconstitutional if read to prevent State, DOJ, or DOC 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.	

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 also creates construction and service jobs in rural regions, as well a new source of tax revenues for local municipalities.

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. <http://www.ghpc.org/>

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, using GHPs can benefit electric utilities and their customers. Because GHPs reduce peak demands, 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.

FY 2001 TRANSPORTATION APPROPRIATIONS RIDERS -- June 26, 2000				
RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol	No provision.	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. 337).	May well be unconstitutional if read to prevent DOT 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.	
Corporate Average Fuel Economy (CAFE)	Prohibits funds to prepare, prescribe, or promulgate new CAFE Standards for automobiles (Sec. 318)	No similar provision. During bill Floor consideration on 6/14 , the Senate adopted a motion to commission an NAS study of the safety, employment, and economic impacts of CAFE standards. A joint resolution to approve a change in the regulation would be required by Congress if the Adm. promulgated a rule during the FY.	Adm strongly objects to the continuation of the prohibition on CAFE standards, since it leads to more energy consumption and would increase both environmental and energy security risks.	

Another initiative on renewables is a new public-private partnership launched in 2000, *GeoPowering the West*, a commitment to increase dramatically the use of geothermal 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 to seven million by 2010, and double the number of states with geothermal facilities to eight by 2008. The benefits will include 20 million tons of atmospheric carbon displaced in 2020.

Green Technology Invades the Army

what years? 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.

Biobased Technologies

In 1999, President Clinton issued Executive Order 13134 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 JOHN: USDA wants bioproducts first and says DOE wants bioenergy first—which do you prefer? 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.

The government is aggressively sponsoring biomass gasification and supported the development and promotion 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. <http://www.eren.doe.gov/biopower/main.html>

The biomass gasifier heats wood in a chamber filled with hot sand until the wood breaks into its constituent chemical components. The residual solids are separated from the constituent gases, which then flow through a scrubber. The final result is a clean-burning gas fuel. Cleaning the gas before combustion has the added benefit of ensuring that emissions of pollutants such as SO_x and NO_x are extremely low. In addition to providing clean energy, gasifiers increase the number and types of biomass fuels suitable for power systems. In the future, energy crops grown specifically for electricity production might power these systems.

The biomass gasifier's economic potential and environmental benefits earned it an award as one of the most significant technical achievements in 1998. Currently, biomass gasification generates about 7,000 megawatts of electricity throughout the United States. This production capacity is

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Ozone Air Quality Designations (Reps. Collins, R-GA and Linder, R-GA)	Bill language prohibits EPA from using funds to designate non-attainment areas for the new ozone national ambient air quality standard (NAAQs) that has been stayed by the D.C. Court of Appeals and is awaiting Supreme Court decision on whether it will be allowed to take effect. This provision was approved as a House Floor amendment by a vote of 226- 199 on 6/21.		Strongly oppose because it would stop the process of designating areas in non- attainment with EPA's new ozone air quality standard pending the outcome of litigation. This will delay achievement of cleaner air by blocking needed procedural steps while awaiting Supreme Court action.	

second only to hydropower among renewable energy technologies. By the year 2010, the potential market for biomass gasifier power systems could approach 10,000 megawatts—enough electricity for 10 million households.

Improved Electricity Production and Distribution

The 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 are modular in design and 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, and may be combined with carbon sequestration such as in geological formations for which research is now underway. (The fuels production component for coal will increase greenhouse gas emissions, compared with the use of petroleum.)

The research itself will require a little over a decade to be completed, and a period for market acceptance of the new technology will follow. 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.

The *ENERGY STAR transformer program* is improving the energy efficiency of the equipment used to decrease the voltage of electricity received from utilities, reducing it to the levels used by commercial and industrial buildings for indoor applications. Because transformers are used 24 hours a day, small improvements in efficiency can lead to significant energy savings. Energy-efficient transformers can save a business up to \$225 per year in electricity bills.

Cleaner Coal and Natural Gas research to develop next-generation technologies for the combustion and use of coal and natural gas is being aggressively supported by the government. For example, development of new coal combustion technologies, such as integrated gasification combined-cycle and pressurized fluidized bed combustion, could lead to ultra-high efficiency coal plants with dramatically lower greenhouse gas emissions. Studies indicate reductions on the order of 75 MMTCE might be possible by 2030. Agencies: Assuming what, and what level of market penetration and overall utilization?)

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 would reduce emissions by as much as 47 MMTCE in 2000. Fifty percent of this pledge is coming from nuclear power through improved availability, increased capacity factors, and unit capacity uprates. Agencies: Uprates is unclear. Upgrades? <http://www.eren.doe.gov/climatechallenge/>

Nuclear Power

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- June 26, 2000				
RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Contaminated Sediments at Superfund Sites	Report language provides that EPA can take no action to order the use of dredging or other invasive remedial technologies for contaminated sediments at Superfund sites (with exceptions for voluntary agreements and urgent threats to public health) until the findings of a National Academy of Sciences study (expected September 2000) are incorporated into EPA procedures. A House floor amendment (Rep. Hinchey, D-NY) was rejected 208-216 on 6/21 that would have overridden this objectionable report language (and for enforcement of arsenic drinking water standards).	No bill yet.	Prevents EPA from cleaning up contaminated sediments or ordering potentially responsible parties (PRPs) to conduct cleanups. This rider is more restrictive than FY 2000 language because it could restrict capping and contaminant sampling as well as dredging. The exception for urgent threats to public health does not define "urgent" or cover threats to the environment. EPA believes this rider could compromise cleanup at the Fox River site in Wisconsin, the Hudson River site in New York, and other Superfund sites nationwide.	
Limit CEQ to 22 FTE	Limits CEQ to 22 FTE, below the 26 FTE it requested.	No bill yet.	Hampers CEQ's ability to provide optimal number of employees to run the agency efficiently.	

The Administration's policy focuses on advancing nuclear power plant designs, the safety of existing reactors, and safe long-term storage of spent nuclear fuel. Three programs are implementing these policies: the *Nuclear Energy Research Initiative (NERI)*, which is researching breakthroughs in nuclear fission and reactor technology; the *Nuclear Energy Plant Optimization Program (NEPO)*, which is applying new technologies to increase plant life, reliability, availability, and productivity; and *Generation IV Nuclear Power Systems*, which is developing the next generation of reactors that are more economic, resistant to proliferation, produce less waste, and have improved safety features.

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 SPI is a new industrial HTS motor that is smaller, lighter, and more efficient than conventional motors.

<http://www.eren.doe.gov/superconductivity/>

Other applications include current controllers that protect utility equipment, improve reliability, and increase stability of the distribution grid, as well as 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. Agencies: with what carbon savings?

SF₆ Emissions

A *SF₆ Emissions Reduction Partnership for Electric Power Systems*, initiated in early 1999, provides a forum for the electric power industry to work together with government to reduce SF₆ emissions to technically and economically feasible levels. SF₆, a gaseous dielectric used in circuit breakers, gas-insulated substations, and switchgear, allows for the safe transmission and distribution of electricity. However, SF₆ is a highly potent greenhouse gas. Over a 100-year period, SF₆ is 23,900 times more effective at trapping infrared radiation than an equivalent amount of CO₂. When SF₆ escapes into the atmosphere, it is a very stable chemical, with an atmospheric lifetime of 3,200 years.

The SF₆ Emissions Reduction Partnership for Electric Power Systems is working to benefit the environment and, because SF₆ is a relatively expensive gas, finding ways of reducing emissions will save money. This new voluntary program is intended to create a valuable opportunity for industry and the government to work together to achieve common goals. As of May 2000, 58 electric utility companies had joined the partnership.

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Title VI ("Environmental Justice") Interim Guidance (Knollenberg, R-MI)	Prohibits expenditure of funds to implement EPA's Feb. 5, 1998, Interim Title VI Guidance to resolve discrimination complaints related to environmental permitting for complaints filed after Oct. 21, 1998.	No bill yet.	Restricts EPA's ability to timely resolve 1964 Civil Rights Act Title VI discrimination complaints. EPA is working to finalize the Title VI Guidance, and could have it done before an appropriation bill is signed, making issue moot.	
Radon in Drinking Water Multi-media Rule (Walsh, R-NY)	Report language directs that final promulgation of the radon in drinking water rule be postponed until Congress has time to consider legislation. There are currently bipartisan efforts to introduce such legislation.	No bill yet.	The bipartisan 1996 Safe Drinking Water Act Amendments require EPA to finalize a radon in drinking water rule by October 2000. The rule would give states statutorily authorized flexibility to implement a multi-media (drinking water and air) approach to reducing radon, which can reduce the risk at much lower cost than by only treating drinking water. When the Amendments passed, the multi-media approach to radon had bipartisan support and was considered very innovative.	

CHAPTER 4

TRANSPORTATION

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The United States is pursuing an array of strategies to reduce transportation-related greenhouse gas emissions. The ~~U.S.~~ private sector is actively engaged in efforts to reduce emissions from transport systems. In fact, the “big three” U.S. automakers ~~all~~ recently announced a number of important breakthroughs in the design of new more fuel-efficient vehicles. This year ~~three~~ ^{two} motor companies ~~all~~ unveiled concept cars that are capable of traveling 70-80 miles per gallon. In addition, programs to reduce congestion are paying dividends in the form of reduced vehicle miles traveled (VMT) and greenhouse gas emissions.

very low
In addition to scores of farsighted U.S. corporations, state and local governments are implementing a host of programs directed toward reducing transportation sector emissions. The *Clean Cities* program and *Maryland's Clean Energy Tax Incentives* are motivating consumer interest in fuel-efficient vehicles. State and city government programs, like Maryland's *Smart Growth Initiative*, also are reducing greenhouse gas emissions by promoting development patterns that increase transit use and bicycle and pedestrian activity.

At the Federal level, government procurement policies are being revamped to help stimulate markets in more fuel-efficient and alternative fuel vehicles. For example, the Administration recently issued an Executive Order titled *Greening the Government through Federal Fleet and Transportation Efficiency*. This Executive Order requires Federal agencies to reduce annual gasoline and diesel fuel consumption by at least 20 percent by the end of 2005. The purchase of alternative fuel vehicles, improvements in fleet fuel efficiency, and reductions in vehicle miles traveled are core components of the compliance strategies of Federal agencies.

The U.S. government also works through public-private partnerships to promote fuel efficiency through research and development and is stimulating markets by offering targeted consumer and business tax incentives. Among these efforts are the *Climate Change Technology Initiative*, the *Partnership for a New Generation of Vehicles*, and the *21 Century Truck Program* for fuel-efficient vehicles, various clean fuels programs, \$6.1 billion for public transit, and a new commuter choice initiative that encourages carpooling, transit, and biking and walking to work.

End large font

Accounting for 32 percent of all U.S. emissions, the transportation sector is the second largest source of greenhouse gases. Carbon dioxide (CO₂), which is emitted as a result of the combustion of fossil fuels, is the most prevalent greenhouse gas given off from transportation related activities. However, the sector is also a source of methane (CH₄) (from uncombusted fuel), nitrous oxide (N₂O) (from catalytic converters), and hydrofluorocarbons (HFCs) (from mobile air conditioners).

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol (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. A House floor amendment was approved 314-108 that had the effect of overriding objectionable Committee report language that attempted to expand the scope of the rider.	No bill yet.	May well be unconstitutional if read to prevent EPA from assisting the POTUS in carrying out his constitutional authority to conduct international negotiations. The Adm. has no intent to implement the Protocol prior to Senate ratification.	
Pesticide Tolerance Fees	Prohibits EPA from promulgating a final rule that will significantly raise the user fees charged for issuing pesticide tolerances (i.e. the allowable level of residual pesticide on food). The provision is being scored as a \$27 million outlay increase against the VA/HUD approps bill. (Sec.423)	No bill yet.	Would result in a significant funding shortfall for the program, and lets manufacturers off the hook for paying a statutorily required fee. The provision is also contrary to last year's conference report, which indicated that FY 2000 was the last year for such a rider.	

Collectively, passenger cars and light-duty trucks contribute 58 percent of all of the sector's greenhouse gas emissions. Aviation (13 percent), heavy-duty trucks (16 percent), and rail and marine (5 percent) are also important emission sources. Other mobile sources, such as recreational vehicles and farm equipment, account for the remaining 10 percent.

} can we meet this?

The amount of CO₂ released from fossil fuel combustion is directly related to the quantity of fuel burned. Fuel efficiency is therefore an important determinant of overall emissions of greenhouse gases. Although fuel use by today's cars and trucks is much more efficient than it was 30 years ago, the continuing increase in VMT and the trend toward larger vehicles, such as sport utility vehicles (SUVs) and minivans, have dampened U.S. progress in reducing transport-related emissions. Significant growth in air travel is another factor contributing to the sector's increase in emissions.

} - too negative?

Fuel-Efficient Trucks

The *21st Century Truck Program* is a 10-year research and development partnership that was announced by Vice President Gore in April 2000. This partnership between the U.S. government and nine major corporate partners that manufacture trucks, diesel engines, and transmissions focuses on four types of heavy vehicles: large pickup trucks, urban delivery trucks, transit buses, and line-haul semi-tractor trailers.

One goal of the program is to triple fuel economy for all of these vehicles, except the largest line-haul trucks where the goal is to double fuel economy. The other goal of the program is to achieve the government's proposed emissions goals of 0.2 g/hp-hr NO_x and 0.01 g/hp-hr particulate matter later this decade. Separately, as part of his presidential campaign, Vice President Gore has proposed new federal income tax credits for people and companies who purchase trucks and buses that meet the types of fuel economy and emissions goals that are part of this program.

Put in safety of truck etc

California's Green School Buses

The *Safe School Bus Clean Fuel Demonstration Project* is a program of the California Energy Commission. This four-phase project is designed to demonstrate new clean fuel or high-efficiency diesel fuel school buses that meet federal safety requirements. The first three phases, which began in 1990 and ended in 1997, replaced old buses with advanced diesel-, compressed natural gas-, and methanol-powered buses. These buses were placed at 124 Local Education Agencies across the state. The schools pledged to keep detailed records of variables such as miles traveled, fuel used, fuel costs, maintenance and repair costs, and problems encountered. Reported results were used to assess the merits of each type of vehicle. The results indicated that natural gas buses are the most reliable and cost-effective. Thus in the fourth and final phase, which began in 1999 and concluded in 2000, only natural gas buses were distributed. In total, the improved fleet of 826 new school buses is saving 1,550 MMTCE annually, or roughly 0.002 MMTCE annually.

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
EPA's TMDL Water Pollution Rule (Rep. Dickey, R-AR)	No FY 2001 or prior-year funds can be used in FY 2001 to make a final determination on or implement any new EPA TMDL (Total Maximum Daily Loads) water pollution rule.	No bill yet.	Would 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) clarifies and strengthens the existing TMDL water pollution planning program, while giving states flexibility in cleaning up waters. The rider would encourage further litigation, which the rule is attempting to avoid, and would 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.)	

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 by 2004. PNGV aims to meet this stretch fuel economy goal as well as stringent criteria emissions standards without sacrificing performance, safety, aesthetics, or affordability.
<http://www.ott.doe.gov/oaat/pngv.html>

Since 1993, the program has made great strides in developing lower-cost, lightweight materials, operational fuel cells, and advanced internal combustion engines for use in hybrid vehicles. 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-Chrysler** introduced the ESX3 diesel-battery hybrid, which achieves more than 70 mpg in gasoline equivalent.

Although these concept cars do not yet meet the PNGV goals for 2004 for cost and compliance with future Tier 2 NOx emissions levels, they show that great strides are being made toward a midsize car with much higher fuel economy. It is expected that PNGV technologies will be integrated into new vehicle redesigns with the potential to increase fleetwide fuel economy significantly.

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.

Vehicles of the Future Are Here

Demonstrating a commitment to reducing greenhouse gas emissions, U.S. automakers are taking significant action.

- 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

FY 2001 AGRICULTURE BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Ft. Reno, OK, Research Facility Surplus Property (Sen.Nickles, R-OK)	No provision.	Prohibits USDA from disposing of or transferring any surplus land from its Ft. Reno research facility without Congressional approval. (Sec. 733)	Bars USDA from restoring land to Indian Tribe via DOI to be held in trust for tribe. Identical to enacted FY00 language, which Administration opposed.	

15 percent more fuel efficient than the conventional version is. GM further announced that it intends to be the industry leader on overall fuel economy for light trucks in 2005.

- **Daimler-Chrysler** announced that, if the Federal government offers tax incentives to make the vehicle cost-effective, it is prepared to bring to market a hybrid version of its Dodge Durango SUV that would be 20 percent more fuel efficient than its current model. It also plans to introduce a fuel cell vehicle in 2003 or 2004.

Graphics: include photo of these cars

Revving up Electric 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 include in this legislation is a \$2,000 reduction in the state titling taxes for buyers of new electric or hybrid vehicles.

Other Advances in the U.S. Automobile Market

Additional progress in reducing greenhouse gas emissions from the transportation sector was made when two Japanese automakers introduced advanced technology vehicles into the U.S. market.

- **Honda** introduced Insight, a two-seater, gasoline-battery hybrid, in December 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 four- to five-seat compact, gasoline-battery hybrid, in August 2000. Toyota anticipates that the Prius, with fuel economy ratings of 52 mpg city and 45 mpg highway, will achieve sales on the order of 1,000 cars per month.

In addition, Honda announced plans to introduce hybrids into more of its models in the near future and to offer a fuel cell vehicle in 2003.

Alternative Fuel Vehicles

Over the past four years, nearly 80 communities across the country have joined the *Clean Cities* program, a voluntary, locally based, public-private partnership that is working to expand the use of alternatives to gasoline and diesel fuel. Clean Cities participants are 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 the 175,000 AFVs in both public and private fleets,

FY 2001 AGRICULTURE BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
American Heritage Rivers (AHR)	Prohibits funds in bill from carrying out activities related to AHR (in NRCS bill language).	Identical to House (Sec. 326).	Restricts Administration initiative to improve waterways, coordinate federal actions, and enhance river communities.	
Kyoto Protocol (Rep. Emerson, R-8- MO)	Bill and report language prohibit funds in the bill from being used to implement the Kyoto Protocol, including carbon emissions trading. This provision would become permanent as written. (Sec. 734)	No provision.	Provision may be unconstitutional in restricting President's authority to negotiate international agreements. It could also limit current law activities to reduce greenhouse gases. Broader than enacted FY00 enacted "Knollenberg" language.	
Climate Change	Prohibits funds in bill from implementing climate change activities (in NRCS report language).	No provision.	Blocks Administration initiative, notably soil carbon sequestration work by NRCS as proposed in the FY01 Budget.	
Farm Loans in Arkansas Flood Plains (Rep. Dickey, R-4-AR)	Prevents USDA from barring agriculture loans for operations in floodplains. (Sec. 742)	No provision.	USDA environmental assessments needed for loan approval would be inconsistent with NEPA.	

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 0.310 MMTCE. <http://www.ccities.doe.gov/>

Through its *Hydrogen Research Program*, the 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 low-cost, high-performance Proton Exchange Membrane fuel cell systems by **Daimler-Chrysler, Ford Motor Company**, and other companies, hydrogen is expected to make a significant penetration into several niche fuel markets over the next five (correct?) years. <http://www.eren.doe.gov/power/hydrogen.html>

Relieving Congestion

The *Congestion Mitigation and Air Quality Improvement (CMAQ)* program is one of the programs funded by the Transportation Equity Act for the 21st Century (TEA-21), the nation's largest transportation appropriations bill. CMAQ funds projects that reduce congestion and improve air quality in areas with low air quality. These projects can involve everything from public transit to shared-ride programs.

The cities of Dallas and Fort Worth, Texas, converted their public sector vehicles to alternative fuels with funds from CMAQ. Philadelphia, Pennsylvania, built the Philadelphia Bicycle Network, which involved identifying bicycle traffic generators, performing traffic and bike counts, reviewing travel patterns, route analysis, bicycle parking and storage analysis, public information and awareness, and the design and construction of a city-wide network of bicycle routes. New York City obtained \$1.9 million in CMAQ matching funds to purchase a barge and provide operating assistance for freight operations to remove 54,000 truck trips annually from the New York and New Jersey streets.

Better Traffic Lights

Since 1996, *Denver, Colorado*, has replaced roughly 20,500 traffic lights with light-emitting diode technology (LED). Traffic signals using LED technology have several advantages over incandescent bulbs. LED signals use less electricity and last 10 times longer than signals with traditional bulbs. Because LEDs are made up of hundreds of small diodes, they do not burn out all at once. Thus LED signals help prevent traffic delays and accidents. Denver officials estimate that the new signals are saving \$430,000 annually and helping the city to avoid the equivalent of more than 0.002 MMTCE per year.

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 commuter trips by suburban dwellers. The city estimates that for each 2,500 units of housing created in the downtown area, a total of 1,226 tons of greenhouse gases will be reduced. This translates into a total reduced fuel cost of \$180,000 for these households.

FY 2001 INTERIOR BILL APPROPRIATIONS RIDERS -- June 26, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Lead Mining in Mark Twain National Forest (MO) (Sen. Bond, R-MO)	No provision included.	Prohibits the withdrawal of lands in FY 2001 to prevent lead mining. No new mining prospecting permits may be issued in FY 2001. Similar provision enacted in FY00 over Administration end-game objections.	Overrides the ability under FLMPA to withdraw lands from mineral development for environmental reasons. These national forest lands border the Ozark National Scenic Riverways National Park.	
Urban Resources Partnership	Forest Service appropriations language (plus report language) prohibits funds to used to carry out this portion of the Urban Community Forestry Program.	No provision.	The rationale for blocking the program - a damaging USDA OIG report - has been removed, with reforms initiated.	

Commuting Options

POTUS EO here?

The *Commuter Choice Initiative* encourages employers to offer a broad range of commuting options to their employees as part of benefits packages. Moving employees from single-occupancy vehicle commutes into alternative modes can save money for employers and employees while reducing congestion, pollution, and greenhouse gases.

Some of the commuting options offered to employees include teleworking, carpooling and vanpooling services, transit vouchers, and cash in lieu of parking spaces. In support of the Commuter Choice Initiative, the 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.

As part of the President's recently announced *Livability Agenda*, the Administration is increasing substantially the investment in transportation 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 and \$1.6 billion for the Congestion Mitigation and Air Quality Improvement Program, discussed above. Additional resources are being targeted to a new grant program to help state and local governments coordinate transportation and land use planning, while at the same time reducing environmental impacts and ensuring efficient access to jobs, services, and centers.

INTEL-igent Commuting

good title!

The **Intel Corporation's** comprehensive and aggressively promoted *RideShare* program is a model for companies nationwide. By taking the initiative in promoting a wide range of transportation alternatives to its employees, Intel has improved the environment and reduced traffic congestion in the communities where its facilities are located. Intel's *RideShare* 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.

The program not only encourages employees to use alternative modes of transportation, but also 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 compressed schedules to reduce their number of commutes and to work from home. Intel *RideShare* also sponsors a variety of education programs, including demonstrations of electric vehicles, workshops on bike safety, annual events to encourage bicycling to work, and ergonomic training for working safely at home.

Employee response is 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 and energy use. Intel has teamed

FY 2001 DEFENSE AUTHORIZATION BILL				
RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
NEPA and Low Level Flight Training	Sec. 312 of H.R. 4205 states that environmental impact statements (EISs) prepared by the military are deemed to meet NEPA requirements, thus foreclosing legal challenge as to their adequacy. Actions may be defined so narrowly as to never trigger NEPA applicability.	No similar provision.	SAP urges deletion of this provision arguing that DOD believes its environmental documents comply with NEPA. It's important that the public has confidence in DOD's military preparedness and environmental concern. Separate application of NEPA would ignore cumulative effects.	

with local citizens committees to advocate for increased funding for local transportation improvements and the expansion of bike and pedestrian accommodations. The success of Intel's *RideShare* program demonstrates the influential role that major corporations can play in environmental policy development and in making it easy and convenient for employees to use alternative modes of transportation.

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 how the availability of Electrowave is enabling nontransit users to change their traveling habits, with 90 percent stating that they do not traditionally use public transportation. The Electrowave consists of a fleet of 11 electric buses with amenities such as air conditioning, large windows, cushioned wrap-around seating, and state-of-the-art handicapped accessibility.

The Electrowave's unqualified success has exceeded all expectations and projections and has benefited both the environment and economic development. 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 along with corresponding pollution and reduction of energy use. Traffic congestion has decreased as residents and tourists, who would normally use an automobile, now depend on the shuttle. The Electrowave is a glowing example of how an innovative public transit system can enhance the environment and provide residents and tourists with an alternative to driving.

"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 and to make important connections with municipalities facing similar issues around the world. As an international city and as citizens of the world, we are proud to do our part in maintaining and saving our environment."

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

Federal Fleets

FY 2001 DEFENSE AUTHORIZATION BILL				
RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Environmental Fines and Penalties (Stevens, R-AK)	No similar provision.	Sec.342 of S. 2549 would require DOD to seek specific Congressional authorization to pay legitimately imposed environmental fines and penalties whether assessed by Federal, State, or local jurisdiction, if the fine is greater than \$1.5M or includes an economic benefit provision. Virtually all Federal fines include such a provision. Similar provision enacted in FY 2000.	Strongly oppose. Treats DOD differently than all other Federal agencies with regard to paying environmental fines and penalties. Creates an administrative burden for DOD to request specific authorization.	

FY 2001 DEFENSE BILL APPROPRIATIONS RIDERS -- July 17, 2000				
RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Prohibition on Use of Certain Pesticides at Dept. of Defense (DOD) Facilities (Sen. Boxer, D-CA)	No provision.	Would prohibit DOD from using appropriated funds for preventive application of certain classes of pesticides that are currently registered for use by EPA, in areas that may be used by children.	The Administration has not taken a public position. Within the Administration, DOD objects to the provision because it may limit its ability to protect against certain pests and to respond to emerging health risks, particularly to dependents on foreign bases. EPA supports the goal of the rider, but is reluctant to signal and opposition.	Provision dropped in conference report.

FY 2001 D.C. BILL APPROPRIATIONS RIDERS -- July 17, 2000				
RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL

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

In setting these targets, the Executive Order further directs the agencies to establish fleets that make use of alternative fuels a majority of the time by 2005. 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 some 14 million gallons and reducing greenhouse gas emissions by an amount equal to 0.160 MMTCE, greening the Federal fleet will produce energy security and significant environmental benefits to the nation.

Another new Executive Order 13150, *Federal Workforce Transportation*, will reduce Federal employee's 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 (increasing to \$100 beginning in 2002), that three agencies implement a transit pass program nationwide, and all agencies allow their employees to exclude from their taxable wages the costs incurred through the use of mass transportation and vanpools.

Clean Fuels Research

Clean burning fuels have the potential to reduce greenhouse gas emissions significantly. Through 1998, the use of ethanol blends in gasoline is estimated to have displaced 1.53 quads (worth \$12 billion) of oil-based fuels, thereby reducing carbon emissions by 5 MMTCE. If Federal biofuels goals are met by 2010, the emission reductions from using clean fuels will approach 3.4 MMTCE. <http://www.ott.doe.gov/biofuels/>

On August 12, 1999, President Clinton issued an 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 liquid fuel production 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.

Clean fuels research also includes the *Ultra Clean Transportation Fuels Program*. Several offices are researching near-term petroleum-based transportation fuel options, intermediate options that are based on petroleum and other fossil fuel feedstocks (e.g., natural gas-to-liquids, petcoke, and other carbonaceous feedstock conversion), and long-term options for renewable fuels, such as biofuels. The *Fuels Utilization R&D Program*, which is part of the Ultra Clean Transportation Fuels initiative, will facilitate the identification, development, and testing of new

FY 2001 ENERGY & WATER BILL APPROPRIATIONS RIDERS -- July 17, 2000

DRAFT

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Rio Grande Silvery Minnow (Sen. Domenici, R-NM)	Includes a general provision constraining in perpetuity Bureau of Reclamation's water acquisitions for the Middle Rio Grande and Carlsbad projects, by requiring the acquisitions to comply with the state-approval provisions of the separate Drought Emergency Assistance Act.	Sen. Domenici on 7/14 offered a silvery minnow amendment in subcommittee. A previous Domenici rider (not clear if identical to the E&W provision) would prohibit in perpetuity, starting in FY 2000, any funds from being used to require the Middle Rio Grande Conservancy District to provide bypass flows to ensure the survival of the endangered Rio Grande Silvery Minnow or the Southwestern Willow Flycatcher. The previous language would also prevent funds from being used to require the Fort Sumner Irrigation District irrigation works to maintain flows for endangered species such as the Pecos bluntnose shiner.	Strongly oppose both provisions as substantially hindering ability to meet Endangered Species Act (ESA) requirements while maintaining services to project beneficiaries. The Senate amendment in particular would dramatically affect the way that the Fish and Wildlife Service and the Bureau of Reclamation implement the ESA by preventing the use of Federal facilities to ensure adequate water flows to the fish in the Middle Rio Grande. The House provision is similar to language enacted in FY 2000.	

fuel formulations for use by the advanced automotive and truck engines developed in the PNGV and heavy truck programs.

Brewing Motor Fuel in Jennings

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. A cogeneration facility will also be built to produce the plant's electrical power.

FY 2001 ENERGY & WATER BILL APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol (Knollenberg, R-MI)	Bill language would 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. Bill language is the same as enacted FY 2000 language. A 6/27 House Floor amendment (Rep. Visclosky, D-IN) was approved that had the effect of overriding objectionable committee report language that attempted to expand the scope of the rider. (Sec. 605)	No bill yet.	May well be unconstitutional if read to prevent DOE 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. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	
National Monuments	Report language states there is no DOE funding in this bill to coordinate, integrate or implement a management plan or any other activity related to a national monument designated in Washington State.	No bill yet.	Would affect the recent Hanford Reach designation, and could affect DOE oversight and clean-up of contaminated lands within the external boundaries of the new Monument.	

CHAPTER 5

AGRICULTURE AND FORESTRY

Graphics: Use large font

Do we need to explain "sequestered"?

Unlike the other sectors of the U.S. economy, agricultural and forestry activities can actually remove carbon from the atmosphere. Using updated inventory data for 1997, an estimated 310 ~~million metric tons of carbon~~ (MMTCE) were sequestered by managed forests, equal to about 17 percent of the total greenhouse gas emissions from the United States for the year. An additional 20 million metric tons was sequestered on crop and grazing lands.

Most of the carbon sequestration occurred in the forestry sector (approximately 90 percent), primarily from tree growth (approximately 36 percent) and forest soils (about 18 percent). Harvested wood in landfills or wood products accounted for approximately 31 percent of carbon sequestration from managed forests.

[Handwritten signature]

Carbon sequestration can be increased through implementation of land-use practices that conserve and improve soil, water, and other land-based natural resources. The United States currently offers numerous programs to assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land. Many of these programs also have ancillary greenhouse gas reduction and carbon sequestration benefits.

End large font

Agricultural activities contribute about 7 percent of all U.S. greenhouse gas emissions ~~and are~~ sources of methane (CH₄) and nitrous oxide (N₂O) as well as carbon dioxide (CO₂). Emissions of N₂O from the application of organic and synthetic nitrogen fertilizers and other cropping practices, such as growing nitrogen fixing crops, account for 57 percent of total greenhouse gas emissions from agriculture. Other significant sources of greenhouse gas emissions are CH₄ from ruminant animals (23 percent), CH₄ and N₂O from manure management (19 percent), and CH₄ from rice cultivation (2 percent). Agencies: these figures are correct according to the US Inventory 1990-1998, which was what was submitted to the UN I April. See <http://www.unfccc.int/resource/statrep00.html>.

but CH₄ and CO₂ are ag's

Greenhouse gas emissions from livestock production have increased in recent years. Although CH₄ emissions from beef cattle have decreased because of declining beef cattle populations, this decrease has been ~~more than~~ offset by increasing emissions of CH₄ and N₂O from manure management. The increase in emissions from manure management can largely be attributed to an increase in the population of poultry and swine and shifts by the swine and dairy industries toward larger facilities. N₂O emissions from agricultural soil management have fluctuated, reflecting annual variations in synthetic nitrogen fertilizer consumption and crop production.

FY 2001 FOREIGN OPS BILL APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol	Bill language would 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. 576) An amendment offered 6/27 in Full Committee (Rep. Knollenberg, R-MI) was approved (51-1) that had the effect of overriding objectionable report language that attempted to expand the scope of the rider. (Sec. 577)	Bill language would 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. 576)	May well be unconstitutional if read to prevent state or USAID from assisting the POTUS in carrying out his constitutional authority to conduct international negotiations. The Admin. has no intent to implement the Protocol prior to Senate ratification. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	

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 from ruminant animals; and reduce nitrous oxide emissions from soils.

Graphics: insert managed forest picture here from ag (file: managed_forest1 or managed_forest2)

Forest Science and Technology

The government is expanding ongoing research and building on existing collaborations with industry, landowners, universities, and federal and state agencies to develop the science and deploy the technology needed for increased carbon sequestration opportunities and sustainable management of natural resources. The research and demonstration priorities are to increase sequestration and reduce emissions; develop forestry practices that conserve soil carbon; increase the potential for soils, forests, and forest products to sequester carbon; develop sustainable biomass production and management systems; improve forest carbon inventory and accounting systems, among others. For example, the government works with a variety of state, private, industry, and university cooperators on research on short rotation woody crops, using an integrated, interdisciplinary approach employing experimental and large-scale plantings.

Bioproducts and Bioenergy[ND15]

Scientific advances in agriculture, forestry, and other biological sciences are making bioproducts and bioenergy technically feasible and economically viable. In 1999, the Administration announced new steps to spur biobased technologies that can help grow the U.S. economy, enhance energy security, and meet environmental challenges, including global warming.

in 2000 The President issued Executive Order 13134 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 and rural America, and reduce annual greenhouse gas emissions by an amount equal to as much as 100 MMTCE—the equivalent of taking more than 70 million cars off the road. http://www.eren.doe.gov/bioenergy_initiative/page1.html

The Executive Order establishes a permanent council of government agency heads to develop a detailed research program. The order builds on the Administration's record of strong and consistent support for biobased industries, as indicated by: (1) the electricity restructuring bill introduced by the Administration earlier in 1999 requiring that 7.5 percent of all U.S. electricity come from renewable resources by 2010; (2) Executive Order 13101, signed in 1998, instructing Federal agencies to make use of biobased products; (3) new proposed tax credits for biobased electricity production; and (4) increased research funding.

FY 2001 COMMERCE, STATE, JUSTICE BILL APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol (Knollenberg, R-MI)	Bill language would 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. 623) A 6/26 House Floor amendment (Rep. Olver, D-MA) was approved 217-181 that had the effect of overriding objectionable Committee report language that attempted to expand the scope of the rider.	No bill yet.	May well be unconstitutional if read to prevent State, DOJ, or DOC 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. While the House amendment clarifies that the funding prohibition does not apply to authorized programs, the Adm. still objects to the bill language as being unnecessary.	

On June 20, 2000, President Clinton signed the *Biomass Research and Development Act*. Passed with bipartisan support, the Act has several provision that complement the Executive Order on Bioproducts and Bioenergy. The Act authorizes \$49 million in funding and establishes a technical advisory committee and interagency board to coordinate activities related to biobased industrial products.

The government's *Commodity Credit Corporation (CCC)* is considering a new initiative to accelerate the development and use of biobased technologies that would stimulate the industrial use of agricultural commodities into biobased products and fuels such as ethanol and biodiesel. The government is using incentive payments to bioenergy companies that increase their use of barley, corn, grain sorghum, oats, rice, wheat, soybeans, sunflower seed, canola, crambe, rapeseed, safflower, flaxseed, and mustard seed to make clean-burning, renewable fuels. It is anticipated that the CCC will make available \$150 million per year over the next two years. The United States now produces about 1.8 billion gallons of ethanol each year.

Technologies in the Marketplace

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

Another biobased product is xanthan gum, 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. Widely used as a thickening agent in foods, xanthan also has many non-food uses. For example, it is used to extend the life of gas and oil wells that have stopped producing. A solution of water and xanthan gum is pumped into the earth to push out any remaining crude oil. Sales of xanthan are approximately \$80 million a year.

Still another biobased product is biodegradable packing peanuts. Petroleum-based plastics now take up about one-quarter of landfills, but products made from a starch-polyester material are biodegradable. An example is biodegradable packing peanuts, which dissolve in water because they are made from biodegradable cornstarch.

Technologies in the Pipeline

In the works are new biobased products such as Fantesk 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. Another biobased product is hypoallergenic latex 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. Still another product, sucrose extracted from

FY 2001 TRANSPORTATION APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Kyoto Protocol	No provision.	Bill and report language would 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. 337).	May well be unconstitutional if read to prevent DOT 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.	
Corporate Average Fuel Economy (CAFE)	Would prohibit funds to prepare, prescribe, or promulgate new CAFE Standards for automobiles (Sec. 318)	No similar provision. During bill Floor consideration on 6/14, the Senate adopted a motion to commission an NAS study of the safety, employment, and economic impacts of CAFE standards. A joint resolution to approve a change in the regulation would be required by Congress if the Adm. promulgated a rule during the FY.	The Administration strongly opposes the House provision restricting work on CAFE standards. Further, the Administration is concerned by the Senate instruction to the conferees to accept the House restriction with a new study. Anything short of lifting the House restriction would result in lost fuel economy, further dependence on foreign oil, and undue cost to the American consumer. The restriction's elimination would allow the Transportation Department to analyze this important issue fully.	

sugarcane juice, is the main ingredient in new liquid epoxies that can bind wood, metal, glass, concrete, and other materials. The advance may open a new industrial outlet for the sweetener in the form of base coats, primers, or adhesives for composite materials like particle boarding or boat hulls.

Biomass for Energy Production

The government also is proceeding with new authority to use land in the *Conservation Reserve Program (CRP)* for pilot biomass projects. Crops on CRP land may be harvested for biomass used in energy production if none of the acreage is harvested more than once a year, and not more than 25 percent of the total acreage enrolled is harvested in any year. In addition, no portion of the crop on the pilot land may be used for any commercial purpose. Participants in the project must agree to a 25 percent reduction of the annual rental payment that they would normally receive in the CRP for each year in which the acreage is harvested.

where is this?
The Beltsville Area Biodiesel Demonstration is testing a blend of 20 percent biodiesel (methyl soyate from soybean oil) and 80 percent diesel fuel. This blend is referred to as B20. Biodiesel is an alternative motor fuel produced from renewable resources such as vegetable oil or animal fats and, typically, blended with petroleum diesel. The one-year Biodiesel Demonstration began August 1999. Currently, all 64 diesel-powered vehicles on the BARC-East side of the facility use the B20 fuel blend. These vehicles include pick-up trucks, tractors, ride-on lawnmowers, and a compost turner. The visitors center tour bus is also running on the blended fuel.

Fuel blending is achieved by filling underground storage tanks with diesel fuel and methyl soyate. No conversion is required to use B20. However, the increased solvent properties of B20 require that filters be checked frequently, particularly at the onset, to avoid clogging from dislocation of existing deposits.

do we care about the details?
Government researchers have improved biodiesel's ability to start engines in cold weather. This is good news for soybean farmers ~~because it~~ will speed the commercial use of biodiesel fuels made from soybean oil. When overnight temperatures fall near or below freezing, biodiesel fuels form small, solid, waxy crystals that stick together to form bigger ones. These large crystals block fuel filters and plug fuel lines. To solve this problem, *or many?* a government chemical engineer developed a three-step winterization process that involves mixing in additives, chilling the fuel, and filtering out the solids. In laboratory tests, the adapted biodiesel fuel was capable of starting engines at temperatures as low as 5 degrees Fahrenheit, making it comparable to petroleum-based diesel fuels.

An added benefit of biodiesel fuels is that they are energy efficient because less fossil energy is required to produce the final product. Biodiesel fuels yield about three units of *fuel product energy (FPE)* for every unit of *fossil fuel energy (FFE)* in the production process. This includes energy used for farm production, soybean crushing, soybean oil conversion, and transportation. In comparison, the petroleum fuel production process yields only one unit of *FPE* per 1.2 units of *FFE*.

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Ozone Air Quality Designations (Reps. Collins, R-GA and Linder, R-GA)	Bill language prohibits EPA from using funds to designate non-attainment areas for the new ozone national ambient air quality standard (NAAQs) that has been stayed by the D.C. Court of Appeals and is awaiting Supreme Court decision on whether it will be allowed to take effect. This provision was approved as a House Floor amendment by a vote of 226-199 on 6/21.		Strongly oppose because it would stop the process of designating areas in non-attainment with EPA's new ozone air quality standard pending the outcome of litigation. This would delay achievement of cleaner air by blocking needed procedural steps while Supreme Court action is pending.	

why not move other B20 stuff here?

Replacing petroleum diesel with B20 will reduce carbon dioxide emissions 16 percent. B20 will also reduce emissions of carbon monoxide (20 percent), particulate matter (22 percent), and sulfates (20 percent)—three pollutants that pose health risks in certain areas of the United States. B20 reduces unburned hydrocarbons by 7 percent. B20 also reduces levels of two compounds identified as potential carcinogens, PAH (polycyclic aromatic hydrocarbons) (13 percent), and nPAH (nitrated PAH) (50 percent).

100 gallons of B20 means
413 pounds less carbon dioxide
0.14 pounds less sulfur
0.40 pounds less carbon monoxide
0.05 pounds less particulate matter

Methane and Nitrous Oxide Mitigation

The 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 to reduce methane concentrations while achieving other environmental benefits, including odor control and nutrient management opportunities.

The *Ruminant Livestock Efficiency Program (RLEP)* promotes livestock management strategies that improve production efficiency and 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.

Efforts to improve *Nitrogen Fertilizer Efficiency* and thereby reduce emissions of nitrous oxide are underway to determine the nitrogen management systems that are best for minimizing gaseous losses. Current and alternative systems of nitrogen management are being studied for a variety of crops including corn, cotton, potatoes, and rice.

Carbon Sequestration

Natural carbon sinks will play a critical role in helping the world meet the challenge of climate change. Recently, focus has intensified on agriculture and forestry practices that can affect the ability of farmland and forests to sequester carbon and help mitigate the impacts of climate change. As understanding of these practices has increased, 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 and expanded to foster greater sequestration. In general, the programs assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land.

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Contaminated Sediments at Superfund Sites	Report language provides that EPA can take no action to order the use of dredging or other invasive remedial technologies for contaminated sediments at Superfund sites (with exceptions for voluntary agreements and urgent threats to public health) until the findings of a National Academy of Sciences study (expected September 2000) are incorporated into EPA procedures. A 6/21 House floor amendment (Rep. Hinchey, D-NY) was rejected 208-216 that would have overridden this objectionable report language (and for enforcement of arsenic drinking water standards).	No bill yet.	Would prevent EPA from cleaning up contaminated sediments or ordering potentially responsible parties (PRPs) to conduct cleanups. This rider is more restrictive than FY 2000 language because it could restrict capping and contaminant sampling as well as dredging. The exception for urgent threats to public health does not define "urgent" or cover threats to the environment. EPA believes this rider could compromise cleanup at the Fox River site in Wisconsin, the Hudson River site in New York, and other Superfund sites nationwide.	
Limit CEQ to 22 FTE	Would limit CEQ to 22 FTE, below the 26 FTE it requested.	No bill yet.	Would hamper CEQ's ability to provide optimal number of employees to run the agency efficiently.	

The programs include *Conservation Technical Assistance (CTA)* to help farmers develop and implement conservation plans. Practices that sequester carbon include cover crops, residue management, crop rotation, and buffer establishment.

The *Conservation Reserve Program (CRP)* pays farmers to convert highly erodible or other environmentally sensitive cropland to grass, shrubs, and trees. The primary goals of the CRP are to decrease soil erosion, improve water quality, and provide enhanced wildlife habitat. From its inception in 1985, the CRP has been responsible for planting 3.5 million acres (1.4 million hectares) of cropland to trees and is estimated to be sequestering 11.3 MMTCE per year on the 36.4 million acres enrolled. Additional benefits from the elimination of nitrogen fertilizer application have been estimated at 1.8 MMTCE per year.

The *Forestry Incentives Program (FIP)* provides financial and technical assistance to encourage production of sawtimber and pulpwood on nonindustrial private forestlands. For 1991 to 1997, more than 1 million acres were planted to trees through the FIP program. The *Stewardship Incentives Program (SIP)* provides financial and technical assistance to expand tree planting and implement stewardship plans on private properties. From 1992 to 1997, a total of 273,000 acres were planted to trees through the SIP program.

The *Environmental Quality Incentives Program (EQIP)* provides technical, educational, and financial assistance to eligible farmers and ranchers to encourage them to adopt conservation practices.

The *Swampbuster program* links wetlands protection to program benefit eligibility and has preserved more than 5.8 million acres of wetlands that would otherwise have been converted to agricultural use. The *Wetlands Reserve Program (WRP)* offers private landowners financial incentives to enhance wetlands in exchange for retiring marginal agricultural land.

FY 2001 VA/HUD APPROPRIATIONS RIDERS -- July 17, 2000

RIDER	FY 2001 HOUSE	FY 2001 SENATE	ADMIN. POSITION ON WHY THE PROVISION IS OBJECTIONABLE	CONFERENCE/ FINAL
Title VI ("Environmental Justice") Interim Guidance (Knollenberg, R-MI)	Prohibits expenditure of funds to implement EPA's Feb. 5, 1998, Interim Title VI Guidance to resolve discrimination complaints related to environmental permitting for complaints filed after Oct. 21, 1998.	No bill yet.	Restricts EPA's ability to timely resolve 1964 Civil Rights Act Title VI discrimination complaints. EPA is working to finalize the Title VI Guidance, and could have it done before an appropriation bill is signed, making issue moot.	
Radon in Drinking Water Multi-media Rule (Walsh, R-NY)	Report language directs that final promulgation of the radon in drinking water rule be postponed until Congress has time to consider legislation. There are currently bipartisan efforts to introduce such legislation.	No bill yet.	The bipartisan 1996 Safe Drinking Water Act Amendments require EPA to finalize a radon in drinking water rule by October 2000. The rule would give states statutorily authorized flexibility to implement a multi-media (drinking water and air) approach to reducing radon, which can reduce the risk at much lower cost than by only treating drinking water. When the Amendments passed, the multi-media approach to radon had bipartisan support and was considered very innovative.	



U.S. DEPARTMENT OF ENERGY

Gary D. Burch, CSP Team Leader (EE-11)

Office of Solar Energy Technologies

1000 Independence Avenue, SW

Washington, D.C. 20585

Phone No: (202) 586-0081

Fax No: (202) 586-8148

DATE: September 12, 2000

Number of Pages: 2
(Including Cover Sheet)

To: Janet Anderson
White House Climate Change Task Force

Phone: (
FAX: (9-395-2342)

MESSAGE:

Janet,

Here are the carbon reduction numbers for one of the Concentrating Solar Power (CSP) technologies—specifically, parabolic troughs.

When compared to a natural gas turbine which is being used as a peaking unit, the California troughs plants are saving about 0.1 MMTCE per year. Over the past 10 years, the cumulative number for these plants is about 1 MMTCE.

If a CSP plant were to used with storage, such that it could generate power on a full time basis, it would be appropriate to compare the CSP plant to a coal plant. In this case, the numbers above would double for the same level of generation—e.g., 354 MW of installed capacity would offset about 0.2 MMTCE on an annual basis.

If you need further information, please call Tommy Rueckert at DOE at 586-0942.

Gary Burch

White House Climate Change Task Force

COP 6 Report Draft Schedule

This timetable is based on project launch no later than July 10, which allows:

- 55 working days for research, writing, editing, and design—completed by September 25 (that is a tight time frame for a report with photos).
- 20 working days for printing by GPO (usually takes GPO 15-30 working days)—completed by October 23.
- 627 • 15 working days for shipping overseas—completed by November 10.
- 1328 • November 13 conference.

Note: Asterisk indicates that text and layout concepts can proceed simultaneously from this point on.

Deliverable	Date Due
Text	
Planning meeting	Within 2 days of project launch
Draft outline and creative brief	2 working days after planning meeting
Review of draft outline and creative brief by WHCCTF	2 working days after submission of draft outline
Notice to agencies*	1 working day after approval of draft outline
Write-ups from agencies	8 working days after notice to agencies goes out
Revision of write-ups as needed and submission of revisions to agencies	4 working days after write-ups received
Approval of write-ups by agencies	2 working days after submission of revisions
1 st complete text draft	10 working days after approval of write-ups
Review of 1 st text draft by WHCCTF	4 working days after submission of 1 st text draft
2 nd text draft incorporating revisions	2 working days after review received
Review of 2 nd text draft by WHCCTF	2 working days after 2 nd text draft received
3 rd text draft incorporating revisions goes to	2 working days after review received

Timetable, 07/27/00

graphics	
Layout	
1 st set of cover and spread concepts*	15 working days after approval of draft outline
Review of 1 st set of concepts by WHCCTF	10 working days after 1 st set of concepts received
2 nd set of cover and spread concepts	5 working days after review received
Review of 2 nd set of concepts by WHCCTF	5 working days after 2 nd set of concepts received
1 st layout draft	5 days after receive 3 rd text draft
Review of 1 st layout draft by WHCCTF	3 working days after receive 1 st layout draft
2 nd layout draft	2 working days after receive review of 1 st layout draft
Review of 2 nd layout draft	2 working days after receive 2 nd layout draft
Preflighting of final layout draft	2 working days after receive review of 2 nd layout draft
GPO printing	Usually 15 to 30 working days after receive final electronic file
Shipping to The Hague	10 to 15 working days (??)



White House Climate Change Task Force COP 6 Report Cost Estimate

Overview

ICF Consulting herein provides cost estimates for three options for an 8.5 x 11 two-color report of approximately 40 to 50 pages (20,000 to 25,000 word text and approximately one to two illustrations per page) with a four-color cover. Please note that printing costs are **not** included in this estimate. Also please note that additional text or layout drafts beyond those specified in this estimate will raise costs.

Objective

To provide an attractive, elegant, and dignified report that will serve as the U.S. materials for the COP 6 international climate negotiations at The Hague, convening November 13, 2000.

Cost Estimate

The attached cost estimate reflects ICF's best estimate of the level of effort and indirect costs required to perform this project. The prices are loaded and include fee. The following are the specifications for Options A, B, and C:

- A. WHCCTF provides conceptualization and all research, and writes all text drafts. ICF Consulting provides editing of one (1) text draft and design of two (2) layout concepts and two (2) full layout drafts, preflighting, proofreading, QA, and project management.
- B. WHCCTF provides conceptualization and all research, and writes first complete text draft. ICF Consulting writes and edits two (2) subsequent text drafts, designs two (2) layout concepts and two (2) full layout drafts, and provides preflighting, proofreading, QA, and project management.
- C. ICF Consulting provides conceptualization and all research, and writes and edits three (3) text drafts, designs two (2) layout concepts and two (2) full layout drafts, and provides preflighting, proofreading, QA, and project management.

Option A: Editing and Design Only

This option assumes:

- 1. All research is done by WHCCTF, and all text drafts are written by WHCCTF.
- 2. Text runs approximately 20,000 to 25,000 words.
- 3. ICF Consulting designs approximately 25 charts, graphs, and tables.

4. WHCCTF and the agencies provide approximately 25 file photos, and IFC Consulting purchases approximately 25 stock photos @ \$100 - \$150 each.
5. ICF Consulting provides two (2) initial layout concepts for the cover and a sample spread, two (2) full layout drafts, and the final preflighting to prepare the file for the printer.
6. Additional drafts (text or layout) will raise costs.
7. No printing costs are included in this cost estimate.

• Editing of WHCCTF text draft, proofreading, and QA two (2) layout drafts	\$5,260
• All design labor and ODCs such as photo purchases	\$15,028
• Project management	\$4,058
<u>Option A Total</u>	<u>\$24,346</u>

Option B: Writing 2nd and 3rd Text Drafts, Editing, and Design

This option assumes:

1. All research is done by WHCCTF, and WHCCTF writes first complete text draft.
2. All other assumptions same as in Option A.

• Writing and editing 2 nd and 3 rd text drafts, proofreading, QA 2 layout drafts	\$10,344
• All design labor and ODCs such as photo purchases	\$15,028
• Project management	\$5,074
<u>Option B Total</u>	<u>\$30,446</u>

Option C: Research, Writing, Editing, and Design

This option assumes:

1. All research is done by ICF Consulting, and ICF Consulting writes all text drafts.
2. All other assumptions same as in Option A.

• Conceptualization and all research (includes rewriting agency submissions)	\$9,990	] - 20,000
• Writing and editing 1 st , 2 nd , and 3 rd text drafts, proofreading, QA 2 layout drafts	\$12,344	
• All design labor and ODCs such as photo purchases	\$15,028	
• Project management	\$7,472	
<u>Option C Total</u>	<u>\$44,834</u>	

20,000 writing

6,000 ~~printing~~ printing



1850 K Street, NW, Suite 1000
Washington, DC 20006-2213
202-862-1144 fax

FAX COVER SHEET

Date

8-1-00

To

John Gibson

Recipient's Fax Number

202-395-2342

No. of Pages (including cover sheet)

3

From

Norah Davis

Phone Number

202-862-2953

Billing Code

Message

fyi

If there is a problem with this transmission, or all pages have not been received,
please call 202-862-1200 ASAP. Thank you.



White House Climate Change Task Force COP 5 Report for 1999

Overview

In October 1999 for COP-5, ICF Consulting helped the WHCCTF prepare a 40-page document, "United States: Taking Action on Climate Change," and 11 two- to four-page information sheets on U.S. climate change programs (a total of approximately 24,000 words). For this effort, ICF provided editing, design, printer coordination, and project management services, but no research or writing services.

This year, by contrast, the WHCCTF has asked ICF Consulting to take the lead on all aspects of the COP-6 publication, including research and writing, because of the complexity of the type of publication.

The COP-5 papers were designed with a bare-bones look to avoid the appearance of the United States "outdoing" the developing nations. The cover and interior were black-and-white with no illustrations and a simple two-column template.

This year, because of the special importance of the COP-6 negotiations, the WHCCTF has decided on a more polished report with a higher level of design—a brochure with a four-color cover, two-color interior spreads, photographs, and other illustrations. The editing, proofreading, and QA are not greatly affected, but the design work is much more time-consuming for a project of this sort compared with the simple design of COP-5.

Estimate

The following is an estimate for a product and services similar to what we did for COP-5, based on a reasonable time estimate of that effort. Note that ICF Consulting did not provide research or writing services for the COP-5 project, nor did the publication require advanced graphics work.

Editing	50 hours
Design	40 hours
Proofing & QA	15 hours
Interface with German printer*	20 hours
Project Management	30 hours

Total 155 hours x \$85.00/hour = \$13,175**

- The interface with the German printer was time-consuming because of three factors: (1) language difficulties that required the services of an ICF vice president fluent in German;

(2) technical software problems due to interfacing with a foreign printer that needed to be resolved; and (3) after WHCCTF had decided on a printer and ICF had conducted tests to iron out potential technical difficulties, the State Department contract officer decided to require a last-minute search for a less expensive printer. As it turned out, this led to a 3-hour international conference call involving EPA, State, the Berlin embassy as translator, the WHCCTF, the German printer, and the ICF project manager. Additional technical tests had to be conducted during the call by the ICF graphics designers.

**** Printing costs are not included in this estimate.**

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. INDUSTRY

- Broad movement (GCC's dwindling membership; PEW; individual company announcements) (EPA?)
- Sector movement: Steel, cement, aluminum, chemical, semiconductors (DOE? EPA?)
- Carbon accounting/valuation (movement in corporate America to start internalizing environmental costs, including carbon emissions, and to reflect environmental concerns in accounting and corporate finance)
- Industries of the Future (DOE)
- Climate Wise (EPA)
- Motor Challenge, Steam Challenge, Compressed Air Challenge, Combined Heat and Power Challenge (DOE?)
- DOE CHP research
- Voluntary Industrial Aluminum Partnership (EPA)
- WasteWiSe (EPA)
- Methane Reduction Programs
 - Landfill Methane Outreach Program (EPA)
 - Coalbed Methane Outreach Program (EPA)
 - Natural GasSTAR (EPA)
 - AgSTAR (USDA)
 - Ruminant Livestock Efficiency Program (USDA)

III. BUILDINGS

- PATH (HUD)
- Energy Star Buildings (EPA)
- Energy Smart Schools/Energy Star Label for Schools (DOE/EPA)
- Federal Buildings EO (WHCCTF)
- Energy Star Products (EPA)
- Appliance standards (DOE)
- Success stories – candidates include:
 - New Jersey Affordable Housing Initiative
 - New York State Energy Research and Development Authority
 - others

IV. ELECTRICITY

- Bioenergy (EO and generally) (DOE/USDA)
- Windpower & Windpowering America (DOE)
- Solar (DOE)
 - DOE research
 - Million Solar Roofs
 - Brightfields
- Restructuring movement and legislation (DOE)
- DOE new energy source research (hydrogen, superconductivity, etc.)
- DOE cleaner coal and natural gas research
- Climate Challenge (DOE)
- Nuclear (DOE)
- Low Income Weatherization and State Energy Grants (DOE)
- Success stories – candidates include: (DOE)
 - Growth of green power choice for consumers (California, etc.)
 - Trigen & other individual companies
 - Others

V. TRANSPORTATION

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

VI. AGRICULTURE & CARBON SEQUESTRATION

- Biomass/Bioenergy (need to decide where best to put – here or under Electricity) (DOE/USDA)
- DOE sequestration research (oceans, geological formations, etc.)
- USDA programs and movement generally to explore climate friendly farming/forestry techniques (USDA)
 - CTA, CRP, EQIP, Swampbuster, Wetlands Reserve Program, Forestry Incentive Program, Stewardship Incentive Program, forestry practices

VII. CONCLUSION

Other items we need to fit in somewhere

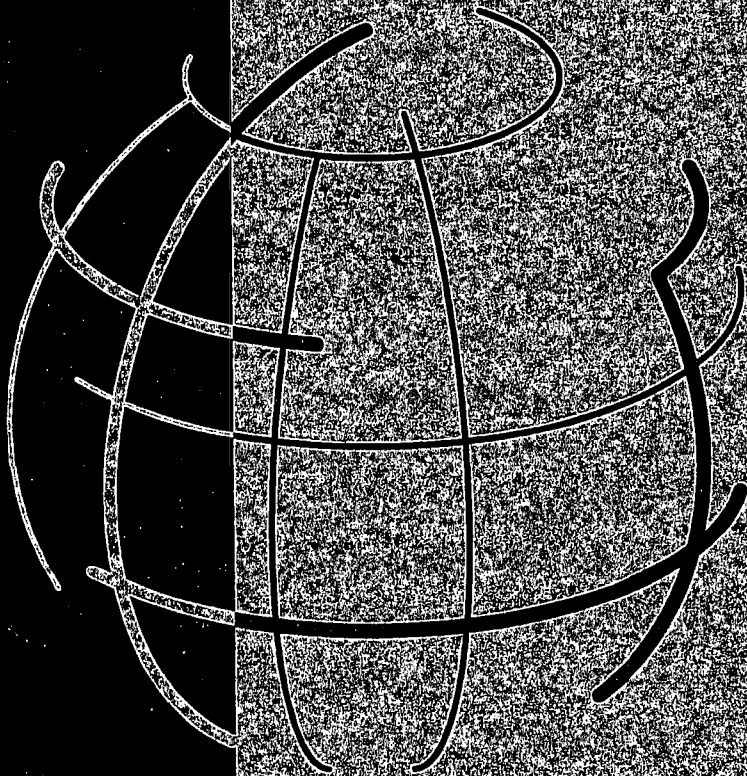
Box on President's CCTI including tax incentives (similar to last year's) (agencies: WHCCTF will write this one)

Clean Air Partnership Fund (WHCCTF has write up)

International Clean Energy Initiative (WHCCTF has write up)

United States

TAKING
ACTION
ON
CLIMATE
CHANGE



October 1999

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EXECUTIVE SUMMARY

Climate change threatens the United States and all nations. To help address this threat, the United States is taking significant new steps to reduce greenhouse gas emissions. During the past year, President Clinton launched initiatives on bioenergy, wind and solar energy, and Federal energy efficiency. In addition, a growing number of state and local governments and private companies are stepping forward to address climate change with prudent, creative, cost-effective strategies to reduce greenhouse gas emissions. At the same time, the United States continues to invest more than \$1 billion per year in research and development on technologies that will help reduce greenhouse gas emissions. In short, from city council chambers to corporate boardrooms, the United States is mobilizing against global warming—the greatest environmental challenge of the 21st century.

New Initiatives

In 1999, the Clinton Administration launched four initiatives that will help reduce greenhouse gas emissions in the United States:

- **Bioenergy.** In August 1999, the President signed an Executive Order to accelerate the development of bio-based industries. The President set a goal of tripling U.S. use of bioenergy and bioproducts by 2010. This would reduce annual greenhouse gas emissions by an amount equal to as much as 100 million metric tons of carbon (MMTCE).
- **Federal energy.** In June 1999, President Clinton issued an Executive Order requiring each Federal agency to reduce greenhouse gas emissions from energy use in buildings by 30 percent below 1990 levels by 2010.

- **Wind Powering America.** This new U.S. Department of Energy (DOE) initiative seeks to supply 5 percent of U.S. electricity through wind technologies by 2020, which would avoid emissions of 35 MMTCE.
- **Brightfields.** DOE announced a program aimed at using former industrial sites contaminated with toxic waste for producing pollution-free solar energy.

These new Federal initiatives on climate are set forth in the first section of this report.

U.S. States, Localities, and Companies Moving Forward

In addition to actions at the Federal level, many states, cities, industries, and sectors of the U.S. economy are moving forward on their own to address climate change, understanding that the threat is real and prudent action is called for.

These actions are described in more detail in Parts II and III of this report.

Ongoing Federal Efforts

The foundation of President Clinton's environmentally and economically sound plan for reducing U.S. greenhouse gas emissions remains the Climate Change Technology Initiative (CCTI)—a vigorous five-year, \$6.3 billion program of tax incentives and investments focusing on energy efficiency and renewable energy technologies. Last year, in Fiscal Year 1999, President Clinton and Vice President Gore secured more than \$1 billion in CCTI funding. These CCTI investments already are yielding real results and real emissions reductions. For example:

- Federal *energy efficiency standards for equipment and appliances*, such as heating and cooling equipment, water heaters, lighting, refrigerators, clothes washers and dryers, and cooking equipment will avoid cumulative emissions of more than 225 MMTCE by 2010.
- Federally led voluntary programs, such as *ENERGY STAR*® labeling for high efficiency products and buildings, already have resulted in more than \$3 billion in technology investments by U.S. companies, consumers, and state and local organizations. These investments will deliver

emissions reductions of almost 40 MMTCE over the next decade.

- Federal efforts focused on *non-CO₂ greenhouse gases* have locked in emissions reductions of well over 100 MMTCE through 2010. In so doing, they are expected to maintain methane emissions at or below 1990 levels through 2010. Not counting applications to replace ozone-depleting substances, they will also maintain industrial emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) at or below 1990 levels through 2010.

Other CCTI investments have a more long-term R&D focus and can be expected to yield even greater reductions in the decade ahead. Among these are: the *Partnership for a New Generation of Vehicles*, a government-industry effort to develop cars that achieve up to three times the fuel efficiency of today's cars; the *Partnership for Advancing Technology in Housing*, which aims to improve the energy efficiency of new homes by more than 50 percent and to retrofit 15 million existing homes to make them 30 percent more energy efficient within a decade; and *research partnerships* for key renewable energy technologies such as wind, photovoltaics, geothermal, and biomass.

In addition to the CCTI, other important elements of the President's October 1997 plan include a proposal to restructure the electricity industry by introducing competition that will provide incentives for

energy efficiency; a wide range of industry consultations with key energy-intensive industry sectors to improve energy use and reduce emissions; a commitment to work with the U.S. Congress and industry on legislation to reward companies that take early action to reduce their emissions; reducing the Federal government's own greenhouse gas emissions; and a strong program of scientific research to further our understanding of human and naturally induced changes in the Earth's environment and assess the likely consequences of global warming.

These ongoing Federal programs and policies to address climate change are set forth in more detail in Part IV of this report.

Part of a Larger Three-Stage Plan

The programs and policies set forth in this report are part of the United States' longer-term response 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 win-win voluntary initiatives for reducing greenhouse gases. These efforts were expanded significantly in October 1997, prior to the Kyoto conference, when the President outlined his more comprehensive, three-stage plan for reducing U.S. emissions. The three stages of the plan are:

- **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. ***All of the materials included in this report are part of Stage 1 of the President's plan.***

- **Stage 2: Review and evaluation** in preparation for a domestic emissions trading system. Under the President's plan, the United States will review its progress beginning around 2004 and evaluate next steps as it moves towards a market-based permit trading system for carbon emissions. 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, an emissions trading program would be implemented to cut emissions in the major greenhouse gas-emitting sectors of the U.S. economy: buildings, transportation, industry, and electricity.

The President's three-stage plan recognizes the long-term nature of efforts to address climate change. It 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. The plan's graduated approach to emissions reduction will allow the United States to exploit the opportunities that exist for win-win reductions that both help the environment and save money for consumers, businesses, and governments.

1998 Emissions

In 1998, greenhouse gas emissions in the United States grew only slightly (0.4 percent) despite strong U.S. economic growth (3.9 percent). Although there were several one-time contributing factors (including mild weather that reduced the demand for heating fuel), the 1998 emissions figures are encouraging. Clearly, these numbers demonstrate that economic growth and emissions need not move in lockstep. The 1998 figures are consistent with a long-term movement in the U.S. economy toward

the lower-emitting service and high-technology sectors.

The Way Forward

At the same time, we realize that it is far too soon to conclude that the 1998 emissions figures represent a trend, and there is certainly no room for complacency. Reducing emissions will continue to be an uphill climb—both for the United States and the entire world.

In the long run, the President's balanced approach to the challenge of climate change will allow the United States to continue to grow our economy and protect the environment at the same time.

As President Clinton has said: "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."

PART I: NEW FEDERAL INITIATIVES

Over the past year, the Clinton Administration introduced a series of new Federal initiatives to address the challenge of climate change. They include:

- **Executive Order on Bio-Based Products and Bioenergy**
- **Executive Order on Federal Energy Efficiency**
- **Wind Powering America Initiative**
- **Brightfields Initiative**

This section discusses each of these initiatives in turn.

Measuring Greenhouse Gas Emissions and Emissions Reductions

Greenhouse gas emissions can be 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.

Because of the interaction effects of programs designed to reinforce each other, it would not be appropriate to

add together emissions reductions for all programs listed in this report to arrive at an estimate of total U.S. reductions. Furthermore, estimates from government agencies and industry sectors rely on different baselines and cannot be directly compared. There is a substantial amount of uncertainty associated with any of these projections because the estimates attempt to quantify projected technology adoption more than a decade into the future.

THE PRESIDENT'S NEW EXECUTIVE ORDER ON BIO-BASED PRODUCTS AND BIOENERGY

On August 12, 1999, President Clinton announced new steps to spur bio-based technologies that can help grow the U.S. economy, enhance U.S. energy security, and meet environmental challenges, including global warming. The President issued Executive Order 13134 coordinating Federal efforts to accelerate these 21st century technologies—which can convert sustainably grown crops, trees, and other “biomass” into fuels, power, and products. He also set a goal of tripling U.S. use of bioenergy and bioproducts 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 an amount equal to as much as 100 million metric tons of carbon (MMTCE)—the equivalent of taking more than 70 million cars off the road.

What the Executive Order Does

Scientific advances in agriculture, forestry, and other biological sciences are making bioenergy and bioproducts technically feasible and economically viable. Recent reports and studies concluded that U.S. government support for research is essential to realizing the full economic

and environmental potential of bio-based industries. The new Executive Order:

- Establishes a permanent council consisting of the Secretaries of Energy and Agriculture, the Environmental Protection Agency Administrator, the Director of the National Science Foundation, and other agency heads

Biomass: Clean Renewable Energy for the 21st Century

The term *biomass* refers to trees, crops, and agricultural, forestry, and other organic waste materials that can be used to make fuels, chemicals, and electricity. Biomass is a clean and renewable source of energy. It can be used to fuel cars, power factories, and create a host of chemicals and other everyday products. Energy from biomass sources—mostly from wood and wood waste—currently accounts for about 3 percent of the total U.S. energy supply. Since biomass crops absorb carbon during growth, their use for

energy and other applications results in near-zero net carbon release. Thus, substituting sustainably grown biomass for fossil fuels can dramatically reduce greenhouse gas emissions that contribute to global warming, while also reducing emissions of nitrogen oxides (NO_x), sulfur oxides (SO_x), and other pollutants. In addition, the deep-rooted plants commonly used for biomass, such as poplar, willow, and switchgrass, are helpful in controlling erosion, filtering chemicals from water runoff, and slowing floodwaters.

THE PRESIDENT'S NEW EXECUTIVE ORDER ON BIO-BASED PRODUCTS AND BIOENERGY

to develop a detailed research program to be presented as part of the annual Federal budget.

- Instructs the council to review major agency regulations, incentives, and programs to ensure that they are effective in promoting the use of bioproducts and bioenergy. The council's plan will be reviewed by an outside advisory group with representatives from bio-based industries, agriculture and forestry sectors, universities, and environmental groups.
- Directs the U.S. Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) to establish a National Bio-based Products and Bioenergy Coordination Office to manage the preparation of interagency budgets and provide a convenient point of entry for anyone interested in Federal work in bio-based products and bioenergy.

The Executive Order also builds on the Administration's record of strong and consistent support for bio-based industries, as indicated by: (1) the electricity restructuring bill introduced by the Administration earlier in 1999 requiring that 7.5 percent of all U.S. electricity come from renewable resources by 2010; (2) Executive Order 13101, signed in September 1998, instructing Federal agencies to make use of bio-based products; (3) new proposed tax credits for bio-based electricity production; and (4) increased research funding for DOE,

USDA, and the National Science Foundation.

Bioenergy and Bioproducts Are Here Today

Clean bioenergy and bioproducts are very much here and now. Already DOE and USDA are participating in partnerships on a number of breakthrough bioenergy and bioproducts projects, including:

Biomass-to-Ethanol Demonstration Projects. During the autumn of 1998, BC International Corporation broke ground in Jennings, Louisiana, for the first commercial plant to produce ethanol from the cellulose in agricultural waste—in this case, sugar cane bagasse. A number of other demonstration projects to convert municipal solid waste to ethanol are under development.

Biorefinery for Chemicals. Cargill Corporation, one of the largest privately held companies in the United States, built a prototype biorefinery in Blair, Nebraska. This new facility will use corn to produce a stream of chemical products and also a biodegradable polymer, polylactic acid, used in manufacturing films, fibers, rigid materials, and coatings.

Co-Firing Technologies. A number of projects are underway to explore ways to use biomass such as switchgrass and short-rotation wood crops like willows to make electricity by co-firing them with coal. Two of the most prominent studies—the Iowa Chariton Valley initiative and

THE PRESIDENT'S NEW EXECUTIVE ORDER ON BIO-BASED PRODUCTS AND BIOENERGY

the New York Salix project—also will investigate the technical and economic aspects of biomass gasification, in which biomass is made into a fuel gas that can be used for heat or power production.

Biomass to Energy. In the United States, more than 270 landfill gas-to-energy projects use the gas from decomposing waste as an energy source.

Economic Potential of Using Biomass for Energy and Products

Using biomass for energy and products is not only good for the environment, it also promises real economic opportunities for farmers, the forest products industry, energy producers, and chemical manufacturers. In rural areas, a fast-growing bioenergy market will increase the demand for energy crops, agricultural and forest residues, and wastes of all types. By creating high-tech jobs and new economic opportunities, meeting the President's goal of tripling U.S. use of bioenergy and bio-products could add \$15 to \$20 billion in new income for farmers and many rural communities, ensuring that they are an integral part of a prosperous 21st century global economy. The President's Committee of Advisors on Science and Technology noted in a recent report, "Powerful Partnerships: The Federal Role in International Cooperation on Energy Innovation," that investments in bioenergy technologies, infrastructures, and markets can play a crucial role in helping the world meet its future energy needs in an environmentally sustainable way.

The Administration's Fiscal Year 2000 Budget on Biomass

The President's Fiscal Year 2000 budget request contains \$242 million for investments in biomass research, development, and deployment, including:

Advanced Biomass Power and Fuels—funding for DOE and USDA to continue developing, testing, and demonstrating high-yield, low-cost biomass feedstocks; processes for co-firing biomass with coal to produce electricity; advanced technologies for biomass gasification using paper industry by-products; and continued work on producing alternative fuels, such as cellulosic ethanol, from biomass.

National Biomass Partnership—funding for DOE, USDA, and other Federal agencies and their private partners to launch a national partnership to develop advanced integrated biomass technologies.

The President also proposed a package of ***biomass tax credits***, which would add an extension of five years to the current tax credit of 1.5 cents per kilowatt-hour for electricity produced from biomass. In addition, the proposal expands the types of biomass eligible for the credit to include certain forest-related, agricultural, and other resources. Finally, the package includes a 1.0 cent per kilowatt-hour tax credit for electricity produced by co-firing biomass in coal plants.

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On June 3, 1999, President Clinton issued Executive Order 13123 that will help meet the challenge of global warming by requiring each Federal agency to reduce greenhouse gas emissions from energy use in buildings by 30 percent below 1990 levels by 2010. This will reduce annual greenhouse gas emissions by 2.4 million metric tons of carbon equivalent (MMTCE)—the equivalent of taking 1.7 million cars off the road—and save U.S. taxpayers more than \$750 million a year. The order also will expand markets for renewable technologies, reduce air pollution, and serve as a powerful example to U.S. businesses and consumers who can reap substantial benefits from energy improvements.

Aggressive New Goals

The Federal government is the largest energy consumer in the United States. Its annual energy bill runs more than \$8 billion, including \$4 billion to heat, cool, and power 500,000 buildings. Federal agencies already have reduced energy consumption 17 percent per square foot relative to 1985 levels. The Executive Order builds on that progress, extending current energy efficiency goals and setting new targets for greenhouse gas reductions, renewable energy use, and water conservation.

New Greenhouse Gas Reduction Goal.

The order requires each Federal agency to reduce greenhouse gas emissions that result from energy use in its buildings by 30 percent below 1990 levels by 2010. This is the Federal government's first-ever goal tied to greenhouse gas reductions.

New Energy Efficiency Goal for

Facilities. The Executive Order requires each Federal agency to improve energy efficiency in its buildings by 35 percent relative to 1985 levels by 2010.

New Energy Efficiency Goal for Industrial and Laboratory Facilities.

The order requires each Federal agency to improve its energy efficiency in industrial and laboratory facilities by 25 percent relative to 1990 by 2010.

Expanded Use of Renewable Energy.

Building on the President's commitment to install 20,000 Federal solar energy systems by 2010, the order calls for Federal agencies to expand their investments in renewable energy through applications of solar, wind, geothermal, and biomass technologies at Federal facilities and through the purchase of electricity from renewable energy sources.

Water Conservation. The order calls for Federal agencies to improve their efficiency in the use of water in order to reduce water consumption and associated energy use. The order requires the U. S. Department of Energy (DOE) to work with other Federal agencies to develop water consumption baselines and then set appropriate goals for water conservation.

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Fewer Exempt Facilities. Prior to the President's new Executive Order, a large number of facilities (accounting for 17 percent of energy use in buildings) were exempt from meeting Federal energy goals. Now all facilities are subject to those goals and requirements unless they meet new exemption criteria to be developed by DOE. In addition, each agency must report all exempt facilities in its annual report to the President and explain the rationale behind excluding them from Federal energy goals.

Cutting-Edge Tools and Strategies

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

Alternative Financing. Financing options such as Energy Savings Performance Contracts (ESPCs) and utility energy efficiency service contracts offer Federal agencies powerful tools for leveraging private sector financing to fund cost-saving energy improvements at no net cost to taxpayers. Under ESPCs, private sector energy service companies finance the upfront cost of purchasing and installing new energy efficient equipment. The Federal government uses a portion of the savings it accrues through reduced energy bills to repay the energy service company over the life of the contract. Contractors then receive a predetermined share of the value of the energy savings generated

by their efforts and may be paid only if actual savings result from the reduced energy use. All additional savings go to the Federal government. The government benefits from new equipment, reduced energy costs, improved energy efficiency, reduced greenhouse gas emissions, and conservation of nonrenewable fuels.

To date, DOE and the U.S. Department of Defense (DoD) have made more than \$8 billion in ESPC contract authority available for all Federal agencies to fund energy improvements. In addition, many of these contracts are "Super ESPCs" that rely on the same principles as regular ESPCs but offer an umbrella contract to allow expedited service. The Executive Order calls for agencies to maximize their use of ESPCs and utility energy efficiency service contracts to realize energy and cost savings.

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

ENERGY STAR® Labels and Other Energy Efficient Products. The order calls for agencies to purchase energy efficient products such as those with the

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ENERGY STAR label. Purchasing compact fluorescent light bulbs, highly efficient boilers, and other energy efficient products can save Federal agencies hundreds of millions of dollars.

ENERGY STAR BuildingSM Label.

Agencies shall strive to meet the ENERGY STAR Building criteria in their eligible facilities to the maximum extent practicable by the end of 2002. The label signifies that the building is in the top 25 percent of similar buildings with regard to energy efficiency.

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

Highly Efficient Energy Systems. The Executive Order calls for agencies to make greater use of highly efficient energy systems, including combined heat and power systems that use "waste" heat from industrial processes to supply power to other needs. These systems can offer tremendous energy and cost savings, as well as significant environmental benefits.

Off-Grid Electricity Generation. The Executive Order requires agencies to consider off-grid electricity opportunities that often provide energy and environmental benefits, while allowing agencies to avoid the costs of building new transmission lines or digging up existing lines. Off-grid options can be particularly effective in remote locations such as some U.S. national parks. Technologies range from solar outdoor lighting to small wind turbines and fuel cells.

Sustainable Building Design. In July 1998, a number of Federal agencies committed to constructing sustainably designed buildings. The June 1999 Executive Order requires all Federal agencies to apply sustainable design principles to the siting, design, and construction of new facilities, thereby saving energy and taxpayer dollars, and reducing pollution.

Strengthening Agency Accountability

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

Annual Reports to the President and Annual Score Cards. Under the Executive Order, each Federal agency must submit an annual report to the

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President describing the agency's progress in meeting the goals. In addition, the Deputy Director for Management of the Office of Management Budget will evaluate each agency's performance and submit agency score cards to the President.

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

Agency Energy Teams. The Executive Order requires each agency to form a technical energy support team to ensure that energy management strategies are implemented across all facilities. The energy teams bring together legal, procurement, and other essential agency representatives to overcome barriers to realizing energy and cost savings.

New Public-Private Advisory Committee. The order calls for DOE to organize an advisory committee to bring together private and public sector experts who can advise agencies on ways to improve their energy management practices.

Concrete Steps, Concrete Savings

In conjunction with the signing of a new Executive Order to promote energy efficiency, President Clinton announced the Pentagon's intent to award **the Federal government's largest-ever Energy Saving Performance Contract (ESPC).**

Under this award, Viron Energy Services and Pepco Energy Services will upgrade the energy performance of 837 Federal buildings at no up-front cost to taxpayers. The 18-year service contract, covering five military installations in the Washington, DC, area, will reduce annual energy consumption by 17 percent. The reductions will reduce annual greenhouse gas emissions by 24,000 metric tons of carbon equivalent (MTCE)—equivalent to taking more than 19,000 cars off the road—and will save DoD more than \$219 million in energy and related costs.

Other examples of energy-saving actions that the Executive Order is designed to promote include:

Energy Efficient Procurement. The Defense Logistics Agency (DLA), which supplies almost 20 percent of all light bulbs purchased by the Federal government, teamed up with DOE to offer half-price compact fluorescent light bulbs to any Federal purchaser.

Last year, the DLA supplied 1.5 million bulbs to Federal purchasers. If the bulbs had all been compact fluorescents, savings over the life of the bulbs would have totaled \$7.5 million. Recently, DOE added compact fluorescents to the ENERGY STAR product-rating program, providing consumers with quality assurance when they purchase the bulbs. A compact fluorescent bulb can last up to five years, saving \$67 over its lifetime.

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Renewable Energy Projects. Some 18 Federal agencies—from the departments of Agriculture, Interior, and Transportation to the Smithsonian Institution and the U.S. Postal Service—recently received a combined \$1.5 million in DOE funding for more than 100 cost-effective renewable energy projects at government sites. The technologies include more than 50 new or renovated solar water heating systems, large and small photovoltaic (PV) systems, PV-powered lights, wind power,

and “solar walls” that preheat outside air for interior heating.

Buying Renewable Power. EPA’s Richmond, California, laboratory became the first major Federal facility to use 100 percent renewable energy. Initially, 60 percent of the power supplied will come from geo-thermal sources, and 40 percent will come from biomass. This green power purchase will produce environmental benefits equivalent to eliminating more than two million passenger car miles driven in California each year.

Prior Federal Energy Efficiency Efforts

The President’s June 1999 Executive Order builds upon previous efforts to improve Federal energy efficiency. The Energy Policy Act of 1992 established the goal of improving energy efficiency in Federal office buildings by 20 percent on an energy-per-square-foot basis by the year 2000, compared with a baseline year of 1985. In March 1994, President Clinton issued Executive Order 12902, which extended the energy efficiency goal to 30 percent below 1985 levels by 2005. The latest order extends these goals still further, while also tightening provisions on exempted facilities and setting forth the first-ever Federal goal tied specifically to greenhouse gas reductions.

ENERGY STAR Buildings. EPA retrofitted GSA’s Foley Square Federal Office Building in New York City to qualify for the ENERGY STAR Buildings Label. The building, which opened in 1994, has 1.2 million square feet and houses offices of the Federal Bureau of Investigation, Internal Revenue Service, and EPA. By deploying equipment and products that qualify the building for the ENERGY STAR label, Foley Square saves taxpayers \$1.3 million annually in energy costs.

WIND POWERING AMERICA INITIATIVE

Wind is an emissions-free energy technology with largely untapped potential to meet future U.S. energy needs while helping address the challenge of climate change. *Wind Powering America* is a new U.S. Department of Energy (DOE) initiative announced in June 1999 to supply 5 percent of U.S. electricity through wind technologies by 2020. Meeting this goal will avoid annual greenhouse gas emissions of over 30 million metric tons of carbon equivalent (MMTCE) in 2020. Mid-term program goals include:

- Doubling the number of states with more than 20 megawatts of wind capacity to 16 by 2005, and tripling that number to 24 by 2010.
- Increasing the contribution of wind turbines to Federal electricity use to 5 percent (1,000 megawatts) by 2010.

Accelerated R&D

Wind Powering America will seek to meet its goals through a robust program to accelerate the research, development, and deployment of wind technologies. The initiative will build partnerships with states and localities, educate the U.S. public on the benefits of wind power, and encourage Federal agencies and organizations to lead by example in the employment of wind technologies.

Wind Power Is Here and Now

A New "Crop" for Farmers. Since 1998 more than 400 megawatts of new wind generating capacity has been installed on farmlands in the Great Plains region of the United States, providing a substantial economic boost directly to farmers, landowners, and local communities while satisfying the growing demand for clean electricity. Wind farming creates construction and service jobs in rural regions, as well substantial tax revenues for local municipalities.

Remote Community Power. Kotzebue, Alaska, located north of the Arctic circle, is putting wind energy to work in reducing its dependence on diesel fuel for electric power. Shipment of diesel fuel to Kotzebue as well as many other Alaskan communities is expensive, seasonally limited, and environmentally risky. Kotzebue recently began operating a wind farm comprised of 10 rugged 66-kilowatt turbines that are reliably providing up to 10 percent of the community's power needs with an energy cost savings of about 40 percent.

Federal Opportunity. Three 225-kilowatt wind turbines are saving the U.S. Navy more than \$100,000 each year in diesel fuel costs for powering its station on San Clemente Island, 70 miles off the coast of Southern California. In addition, the turbines are helping the Navy respond to stringent local air pollution control mandates. With a near-perfect reliability record, the project is serving as a model for the way that wind energy can bring benefits to Federal facilities.

BRIGHTFIELDS INITIATIVE

Brightfields is a new initiative launched by the U.S. Department of Energy (DOE) in August 1999, aimed at using former industrial sites contaminated with toxic waste for producing pollution-free solar energy. This novel concept addresses three of the nation's greatest challenges: climate change, urban revitalization, and toxic waste cleanup.

From "Brownfields" to "Brightfields"

Many former industrial sites in U.S. urban areas are hard to redevelop because of a legacy of toxic waste contamination. This initiative will turn these "brownfields" into "brightfields" by placing clean energy systems, such as photovoltaic arrays, and high-tech solar manufacturing facilities on these sites.

Solar energy technologies, and photovoltaic systems in particular, are well-suited to brownfield sites. They require little maintenance and can stand directly on the ground without penetrating the surface or disturbing any existing contamination. The systems can be installed to function on or off the local power grid, depending on the needs of the site and existing infrastructure. They are especially attractive in urban areas with air quality concerns. With zero emissions, solar energy systems can offset emissions from other energy sources, particularly during peak hours when utilities often rely on older systems that pollute more heavily.

Brightfields also provide an opportunity for blighted urban neighborhoods to attract high-tech jobs and environmentally conscious businesses that are interested in supporting green investments or locating in environmentally friendly industrial parks.

Chicago First City to Use Brightfields Approach

The City of Chicago, working with DOE and Commonwealth Edison, developed an extensive plan that uses the brightfields approach to advance its economic development, climate change, air quality, and electricity reliability goals.

As a first step, municipal officials persuaded the Spire Corporation to manufacture solar panels at one of the city's brownfields, creating more than 100 new jobs. A solar energy system also will be installed, both to supply some of the company's electricity needs and to serve as a demonstration and educational site. In addition, the city and Commonwealth Edison committed \$8 million over the next five years to purchase and install solar energy systems at other brownfield sites, schools, office buildings, and municipal and commercial properties, and along transportation routes.

DOE has begun work with cities in California, Connecticut, Minnesota, New York, and Virginia to explore ways that brightfields can help communities address concerns about land use, economic development, energy, air quality, and climate change.

PART II: STATES AND LOCALITIES TAKING ACTION

Many U.S. states and communities are helping lead the fight against global warming. State and local governments, as regulators of many direct and indirect sources of greenhouse gas emissions and as managers of facilities that consume significant amounts of energy, are in a unique position to make a difference. Many are doing just that by stepping forward—both in partnership with the Federal government and on their own initiative—with innovative programs to reduce emissions. Their efforts are creating jobs and strengthening local economies, saving energy and money, and improving local air and environmental quality.

State and Local Success Stories

The following are just a few examples of the wide array of actions that states and localities are taking to address climate change:

The *State of New Jersey* committed to reduce its greenhouse gas emissions by 3.5 percent below 1990 levels by 2005. This amounts to a reduction equal to

5.7 million metric tons of carbon equivalent (MMTCE) from the state's business-as-usual projections. Strategies include improving commercial and industrial energy efficiency, using innovative technologies, preventing pollution, recycling, reducing solid waste, and sequestering carbon. One project, the Affordable Housing Initiative, offers grants to developers to design low-income housing that meets energy efficiency

U.S. Mayors Issue Statement on Global Warming

In September 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. The International Council for

Local Environmental Initiatives (ICLEI) coordinated issuance of the statement.

Sixty-six U.S. cities have joined ICLEI's *U.S. Cities for Climate Protection Campaign*. Participating cities agree to a set of milestones that includes preparing a baseline survey of emissions, setting a reduction target, preparing a local action plan, and implementing the plan. In 1998, the campaign avoided greenhouse gas emissions of approximately 1.3 million metric tons of carbon equivalent (MMTCE).

standards 30 percent better than current building codes. The state also established a Carbon Dioxide Bank working group and signed a letter of intent with the Netherlands that establishes a framework for developing joint initiatives to address global warming, including an emissions trading system.

In 1997, the *State of Oregon* enacted landmark legislation establishing a carbon dioxide standard for all new power plants of 25 megawatts or more. New natural gas-fired plants must emit 17 percent less carbon dioxide per kilowatt-hour than the most efficient gas-fired plants currently operating in the United States. The standard can be met by any combination of efficiency, co-generation, or offsets from off-site mitigation. The mitigation measures will offset 3.2 MMTCE over the next 100 years.

The *State of Wisconsin* is implementing energy efficient technologies and practices throughout state government, and encouraging consumers and businesses to do the same. The state's high-visibility public education campaign included retail store displays, newspaper and radio spots, brochures, and a toll-free call-in number. To date, Wisconsin has upgraded 53 million square feet in state government buildings, avoided annual greenhouse gas emissions of almost 30,000 metric tons of carbon equivalent (MTCE), and saved more than \$7 million in annual energy costs.

As part of an overall restructuring of the *State of California's* utility industry, the state established a Renewable Resource Trust Fund to collect \$540 million from investor-owned utilities to support existing and emerging renewable energy technologies. Municipal utilities and individual customers also may contribute to the fund. The fund is used to support production incentives, producer and consumer rebates, and an education program to help develop a consumer market for renewables. California also is collecting \$218 million from the state's investor-owned utilities for energy efficiency projects.

In the *State of North Carolina*, *Wake County Public Schools* embarked on an ambitious effort to upgrade the energy efficiency of the county's 120 school and administration buildings. By using a shared savings program in which individual schools receive a 10 percent share of their total annual energy savings, the school system involved the entire community in energy efficiency efforts. Measures already in place are avoiding more than 2,400 MTCE annually.

The city and county of *Denver, Colorado*, invested in lighting upgrades in 4.5 million square feet of office space, as well as multiple energy efficiency measures in nearly 2,000 additional facilities. The city's downtown district now has the highest number of buildings with the ENERGY STAR® label of any U.S. municipality. ENERGY STAR BuildingsSM is a U.S. Environmental Protection Agency

(EPA) program recognizing buildings that are in the top 25 percent of their class with regard to energy efficiency. The city also replaced incandescent light bulbs with high-efficiency red light emitting diodes in traffic signals at more than 1,200 intersections. All told, Denver's efforts avoid emissions of more than 1,900 MTCE each year.

In *San Diego, California*, the city government, San Diego County, and the San Diego Unified School District are focused on a concentrated effort to improve building energy efficiency. The city's Environmental Services Building, for example, became the first facility in the United States to receive EPA's ENERGY STAR Buildings label. The county recently installed energy efficient lighting in some 5 million square feet of office space in less than 18 months. Together, these efforts are reducing annual greenhouse gas emissions by more than 1,200 MTCE and saving \$5.6 million in annual energy costs.

The *New York State Energy Research and Development Authority (NYSERDA)* now offers to pay 50 percent of an applicant's consulting services for feasibility audits for energy upgrades in five of the state's electric distribution systems. NYSERDA will pay for an additional 25 percent of the audit costs of any applicant who has joined EPA's ENERGY STAR Buildings partnership.

Minneapolis and St. Paul, Minnesota, continued efforts toward fulfilling their pledge (made in 1993) to reduce their combined carbon dioxide emissions by 20 percent below 1988 levels by the year 2005. So far, the Twin Cities' efforts have focused largely on improving energy efficiency in municipal properties, which has saved more than \$877,000 in annual energy costs.

Low Income Weatherization and State Energy Grants

Two U.S. Department of Energy (DOE) programs specifically target energy efficiency investments at the state and local levels. The *Weatherization Assistance Program* delivers home energy efficiency services, such as insulation, to low-income U.S. households, reducing energy costs, improving health and safety, and reducing carbon emissions. In Fiscal Year 2000, this program will weatherize the homes of 66,000 low-income families, avoiding emissions of more than 760,000 metric tons of carbon equivalent (MTCE) and saving \$248 million. The *State Energy Program* has provided grant funds to carry out more than 8,700 projects since 1976. The program promotes the adoption of high-potential energy technologies developed under DOE energy efficiency and renewable energy research programs, flexibly addressing unique state needs and opportunities.

Soon, more than a dozen school districts in the *State of Iowa* will have installed nonpolluting wind turbines to produce electricity for classrooms. Forest City Community Schools, for example, began operating a 600-kilowatt wind turbine in January 1999 that is expected to provide 80 to 90 percent of the school's electrical needs.

Prince Georges County, Maryland, installed a methane recovery system at a landfill and uses the methane to provide heat, hot water, and electricity to a nearby correctional facility. Annual methane emissions were reduced by more than 250,000 MTCE, and energy revenues total nearly \$1.3 million.

The *University of Virginia* is making energy efficiency upgrades to more than 7 million square feet of facilities through lighting retrofits, building system improvements, heating pipe insulation, occupancy sensors, and other measures. The university invested \$4.3 million in energy efficiency steps, avoiding annual greenhouse gas emissions of more than 1,700 MTCE.

In 1999, *Santa Monica, California*, became the first major municipal government in the world to purchase renewable energy to provide all of its power needs (approximately 5 megawatts).

In 1994, the *State of Utah* established a partnership with the National Park Service to demonstrate the use of renewable energy and energy efficient technologies in the parks and monuments of Utah.

Renewable and energy efficiency projects have been initiated at four sites in the state, reducing annual greenhouse gas emissions by 185 MTCE, and saving \$140,500 per year in energy costs and fuel savings.

Working In Partnership with Federal Government

In addition to the Weatherization Assistance Program and the State Energy Program, the Federal government has numerous programs that provide support to state and local climate change efforts, including many of those discussed here. Among these programs are ENERGY STAR Buildings, WasteWi\$e, and a number of others set forth in the final section of this report.

One program, EPA's *State and Local Climate Change Program*, is a capacity-building initiative that provides states and communities with guidance and technical information in establishing greenhouse gas baseline emissions inventories and identifying options to reduce emissions. To date, 34 of 50 states have completed greenhouse gas emission inventories, and 25 states are producing action plans to identify options that reduce emissions. For example, Vermont's State Action Plan identified ways to reduce cumulative emissions by 21 percent, or almost 13 MMTCE by 2020. Vermont's policies also would reduce acid rain precursors by 24 percent, ground level ozone by 30 percent, and energy use by 16 percent.

PART III: U.S. COMPANIES MOVING FORWARD

Many U.S. businesses are stepping forward to assume leadership roles in addressing the challenge of climate change.

Growing Commitment to Greenhouse Gas Reductions

An increasing number of U.S. companies are committed to taking real actions to cut their greenhouse gas emissions. In the past six months:

DuPont announced three goals for 2010 related to climate change. The first is to reduce greenhouse gas emissions by 65 percent from a 1990 baseline; the second is to hold energy use flat at 1990 levels; and the third, to generate 10 percent of DuPont's energy from renewables. These goals build upon previous objectives announced for 2000.

Motorola led efforts in the semiconductor industry to reduce greenhouse gas emissions by pledging to reduce the company's perfluorocarbon (PFC) emissions by 50 percent relative to a 1995 baseline by 2010. The mitigation is made possible by reducing the use of PFCs or replacing them during the cleaning and etching stages of the manufacturing process. Motorola's target exceeds the goal for PFC reduction set by most of the other members of the semiconductor industry. (See "World Class Leadership.")

DuPont and Motorola are just the latest additions to the roster of U.S. corporations that understand the threat of global warming is real. In 1998, **United Technologies**—producers of Otis elevators,

Carrier air conditioners, Pratt & Whitney engines, and Sikorsky helicopters—announced a plan to cut emissions by improving energy efficiency 25 percent per unit of production by 2010. In addition, **IBM** announced a corporate-wide annual goal of improving energy efficiency by 4 percent. IBM also set a reduction target for PFCs; and by 2002, IBM will reduce its emissions of perfluoroethane by 40 percent per unit of production. Also, British Petroleum extended its commitment to reduce greenhouse gas emissions 10 percent below 1990 levels by 2010 to include its newly acquired U.S. subsidiaries, **Amoco** and **Arco**.

World Class Leadership

In April 1999, thanks to the leadership of Motorola and others, the global semiconductor industry agreed to reduce perfluorocarbon (PFC) emissions by 10 percent by 2010 relative to a 1990 baseline. Manufacturers in Europe, Japan, Korea, the United States, and Taiwan committed to aggressive action to reduce the use of PFCs in existing equipment and agreed to invest in major design changes for future low- or no-emitting manufacturing processes. Companies that accepted the World Semiconductor Council's reduction target for PFC emissions produce more than 90 percent of the world's semiconductors.

Real Actions, Real Reductions

In recent years, dozens of firms in a variety of industries have been moving forward with real actions to reduce their emissions of greenhouse gases and improve their energy efficiency. Examples include:

Alcan Ingot committed to reducing its PFC emissions by about 50 percent, relative to 1990 levels, by the year 2000 through the U.S. Environmental Protection Agency's (EPA) Voluntary Aluminum Industrial Partnership program. At Alcan's Seabree Aluminum Plant, the company reduced its PFC emissions by 63 percent over the past five years through the installation of computer-based systems that improve the flow of raw materials into aluminum smelting pots.

Applied Materials is addressing climate change aggressively by developing a technology that cleans semiconductor chemical vapor deposition chambers with minimal emissions of PFCs. The technology simultaneously improves productivity by reducing chamber clean time by up to 60 percent. A high-density, microwave-driven plasma discharge dissociates PFC molecules with an efficiency greater than 99 percent and consequently reduces greenhouse gas emissions by two orders of magnitude.

Panasonic is a leader in the manufacture and promotion of energy efficient ENERGY STAR® home electronic products. During Panasonic's first year of partnering with EPA, almost 97 percent of the company's unit sales qualified for the ENERGY STAR

label, compared with the industry average of 40 percent. Panasonic also aggressively promotes public awareness of energy efficiency. Because of the firm's efforts, EPA's ENERGY STAR public service announcement recently ran hourly on the large astrovision screen in Times Square, New York City.

Ricoh Corporation is a leader in the design and manufacture of energy efficient ENERGY STAR office equipment and in educating its own employees and the public about the environmental benefits of energy efficiency. Ricoh markets a wide range of ENERGY STAR digital printers, faxes, and copiers. The company also developed an exceptional web-based interactive educational tool on ENERGY STAR and the environment. The tool was intended initially for the Ricoh's sales staff and service technicians in the United States and Canada but is now used for public education as well. Ricoh expects to attract millions of web viewers by the end of 1999 and to expand the use of this educational tool to other countries.

ST Microelectronics improved energy efficiency and reduced PFC emissions in semiconductor manufacturing. The company benchmarked its energy use at production facilities and is implementing energy efficiency projects using wind turbine, photovoltaic, thermal solar, fuel cell, and cogeneration technologies that will reduce greenhouse gas emissions by a factor of 10 by 2010.

Texas Industries is pursuing a goal of zero waste in its cement and steel oper-

ations. To jumpstart the process of reaching this goal, the company developed a technology that uses a steel making by-product, slag, in the cement manufacturing process. The technology increases cement production by up to 15 percent, reduces greenhouse gas emissions by about 10 percent, and lowers conventional air pollutants by up to 40 percent.

Trigen is a corporate leader in promoting combined heat and power across the country, and the company has been successfully installing high-performing projects. For example, Trigen's Grays Ferry combined-cycle gas turbine cogeneration unit in Philadelphia replaced several old oil-fired district heating boilers. The project is designed to operate at 70 percent fuel efficiency, producing 150 megawatts of power and 1.4 million pounds of steam per hour. The district energy system provides heat to 70 percent of the downtown area's buildings and institutional facilities. The project is estimated to reduce emissions by approximately 90,000 metric tons of carbon equivalent (MTCE) annually. The cogeneration project at the Loctite Corporation in Rocky Hill, Connecticut, operates at 88 percent efficiency and is capable of generating 9.5 million kilowatts per year of electric energy. Annual emissions reductions are estimated at 750 MTCE per year.

TXU, one of the largest energy providers in the United States, is committed to reducing emissions of sulfur hexafluoride (SF₆) gas voluntarily in partnership with EPA's Climate Challenge and Emission

Reduction Partnership for Electric Power Systems program. TXU realized significant reductions in the use of SF₆ gas by introducing advanced leak detection equipment, initiating aggressive policies to identify equipment in need of repair, and implementing a strict inventory protocol that ensures all purchased SF₆ is fully and properly used.

Industry Sectors Move Forward

In addition to the semiconductor industry (see "World Class Leadership" on page 20), a number of other industry sectors

Corporations Speak Out for Action

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

In addition, the **Business Roundtable**, a group of CEOs from leading U.S. corporations, this year 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.

also are improving efficiency and reducing greenhouse gas emissions:

The **electric utility** sector entered into the *Climate Challenge* program in 1994 and agreed to reduce, avoid, or sequester greenhouse gas emissions voluntarily by 2000. Utility companies, together with the U.S. Department of Energy (DOE) and EPA, developed a workbook of reduction options that was widely circulated. Individual companies entered into agreements, and, as a result of their participation, utilities estimate emissions reductions of as much as 47 million metric tons of carbon equivalent (MMTCE) in 2000.

The **steel industry** is the fourth largest energy-consuming manufacturing subsector in the United States. The industry recently undertook a number of projects to increase energy efficiency and reduce waste. From 1994 to 1996 alone, the energy intensity of blast furnace iron making dropped by 4 percent. A comparable drop in carbon dioxide emissions accompanied the reduction in energy consumption. Nearly 80 percent of obsolete scrap from post-consumer products, such as discarded cars and appliances, is currently recycled; the steel industry is engaged in research to allow it to meet its goal of 100 percent recovery. Utilizing scrap steel greatly reduces the amount of energy required to make steel from virgin materials.

The **chemical industry** represents nearly 7 percent of total U.S. energy use. About

half of this sector's energy is used for feedstocks, while the remainder provides fuel, power, and steam. The Chemical Manufacturers Association (CMA) adopted its own Climate Action Program to reduce or avoid greenhouse gas emissions. A large portion of the industry reported emissions every year from 1992 through 1997; energy efficiency performance for those companies improved nearly 22 percent per pound of production with a corresponding drop in carbon dioxide emissions of 24 percent. The CMA awards companies for outstanding energy efficiency projects, thereby providing a model that other companies can use to reduce emissions and improve efficiency. The projects range from waste elimination and equipment innovations to new catalysts and process redesign. CMA intends to continue to implement its Energy Efficiency Continuous Improvement and Climate Action Programs vigorously in order to strengthen the industry's performance.

The **cement industry** emits carbon dioxide from the use of fossil fuels as well as from the calcination process in which limestone is heated. Companies representing more than 70 percent of U.S. cement production have joined EPA's Climate Wise program to take advantage of the latest methods of improving energy efficiency and reducing emissions. A spreadsheet-based workbook incorporates issues specific to the cement industry and enables companies to prepare an action plan and report the results of their efforts. The companies estimate that in 2000, annual emissions will be reduced by 8

percent below the business-as-usual projection and that annual savings will total \$2.3 million.

The *aluminum industry* is another energy-intensive sector with many opportunities to reduce its greenhouse gas emissions. The industry is investing in R&D, with a goal of a 15 percent reduction in energy use and concomitant decrease in carbon dioxide emis-

sions, as well as zero carbon dioxide emissions released from the smelting process. In addition, 11 of 12 U.S. primary aluminum manufacturers reduced their annual greenhouse gas emissions by 1.8 MMTCE annually and are committed to reducing PFC emissions by 45 percent to 1990 levels by 2000 through EPA's Voluntary Aluminum Industry Partnership.

Industry Consultations

An important component of the President's October 1997 plan to reduce U.S. greenhouse gas reductions is to build voluntary partnerships with energy-intensive industries to develop strategies to cut emissions. High-level Administration officials have met with top management of the aluminum, cement, forest products, gas pipelines, and steel industries, and publicly owned and investor-owned electric utilities. These consultations between

the Administration and industry leaders are focusing on the development of a common methodology on emissions baselines, measuring, monitoring, and reporting, as well as the identification of opportunities for the development and diffusion of less carbon-intensive technologies and practices. As part of these consultations, the Administration and industry officials discuss ways to ensure credit for businesses that take early actions to reduce emissions.

PART IV: ONGOING U.S. DOMESTIC PROGRAMS

In addition to efforts by U.S. states and localities, U.S. companies, and new Federal initiatives, there are literally dozens of win-win climate change programs and initiatives put into place by President Clinton since 1993. These new programs aim to develop and deploy energy efficient technologies and spur the development and broader use of renewable energy. These efforts have accelerated and expanded since the Kyoto climate change conference in 1997. Sustaining this commitment to reducing U.S. greenhouse gas emissions has been a focused effort by President Clinton to invest in the research, development, and deployment of energy efficiency technologies and renewable energy—an area whose budget in the U.S. Department of Energy (DOE) has exceeded \$800 million each and every year of the Clinton Administration.

The following survey highlights the most important of these investments, as well as a number of programs aimed at reducing or avoiding U.S. greenhouse gas emissions administered by the U.S. Environmental Protection Agency (EPA), the U.S. Department of Agriculture (USDA), and other agencies. Together, the programs cover the four major greenhouse gas-emitting sectors of the U.S. economy (buildings, transportation, industry, and electricity), carbon sequestration, agriculture and forestry, and a robust scientific research program.

As the other components of the President's strategy are implemented by industry partners, citizens, and the U.S. Congress, the Administration expects accelerated and greater energy efficiency, environmental, security, and economic benefits.

Buildings

The buildings sector is responsible for approximately 35 percent of U.S. greenhouse gas emissions. Most of the emis-

sions result from the electricity needed to run appliances and equipment in buildings, such as heating, ventilation, and air conditioning equipment. Studies show that many homes and businesses could reduce their energy use by about 30 percent using proven, cost-effective products, and investing in simple profitable building upgrades. A variety of DOE and EPA programs focus on developing and promoting the broader use of cleaner and more efficient building and appliance technologies. The programs include:

Partnership for Advancing Technology in Housing (PATH)

PATH is a partnership between the Federal government and the building industry to develop and deploy housing technologies to make new homes 50 percent more energy efficient and to make at least 15 million existing homes 30 percent more energy efficient within a decade. Meeting PATH's goals would reduce annual carbon emissions

in 2010 by an amount equal to nearly 24 million metric tons of carbon equivalent (MMTCE)—the amount produced by some 20 million cars—and would save consumers \$11 billion a year in energy costs. PATH has established five pilot communities in Denver, Los Angeles, Pittsburgh, and Tucson that are incorporating new housing technologies and advanced building concepts.

Energy Efficiency Standards for Equipment and Appliances

To save energy and reduce consumer utility bills, the U.S. government develops test procedures and national minimum energy efficiency standards for equipment and appliances, such as heating and cooling equipment, water heaters, lighting, refrigerators, clothes washers and dryers, and cooking equipment.

Climate Change Technology Initiative

The centerpiece of President Clinton's domestic climate change program is the Climate Change Technology Initiative (CCTI)—a package of targeted tax incentives and investments aimed at increasing energy efficiency and spurring broader use of renewable energy. The package amounts to an additional \$6.3 billion over five years (\$3.6 billion in tax cuts and \$2.7 billion in new investment), over and above what was already planned for climate change-related investments. The CCTI has been endorsed and supported by the President's Committee of Advisors on Science and Technology (PCAST). In 1997, PCAST produced a major analysis of energy R&D needs that provided the analytical underpinning for CCTI's package of investments. In Fiscal Year 1999, the President secured more than \$1 billion for CCTI investments—a 25 percent increase over the prior year. As of this writing, the Administration was engaged in negotiations to preserve these gains in the face of efforts by the U.S. Congress to scale back on investments in energy efficiency and renewables.

Most of CCTI's specific investment initiatives and programs are discussed within this section. Highlights of CCTI's proposed tax package include:

- **Tax credits for energy efficient homes.**
Consumers would receive \$1,000-\$2,000 credit toward the purchase of a new energy efficient home; a 10-20 percent tax credit for the purchase of selected energy efficient products for their homes and buildings; and a \$1,000-\$2,000 credit for installing a rooftop solar system.
- **Tax credits for fuel-efficient cars.**
The package includes tax credits ranging from \$1,000-\$4,000 for the purchase of a qualifying electric, fuel cell, or hybrid vehicle.
- **Tax credits for renewable energy.**
The package extends the 1.5 cents per kilowatt hour tax credit for the production of electricity from wind and biomass; expands the biomass credit to cover additional sources of biomass; and adds a 1.0 cent per kilowatt hour tax credit for co-firing coal and biomass in power plants.

Through 1997, residential appliance standards avoided cumulative emissions of 37 MMTCE and saved consumers a cumulative \$13.3 billion. By 2010, the currently enacted standards will have avoided cumulative emissions of more than more than 225 MMTCE and saved consumers almost \$50 billion.

In the upcoming year, the U.S. government expects to publish standards for clothes washers, water heaters, fluorescent lamp ballasts, and central air conditioners. These standards, and the recently enacted standards for refrigerators and room air conditioners, are expected to have avoided cumulative emissions of almost 12 MMTCE through 2010.

ENERGY STAR® Partnerships

The ENERGY STAR partnership programs are designed to remove market barriers to the purchase of energy efficient products, services, and technologies in residential, commercial, and industrial buildings.

- The *ENERGY STAR Products* program allows manufactures of selected energy efficient products to promote their products with the ENERGY STAR label. This allows consumers to easily identify products that help the environment and save energy and money. More than 3,000 highly efficient ENERGY STAR product models, ranging from computers to refrigerators to central air-conditioning units, currently are available to consumers.

- The *ENERGY STAR BuildingsSM Partnership* encourages individual building owners, developers, and managers to install energy efficient lighting and undertake a five-stage strategy to capitalize on system interactions that maximize energy savings at minimum cost. To date, buildings representing more than 13 percent of U.S. commercial square footage have signed up for the program. Among them are the Empire State Building, World Trade Center, and Chicago's Sears Tower.

EPA estimates that by 2010 investments in ENERGY STAR technologies and services already in place today will reduce cumulative greenhouse gas emissions by 40 MMTCE and save consumers and businesses more than \$13 billion in energy costs.

Energy Efficiency in Schools

The energy to run the nation's 115,000 primary and secondary schools costs approximately \$5 billion annually—more than the cost of textbooks and computers combined. DOE and EPA have two programs that are working in coordination to improve energy efficiency in U.S. primary and secondary schools. DOE's *EnergySmart Schools* works in partnership with major companies, unions, nonprofits, and Federal, state, and local agencies to cut energy bills in schools so that the savings can be reinvested in students and their education. EPA's *ENERGY STAR Label for Schools* provides tools

for schools to evaluate their own energy use, find ways to reduce it, and meet indoor air quality standards. DOE estimates that a 25 percent reduction in schools' energy use will cut annual U.S. greenhouse gas emissions by 3 to 4 MMTCE.

New United States and European Community Agreement on ENERGY STAR Labeling

Later this year, the United States and the European Community are expected to sign an agreement making the ENERGY STAR label an international symbol for energy efficiency. The agreement is intended to unify voluntary energy efficiency labeling programs in two of the major global markets for office equipment. This coordinated effort will serve to increase global supply of energy efficient equipment and demand by establishing uniform criteria for energy efficiency in the United States and the European Union. In addition, the proposed agreement would lend greater authority to efforts by other countries to stimulate the market for energy efficient products and establish the ENERGY STAR program as the international symbol for energy efficiency. The agreement currently is awaiting EC approval.

Transportation

The transportation sector accounts for approximately 30 percent of U.S. annual greenhouse gas emissions (and 65 percent

of U.S. annual petroleum consumption). Reflecting the fact that more than three-fourths of total energy consumption in the transportation sector is used in cars and trucks, U.S. climate efforts in this area aim almost exclusively at reducing the consumption of oil (and oil by-products) in those vehicles.

Partnership for a New Generation of Vehicles

Partnership for a New Generation of Vehicles (PNGV) is a Federal government-industry effort that aims to develop attractive, affordable, family-size cars that meet all applicable safety and environmental standards while achieving up to three times the fuel efficiency of today's cars. Since 1993, the program has made great strides in developing lower-cost, lightweight materials, operational fuel cells, and advanced internal combustion engines for use in hybrid vehicles. The PNGV program aims to develop concept cars in 2000 and produce a production prototype mid-sized family car capable of 80 miles per gallon (mpg) by 2004. In Fiscal Year 1999, appropriations for PNGV-related work totaled more than \$240 million.

Light and Heavy Trucks

Similar government and industry efforts are aimed at developing cleaner, more efficient diesel engines for both light and heavy trucks.

- By 2002, DOE aims to develop **advanced diesel cycle engine technologies** for pickup trucks, vans,

and sport utility vehicles that achieve at least a 35 percent fuel efficiency improvement relative to current gasoline-fueled trucks while meeting strict emission standards.

- By 2004, DOE, in coordination with EPA and the U.S. Department of Defense, aims to develop **engine and vehicle technologies for heavy trucks** that will increase the fuel economy to 12 mpg from the current average of 5.3 mpg.

Breakthroughs on Concept Cars

A direct result of the Partnership for a New Generation of Vehicles (PNGV) is the development of "concept cars," including hybrid vehicles that combine a traditional power source with battery storage and electric motors. On October 5, 1999, Ford presented to DOE the company's P2000 concept car, which uses advanced materials to reduce the weight of a full-size vehicle by 40 percent. Combined with an advanced direct injection engine, the P2000 is projected to deliver 63 miles per gallon. In addition, General Motors and Daimler Chrysler displayed driveable vehicles powered by fuel cells. Concept cars that meet PNGV's 80 mpg goal are expected to be unveiled in 2000.

Industry

Industry accounts for approximately one-third of U.S. annual carbon dioxide emissions (and 27 percent of U.S. energy consumption in 1997). A number of DOE and EPA programs focus on developing and promoting energy efficient technologies and practices in the nation's most energy-intensive industries.

Industries of the Future

This DOE program works cooperatively with the nation's most energy-intensive industries—such as aluminum, glass, chemicals, forest products, mining, petroleum refining, and steel—on research to develop technologies that increase energy and resource efficiency. Together, participating industries use more than 80 percent of all energy consumed in U.S. manufacturing. Promising collaborative efforts include improvements in the process of making steel, pulp and paper, and other energy-intensive products that could dramatically increase efficiency and lower greenhouse gas emissions. DOE estimates that participating industries will prevent emissions of more than 25 MMTCE by 2010 and realize \$4 billion in energy cost savings.

Climate Wise

This EPA program gives technical assistance to more than 530 individual manufacturing companies that have entered into partnership agreements with the Federal government to reduce green-

house gas emissions, increase productivity, and save money. Companies submit comprehensive action plans that identify specific steps they will undertake between the time they enter into the compact and 2000. By 2010, Climate Wise partners are projected to have avoided cumulative greenhouse gas emissions of nearly 14 MMTCE and saved \$2 billion through their participation in the program.

Methane Reduction Programs

The U.S. government administers a variety of industry-government voluntary partnerships that significantly reduce U.S. methane emissions from a variety of sources: The Landfill Methane Outreach Program, the Coalbed Methane Outreach Program, Natural GasStar, AgSTAR, and the Ruminant Livestock Efficiency Program (RLEP). These programs encourage emissions reductions either through the profitable collection and use of methane, as opposed to its release to the atmosphere, or, in the case of RLEP, through more efficient production in the livestock and dairy sectors. In 1998, participants in the programs reduced methane emissions by almost 5 MMTCE. EPA estimates that investments already made to reduce methane emissions by partners in these programs will reduce cumulative emissions by almost 70 MMTCE and save more than \$1 billion. By 2010, EPA expects that methane emissions will be stabilized at 1990 levels as a result of these voluntary partnerships.

HFC, PFC and SF₆ Emission Reduction Programs

Of all greenhouse gases, perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and several hydrofluorocarbons (HFCs) are the most potent because of their extreme stability in the atmosphere and strong absorption of radiation. PFCs, for example, commonly have atmospheric lifetimes on the order of thousands of years. The U.S. government administers a variety of industry-government voluntary partnerships that are reducing emissions of those gases substantially. The *Voluntary Aluminum Industrial Partnership (VAIP)* works with 11 of the nation's 12 primary aluminum producers to reduce PFC emissions while increasing the efficiency of primary aluminum production. The Federal government also administers a regulatory program through the Clean Air Act to help direct industry toward safe, new alternatives as manufacturers consider substitutes for ozone-depleting chlorofluorocarbons (CFCs) and halon compounds.

Investments already made by partners in voluntary programs will reduce cumulative emissions by more than 49 MMTCE over the lifetime of the projects. In addition, an estimated 54 MMTCE will have been prevented by 2000 through regulation. HFC and PFC emissions in applications to replace ozone-depleting substances are expected to be significantly below business-as-usual scenarios due to voluntary and regulatory initiatives. HFC, PFC and SF₆ emissions from other industrial

sources are expected to be at or below 1990 levels by 2010.

Industrial Combined Heat and Power Systems

DOE is developing new industrial combined heat and power (CHP) systems to capture thermal heat that otherwise would be wasted. CHP systems are expected to be 15 percent more energy efficient and 80 percent cleaner than conventional power systems and cut electricity costs by 10 percent. In addition, EPA and DOE are working to eliminate barriers to the rapid dissemination of combined heat and power technology.

Motor Challenge

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

WasteWi\$e

WasteWi\$e works with U.S. businesses; Federal, state, local, and tribal government agencies; and other institutions to reduce municipal solid waste. Presently, more

than 900 organizations are WasteWi\$e partners. Waste reduction activities reduce greenhouse gas emissions in several ways, including energy savings, increased carbon sequestration, and avoided methane emissions. In 1998 alone, the combined waste reduction results of WasteWi\$e partners prevented emissions of approximately 4.5 MMTCE—equal to the average annual emissions from electric power consumption from roughly 2.7 million households.

Electricity

Greenhouse gas emissions from the generation, transmission, and distribution of electricity account for 30 percent of U.S. annual greenhouse gas emissions. U.S. climate efforts in this area include improving the efficiency of electricity generation through substituting lower carbon and carbon-free fuels, reducing the demand for electricity through greater end use efficiency, and restructuring the electric power industry. These efforts are being accomplished through a combination of DOE and EPA voluntary partnerships and R&D efforts.

Electricity Restructuring

A core element of the President'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 includes a requirement that utilities open up their distribution and transmission wires to all qualified sellers; a renewable portfolio standard to increase the use of

electricity from renewable sources to at least 7.5 percent of sales by 2010; a \$3 billion per year Public Benefits Fund to spur greater investment in energy efficiency and renewable energy technologies; and a green labeling requirement to inform consumers about clean energy options. This plan is projected to reduce carbon emissions by roughly 40 to 60 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.

Photovoltaic Energy Systems R&D

Over the past 20 years, Federal research and development has resulted in a 90 percent cost reduction in solar photovoltaics (PV). As a result, industrial manufacturing of PV modules more than doubled between 1994 and 1998, growing from 26 megawatts in 1994 to more than 53 megawatts in 1998. DOE now is accelerating its R&D of the next generation of photovoltaic cells; increasing manufacturing R&D; increasing research in buildings-integrated applications; and developing new, unconventional technologies.

- **Million Solar Roofs.** This initiative, announced by the President in June 1997, seeks to place solar energy systems on one million roofs by 2010. To date, commitments for 900,000 have been made, indicating the potential for widespread market penetration of solar technologies. The President's Climate Change Technology Initiative

includes \$120 million in proposed tax credits to support this program. Meeting the initiative's goals will reduce carbon emissions equivalent to the annual emissions from 850,000 cars by 2010.

Hydrogen Research Program

DOE currently is accelerating research on low-cost hydrogen production and storage—prerequisites to the widespread use of hydrogen as a fuel. Over the next five years, hydrogen is expected to make a significant penetration into several niche fuel markets, owing to the recent demonstration of low-cost, high-performance Proton Exchange Membrane (PEM) fuel cell systems by Daimler Chrysler, Ford, and other companies.

High Temperature Superconductivity

DOE supports industry-led projects to capitalize on recent breakthroughs in superconducting wire technology, aimed at developing super-efficient power equipment, such as advanced motors, power cables, and transformers. These technologies would allow more electricity to reach the consumer without increasing the use of fossil fuels.

Climate Challenge

This program is a joint voluntary effort between DOE and the electric utility industry to reduce, avoid, or sequester greenhouse gases. Utilities identify and implement cost-effective activities that are specified in agreements between the

Federal government and individual electric utilities. Under this program, the electric utility industry as a whole also has developed nine industry-wide initiatives to research, develop, and promote technologies and practices that lower greenhouse gas emissions. Currently, Climate Challenge's partner utilities number more than 600 and represent 71 percent of the 1990 U.S. carbon emissions from electricity generation. Utilities estimate that pledged Climate Challenge actions would reduce emissions by as much as 47 MMTCE in 2000.

Cleaner Coal and Natural Gas

DOE supports an aggressive R&D effort to develop next-generation technologies for the combustion and use of coal and natural gas. For example, research and development of new coal combustion technologies, such as integrated gasification combined-cycle and pressurized fluidized bed combustion, could lead to ultra-high efficiency coal plants with dramatically lower greenhouse gas emissions—as much as 75 MMTCE by 2030.

Nuclear Energy

Nuclear power plants provide approximately 20 percent of U.S. electricity and avoid greenhouse gas emissions of 150 MMTCE annually. Licenses for U.S. nuclear power plants will begin to expire in large numbers in 2010. To ensure that current nuclear plants can continue to deliver adequate and affordable energy supplies up to and beyond their initial

40-year license, DOE initiated the Nuclear Energy Plant Optimization (NEPO) program. NEPO supports collaborative R&D with industry, aimed at resolving open issues related to plant aging. It also supports the application of new technologies to improve plant economics, reliability, and availability.

Sequestration and Agriculture

R&D for Sequestration

DOE is pursuing research on sequestration technologies to separate and capture carbon dioxide from energy processes and combustion, disposal technologies for storing carbon dioxide in underground geological structures and in the deep ocean, and advanced concepts to transform carbon dioxide into either useful or environmentally benign products. In the post-2015 time period, this program has the potential to eliminate hundreds of millions of metric tons of greenhouse gases from the atmosphere.

Carbon Sequestration in Agriculture and Forestry

Natural carbon sinks will play a critical role in helping the world meet the challenge of climate change. Recently, focus has intensified on agriculture and forestry practices that can affect the ability of farmland and forests to sequester carbon and help mitigate the impacts of climate change. As understanding of these practices has increased, the U.S. government has begun to analyze the net carbon effects of various USDA conservation and

environmental programs and to determine how they can be enhanced and expanded to foster greater sequestration. In general, the programs assist farmers, ranchers, and other landowners in conserving and improving soil, water, and other natural resources associated with rural land. The programs include:

- ***Conservation Technical Assistance (CTA)*** helps farmers develop and implement conservation plans on farms and ranches. Practices that sequester carbon include cover crops, residue management, crop rotation, and buffer establishment.
- ***Conservation Reserve Program (CRP)*** provides rental payments and cost-sharing on 36.4 million acres for grass, shrub, or tree planting in exchange for retiring highly erodible or other environmentally sensitive cropland.
- ***Forestry Incentives Program (FIP)*** provides financial and technical assistance to encourage production of sawtimber and pulpwood on nonindustrial private forestlands, and the Stewardship Incentives Program (SIP) provides financial and technical assistance to expand tree planting and implement stewardship plans on private properties.

Scientific Research

The Administration is continuing its strong support (\$1.7 billion in Fiscal Year 1999 funding) for the U.S. Global Change Research Program (USGCRP), which seeks to provide a sound scientific understanding of the human and natural forces that influence the Earth's climate system. National and international policymakers use the information produced by USGCRP scientists to make informed decisions on global change issues.

Specific new research focuses include:

- ***Carbon Cycle Initiative***—a new multiagency initiative to improve understanding of the ways that carbon cycles between the atmosphere, oceans, and land.
- ***Soil Carbon Inventory***—expanded efforts to conduct a comprehensive scientific inventory of carbon stored in U.S. soils and develop methods to predict how various practices and policies would affect soil carbon levels.
- ***Consequences of Climate Change***—the first national assessment of the potential impacts of climate change on the United States.

COP 6 First Round of Changes to Layout D1

Peter: The first set of changes are high priority. The second set (see below first set) are lower priority for this round (LO d1), but will have to be done for LO d1. Page numbers follow your layout.

High Priority

Ch 1 Industry

- p. 3 Global change: change all folios to flow from chapter to chapter.
- p. 4 Cloud band has wrong quote: use the Metzger quote instead.

"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

- p. 5 Same story: line 8, change 2.7 to **XX** (figure was 2.7 MMT of CO2 and needs to be converted to MMTCE).
- p. 8 Pull up runover text so we don't have a page 9.

Ch 2 Buildings

- p. 3 line 1: change the first word from "Three" to "There are several Sector, including the increasing ...
- p. 3 line 5: change "promising" news to "good" news
- p. 3 Global change: make folios successive from chapter to chapter
- p. 4 Daniel Boone High School, last line, words missing: "electric loads easily."
- p. 4 Quote from Schell: put a screen behind it so that it's clear that it's not part of the body of text
- p. 5 Delete the headline, "Leadership by Example in Federal Facilities" and use "Teaching Old Buildings Some New Energy Tricks" (see low priority comments below)
- p. 6 Under Energy Efficiency in Private Buildings, line 12: put ENERGY STAR into small caps. (There are a lot of places where this change needs to be made, and it's generally low priority, but I want to show EPA that we are aware that this is the correct usage—EPA will be upset that it's in lower-case).
- p. 6 Move Beckett quote to p. 8 cloud column. (I wouldn't do this except that it permits the text to pull up so we don't have to copy-fit.)
- p. 8 Change headline to read, Energy-Efficient Products Help Consumers Fight Global Warming
- p. 8 Second column: add "g" at end of subhead (Fight Global Warming)

- p. 4 Under Carbon Sequestration, add at end of 1st para: ...greater sequestration. Below are descriptions of some of these programs.
- p. 5 1st para. Add program after Swampbuster and italicize Swampbuster, so it reads The *Swampbuster* program has preserved more ...
- p. 5 3rd para, line 4: add an "s" after cropping system, so it reads ...and cropping systems could....

Ch 6 Research

- p. 3 1st para, line 7, add hyphen in human-induced
- p. 4 Under National Assessment, end of 1st para., second-to-last line, delete resource managers and, so that the sentence reads: ... questions of interest to decision-makers).
- p. 4 Last para., last 4 lines on this page, change so it reads: 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).
Then delete the last sentence, Most of these additional reports will be published by the end of 2000.
If the runover text still doesn't pull up, then try taking out "regional and" from the second line above, so that it reads ...stakeholders, plus sector analyses (Human ..)
If that still doesn't do it, try kerning.
If that still doesn't do it, call me. (1-301-494-0804).

That's it for the priority items. All of the lower priority items below can wait until next week.

You could be making those changes while the agencies review the layout. John is going to give them until 1 pm on Wed to review, so starting Wed afternoon, we'll get you the final round of changes.

Also on Wed, the translation company will be sending the French and Spanish versions of the Exec Sum to the State Dept for review, and they will get the final French and Spanish texts to you for layout in two 8-pagers on Thurs or Friday.

In addition, I think that John is going to get us the International text for the three other 8-pagers (English, French, and Spanish) to the translators on Thurs, but you'll get the English version then as well.

- p. 8 Add this sentence right after that title: Using more energy-efficient appliances and other products helps reduce overall energy use in buildings and thus carbon emissions from the buildings sector.
- p. 8 Chart in cloud column: change Energy Star to ENERGY STAR, add \$billions, center title, insert at end of chart in parentheses in small font: (measured since the early 1990s)
- p. 8 Second para, line 4: delete "a total of" ("...saved consumers nearly \$25 billion ...")
- p. 8 Same para, line 12, replace "... a total of 10 quads of energy through 2030." with "...consumers more than \$10 billion and reduce cumulative emissions by 22 MMTCE through 2010."
- p. 8 Add para. space right after that change.
- p. 9 Pull up text so this page is eliminated.

Ch 3 Electricity

- p. 3 Add at end of third para. after ... green energy options. (See page XX.)
- p. 5 Combine the last 2 paragraphs in the 2nd column, so that it reads ... power plant. By the year 2010, ...
- p. 5 At the end of that paragraph, add after 10 million households. (For more on bioenergy, see Chapter 4, Transportation, and Chapter 5, Agriculture and Forestry.)
- p. 6 Move Utilities Reducing Emissions Now sidebar to cloud band on p. 12.
- p. 6 Move other sidebar up.
- p. 12 3rd para., line 9: delete extra comma.
- p. 13 Insert placeholder box with words, Insert Chart(s) from DOE

Ch 4 Transportation

- p. 3 1st para, line 7: add space after the ending parenthesis.
- p. 3 2nd para, line 5: change 21st Century Truck Program to 21st Century Truck Initiative
- p. 4 Under Fuel-Efficient Trucks, line 5: delete nine major, so the sentence reads: This initiative between the U.S. government and corporate partners will ...
- p. 5 Toyota bullet: after 52 mpg city and 45 mpg highway, add in bold: (**Agencies: pls. correct figures**)
- p. 6 Second success story, Powering Vehicle Fleets with Biodiesel, line 4: delete Biodiesel is. Should read: ...referred to as B20. A one-year demonstration at ...
- p. 8 Screen or something on quote to set it off as a quote (all the quotes should have the same font and a similar look, so it doesn't appear that the WHCCTF is considering some people's quotes to be more important than others'.
- p. 8 Under Mixed-Use Approach, after the figure 303 MTCE on line 8, add in parentheses and bold: (**Agencies, pls. check figure.**)

Ch 5 Agriculture & Forestry

- p. 3 At end of 3rd para., add after ... 70 million cars off the road. (See also Chapter 3, Electricity, and Chapter 4, Transportation.)
- p. 4 Success story: First two para. add bullets.
- p. 4 Same success story: After 2nd bullet para, change Others are in the pipeline to Many others are in the pipeline, such as the following:

COP 6 First Round of Changes to Exec Summary Layout D1

High Priority

- p. 4 Move box and quote from p. 8 to here
- p. 4 Add bullets to 2nd and 3rd para. (Over the 1990s, the U.S. ... In both 1998 and 1999 ... per year.
- p. 5 Change title of graph to: **Growth in the U.S. Economy and CO₂ Emissions**
- p. 5 On the graph, make the 2 in CO₂ into a subscript rather than a superscript.
- p. 5 Add bullets to the 1st, 2nd, and 3rd para (Ford and GM, Thanks in part, and Honda and Toyota).
- p. 6 Add 1993 to the bar graph (number is 622).
- p. 6 Add bullets to 3rd, 4th, 5th, and 6th para. (Minimum efficiency standards, The Energy Star, Public-private partnership, Programs designed to)
- p. 6 First bullet, third-to-last line: change over \$10 billion to more than \$10 billion.
- p. 6 Second bullet, third line: change Energy Star to ENERGY STAR.
- p. 7 1st para, last line, add and between Electricity Generation, and Transportation.
- p. 7 Under New Federal Initiatives, delete the first bullet (In addition to fighting ...)
- p. 7 2nd column, under State and Localities Taking Action, add bullets to 2nd, 3rd, and 4th para. (A total of 78 U.S. cities, In June 2000, To date, 26 states...)
- p. 8 Move quote and box to p. 4
- p. 8 In title of box, line 2, upper case the “a” in “and” Emissions Reductions.
John, we might want to consider omitting this box from the French and Spanish versions, because it’s not really applicable. OK?
- p. 9 Omit the map so that it doesn’t throw off the consecutive page numbering. See below.

Lower Priority

- p. 4 First para. line 1, make 2 in CO₂ into subscript (small one).
- p. 4 First bullet, line 2: same
- p. 4 Second para, line 9: same
- p. 5 Text wrapping the globe is too close to the globe.
- p. 5 2nd column, 1st para, line 9: add a comma after Weyerhaeuser,
- p. 6 On the next round, we should consider adding the actual numbers into the bars on the bar graph.
- p. 9 Map: Shade Florida for action plan initiated (the lighter shading).
Add cities (Vanessa will get you updated cities)
- p. 9 Map: Add state names (Vanessa can help with this if you want)
- p. 9 Map: Add caption:

Thanks in part to the U.S. government’s State and Local Climate Change program, 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.

Change OK, John? Alternatively, leave the caption the way it was, 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.

But add a credit line, State and Local Climate Change Program.

- p. 3 Fourth para, lines 3,4, and 5: Make subscripts in CO₂, CH₄, N₂O, and SF₆ smaller.
- p. 4 Quote bottom of cloud band: change break on Vice President for Safety,
Health and Environment
DuPont
- So that the break comes after Safety,
- p. 4 Main text, 2nd para, line 5: italics for Public Benefits Fund
- p. 5 2nd column, 2nd para, line 2 is spacey (all spaciness is very low priority finetuning: I wouldn't do it now anyway in case other changes come in from the reviewers that might fix it anyway.
- p. 5 Same para, line 8, subscript in SO₂ needs to be smaller.
- p. 7 Sidebar, 2nd to last line: fix CO₂ so that the 2 is smaller.
- p. 7 Under Solar Power = Emissions-Free Electricity, lines 3-4, fix promises so that it breaks prom-ises.
- p. 8 2nd column under Wind Power, spacey 5th line
- p. 8 Last para, Wind Powering America should be in italics.
- p. 9 John wants the cow-wind turbine photo from DOE. Is there a reason you didn't use it?
- p. 11 Move sidebar and photo, Ambitious Goals – Flexible Means to p. 12 (the corresponding Oregon text occurs on that page).
- p. 11 Same sidebar, fix CO₂ in lines 4, 7, 8, and 13 so that the subscript 2 is smaller.
- p. 11 Also in same sidebar, line 10, Climate Trust should be in bold.
- p. 11 Last para, fix SF₆ to be smaller in lines 5 and 6.
- p. 12 2nd para, lines 3 and 9, fix subscript in CO₂ to be smaller on line 3 and make a small subscript on line 9.

Ch 4 Transportation

- p. 4 1st para, line 9: fix spaciness
- p. 5 2nd column, end of 1st para: fix line space between 1st and 2nd para.
- p. 6 First success story, line 3: fix spaciness
- p. 6 Same story, line 4: BC International Corporation should be bold.
- p. 8 Under success story, line 1: Intel Corporation's should be bold.
- p. 8 Same, line 2: RideShare should be italics.
- p. 9 Line 5, Electrowave should be in italics.

Ch 5 Agriculture & Forestry

- p. 2 New photo needed of cornstalk or corn field.
- p. 5 2nd para, line 5: Stewardship Incentives Program should be italics.
- p. 5 3rd para, line 7: fix spaciness.

Lower Priority

Ch 1 Industry

- p. 3 Fix spaciness in 3rd para., lines 3 and 4 (this is really low priority since it's fine-tuning).
- p. 4 Cloud band: switch quote and first success story, so J&J: Win-Win is at the top of the page and the quote is in the middle, sandwiched between the two success stories.
- p. 4 Para. 2, line 2: *Green Power Market*: Green should be in italics.
- p. 4 Para 4, line 1: Pew Center on Climate Change should be in bold, not italics.
- p. 4 Global change: center all heads of success stories (I'm not adamant on this, but I think that it would look better; however, it's really low priority).
- p. 5 Para 2, line 1-2: Industries of the Future should be in italics.
- p. 5 Para 3, line 6: Add space between sentences. (... component technologies. One best practice...)
- p. 5 Second success story, Greening the Cement Industry, line 2: the 2 in CO₂ should be a subscript.
- p. 7. Last para, lines 1 and 7, reduce size of subscript in SF₆.

Ch 2 Buildings

- p. 4 Center heads in both success stories
- p. 4 Rebuild Duke success story, line 1: Rebuild Duke University Facilities—Facilities should be in italics like the rest.
- p. 4 Move second success story down a bit.
- p. 4 Main text, 1st full para, line 2: Cities for Climate Protection should be italics.
- p. 5 Change title in main text from "Leadership by Example in Federal Facilities" to "Federal Buildings Leading By Example"
- p. 5 Success stories: Put Greening of the White House first, then US Dept. of Ag story second, and use photo of White House instead of Whitten Building. Delete headline "The Greening of the White House" and change the first line of the story to read: "On Earth Day 1993, President Clinton launched a new initiative, "The Greening of the White House," to improve the energy . . .
- p. 5 Same success story: when the White House story ends, just go into a new paragraph starting "Three of the buildings that house the **U.S. Department of Agriculture** ...
- p. 6 Success story: lines 9-10: put Partnership for Advancing Technology in Housing (PATH) into italics.
- p. 7 Second para, line 3: Energy Star
- p. 7 Second column, 2nd para, line 5: Energy Star
- p. 8 Second column, new para that starts "Based on one study" change Energy Star to small caps.
- p. 8 Same para, line 5: change Energy Star
- p. 8 Same para, line 7: change Energy Star
- p. 8 Chart: can you think of any way for the last line (MMTCE Avoided and the numbers in the last line) to pop out?

Ch. 3 Electricity

DATE: 9/13
TIME: 11:10am

Natural Resource



Division

ENVIRONMENT BRANCH

NEOB/RM: 8026

TO: John Eibsen
Fax # 395-2342

FROM:

☐ R. Fairweather
☐ K. Neyland
☒ R. Tuccillo
☐ P. Barr
☐ C. Dennis
☐ T. Gallion



☐ N. Shapiro
☐ G. Foster
☐ C.M. Abendroth
☐ Scott Macomber
☐ D. Gaymon

Fax #202-395-5836

Phone #202-395-6827

Message: Comments on Executive SummaryNUMBER OF PAGES TO FOLLOW: 5Kathleen584
9312SKIPmeter
per/ko2334
S265
1275

CEA has ...
 with this section. At ...
 you planning to address them.

EXECUTIVE SUMMARY

JOHN: DITTO PAGE 4, SECTION ON LEADERSHIP BY PRIVATE SECTOR, LONG COMMENT (SEE DOE PART 1)

PAGE 27, 2ND FULL PARAGRAH: RE 198,000 MT ANNUAL NUMBER

PAGE 38, 2ND PARA: CONSISTENT WITH THE PREVIOUS COMMENT, DELBTE THE LAST SENTENCE.

NORAH: I HAVE NO IDEA WHAT THE ABOVE MEANS.

Graphics: Use larger font for following text

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 the challenge, both through domestic actions to reduce greenhouse gas emissions and by working with other nations to achieve an environmentally sound, cost-effective, and ratifiable global agreement.

Awareness is growing throughout U.S. society that global warming is a serious problem 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, specific, concrete actions by citizens, businesses, and governments are yielding tangible results in terms of tons of greenhouse gas emissions avoided. In fact, there is significant evidence that the United States is beginning to decouple economic growth and greenhouse gas emissions growth—an achievement that would be 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

Breaking the Link Between Economic Growth and Emissions Growth

In recent years, very robust growth in U.S. gross domestic product (GDP) has been accompanied by a slowdown in the growth of the nation's greenhouse gas emissions. This trend has grown more pronounced in the late 1990s.

- Over the 1990s, the U.S. GDP grew almost three times faster than energy-related CO₂ emissions.
- In both 1998 and 1999, U.S. GDP grew by more than 4 percent each year while CO₂ emissions grew by less than 1 percent per year.

Graphics: Insert graph, Growth in the U.S. Economy and CO₂ Emissions

Caption for graph: *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.*

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. This is significantly greater than the 2.6 percent rate of decline that occurred during the oil crisis years of 1973 to 1986. Finally, the carbon intensity of the U.S. economy – the amount of CO₂ 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 (averaging about 17 percent of GDP over the past three years) 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 greenhouse gas emissions. It is also clear there is a commitment at all levels to ensuring that these positive results multiply in the years ahead.

U.S. Business Community Stepping Forward

U.S. industry is undergoing a sea change in its attitude towards climate change. This new outlook reflects in part the basic economic fact that saving energy and reducing waste is in interest of American businesses. 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.

The automobile industry, for example, is making important progress in reducing emissions from vehicles.

- 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). To encourage consumer interest in these new vehicles, the Administration is proposing tax credits of up to \$3,000 for the purchase of a hybrid vehicle. (See "Targeted Tax Credits to Fight Global Warming.") *when they become available,*
- 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 United States Environmental Protection Agency are that these commitments will result in cumulative emissions reductions of over 100 MMTCE through 2020.~~ *This is way to early to estimate*

- **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 and reduce emissions of greenhouse gases. 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 U.S. companies that are stepping forward with real plans to address climate change—often saving themselves and their shareholders money in the process, including **DuPont, Motorola, United Technologies, Boeing, Shell, Weyerhaeuser** and **Amoco** and **Arco**, subsidiaries of **British Petroleum**.

Renewable energy markets received a significant boost in May 2000, when 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. Many U.S. climate protection programs now show tangible results:

- Minimum efficiency standards on residential appliances such as ~~furnaces, water heaters~~, air conditioners, and refrigerators 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 a total of 10 quads of energy through 2030. NORAH: check spelling of fluorescent
- 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 an estimated 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 more than 100 MMTCE—the equivalent of taking some 85 million cars off the road. EPA/DOE: PLEASE GET TOGETHER AND GET THESE NOS. AGREED UPON AND CORRECT.

3/00 Rpt to Congress
used 80 mmtce

Source
II
revised

I had the source for these 4's

Mike McGee
J. McGee
SSB
500-0-455
rule
writing
analysis
for these
reg.
analysis

only 965

3100 Rept to Congress

- 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 (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.

Growing Commitment by the U.S. Government

3100 Rept to Congress has \$7.1 billion for FY99 and FY00
Over the past two years (FY 1999 & FY 2000), the Clinton-Gore Administration has secured more than \$6 billion in overall funding to fight climate change. This includes some \$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, Transportation.

Is this only LTI for
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, 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.

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

Begin text box*What's the source for these?*

FY01 budget only publishes numbers through 05. Will check if 101R numbers are published

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 the following:

- 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 \$600-3000 for the purchase of a qualifying hybrid vehicle from 2003-2006.
- 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.

- 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.*

Photo of Gore

"We have learned that a strong economy and a safe environment go hand in hand."

*Vice President Al Gore
April 2000*

Conclusion

The United States understands that domestic progress on climate change is important in itself—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 setting the stage so that more progress may be made internationally—both within 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.

"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

Insert and 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 equivalent to carbon dioxide equivalent, multiply by 3.67.

John-
comments
+ potential cuts.
Janet

Chapter 3

Electricity

Graphics: Use large font

Reducing 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, ~~through~~ substituting lower carbon and carbon-free fuels, reducing the demand for electricity through greater end-use efficiency, and restructuring the electric power industry.

yes

capitalize?
(At the Federal level, these efforts are being accomplished through a variety of voluntary partnerships. In addition, Federal funding is used to sponsor research and development of promising, low- or no-emission technologies for generating electricity from 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 programs such as the Green Power Market Development Group, a group of 11 corporations that are exploring a variety of green energy options.

End large font

The United States relies on electricity to satisfy a substantial portion of its energy requirements, especially for lighting, electric motors, heating, and air conditioning. Electric utilities account for approximately 29 percent of national emissions and are, collectively, the single largest source of U.S. greenhouse gases.

Carbon dioxide (CO₂), a byproduct of the combustion of fossil fuels, accounts for the majority of the sector's emissions, but methane (CH₄), nitrous oxide (N₂O), and sulfur hexafluoride (SF₆) also are emitted during the generation, transmission, and distribution of electricity. Both CH₄ and N₂O are byproducts of fossil fuel combustion, while SF₆, which is used as a dielectric in electrical equipment, escapes from transmission and distribution systems.

yes
The type of fuel used to produce electricity significantly affects the volume of emissions from electricity generation. Coal-fired generators, which supply ~~roughly~~ ^{more than} half of U.S. electricity, are responsible for 85 percent of all greenhouse gas emissions from the electricity sector. CO₂ emissions from the combustion of natural gas and petroleum contribute 9 and 4 percent of total emissions, respectively.

yes
By contrast, 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. ~~In fact, every large new nuclear generating facility will save, at a minimum, 1.5 MMTCE per year.~~

~~Nevertheless, if U.S. electric utilities instead rely on fossil-fired generation, carbon emissions will continue to rise as electricity demand increases.~~

Hydropower

Hydropower currently generates about 10 percent of the nation's electricity. Existing hydropower generation is in jeopardy due to a mix of environmental, regulatory, and economic pressures. Current hydropower technology, while essentially emission-free, can have undesirable environmental effects, such as fish injury and mortality from passage through turbines, as well as detrimental changes in the quality of downstream water due to a decrease in dissolved gases. The 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. Deployment of this new turbine can help preserve an important source of renewable electric generation.

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 U.S. green energy markets. 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.

"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

move
back
w/
no key
yes

move to immediately after distributed gen
(prior to govt sections on renewables)
works much better there

"We see the development of green energy markets and technologies as the solution to the climate challenge. As a leader in providing these solutions, it is our priority to find ways to reduce the environmental impact of the energy used in our cars and in our manufacturing plants."

Dennis Minano

*Vice President for Environmental Health and Safety and Chief Environment Officer
General Motors*

State and Local Initiatives in the Electricity Sector

Move - I think this should be last.

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

In 1997 Oregon enacted legislation that authorizes the state's Energy Facility Siting Council to set **CO₂ Emission Standards for New Energy Facilities**. Facilities for which the council has set standards include base-load plants, non-base load (peaking) plants, and nongenerating energy facilities. The standard for base-load gas plants requires a net emissions rate of 0.675 pounds of CO₂ per kilowatt-hour, which is 17 percent below the most efficient plant in operation in the United States in 1999. Peaking plants must meet a net emissions rate of 0.7 pounds of CO₂ /kWh, and non-generating facilities must meet a comparable rate of 0.522 pounds of CO₂ /kWh. Three power plants have met the standard. One of those is also required to do additional CO₂ offset projects as a result of an earlier proceeding. The three plants are expected to reduce greenhouse gas emissions by 198,000 MTCE per year over a 30-year project life. The total CO₂ offset project costs are \$12.8 million.

The Flexibility of Choice

According to an Oregon law enacted in 1997 and updated in 2000, energy facility developers may choose from several options to meet the CO₂ emission standards. These include building high-efficiency facilities using cogeneration, providing offset projects that avoid, reduce, or sequester CO₂ emissions, or paying a fee of \$0.57 per short ton of excess CO₂, along with an administrative fee. 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 CO₂ offsets.

Geothermal energy produces virtually negligible greenhouse gas emissions and 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 *Boise Front Low Temperature Geothermal Resource Ground Water Management Area*.

Currently, four geothermal projects are in the ground water management area: projects at the City of Boise, the Fort Boise Veteran's Hospital, the Boise Capitol Mall Complex, and the Boise Warm Springs Water District. These projects are saving an estimated 50.4 gigawatt-hours of electricity per year, which equates to an annual cost savings of \$1 million. Depending on the fuel type being burned in a conventional power system, using geothermal energy could reduce greenhouse gas emission by 2,500 to 7,500 MTCE.

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.

Participation in this program is growing, especially in the new and emerging technology sectors. The fund provides financial incentives for 10 million megawatt-hours of renewable power per year, equating to a reduction of approximately 1.6 million MTCE of greenhouse gases, along with 140 metric tons of SO₂ and 1,727 metric tons of NO_x, if the electricity were generated via conventional means.

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 includes a requirement that utilities open up their distribution and transmission wires to all qualified sellers. The proposal involves using market forces to obtain the most energy from each unit of fuel.

The proposal also calls for a *Renewable Portfolio Standard* to increase the use of electricity from renewable sources to at least 7.5 percent of sales by 2010. To set an example and also to help implement a Presidential Executive Order on *Greening the Government through Efficient Energy Management*, one agency imposed a Renewable Portfolio Standard on itself, calling for 3 percent of its total electricity needs to come from non-hydro renewable energy sources by 2005 and 7.5 percent of its total electricity purchases to come from green power by 2010.

some of which will be used - The Administration's restructuring proposal also provides for a *Public Benefits Fund* of \$3 billion per year to spur greater investment in energy efficiency, renewable energy technologies, and nuclear power. ~~The proposal also has~~ and provides a green labeling requirement to inform consumers about clean energy options. 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.

Distributed Energy

The U.S. government ~~continues to~~ works with the private sector to develop public-private partnerships to advance the deployment of renewable energy technologies in the distributed power system. Utility restructuring, emerging technology, environmental concerns, and an

and smaller scale generation

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 Systems* 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 and near the grid to support economic operation of existing power stations. Mostly fueled by natural gas, liquid fuels, or renewables ~~(solar, wind)~~, these dispersed generation resources could bypass major portions of the electric transmission and distribution system. Distributed systems include biomass-based generators, combustion turbines, concentrating solar power and photovoltaic systems, fuel cells, wind turbines, microturbines, engines/generator sets, and storage and control technologies. <http://www.eren.doe.gov/der/>

(wind is not near load centers!)

Traditionally, energy resources are produced or generated centrally and then distributed to end-users. Moving energy supplies closer to the point of end use through rooftop photovoltaic systems or microturbines promises important economic, environmental, and reliability advantages. On-site cogenerated electricity and heat production can allow consumers to use the heat byproduct of electricity production, saving dollars as well as reducing primary energy loads.

Solar 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 and, by 2010, could help avoid emissions totaling 1.5 MMTCE. Although the cost of solar technologies has been reduced significantly in the last 15 years, 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.

The lowest-cost solar power option available today is *Parabolic Trough* technology. These systems use curved mirrors to focus sunlight on a receiver pipe, heating the oil within it, producing steam, and generating electricity. Parabolic-trough technology is being used in nine power plants that comprise the Solar Electric Generating Systems located in California's Mojave Desert. The plants have been operated as commercial peak power facilities since 1985 and sell their power to the local utility, Southern California Edison. The nine 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.

<http://www.eren.doe.gov/femp/prodtech/parafta1.html>

The *Million Solar Roofs* initiative seeks to place solar energy systems on one million roofs by 2010. To date, commitments for 900,000 systems have been made, indicating the potential for widespread market penetration of solar technologies. President Clinton's *Climate Change Technology Initiative* includes \$120 million in proposed tax credits 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.

<http://www.eren.doe.gov/millionroofs/background.html>

The government's *Brightfields* initiative, launched in 1999, is aimed at using abandoned industrial sites—known as brownfields—for producing pollution-free solar energy. Projects are designed to turn environmental losses into economic gains by taking advantage of restructuring in the electricity sector and making pollution-free solar energy available to consumers. Currently, Brightfields projects are underway in cities across the United States, including Los Angeles, Minneapolis, Chicago, and Washington, D.C. The Brightfields model has proven extremely successful: Redeveloping brownfield sites with solar energy manufacturing benefits local communities through economic development and environmental protection.

<http://www.eren.doe.gov/brightfields/>

A Brighter Future

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 with a factory for manufacturing solar panels and a solar energy system that will supply some of the company's electricity needs and serve as a demonstration and educational site. The project will create 100 jobs in Chicago in manufacturing and supporting industries when it opens its plant 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 25 million pounds of carbon dioxide over the next five years—the amount produced by driving an automobile 64.5 million miles. In addition, the project has attracted a major solar assembly plant to Chicago. 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.

? do you want all MMTc? then 3100 metric tons Ce = .0031 MmtCe

~~Solar R&D~~

Over the past 20 years, Federal support for *Photovoltaic Energy Systems R&D* has resulted in a 90 percent cost reduction for energy produced by solar 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 53 megawatts in 1998. Today, the government is working to accelerate R&D of the next generation of photovoltaic cells. <http://www.eren.doe.gov/pv/>

In addition, the Photovoltaic Energy Systems R&D program is increasing research into buildings-integrated applications and helping to develop new, unconventional technologies. [These R&D investments will enable photovoltaics to make significant contributions to the nation's energy economy in the 21st century. Reducing system costs from about \$7 per watt to \$3 per watt would accelerate growth of the solar energy market and result in a domestic industry with billions of

potential w/

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dollars in annual sales.]

potential cut

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Photovoltaic Manufacturing Technology (PVMat) is a research and development partnership with members of the U.S. photovoltaics industry. The program, which was initiated in 1990, aims to reduce costs and extend the world leadership role of the U.S. photovoltaics industry in manufacturing and developing commercial PV modules and systems. <http://www.nrel.gov/pvmat/>

The results of this multiphased, cost-shared project are striking. A recent analysis found that from 1992 to 1996, module manufacturing costs fell by 56 percent. During this period, the U.S. manufacturing capacity increased by more than a factor of six. [In addition, the U.S. share of the world market increased from 31 percent in 1992 to about 42 percent in 1996. Continuing on this course could bring module manufacturing costs down to almost \$1.50 per watt in the near future.]

potential cut

Catching Rays by the Lake

The Dangling Rope Marina, on the northern shore of Glen Canyon's popular 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. Not only was the diesel system old, noisy, and expensive to operate, using it exposed the area to a potential oil spill.

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. This quiet, nonpolluting array of 384 PV panels is accompanied by a 2.4-megawatt-hour battery bank for storage, a propane-fueled engine generator for occasional backup power, and a 250-kilowatt DC-to-AC hybrid power converter.

During the new system's 20-year operating life, it is expected to save as much as \$2.3 million in energy costs. ~~Annual greenhouse gas and air pollutant emissions amount to:~~

- ~~2,000 pounds of sulfur dioxide~~
- ~~5,180 pounds of carbon monoxide~~
- ~~27,000 pounds of nitrogen oxides~~
- ~~Roughly 0.0001 MMTCE~~

cut; \$ savings
#5 too small are plenty

The success of the project at Dangling Rope Marina on Lake Powell is just one example from more than 30 current government photovoltaics electricity projects in 15 states.

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 capture waste heat and use it to heat and cool buildings, or provide steam in industrial processes. The use of waste heat results

generate electricity and

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 government launched the *Combined Heat and Power Challenge* program with the goal of doubling U.S. combined heat and power capacity by 2010. <http://www.oit.doe.gov/chpchallenge/>

By substituting the targeted 50 gigawatt of CHP capacity for conventional capacity, annual greenhouse emissions will be reduced by 30 MMTCE and annual NO_x emissions by hundreds of thousands of tons. Recent analyses have concluded that this goal can be achieved by electric utility restructuring and revising tax policy and air regulations to remove barriers.

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. Developed with the assistance of the *Advanced Turbine Systems (ATS)* program, the combined heat and power system will lower the company's annual energy costs and reduce emissions of sulfur dioxide by 99.6 percent, NO_x by 83 percent, and CO₂ by 26 percent compared with grid-supplied power. http://www.oit.doe.gov/bestpractices/learn_others/pdfs/july_99.pdf

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, 732 megawatts of new capacity was added, representing a 41 percent increase in capacity for a total of 2,500 megawatts. These wind energy systems are helping the nation meet its electricity needs with no greenhouse gas emissions. Both the Federal government and the private sector are working to ~~capitalize on~~ this technology.

? deploy, install, promote ?

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 *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) by 2002. [The program's goal is to achieve 10,000 megawatts of installed wind-powered generating capacity in the United States by 2010, which could displace as much as 10 MMTCE per year.] <http://www.eren.doe.gov/wind/>

-potential cut

Wind Power America started 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. In addition, the Wind Power America program will provide a source of income for U.S. farmers, Native Americans, and other rural landowners. As of April 27, 2000, some 30 Federal agencies had committed to purchase a significant portion of their electricity needs from wind energy. <http://www.eren.doe.gov/windpoweringamerica/>

Harnessing the Great North Wind

The Lake Benton Wind Power Plant 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. U.S. facilities totaling more than 160 megawatts in generating capacity that are using Enron Wind's 750-kilowatt and 550-kilowatt turbines have generated 122 gigawatt hours of electricity (equivalent to 1.3 trillion Btu of primary energy). Over their lifetimes, the turbines will displace 110 trillion Btu of primary energy, save \$246 million in energy costs, and reduce emissions by 2.1 MMTCE.

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 also creates construction and service jobs in rural regions, as well a new source of tax revenues for local municipalities.

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. <http://www.ghpc.org/>

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, using GHPs can benefit electric utilities and their customers. Because GHPs reduce peak demands, 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.

Another initiative on renewables is a new public-private partnership launched in 2000, *GeoPowering the West*, a commitment to increase dramatically the use of geothermal 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 to seven million by 2010, and double the number of states with geothermal facilities to eight by 2008. The benefits will include 20 million tons of atmospheric carbon displaced in 2020.

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.

Biobased Technologies

In 1999, President Clinton issued Executive Order 13134 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 JOHN: USDA wants bioproducts first and says DOE wants bioenergy first—which do you prefer? 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.

The government is aggressively sponsoring biomass gasification and supported the development and promotion 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. <http://www.eren.doe.gov/biopower/main.html>

The biomass gasifier heats wood in a chamber filled with hot sand [until the wood breaks into its constituent chemical components. The residual solids are separated from the constituent gases, which then flow through a scrubber. The ^{end} final result is a clean-burning gas fuel. Cleaning the gas before combustion has the added benefit of ensuring that emissions of pollutants such as SO_x and NO_x are extremely low. In addition to providing clean energy, gasifiers increase the number and types of biomass fuels suitable for power systems. In the future, energy crops grown specifically for electricity production might power these systems.

The biomass gasifier's economic potential and environmental benefits earned it an award as one of the most significant technical achievements in 1998. [Currently, biomass gasification generates about 7,000 megawatts of electricity throughout the United States. This production capacity is second only to hydropower among renewable energy technologies. By the year 2010, the

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potential market for biomass gasifier power systems could approach 10,000 megawatts—enough electricity for 10 million households.]

Improved Electricity Production and Distribution

The 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 are modular in design and 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, and may be combined with carbon sequestration such as in geological formations for which research is now underway. ~~[The fuels production component for coal will increase greenhouse gas emissions, compared with the use of petroleum.]~~ cut why say this here?

The research itself will require a little over a decade to be completed, and a period for market acceptance of the new technology will follow. 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.

move to after climate challenge
The *Energy Star transformer program* is improving the energy efficiency of the equipment used to decrease the voltage of electricity received from utilities, reducing it to the levels used by commercial and industrial buildings for indoor applications. Because transformers are used 24 hours a day, small improvements in efficiency can lead to significant energy savings. Energy-efficient transformers can save a business up to \$225 per year in electricity bills.

cut; duplicate info
Cleaner Coal and Natural Gas research to develop next-generation technologies for the combustion and use of coal and natural gas is being aggressively supported by the government. For example, development of new coal combustion technologies, such as integrated gasification combined-cycle and pressurized fluidized bed combustion, could lead to ultra-high efficiency coal plants with dramatically lower greenhouse gas emissions. Studies indicate reductions on the order of 75 MMTCE might be possible by 2030. Agencies: Assuming what, and what level of market penetration and overall utilization?)

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 estimates~~ that pledged Climate Challenge actions would reduce emissions by as much as 47 MMTCE in 2000. ~~One third~~ ^{the rest} of this pledge is coming from nuclear power through improved availability, increased capacity factors, and unit capacity upgrades. ~~Agencies: Upgrades is unclear. Upgrades?~~ ^{with other reductions from a broad range of utility actions.}
<http://www.eren.doe.gov/climatechallenge/>

Nuclear Power

new sentence
The Administration's policy focuses on advancing nuclear power plant designs, the safety of ^{this clause first} provides approx. 20% of all US generated electricity and its
Nuclear energy's continued role in electricity production is important for our economic and energy security, and may be an important component of the nation's global climate change response. Nuclear power plants generate approximately 20 percent of all U.S. generated electricity.

existing reactors, and safe long-term storage of spent nuclear fuel. Three programs are implementing these policies: the *Nuclear Energy Research Initiative (NERI)*, which is researching breakthroughs in nuclear fission and reactor technology; the *Nuclear Energy Plant Optimization Program (NEPO)*, which is applying new technologies to increase plant life, reliability, availability, and productivity; and *Generation IV Nuclear Power Systems*, which is developing the next generation of reactors that are more economic, resistant to proliferation, produce less waste, and have improved safety features.

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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 SPI is a new industrial HTS motor that is smaller, lighter, and more efficient than conventional motors.

<http://www.eren.doe.gov/superconductivity/>

[Other applications include current controllers that protect utility equipment, improve reliability, and increase stability of the distribution grid, as well as 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. Agencies: with what carbon savings?~~

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SF₆ Emissions

A *SF₆ Emissions Reduction Partnership for Electric Power Systems*, initiated in early 1999, provides a forum for the electric power industry to work together with government to reduce SF₆ emissions to technically and economically feasible levels. SF₆, a gaseous dielectric used in circuit breakers, gas-insulated substations, and switchgear, allows for the safe transmission and distribution of electricity. ~~However, SF₆ is a highly potent greenhouse gas. Over a 100-year period, SF₆ is 23,900 times more effective at trapping infrared radiation than an equivalent amount of CO₂. When SF₆ escapes into the atmosphere, it is a very stable chemical, with an atmospheric lifetime of 3,200 years.~~

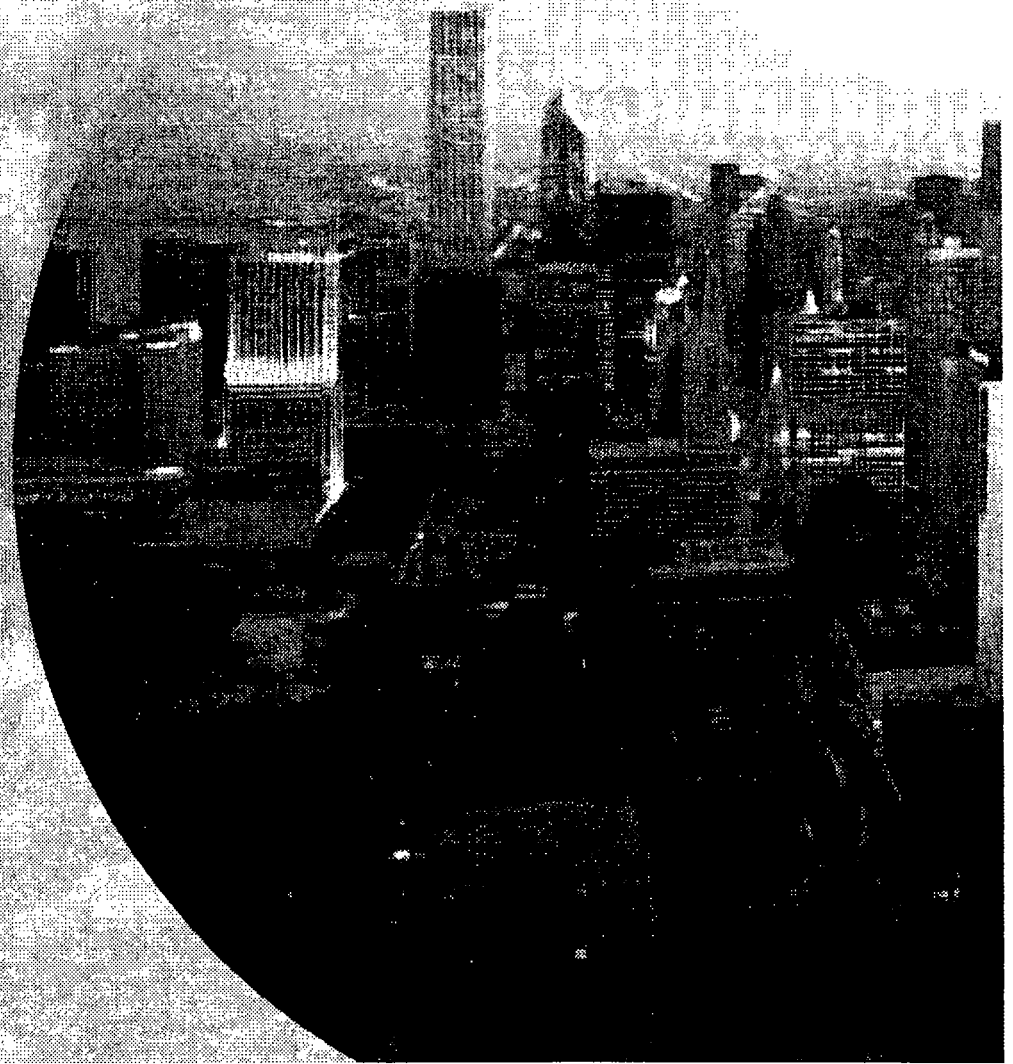
The SF₆ Emissions Reduction Partnership for Electric Power Systems is working to benefit the environment and, because SF₆ is a relatively expensive gas, finding ways of reducing emissions ~~that~~ will save money. ~~This new voluntary program is intended to create a valuable opportunity for industry and the government to work together to achieve common goals.~~ As of May 2000, 58 electric utility companies had joined the partnership.

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Executive Summary



Executive Summary

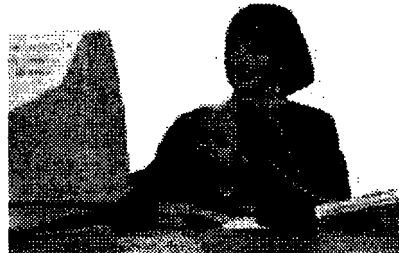
Climate change is the premier environmental challenge of the 21st century. The world's leading atmospheric scientists agree that the Earth is warming and that human activities are contributing to this trend. The evidence for this warming trend grows stronger day by day.

Many segments of U.S. society are embracing the need for action to slow climate change. State and local leaders, religious and scientific organizations, and large and small businesses throughout the United States are joining the Federal government in pursuing creative, cost-effective steps that reduce greenhouse gas emissions.

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.

"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***



***Placeholder for President Clinton and
Vice President Gore***

International Clean Energy Initiative

To help accelerate the development and deployment of clean energy technologies around the world, the Clinton-Gore Administration is proposing \$201 million for FY 2001, which is more than a 100 percent increase over FY 2000 enacted levels. The funding is for a multi-agency initiative to encourage open competitive markets, remove market barriers to clean energy technologies in developing countries, and 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.

New Federal Initiatives

President Clinton and Vice President Gore are fighting for funding to combat global warming. The Clinton-Gore Administration's Climate Change Technology Initiative (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 money for U.S. consumers and at the same time reduce greenhouse gas emissions.

CCTI investments have risen substantially each of the past two years. The Administration's Fiscal Year 2001 budget proposes a still more accelerated effort—a 43 percent increase over FY 2000 enacted levels. The budget includes a series of new initiatives, such as accelerated efforts to develop clean energy sources at home and abroad:

- \$4 billion in funding for renewable energy, energy efficiency, agricultural- and forest-based energy, research and development, and other programs.

- \$4.1 billion in consumer tax incentives for the purchase of clean cars, homes, and appliances that will help move clean energy products to the forefront of markets.

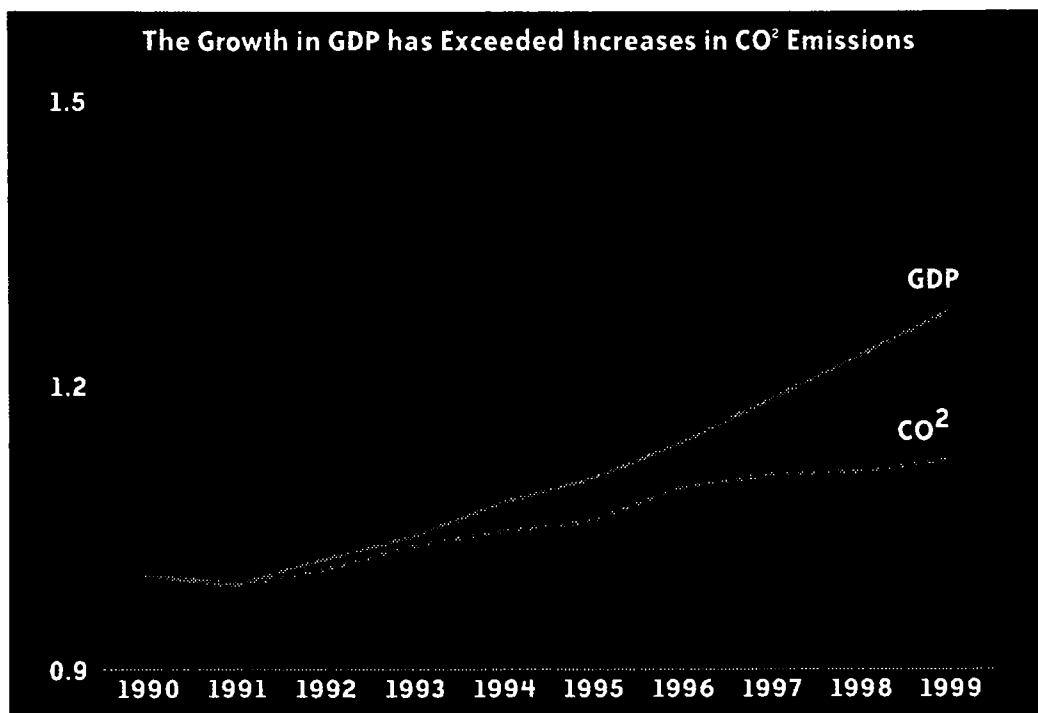
Over the past two years, the Clinton-Gore Administration has taken extraordinary steps to reduce greenhouse gas emissions from domestic sources. The President issued three Executive Orders that require Federal agencies to:

- Reduce the amount of petroleum used by their vehicle fleets by 2005 to a level that is 20 percent below 1999 levels. This action is expected to reduce greenhouse emissions by as much as 160,000 tons of carbon equivalent per year.

- Reduce greenhouse gas emissions from their buildings by 30 percent by 2010.

- Accelerate the development of clean biobased fuels and products.

The Growth in GDP has Exceeded Increases in CO² Emissions



Overall, during the 1990s, the U.S. GDP grew almost three times more quickly than did energy-related CO₂ emissions

Results

Government, industry, and community leaders throughout the United States are working hard to forge sensible approaches to dealing with climate change. These efforts are beginning to show results. Recent years have produced a widening gap between the robust growth in the U.S. gross domestic product (GDP) and the slowing growth in the nation's greenhouse gas emissions. The disparity between GDP and carbon dioxide (CO₂) 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 CO₂ emissions grew by only about 1 percent.

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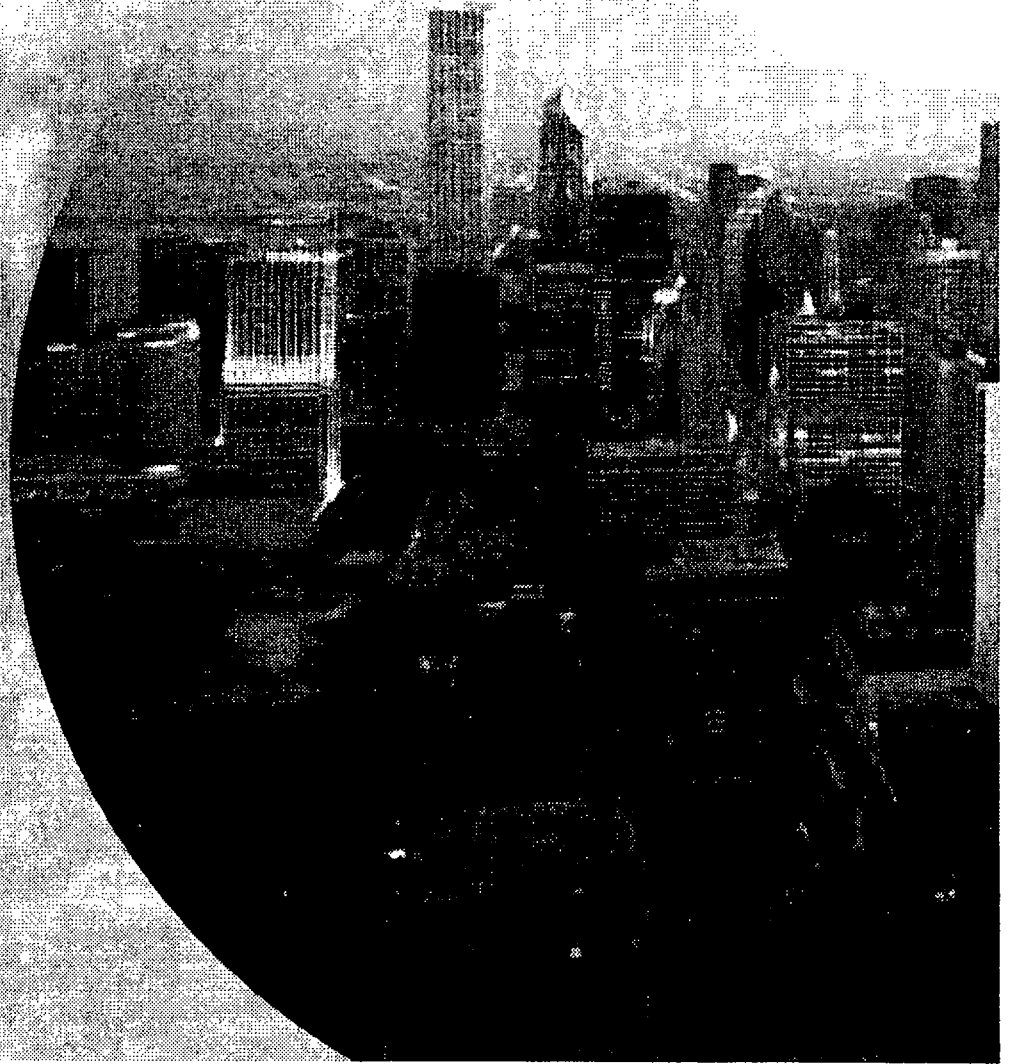
The success of this decoupling of emissions from economic growth demonstrates clearly that environmental goals and economic prosperity can go hand in hand.

Public-Private Partnerships

Important progress is occurring in reducing emissions from automobiles through research technologies and tax credits, especially through the Partnership for a New Generation of Vehicles (PNGV). A public-private partnership led by Vice President Gore, PNGV includes General Motors, Ford Motor Company, and Daimler-Chrysler. The three corporations have announced that, thanks in part to their participation in this program, they will introduce to the market within the next few years highly fuel-efficient hybrid cars that will double or triple the gas mileage of the typical midsize vehicle on the road today. To encourage consumer interest in these new types of vehicles, the Administration is proposing tax credits of up to



Executive Summary



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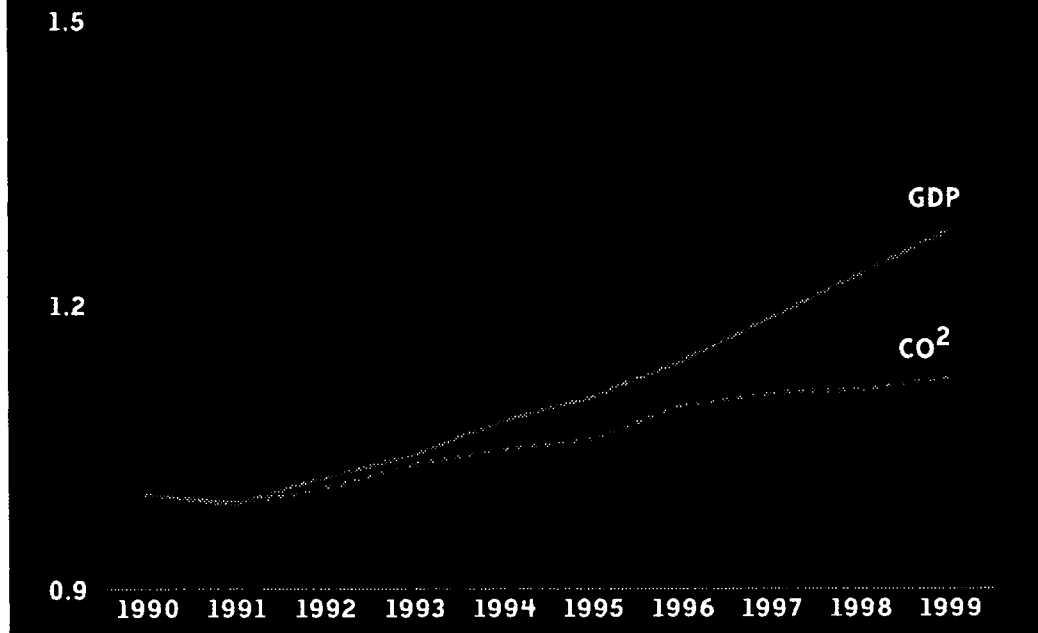
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USDA Features (contact: Steven Shafer, USDA-ARS, 301-504-4644, srs@ars.usda.gov)

1. Chariton Valley Biomass Project

Photo: Switch.gif (Source: Chariton Valley Resource Conservation and Development)

Note: VP Gore has visited the Chariton Valley Biomass Project and would be familiar with this effort.

Switchgrass once grew abundantly in the soils of southern Iowa's rolling hills simply because the two were well suited. This natural companionship, along with the excellent burn qualities of switchgrass, created interest in the potential of growing the plant on marginal land as an alternative energy crop.

Evaluating this possibility is the Chariton Valley Biomass Project, which is underway in four counties in Iowa. The goal is to eventually use the switchgrass as a fuel to replace a portion of the coal burned at Alliant Power's (formerly IES Utilities) Ottumwa generating station.

The Chariton Valley Biomass Project is sponsored by a consortium including the US Department of Agriculture, the US Department of Energy, Iowa State University, the county governments, and several non-governmental organizations and companies.

Chariton Valley Resource Conservation and Development, which coordinates the Biomass project, is a non-profit corporation. It receives direct technical assistance from the USDA through the Resource Conservation and Development (RC&D) Program, authorized by Section 102 of the Food and Agriculture Act of 1962 (P.L. 87-703). At the local level, the program is carried out by local citizens through the RC&D Council. A Coordinator provided by the USDA, acts in an informal leadership role to facilitate change and economic progress. The stated purpose of the RC&D Program "...is to accelerate the conservation, development, and utilization of natural resources, to improve the general level of economic activity, and to enhance the environment and standard of living in authorized RC&D areas."

In addition to the benefits of growing switchgrass as an alternative fuel, the plant has positive environmental qualities. Its massive root system filters pesticides and herbicides, which protects water supplies. A study is being conducted to determine how to best manage the native grass for maximum benefits to the environment, which are improved quality of soil, water, and air.

Since a majority of the switchgrass acres in the Chariton Valley Biomass Project are enrolled in the USDA's Conservation Reserve Program, maintaining the goal of wildlife protection is a concern. The switchgrass management goal is to have minimal or no effect on wildlife when harvesting occurs.

The project will also look at the economic benefits of growing switchgrass. An economic study will evaluate the potential of switchgrass as a profitable alternative to row crop.

2. How Agricultural Producers Increase the Storage of Carbon on Agricultural Lands

Photo: NOTILL.jpg (Source: USDA)

Agricultural producers may be able to influence climate by increasing the storage of carbon on agricultural lands. Storing, or "sequestering," carbon in soil as organic matter and in trees helps reduce the amount of carbon dioxide in the atmosphere. This is why soil and vegetation are sometimes called carbon "sinks." Conservation practices, most often adopted for other benefits, that increase carbon storage include:

- Using conservation or no-till cultivation systems.
- Rotating crops and incorporating small grains, hay, legumes, or other crops into rotations.
- Planting cover crops.
- Minimizing or eliminating summer fallow.
- Managing nutrients and irrigation efficiently and effectively.
- Applying manure, compost, and other organic amendments according to nutrient management plans.
- Improving pasture and rangeland soils through grazing, vegetation, and fire management.
- Installing permanently vegetated conservation buffers, such as windbreaks, grass waterways, filter strips, and riparian buffers.
- Restoring or protecting wetlands. (Carbon sequestration outpaces methane emissions in most wetlands.)
- Converting marginal agricultural land to perennial grassland or forest.
- Managing woodlands to conserve soil and increase biomass.
- Adopting agroforestry practices that incorporate trees into agricultural operations.

These practices improve soil, water, and air quality, on and off the farm, and have economic benefits as well. For example, reducing the number and intensity of field operations saves money, time, and labor. Using nitrogen fertilizers more efficiently and not overusing them lowers fertilizer costs while maintaining yields. Better management of nitrogen fertilizers means that fields lose fewer nutrients to grounds and surface waters. Methane-recovery systems may pay for themselves within a few years because the methane can be burned right on the farm for energy. Composts provide nutrients and soil improvement for on- or off-farm application. Such systems also help keep waterways cleaner.

Practices that increase the amount of soil carbon also reduce soil erosion and improve soil quality. As its organic carbon content increases, a soil is better able to hold water and nutrients. This increases its productivity, while protecting water quality and minimizing flooding. Higher-quality soil also helps crops withstand drought, cuts irrigation needs, and increases the long-term productivity of farmed land. Keeping crop residues on fields, maintaining vegetated buffers along surface waters, and using agroforestry practice improve air and water quality by reducing erosion. These practices also enhance wildlife habitat by providing food and shelter, and can provide additional farm income.

Some of the practices that decrease greenhouse gas emissions or sequester carbon require a capital investment or increase farm-operating costs. The USDA's Conservation Reserve

Program (CRP), the Wetlands Reserve Program (WRP), AgSTAR, and the Environmental Quality Incentives Program (EQIP) provide assistance to help farmers adopt these beneficial practices. The benefits of these programs and modern agricultural practices include a 32% decrease in erosion from the Nation's cropland from 1982 to 1992, attributable in large part to the increase in cropland under conservation tillage, the Conservation Reserve Program, and afforestation. The total carbon emission reduction that could be achieved potentially by control of soil erosion by water on the Nation's croplands has been estimated conservatively at 12 to 23 million metric tons of carbon per year. If all improved cropping strategies were maximized on all the Nation's croplands, the estimated total carbon sequestration potential is estimated at 75 to 208 million metric tons per year.

3. Assessing, Adapting, and Applying Climate Forecasts for Risk-Based Management in Agriculture and Natural Resource Conservation

Photo: Precip.gif (Source: NOAA)

Agriculture, soil and water conservation, urban and industrial water supply, and natural ecosystems are all sensitive to variations in climate and weather. Unpredictable variations in climate hinder efforts to effectively manage and optimally use water resources for agricultural production. A variety of climate forecast products are becoming available from NOAA's Climate Prediction Center. These climate forecasts offer the possibility of pro-active planning and management in anticipation of forecasted climate conditions. However, these climate forecasts are tailored for a general audience, and a number of challenges exist for effective applications in agricultural planning and management. The primary challenges are to adapt and apply the predictions and risks associated with NOAA's regional and long duration forecasts to farms and fields at time periods that are relevant for agricultural decision making. Research conducted by the USDA Agricultural Research Service will establish the impact of the forecasted climate on soil water and plant productivity, and establish the risks associated with this forecast for particular agronomic applications. This information will be incorporated into risk-based decision and management tools and resource conservation strategies, which will provide opportunities to exploit favorable climate conditions and to mitigate adverse climate extremes.

The seasonal climate forecasts produced by NOAA's Climate Prediction Center deserve particular attention for two reasons. First, they incorporate the best current scientific understanding; and second, they are free and available to anyone with World Wide Web access. As might be expected, NOAA's climate forecasts are intended for a general audience, so adapting them for agricultural risk management means that researchers are working on several issues, such as:

1. The large size of the region covered by the forecast (about half the size of Oklahoma); most users need forecasts for areas the size of ranches and farms.
2. The long period (90 days) for which the forecast is issued; agribusiness needs forecasts for weeks and days, as well as over months.
3. The local uncertainty associated with a regional forecast; in other words, does the forecast skill change if the forecast is applied to a smaller area?
4. The impact forecasted climate conditions will have on soil water, surface water runoff, and forage and grain production.

The research in progress by the USDA will produce several tangible outcomes with direct benefit to the agricultural community. First, recommendations can be provided to NOAA that may lead to the development of more agriculture-specific climate forecasts. Second, information can be developed on expected changes in the soil water and crop productivity as a result of forecasted climate conditions suitable for use while making agribusiness decisions. Third, alternative agronomic practices can be recommended to mitigate adverse and exploit favorable climate conditions during the upcoming growing season. And fourth, the forecast, risk, and impact information can be organized into a decision support system that can be accessed by the farmer or rancher.

The result of this effort to use long-range weather forecasts for managing agricultural systems will be information that can be used to determine the number of livestock that a farm operation can support during the upcoming season; the need for outside forage supply; decisions on winter wheat grazing or grain production options; fertilizer needs; erosion protection; and other cost-benefit issues. Weather variability is one of the biggest limitations on agricultural productivity, so management tools based on weather-related risks will be invaluable in the face of weather and climate uncertainties.

EPA's Comments on Draft COP 6 Report

In general, all of the chapters, and particularly Chapter 1/Intro, need to focus more on what we've accomplished -- both in terms of general trends and tons reduced.

Chapter 1/Intro

- This chapter is *not very compelling* given the purpose of the document -- to demonstrate domestic progress in reducing ghg emissions -- and the audience that will be reading it. Start by talking *success* and *results* (tons, trends in energy intensity), not federal initiatives (emphasized in last year's document) and budget (not materialized).
- Move "Results" section to the beginning. Skip Laitner, economist on staff here, is redrafting the "Results" section with some new data - we should be able to forward it to you later today and I think it will be helpful. In addition to trends in energy intensity, need to also include actual tons reduced by programs.
- Box on Boeing is awkward -- it's the only box in the chapter about a program, the program isn't mentioned in the chapter (and the program no longer exists -- Green Lights has been transformed into Energy Star). Idea: include a separate box "It All Started With Green Lights" and discuss the success of the program that was launched in 1991, the evolution of Energy Star, etc.)
- The Ford - GM announcements on developing more fuel efficient SUVs were a very big deal this year. This needs to be highlighted in intro and up front in transportation chapter.
- "The Role of State and Local Govts" section is weak. Needs actual examples of what states and cities are doing (better than what's said about the ICMA program). Ditto for the box on State and Local Climate Change program: the bullet on the U.S. Cities for Climate Protection program is misleading because that is not an EPA thing and the title leads one to believe this box is about an EPA program; don't talk about how many copies of the toolkit have distributed, talk about the toolkit; also, how many people receive internet updates is not an accomplishment, it's a means to the accomplishment - it sounds bureaucratic - delete.

Chapter 2 Industry

- Don't start the chapter with the discussion on trends within the industry. Start with accomplishments. The same goes for all of the chapters.
- Move up the box about the Green Power Market Development Group.

Chapter 3 Buildings

- Again, don't start with trends or federal actions (Greening WH). Start with Public/Private Partnerships.
- CHP is mentioned more than once.

Chapter 4 Electricity

- "Freedom of Choice" sounds like we're going to talk about abortion. Maybe "flexibility"?
- Shouldn't the paragraph about the Hydrogen Research Program go in the transport chapter?

Chapter 5 Transportation

- Move up what the car companies are doing - before the federal stuff.
- Include Toyota and Honda.

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United States Department of State

Bureau of Oceans and International
Environmental and Scientific Affairs

Washington, D.C. 20520

DATE 7/31/00 TIME 2:30

NUMBER OF PAGES TO FOLLOW 2

FAX TO Angie Mizeur John

TELEPHONE NUMBER _____

FAX NUMBER 456-1736

OFFICE WH OCTF

FAX FROM Amy Royden, Special Assistant

TELEPHONE NUMBER 202-647-1561

FAX NUMBER 202-647-0217

OFFICE OES/FO

MESSAGE:

Comparison of CO₂ emissions from
fossil fuels versus GDP growth
for 1990 - 1998
or 1993 - 1998
(While we have figures for the U.S. for
1999, we don't for other countries.)
These are available at <http://eia.doe.gov/oiaf/1005/flash/>

DOE
policy office
Max Sox

**Growth in carbon dioxide emissions from fossil fuels
compared to growth in GDP; selected countries
1990-1998**

Country	Percent change 1990-1998 carbon dioxide emissions from consumption and flaring of fossil fuels	GDP percentage growth 1990-1998
Canada	7.33	17.72
China	21.3	126.54
France	6.07	13.2
Germany	-10.52 ¹	11.57 ²
India	59.05 ³	45.39 ⁴
Japan	8.55	10.77
The Netherlands	17.4	22.38
Nigeria	21.6	25.38
United Kingdom	-9.38	15.29
United States	10.6	23.07

Source: International Energy Annual (1/18/2000) <http://www.eia.doe.gov/iea>

¹ No GDP figures are available for East Germany in 1990, so table uses 1991 emissions and GDP data for Germany.

² See footnote 1.

³ No GDP figure available for 1998, so table uses 1997 GDP and emissions data.

⁴ See footnote 3.

**Growth in carbon dioxide emissions from fossil fuels
compared to growth in GDP; selected countries
1993-1998**

Country	Percent change 1993-1998 carbon dioxide emissions from consumption and flaring of fossil fuels	GDP percentage growth 1993-1998
Canada	7.12	16.37
China	4.0	60.02
France	8.67 ¹	12.52
Germany	-4.76	10.45
India	31.7 ²	30.99 ³
Japan	3.04	3.98
The Netherlands	9.67	16.88
Nigeria	2.69	13.67
United Kingdom	-6.04	15.81 ⁴
United States	7.81	18.19

Source: International Energy Annual (1/18/2000) <http://www.eia.doe.gov/iea>

- ¹ France's emissions decreased between 1990 and 1994, so that the percentage growth between 1993 and 1998 is greater than the growth between 1990 and 1998.
- ² No GDP figure available for 1998, so table uses 1997 GDP and emissions data.
- ³ See footnote 3.
- ⁴ The United Kingdom's GDP decreased between 1990 and 1993 and thus was at its lowest in 1993 during the 1990-98 timeframe.

W/o proposed tax credit: ~~33,833~~

W/ proposed tax credit: ~~257,392~~

A DOE (?) model predicts that

Thus, tax credit will spur the purchase of an additional 223,599 energy efficient homes. from 2001 thru 2005.

construction (?)

Question: What is the average cost to retrofit an average home to bring it up to the standards set forth in proposed tax credit?

Answer: Unable to get exact answer. Am told informally that retrofits ^{to an existing home to meet} are very expensive. ^{the 30-50% still would be}
Here's what we have:

^{add underlines} The incremental cost of building a new home so that it meets the energy efficiency standards set forth in the proposed tax credit ranges from \$1,666 to \$8,148 (depending on the region in which the home is built and efficiency standard).

Source: building simulation model developed by DOE

----- Forwarded by John D. Gibson/WHCCTF/EOP on 06/28/2000 03:47 PM -----

David agrees w/ me that these are seem high. He is checking - will call us back.



Lee.Davidf@epamail.epa.gov

06/28/2000 03:23:40 PM

Record Type: Record

To: John D. Gibson/WHCCTF/EOP

cc:

Subject: Re: test

(See attached file: Questions from GCCTF.wpd)



- Questions from GCCTF.wpd

gundrops
licorice sticks