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Climate Challenge Program Report

**December
1996**



Energy Efficiency and Demand-Side Management

Fossil Generation Efficiency and Fuel Switching

Renewable Energy Resources

Nuclear Capacity and Capacity Utilization

Efficient Transmission and Distribution

Use of Coal Combustion By-Products

Carbon Sequestration

Methane Capture

Transportation Programs

International Programs

Miscellaneous GHG Reduction Program

Education and Community Service

*Policy
Cabinet Energy*

'97 OCT 2 PM 5:03



Department of Energy
Washington, DC 20585

Office of Policy and International Affairs
1000 Independence Ave., S.W.
Room 7C-016
Washington, DC 20585
Phone: 202/586-5800 Fax: 202/586-0861

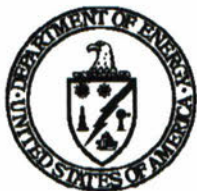
DATE 10-2

TO Todd Stern FAX NO 456.2215

FROM Marc Chupka

MESSAGE _____

Pages to follow 2



Department of Energy

Washington, DC 20585

October 2, 1997

MEMORANDUM

TO: Jack Gibbons
Katie McGinty
Gene Sperling
Todd Stern
Dan Tarullo
Janet Yellen
Franklin Raines

FROM: Marc W. Chupka 
Acting Assistant Secretary for
Policy and International Affairs

cc: Elizabeth Moler

SUBJECT: When Does Emission Trading Begin?

Following the NEC principals meeting earlier in the week, Betsy Moler asked me to prepare a memo outlining some thoughts on how to initiate an emission trading system. I hope you find this discussion useful.

There are two possible ways to envision domestic emission trading occurring before the onset of the first "budget period" as established by a Kyoto agreement. First, as a matter of domestic policy, one may consider instituting an emission allowance and trading system several years before the first budget period that would begin to reduce the growth in emissions and better position the nation to achieve the first multi-year target. The second approach would allow permits to be traded before they even became binding as a way for market participants prepare for the first budget period.

The first approach establishes a "glide path" by allocating (via grandfathering or auction) a number of permits slightly below existing emission levels and gradually ratcheting down for several years. Depending on the trajectory chosen, permit prices would probably be quite low and would rise slowly. This would put the nation within striking distance of achieving the first emission budget, help the economy adjust gradually, and reinforce the longer-term signal that long-lived investments should be based upon expectations of higher future permit prices. This ramped-in approach was in fact modeled by the interagency analysis team as a way to gradually introduce the policies into the models.

The second approach would operate as a futures market in emission rights. The ability to trade allowances before the relevant budget period in which they apply would make economic sense from the standpoint of corporations managing financial risk, but could take significantly different form



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depending on whether the allowances were freely allocated to market participants or auctioned.

Assume that the first budget period is established for 2010-2015. Under a free allocation scheme, the government could actually allocate the allowances years earlier (but the allowances are only "good" for emissions between 2010-2015). Firms could freely trade at prices that would reflect expectations of future values. Some firms may want to assure sufficient allowances during the first budget period, because, for example, they plan to build a powerplant and want allowances in hand at a certain price to complete a structured financing arrangement. Such firms would buy additional allowances. Other firms may be willing to sell allowances before the budget period because they don't believe that they will need them or could reduce emissions cheaply. It would probably enhance economic efficiency to allow such trades, and these trades could even be helpful in sending the right signals to market participants long before the actual budget period (the "announcement effect" on technology development and deployment). Even if the allowances were not explicitly allocated, a futures market could develop (as described below) without government involvement. However, the uncertainties regarding the eventual liquidity in the allowance market would probably hamper such a development compared to pre-trading under an auction scheme.

Under an auction scheme, government could decide to auction the permits years before they are valid, but would take some price risk. Even if government did not pre-auction permits, however, financial instruments could emerge that resemble stock "puts" and "calls." Some speculators could offer a contract to deliver an allowance (good for the 2010-2015 budget period) at a set price, say \$50/ton. Assuming that the contract is enforceable, the offeror would make money if the initial auction price was \$25/ton but lose money if the auction price turned out to be \$75/ton. The buyer of the contract could lock in a price long in advance, as a financial risk management strategy, but would probably pay a substantial risk premium. Such a market could evolve without government involvement, since the auction mechanism could ensure a certain amount of early liquidity.

Because early allowance trading would enhance economic efficiency, either in explicit allowances or in futures, it should be allowed. Its an open question whether or not specific policies should encourage early trading, since early trading may emerge in any case under plausible scenarios.

DEPARTMENT OF ENERGY
Washington, DC 20585

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FACSIMILE TRANSMISSION SHEET

To	TODD STERN	From	ELGIE HOLSTEIN
Office		Date	OCT. 17, 1997
Fax Number	456-2215	Fax Number	202/586-7644
Office Number	456-2702	Office Number	202/586-6210

Comments:

Pages: 3, including this cover sheet.IF TRANSMITTAL IS INCOMPLETE, PLEASE PHONE Carolyn AT 202/586-6210.



The Secretary of Energy
Washington, DC 20585

October 17, 1997

MEMORANDUM FOR GENE SPERLING

FROM: FEDERICO PEÑA ^{FP}

RE: Possible Language in Announcing Action to Address Climate Change

As you know, I offered the President six action items for possible announcement at the time he states the United States position on climate change (especially targets and timetables). The NEC has already considered the issue of electricity restructuring and how it should be included as part of the climate change announcement. For your consideration, I offer language on the other five action items for possible inclusion in the announcement.

I hope these suggestions are helpful in crafting the President's statement on climate change. Please call me if I can be of further assistance.

Implementing the PCAST Recommendations

"My Committee of Advisors on Science and Technology has recommended that the Federal government undertake a large-scale energy R&D effort focused on technologies to reduce greenhouse gases at the lowest possible economic, environmental, and social cost. This effort should cover all aspects of bringing research from the laboratory into the larger economy -- including applied energy research, development, and deployment. In line with my Advisors' recommendations, I propose to increase energy R&D efforts by \$500 million above current levels in FY 1999 and growing to \$1 billion above current levels by FY 2003. The proposed figure for FY 2003 would return the Administration's inflation-adjusted applied energy R&D budget to about where it was in the early 1990s."

National Climate Technology Strategy

"Today, I am launching an Administration-wide Climate Change Technology Strategy that will provide the nation's longer-term roadmap to developing and deploying cost-effective technologies to reduce greenhouse gas emissions. This Strategy will be guided by several recently completed scientific reports, including Department of Energy's recent 'Five-Lab Study' and the report from my science and technology advisors. I challenged our National Laboratories in June to work on a long-range technology strategy. They have already developed a framework for this strategy. Now, I am directing the Laboratories and the Department of Energy to begin holding public meetings on their strategy and to report back to



me by March on the key technologies that will be most important in reducing greenhouse gases in the longer term."

Comprehensive National Energy Strategy

"I also plan to issue a new Comprehensive National Energy Strategy in the Spring of next year. The Department of Energy will lead the Administration in designing this Strategy to improve the efficiencies of our energy systems and to mitigate the effects of energy use on the overall environment. We intend this Comprehensive Strategy to guide us in integrating the economic goal of increased standards of living and the environmental goal of reduced greenhouse gas emissions."

Federal Buildings Initiative

"As the largest single user of energy in our country, the Federal government has an enormous opportunity to reduce greenhouse gases by reducing fossil fuel use. My Administration will undertake a government-wide energy efficiency initiative, where we will improve energy efficiency in owned and leased facilities, reduce energy use in government transportation, and develop creative ways to finance energy-efficient investments. In addition, we will reinvent Federal purchasing practices so that energy-efficient products are not overlooked. Finally, we will commit to having 20,000 solar systems installed at Federal facilities by 2010, as part of the Million Solar Roofs initiative I announced in June. These actions will demonstrate the Federal government's commitment to reduce greenhouse gas emissions and will pay dividends well before any international emissions limits are in place."

Bully Pulpit

"In addition, I challenge the major appliance companies to aggressively market home appliances under the Energy Star program, sponsored by the Department of Energy and the Environmental Protection Agency. I will be inviting the top executives of these companies to the White House to discuss how best to promote the Energy Star program. This program labels the most efficient appliances in a given category with a "star" to indicate superior energy efficiency performance. Americans want to do what is right -- all they need is the right information, which they can get by simply looking for the Energy Star."

"At the recent White House conference on climate change, I was impressed by the potential energy savings in a typical home. For example, many electronic appliances in our homes (televisions, VCRs, audio devices, battery chargers, faxes and answering machines) use substantial amounts of electricity even when turned off. I will invite the top executives of the major appliance manufacturers to the White House and challenge them to adopt best engineering practices to reduce energy use when these appliances are off. This requires no regulation, little capital investment, and could save consumers billions of dollars a year."



DEPARTMENT OF ENERGY
Washington, DC 20585

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FACSIMILE TRANSMISSION SHEET

To	Todd Stern	From	Dan Reicher
Office		Date	10/21/97
Fax Number	456-2215	Fax Number	202/586-0148
Office Number		Office Number	202/586-9500

Comments:

The attached paper on Federal Energy Management has been agreed to by OMB, DOD, and DOE. For further information call Dan Reicher at 586-7701/301-891-3625/1-888-436-3983.

Pages: 4, including this cover sheet.

IF TRANSMITTAL IS INCOMPLETE, PLEASE PHONE Vernellia AT 202/586-9500.

Federal Government Energy Management

Aggressive energy management can substantially reduce carbon emissions from the activities of the Federal government, which has the nation's largest energy bill at almost \$8 billion per year. Significant strides have already been made — energy consumption per square foot in Federal buildings is down 15 percent and energy use in civilian and military vehicles is down about 27 percent from 1985 levels. However, we can do much more.

Reductions in government energy use from the strategies discussed below in combination with expected decreases under existing Federal energy management goals can reduce carbon emissions by more than four million tons annually by 2010. The initiatives will reduce Federal emissions of greenhouse gases through enhanced focus on energy efficiency and renewable energy. They address areas which can deliver the greatest energy savings, best leverage private sector funding and improve the Federal procurement system.

Expand Energy Savings Performance Contracting

Expand use of Energy Savings Performance Contracts. ESPC uses private investment capital and expertise to accomplish energy and cost saving projects in Federal facilities. When a private sector firm which has invested in federal energy efficiency improvements is fully repaid from its share of the delivered savings, all additional savings accrue to the government. Streamlined ESPC contracts put in place by DOD and DOE are beginning to speed large investments in energy projects at Federal facilities. However, use of ESPC's is still limited in the Federal government. The Office of Management and Budget will lead an effort to increase their use. It will include new policy and budget guidance for agencies. ESPC authority can also be extended to other areas including:

- *Leased Federal buildings.* These include buildings where the Government either pays for the energy use directly or in other building where ESPC can provide a better lease for the Government.
- *Federal mobility.* There may be great potential for energy savings from more efficient energy use in aircraft, ships and vehicles.
- *Water conservation.* Water conservation projects save energy because each gallon contains energy from pumping, heating, chilling or treatment.
- *Non-federal facilities where the Government makes indirect payment of energy expenses.* These include, for example, National Guard facilities which the state owns but where the Federal Government covers utility expenses and public housing facilities which are Federally supported but owned by public housing authorities.
- *State and local government facilities.* Federal energy experts can help transfer ESPC techniques to state and local governments so they can access this important approach to energy efficiency.

Improve Federal Procurement of Energy Efficient Technology

- *Accelerate the development of Product Energy Efficiency Recommendations.* These cover products that are in the top 25% of their class for energy efficiency or have Energy Star ratings, for example electric motors and air conditioning chillers. They provide a guide to Federal purchasers of the energy efficiency level to request in a specification or procurement.
- *Establish as standard practice, the purchase of energy efficient products for Government use.* Traditionally, federal purchases have been based on lowest price, ignoring the substantial savings many energy efficient products can achieve over their life. The Executive Office of the President will lead an interagency team to streamline and update Executive Orders and procurement practices to encourage the acquisition of these products. Use of alternative contracting vehicles to acquire energy-efficient products

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will be encouraged, and purchase of products in the top 25 percent of class for energy efficiency or conforming to Energy Star standards will become standard practice, subject to necessary exceptions. The initiative will be augmented by publication of a "best practices" buying guide and expanded training of purchasing decision-makers.

- *Use consolidated purchasing to stimulate markets and lower prices.* Consolidated Federal purchasing can stimulate commercial markets for new and emerging products which offer greater energy efficiency, lower operating costs, and sales opportunities for small businesses that produce these products.
- *Increase Federal procurement of renewable energy.* In states that have implemented retail competition in their electricity industry, Federal facilities will work with their suppliers to ensure that the facilities purchase competitively supplied non-hydro renewable energy at levels equivalent to the percentage specified in that state's retail competition legislation.
- *Report Federal Agencies' Contributions to Reduction of Carbon Emissions.* This initiative will develop an appropriate measurement methodology to convert currently available data on Federal energy use to carbon emissions to aid national carbon reduction efforts.

Building for the 21st Century

- *Establish a new level of excellence for Federal building construction and renovation that incorporates energy efficiency, quality, affordability, and sustainability.* By using the latest construction techniques and tapping the knowledge of the building community and local partners, agencies will work to ensure that new Federal buildings achieve energy efficiency increases of 30-50% by 2000 as compared to existing facilities. This will be accomplished through a "whole building" approach that treats buildings as integrated systems rather than a series of independent component selections.
- *Deploy solar technologies in Federal buildings.* Show Federal leadership by installing solar photovoltaic and solar thermal systems on 20,000 Federal roofs by 2010 in support of the President's 'Million Solar Roof Initiative'. Utilize alternative financing methods to provide the rapid infusion of investment necessary to support the cost-effective installation of these systems.
- *Expand the use of combined heat and power generation at Federal facilities.* Combined heat and power makes greater use of the waste heat produced in the generation of electricity.
- *Use biomass fuels in Federal boilers.* Biomass would come from agricultural and wood waste and methane from landfill and treatment plant operations.
- *Expand public awareness of energy efficient technologies.* By showcasing energy efficient and renewable energy technologies at National Parks, Federal offices, embassies, military bases, and other facilities the public will be more aware of their potential to reduce pollution and lower costs.
- *Seek increased resources for civilian agency staffing to expand energy management activities and complete energy efficiency projects.* In recent years, budgets for energy management in several key agencies have been cut by more than 80%. These Federal appropriations often provide the most cost-effective funding for Federal energy efficiency projects.

Improve Aircraft, Ship, and Heavy Vehicle Fuel Efficiency

- *Public-Private partnerships to improve the energy efficiency of Federal aircraft, ships and vehicles.* Energy use in Federal aircraft, ships and vehicles, predominantly in the military services, is responsible for 43% of the \$8 billion Federal energy bill. This initiative would improve the energy efficiency of main propulsion systems, with particular emphasis on medium and heavy diesel engines and high performance turbine technology. The initiative -- designed along the lines of the Partnership for a New Generation of

Vehicles -- would involve a partnership between Federal agencies and the private sector. Advances under this initiative will have significant application in commercial markets. In addition, the initiative will focus on near-term energy efficiency opportunities such as lighting retrofits on ships.

- *Increase the use of alternative fueled vehicles (AFVs) in the Federal fleet.* Federal agencies are increasing the use of alternative fuel vehicles which, among other things, helps reduce emissions of greenhouse gases. This initiative would enhance the focus of the current program on AFVs such as electrics, hybrid-electrics, natural gas and renewable-fueled vehicles.



DEPARTMENT OF ENERGY
Washington, DC 20585

97 OCT 22 PM 1:29
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FACSIMILE TRANSMISSION SHEET

To	<i>Gold Star</i>	From	<i>Elgie Holstein</i>
Office		Date	<i>10/22/97</i>
Fax Number	<i>456-2215</i>	Fax Number	202/ 586-7644
Office Number		Office Number	202/ 586-6210

Comments:

This memo and the October 21 memo on the Lighting and Appliance Energy Efficiency Standard Program were drafted in response to the President's request and given to the President by Secretary Peña last night.

Pages:

4

, including this cover sheet.

IF TRANSMITTAL IS INCOMPLETE, PLEASE PHONE

Anna

AT 202/ 586-6210.

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DEPARTMENT OF ENERGY
Washington, DC 20585

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FACSIMILE TRANSMISSION SHEET

To	<i>Todd Stern</i>	From	<i>Jim Reichen</i>
Office		Date	
Fax Number	<i>456-2215</i>	Fax Number	202/ 586-0148
Office Number		Office Number	202/ 586-9500

Comments:

Pages: 14, including this cover sheet.IF TRANSMITTAL IS INCOMPLETE, PLEASE PHONE *Natasha/Kathy* AT 202/ 586-9500.

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10/20/97 - 12:00pm

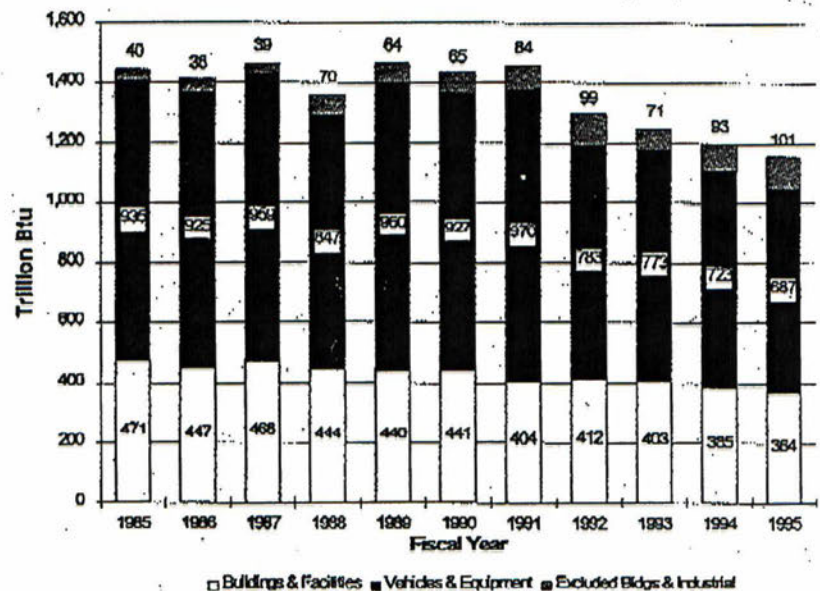
Federal Government Energy Management

Introduction

Aggressive energy management can substantially reduce carbon emissions from the activities of the Federal government, the nation's largest energy consumer. Reductions in government energy use from the strategies discussed below in combination with the decreases currently anticipated under existing Federal energy management goals can reduce carbon emissions by more than four million tons annually by 2010.

Figure 1

Federal Energy Consumption, 1985 through 1995



Overview of Federal Energy Use

The Federal Government is the single largest energy consumer in the Nation with a widely dispersed pattern of consumption in approximately 500,000 buildings with over 3 billion square feet of floor space. Energy is also used to support vehicle mobility and industrial operations. In total, this represents 2 percent of all energy used in the United States. The cost of this energy was just under \$8.0 billion in FY 1995, with \$3.6 billion spent in buildings and facilities, \$3.4 billion for vehicles and equipment, and \$0.9 billion for energy-intensive industrial operations. Figure 1 shows a 20.3% reduction in overall government energy use since FY 1985.

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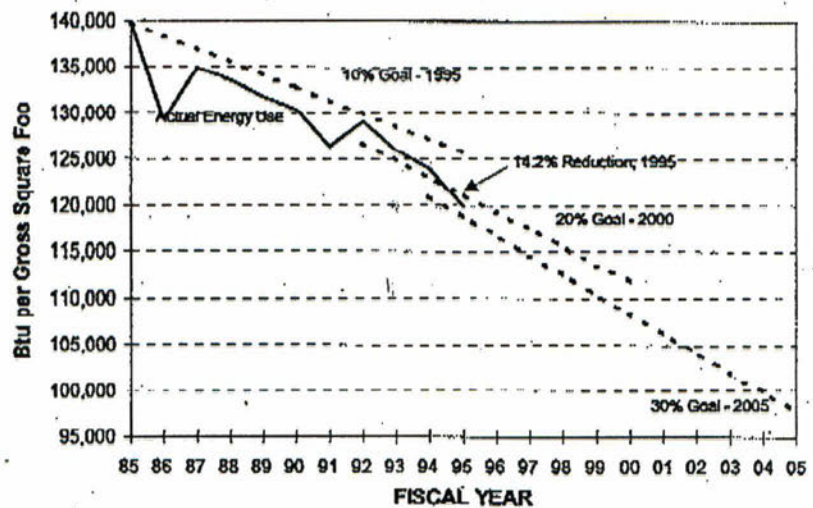
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Principal Federal Energy Management Goals

Federal legislation and executive orders set the following goals for energy use:

- Reduce energy use in buildings by 30 percent per gross square foot by the year 2005, compared to a 1985 baseline.
- Reduce Federal industrial energy use by 20 percent by the year 2000, compared to 1990.
- Install in Federal buildings all cost-effective energy and water conservation measures with payback periods of less than 10 years.
- Significantly increase the use of solar and other renewable energy sources.
- Expand the use of innovative financing and contractual mechanisms such as utility incentive programs and energy savings performance contracts.
- Provide information to state and local governments and the public on beneficial energy management processes

Figure 2
Federal Performance Toward Building Energy Reduction Goals

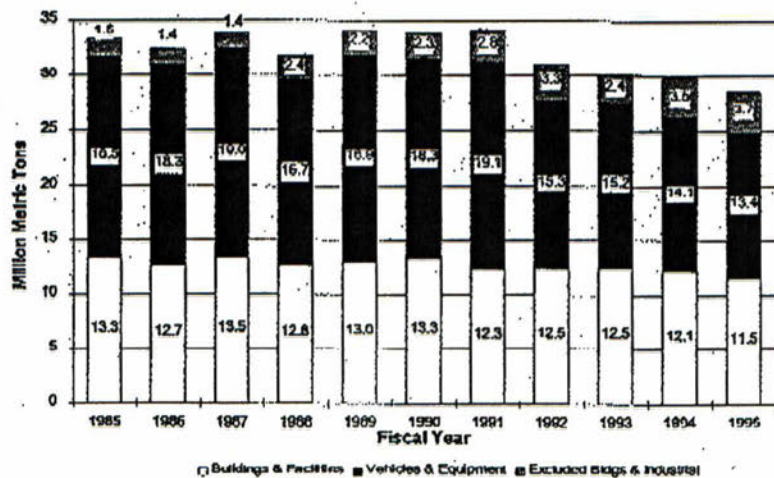


Progress

In FY 1995, the Federal government's energy consumption in buildings and facilities was 14.2 percent per gross square foot lower than in FY 1985. The Government's annual performance toward its energy reduction goals is illustrated in Figure 2. This performance follows an earlier 16.6 percent reduction from FY 1975 to FY 1985.

Figure 3

Carbon Emissions from Federal Energy Consumption, 1985 through 1995



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From FY 1985 to FY 1995, reductions in Federal energy consumption avoided cumulative emissions of 13.0 million metric tons of carbon into the atmosphere. Figure 3 illustrates this trend for those years.

Federal Energy Management Coordination Efforts

Each Federal agency is responsible for management of the energy use in its own buildings and operations.

Direction and coordination of this effort across all agencies is assigned to the Department of Energy's Federal Energy Management Program (FEMP) and two inter-agency coordinating bodies: the Energy Policy Committee and the Energy Management Task Force.

FEMP's mission is to reduce the use of energy and the cost of government by advancing energy efficiency, water conservation, and renewable energy sources. FEMP accomplishes its mission by leveraging both Federal and private sector resources to provide financial and technical assistance to other Federal agencies, collecting Government-wide energy consumption and cost data and reporting on the Government's progress in meeting energy reduction goals.

The Energy Policy Committee (established by the Department of Energy Organization Act) is comprised of agency principal energy conservation officers designated at the Assistant Secretary or Assistant Administrator level. The Committee was formed to develop and coordinate Federal energy management policy. The Energy Management Task Force (established by the Federal Energy Management Improvement Act) serves as an implementing arm of the Energy Policy Committee. It establishes working groups to resolve specific technical or programmatic issues, develops new initiatives for Federal implementation, and addresses legislative requirements and other topics to improve energy management.

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DRAFT**10/20/97 - 12:00pm****Agency Implementation**

Each agency implements its own unique energy management plan to achieve the above energy goals. These plans generally contain the following key elements.

Project Financing—Reduced congressional appropriations for energy efficiency at Federal facilities (See table) necessitates the increased use of private sector capital to finance efficiency and renewable energy projects.

Agency	FY95	FY96	FY97	FY98 Request	FY98 Estimate
Department of Defense	221	69	47	40	40
General Services Administration	13	7	20	0*	0
Department of Energy	25	0	0	0**	0

*GSA did not request any FY98 energy management funds in order to help reduce the deficit in the agency's Federal Buildings Fund.

**Congress eliminated DOE's In-House Energy Management Program in FY96 and directed that no program should be funded in FY97.

The use of private capital and expertise allows Federal facilities to accomplish energy and cost saving projects at minimal up front cost to the taxpayers. Under an Energy Savings Performance Contract (ESPC) a private firm invests its own capital to make efficiency upgrades or install renewable energy technology. When a project is completed, the government and the private sector firm share the energy cost savings. When the private sector firm is fully repaid from its share of the delivered savings, the remaining savings accrue totally to the government. Agencies have issued several small contracts using this alternative financing method. Large regional contracts recently put in place by DOE and DOD simplify the procurement process for agencies and energy service companies and are speeding the introduction of energy projects and cost savings at Federal facilities.

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Technical Assistance—FEMP assists other agencies as they identify and implement cost-effective energy efficiency, renewable energy, and water conservation projects. Components of technical assistance include transforming the procurement process to incorporate energy efficiency, pre-screening and audit activities that lead to project development, design assistance for new construction, training for Federal energy managers, and new technology demonstrations.

Planning, Reporting, and Evaluation—Implementing Congressional and Executive Branch energy policy requires evaluation of programs and overall agency performance in energy and cost savings and emissions reduction. In addition, communications and outreach efforts help transfer Federal energy management successes to other agencies as well as state and local governments.

Agency Energy Management—The final responsibility for the day-to-day energy efficient operation of Federal facilities, is the responsibility of thousands of Federal energy managers across the country and around the world. Ultimately, their actions deliver the energy and cost savings at the Federal sites. Each Agency needs to provide support for these managers within the agency's own organization to help them do their jobs. That support requires dedicated staff, funding and management support to ensure these savings are delivered.

Continuing Challenges and Opportunities

- The use of Energy Savings Performance Contracts to leverage private financing is currently limited to a select set of Federally owned buildings. Opportunities exist to expand its use to all Federal buildings as well as, vehicles, water conservation projects and state and local government facilities.

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- Current procurement of energy consuming products and appliances favors purchase of the lowest-cost product without accounting for energy expenses over the product life. Opportunities exist to lower energy use and the total cost to the government by reinventing the procurement of energy efficient products and appliances.
- Making Federal buildings energy and cost efficient requires a systems engineering approach to improving building envelopes and mechanical systems and supporting building operations and maintenance. Using sustainable technologies in the design of new Federal buildings, and renovation of existing ones and supporting the growth of community-based resources to build, operate, and maintain these systems can save energy and lower the cost of operating Federal facilities.
- Federal energy management goals have focussed on buildings and facilities while vehicle fuel efficiency has received lesser attention. Increasing the efficiency of medium and heavy diesel engines for trucks, tanks, and heavy equipment, making improvements to aircraft turbine engines, expanding vehicle efficiency retrofits and increasing the use of alternative-fueled vehicles can cut vehicle energy use and improve mission performance.

Recommended Federal Energy Management Activities

To Reduce Carbon Emissions

The following initiatives address the continuing challenges and opportunities in Federal energy management.

They will reduce emissions of greenhouse gases through enhanced focus on energy efficiency and renewable energy in the Federal sector.

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The initiatives address areas of Federal energy management which can:

- deliver the greatest energy savings,
- best leverage private sector funding and expertise,
- transform the Federal acquisition and procurement system to stimulate the purchase of energy efficient and cost effective products,
- upgrade the performance of Federal buildings to be more energy and cost efficient,
- improve the energy efficiency and mission capability of government vehicles.

Expand Energy Savings Performance Contracting

- *Seek early reauthorization of the Energy Savings Performance Contracting (ESPC) Authority* which expires in May of 2000, pursuant to the Energy Policy Act of 1992. ESPC uses private capital and expertise to accomplish energy and cost saving projects in Federal facilities. When the private sector firm is fully repaid from its share of the delivered savings, all the remaining savings accrue to the government. Agencies have issued several small contracts using this alternative financing method. Large regional contracts recently put in place by DOE and DOD simplify the procurement process and are beginning to speed the introduction of billions of dollars of energy projects and cost savings at Federal facilities. The current authority is part of a 5 year pilot program which has demonstrated the usefulness of the ESPC approach. Early reauthorization can be combined with additional authority extending the use of this valuable contracting method to other areas which could also generate additional energy and cost savings.
- *Extend the ESPC authority to cover all Federal buildings* including leased buildings where the Government either pays for the energy use directly or where the Government can negotiate a reduction in lease costs based on assisting the landlord in reducing the energy cost of operating the building.

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- *Extend the ESPC authority to cover mobility energy and water conservation.* Current ESPC authority allows use of these contracts only for building energy savings. Mobility energy savings are savings from more efficient energy use in aircraft, ships and vehicles and are estimated by DOE to offer savings of several hundred million dollars per year. These savings can be delivered while improving the mission capability of several classes of aircraft, ships and heavy vehicles. Water conservation projects save energy because each gallon can contain embedded energy from pumping, heating, chilling and treatment. ESPC will be extended to such projects as low flow plumbing fixture retrofits and upgrading irrigation system efficiency.
- *Extend the ESPC authority to non-federal facilities where the Government makes indirect payment of energy expenses.* These include: state hospitals which provide utility services to adjacent Veterans hospitals; National Guard facilities which the state owns but where the Federal Government covers utility expenses; and public housing facilities which are Federally supported but owned by numerous small public housing authorities.
- *Extend ESPC to state and local government facilities.* There are two models that can deliver the benefits of ESPC to states and localities. One would allow states and local governments to access ESPC services directly for their facilities. Another model would provide resources for transferring the ESPC techniques to State Energy Offices which could become contracting offices for their own state and local facilities.

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Reinvent Federal Procurement

- *Accelerate the development of Product Energy Efficiency Recommendations.* These cover products that are in the top 25% of their class for energy efficiency or have Energy Star ratings. They provide a guide to Federal purchasers of the energy efficiency level to request in a specification or procurement. FEMP has developed 22 recommendations for products such as motors and air conditioning chillers. A total of approximately 60 are planned. Accelerating the development of the remaining recommendations will allow product purchasers to save energy in their near-term product purchases.
- *Establish as standard practice, the purchase of energy efficient products for all Government use.* Government purchasing decisions for many energy-consuming products have traditionally been based on a lowest purchase price and often ignored the tremendous savings that would accrue in energy usage and cost over the life of the more efficient product. The Federal Procurement Challenge, signed by 22 agencies in 1995, began a voluntary program to buy only those products that were in the top 25% of their class for energy efficiency or conformed to Energy Star standards. As mentioned above, FEMP is developing the Product Energy Efficiency Recommendations to identify such products. The early signs of success of this program indicate that the purchase of energy efficient products should be made standard practice. However, in cases where mission performance would be compromised or life cycle cost would be increased, exceptions could be made. The Office of Management and Budget, in coordination with the Interagency Energy Policy Committee, would lead the effort to transform the procurement system. [DOD Alternative: "The early signs of this program indicate that the purchase of energy efficient products has been very successful and should be extended while maintaining the benefits of acquisition reform. The Office of Management and Budget would lead the interagency effort to transfer the acquisition system to take account of these newly-available products."]

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- *Expand outreach and training efforts for Federal purchasers.* To help incorporate energy efficiency into purchasing decisions: increase the number of training courses offered, provide customized sessions with individual agencies, support better, more precise labeling in supply schedules and catalogues, and encourage manufacturers to use the 'Federal top 25%' and Energy Star labeling in their product marketing efforts.

- *Expand outreach and training to include state and local governments.* State and local governments represent a significant volume of purchasing in the U.S., nearly equal to the buying power of the Federal Government. Tools and strategies used at the Federal level will be deployed to state and local governments to expand their use of energy efficiency criteria in purchasing decisions.

- *Use consolidated purchasing to stimulate markets and lower prices.* Consolidated purchasing can lower prices and stimulate markets for new and emerging products which offer greater energy efficiency and lower operating costs. Consolidated purchasing can stimulate development of new energy efficient products by demonstrating a Federal (and possibly State and local government) demand for a product with a higher efficiency level than is currently on the market. Consolidated purchasing can also aggregate government demand for an existing energy efficient product to lower the production cost. Often these energy efficient products are developed by small businesses for which an aggregated demand can attract investment, increase production, and reduce cost. Both of these approaches to consolidated procurement will benefit the Federal government, the taxpayer, and the consumer by making higher efficiency products more readily available from both large and small business at lower price and across the entire market. Agencies will implement these and other approaches to consolidated purchasing.

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• *Increase Federal procurement of renewable energy.* In states that have implemented retail competition in their electricity industry, Federal facilities when purchasing electricity will be required to purchase competitively supplied non-hydro renewable energy at levels equivalent to the greater of: (i) the percentage specified in that state's retail competition legislation or (ii) two percent. [DOD would limit this requirement to the percentage specified in state legislation, if any.] The two percent figure approximates the proportion of non-hydro renewable electricity currently available within the U.S. from technologies such as solar, geothermal, wind, biomass, and municipal solid waste plants. Facilities will also be required to procure additional percentages of electricity from renewable energy where it is the most economical energy source and meets mission requirements.

• *Report Federal Agencies' Contributions to Reduction of Carbon Emissions.* This initiative will develop an appropriate measurement methodology to convert currently available data on Federal energy use to carbon emissions to aid national carbon reduction efforts. Using the energy consumption data collected from the agencies on an annual basis, the reduction of carbon as a result of energy efficiency and renewable energy technologies applications at Federal facilities would be determined. This information would be provided annually to the Energy Information Administration, under Section 1605 of the Energy Policy Act of 1992 regarding voluntary reporting of greenhouse gas emissions.

Building for the 21st Century

• *Establish a new level of excellence for Federal building construction and renovation that incorporates energy efficiency, quality, affordability, and sustainability.* By using the latest construction techniques and tapping the knowledge of the building community and local partners, agencies will ensure that new

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Federal buildings achieve energy efficiency increases of 30-50% by 2000 as compared to existing facilities in 1996. This will be accomplished through a systems engineering or "whole building" approach that treats buildings as integrated systems rather than a series of independent component selections. This integrated approach will assist decision makers in optimizing siting, design, material, equipment selection, and financing of both new construction and renovation. The initiative will actively involve the buildings industry as a way to improve their business. It will lower Federal facility construction and operating costs through, among other things, reduced energy use and cost. The initiative will establish the concepts and principles of systems engineering in all phases of building design, construction, financing, and operation and implement them in several future Federal building projects. This effort will be headed by those agencies with the largest construction, renovation and demolition/reconstruction programs including DOD, DOE, HUD, Postal Service, and GSA.

Expand Federal leadership in deploying solar and renewable technologies in buildings. Show Federal leadership by installing solar photovoltaic and solar thermal systems on 20,000 Federal roofs by 2010 in support of the President's 'Million Solar Roof Initiative'. Utilize alternative financing methods to provide the rapid infusion of investment necessary to support the cost-effective installation of these systems.

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- *Expand the use of combined heat and power generation at Federal facilities.* Combined heat and power makes greater use of the waste heat produced in the generation of electricity. Combined heat and power could be expanded by connecting Federal buildings to existing district heating systems. Additionally, for new construction, advanced gas turbines can provide electricity and heat in Federal buildings at significantly increased efficiency.
- *Use biomass fuels in Federal boilers.* Biomass would come from agricultural and wood waste and methane from landfill and treatment plant operations. The use of such fuels would take advantage of local renewable energy sources to displace fossil energy sources. The process will require survey and evaluation of Federal energy systems to support project development.
- *Expand public awareness of energy efficient technologies by showcasing them at National Parks, Federal offices, embassies, military bases, and other facilities.* Expand the number of energy efficient showcase projects at Federal facilities and increase the distribution of interpretive materials to stimulate replication of these energy saving projects in other Federal and non-Federal facilities.
- *Expand the role of interagency energy groups in bringing greater energy efficiency focus to the activities of Federal agencies.* There are many collaborative opportunities among agencies which can further the implementation of energy efficiency nationally. Different agencies fund training programs, provide financing for building upgrades, and provide payment of building energy expenses in low income communities. Expanding the role of the Energy Policy Committee and Interagency Energy Management Task Force and other organizations to coordinate these diverse agency activities will cut Federal energy use and expenses.

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- *Increase civilian agency budgets and staffing to expand energy management activities and complete energy efficiency projects.* In recent years budgets for energy management in several key agencies have been cut by more than 80%. These Federal appropriations often provide the most cost-effective funding for Federal energy efficiency projects. They also provide the necessary resources for Federal energy managers to identify opportunities and undertake contracting actions using ESPCs and other private financing methods. In some agencies, where facilities are operated by contractor personnel, the energy managers are being reassigned to non-energy jobs because there are no funds to maintain these positions.

Improve aircraft, ship, and heavy vehicle fuel efficiency

- *Improve the energy efficiency of Federal aircraft, ships and vehicles.* Energy use in Federal aircraft, ships and vehicles, predominantly in the military services, is responsible for 43% of the \$8 billion Federal energy bill. This initiative would improve the energy efficiency of main propulsion systems, with particular emphasis on medium and heavy diesel engines and high performance turbine technology. It seeks to develop, test and demonstrate technologies that increase energy efficiency. In addition this initiative will focus on near-term energy efficiency opportunities such as lighting retrofits on ships. The initiative -- designed along the lines of the Partnership for a New Generation of Vehicle -- would involve a partnership between Federal offices such as the DOD Tank and Automotive Command, the Department of Energy, and the private sector including medium and heavy diesel engine manufacturers. Advances under this initiative will have significant application in commercial markets.

- *Increase the use of low-carbon alternative fueled vehicles (AFV's) in the Federal fleet.* Federal agencies are increasing the use of alternative fuel vehicles to meet the requirements of the Energy Policy Act of 1992 and the Clean Air Act Amendments of 1990. This initiative would increase the focus of the

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current program on low-carbon AFV's such as electrics, hybrid-electrics, natural gas and renewable-fueled vehicles. The Interagency Energy Policy Committee would lead the effort to increase the use of low-carbon vehicles in the Federal fleet in conjunction with the Interagency Alternative Fuel and Low Emission Vehicle Committee and the Office of Management and Budget.

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