United States Government **Department of Energy**

Memorandum

DATE: November 24, 2008

FROM: Richard G. Kidd, IV
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SUBJECT: Response to Inquiries regarding Greening the Department of Energy

TO: Department of Energy Transition Team

Executive Summary

The Department of Energy recognizes that the concept of "greening" the Federal Government encompasses comprehensive sustainable practices beyond the efficient use of energy and expanded use of renewable energy. This document focuses primarily on energy efficiency and renewable energy, alternatively referred to as "energy management" or "energy performance."

For many years, the Department of Energy (DOE) maintained a line-item program for funding in-house energy improvements, and has generally met the Federal statutory requirements for energy performance. With the onset of more ambitious targets set by Executive Order (E.O.) 13423 and the *Energy Independence and Security Act* (EISA), the Department embarked on a program to rapidly meet and exceed the Federal government's ambitious new energy, water, transportation and sustainability requirements. This program would not only meet, but exceed statutory requirements and establish DOE as a leader in greening Federal facilities.

Since June 2007, DOE has joined with partnering Energy Service Companies (ESCOs) to undertake energy audits at DOE's highest energy-consuming sites. In only a year, project proposals have been developed worth over $400 million in energy investment, paid for entirely by the energy savings resulting from the projects. These projects, if fully implemented, will save DOE an additional 7% in its energy intensity, boost the generation of new, on-site renewable electricity to over 4% of DOE's total consumption, and place DOE on a path to exceed E.O. 13423 and EISA requirements.

Over 40 comprehensive site evaluations have been conducted since August 2007. Five projects worth $151M have already been awarded, and additional proposals being evaluated will invest an additional $300 million if awarded. Net energy savings from awarded and proposed projects: 1.4 million Mbtu/year, or approximately $45 million in annual energy cost savings.

FEMP is focusing on the following efforts to ensure success in the next few months:

- **Executable Plans:** DOE sites are submitting Executable Plans providing detailed benchmarks and performance plans for the accomplishment of statutory goals. Final drafts are due December 31, 2008.

- **Decisive Projects:** Two large-scale proposals currently being evaluated would constitute major advancements in renewable energy generation on DOE land. These are key opportunities to demonstrate a serious commitment to energy leadership.

- **Institutionalization:** FEMP intends to revise DOE Order 430.2b, the DOE policy tool which transmits energy requirements, to codify key processes found to most effective in furthering DOE energy management.

Over the long term, FEMP has identified two key efforts as necessary for continued effective energy performance and leading by example:

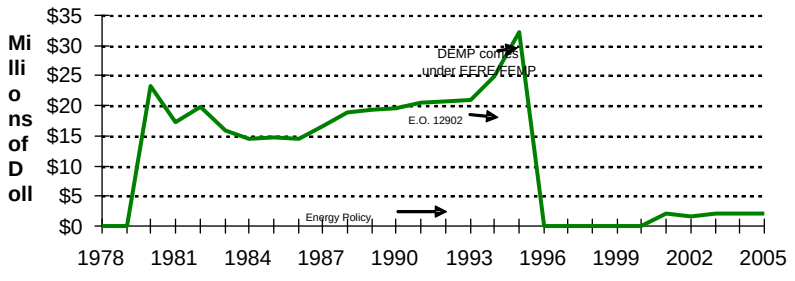
- **Project Finance Leveraging:** Achieving greater savings and advanced technology deployment by combining energy savings performance contracts (ESPCs) with appropriated funding.

- **Franchising:** Promoting comprehensive, agency-wide energy management efforts, based on the best practices and lessons learned from the energy performance initiative.

Background

Since 1978, the Department of Energy has maintained an organizational serving in-house energy management needs. The first, known as the In-House Energy Management (IHEM) program, was created to meet the needs of the National Energy Conservation Policy Act (NECPA) and existed within the Office of Management. Budgeted and an average of $20 million annually, IHEM funded site audits, retrofits, maintenance upgrades, and other activities to improve the Department's energy performance. In 1994, IHEM was renamed the Departmental Energy Management Program (DEMP) and reorganized as a sub-unit of FEMP, but lost funding in the subsequent year. Since 1996, DEMP existed on only a fraction of its previous funding, and was finally phased out in FY 2008.

Chart 1: Departmental Energy Management Program Funding History FY78 through FY05



Executive Order 13423, signed on January 26, 2007, set new goals for the Federal government to reduce its energy consumption, increase the use of clean, renewable fuels, and set energy and environmental sustainability as a key priority for our nation's Federal agencies. EISA further codified these goals into law.

On August 6, 2007, Secretary of Energy Samuel W. Bodman announced DOE would undergo a dramatic transformation of the way the Department manages our energy use, directing that over

the next year, DOE would take steps to leverage private-sector expertise and financing resources to meet or exceed the Executive Order goals at an accelerated rate, and in the process save taxpayer dollars by taking advantage of guaranteed cost savings.

This effort, dubbed the Transformational Energy Action Management, or TEAM, Initiative, would put DOE on the path to sustainable energy management by rapidly engaging Energy Service Companies (ESCOs) in a comprehensive survey of the DOE complex.

The Goals

In addition to achieving the goals of Executive Order 13423, the TEAM Initiative commits the Department of Energy to:

- **Energy Efficiency/Water Conservation:** Department-wide energy savings of no less than 30% reductions in energy intensity and 16% reductions in water consumption.
- **Renewable Energy Generation/Consumption:** Develop model processes for purchasing renewable power and maximize the use of DOE land to develop utility-scale on-site renewable energy generation. Exceed the Executive Order renewable energy consumption goal of 7.5%.
- **Petroleum Reduction/Alternative Fuel Use:** Transform the DOE fleets, and ensure that all sites with alternative-fuel vehicles have access to alternative fuel. Additionally, by the end of 2010, DOE would replace its conventional-fuel vehicle fleet with alternative-fuel vehicles and/or hybrid technology vehicles.
- **Sustainable Buildings – New Construction and Major Renovations:** Ensure that new construction and major renovations comply with "Guiding Principles" for Federal Leadership in High Performance and Sustainable Buildings (HPSB), and achieve a LEED Gold standard for all new construction.
- **Sustainable Buildings – Current Inventory:** Ensure that 15 percent of the existing federal capital asset building inventory, as of the end of fiscal year 2015 incorporates the sustainable practices in the "Guiding Principles," and strive to achieve a LEED Gold standard for all renovations over $5 million.
- **Environmental Management:** The use of Environmental Management Systems (EMS) to implement, manage, measure and continually improve upon DOE performance in the acquisition of environmentally preferable products and services, reducing the use and disposal of toxic and hazardous chemicals, waste prevention and recycling, and reducing the environmental impacts of its electronic equipment.
- **Advanced Metering:** Advanced meters throughout DOE sites monitoring electric, thermal and water consumption.

The Plan

The TEAM Initiative's strategic goal was clear: exceed the requirements of E.O. 13423, and do so at an accelerated rate. To this end, a plan was put forward to the Secretary in June 2007 (Appendix 1) which detailed the execution strategy. Chief components of this strategy included:

- **Order of Operations**: The "order of operations" required DOE sites to first exhaust all available opportunities for utilizing third-party financing to implement sustainable

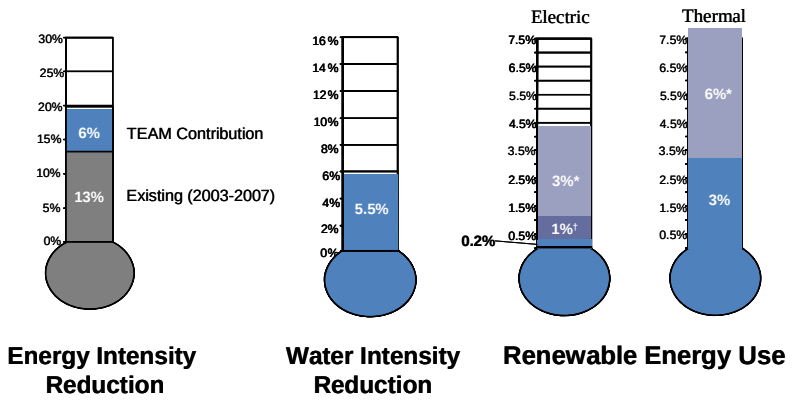
technologies and practices before requesting appropriated funding. This was done to avoid delays in the appropriations process (and thus losses in energy savings) and preserve taxpayer resources for national priorities.

- **Executable Plans:** Executable plans are detailed energy performance plans which detail site-specific commitments to achieving TEAM Initiative goals. The plans, to be submitted by each DOE site no later than December 2008, would include specific measures to be undertaken and the corresponding resource and personnel requirements. These plans would form an overall DOE benchmark against which all future energy performance efforts would be measured. Fleet Compliance Strategies were developed to provide a fleet-specific supplement to the Executable Plans (see Appendix 6).

- **Streamlined Performance**: DOE would implement policies and procedures designed to streamline the procurement and implementation of energy-efficient and renewable technologies. This would include the establishment of a DOE "Center of Excellence" to act as a single source for legal, procurement and technical expertise, and the solicitation of interest from renewable power developers to set a procurement framework for the development of renewable power on DOE land.

- **Performance Monitoring and Reporting**: Senior DOE leadership is continuously informed of progress through regular reporting and monitoring protocols (see Appendices 5, 7).

Chart 2: TEAM Initiative Progress Meters



TEAM Contributions derived both from awarded projects and projected results of projects in development

* Requires successful completion of Savannah River biomass project
† Requires successful completion of NTS concentrated solar power project

Initial Results

Over 40 DOE sites underwent energy performance audits by qualified ESCOs, though not all audits resulted in cost-effective proposals for financing. Five projects have been awarded as of November 2008, which will invest $151 million in energy savings improvements. Through the use of energy savings performance contracts (ESPCs), these efficiency and modernization projects required no up-front appropriations, and will be paid back through the resulting energy cost savings. DOE is evaluating 14 additional ESPC proposals that, if awarded, would result in another $300 million in energy performance improvements. Chart 2 shows the progress to date in energy and water conservation and renewable energy use, as well as the potential for improvement based on measures which have been proposed.

DOE Policies have been implemented which improve DOE's energy performance. A LEED "Gold" standard is now required on all new building construction designs at DOE sites. EMS systems are on track to be implemented at all DOE sites by June 2009. The DOE Center of

Excellence was established at the Golden Field Office in Golden, CO in 2007. The DOE Review Board, which evaluates ESPC contract proposals, has been streamlined to reduce barriers to project implementation, and a new set of Super ESPC contracts are in the final stages of competition and are estimated to be awarded in January 2009. Draft Executable Plans have been submitted in November 2008 that detail site-specific performance goals, with the final drafts due by the end of December.

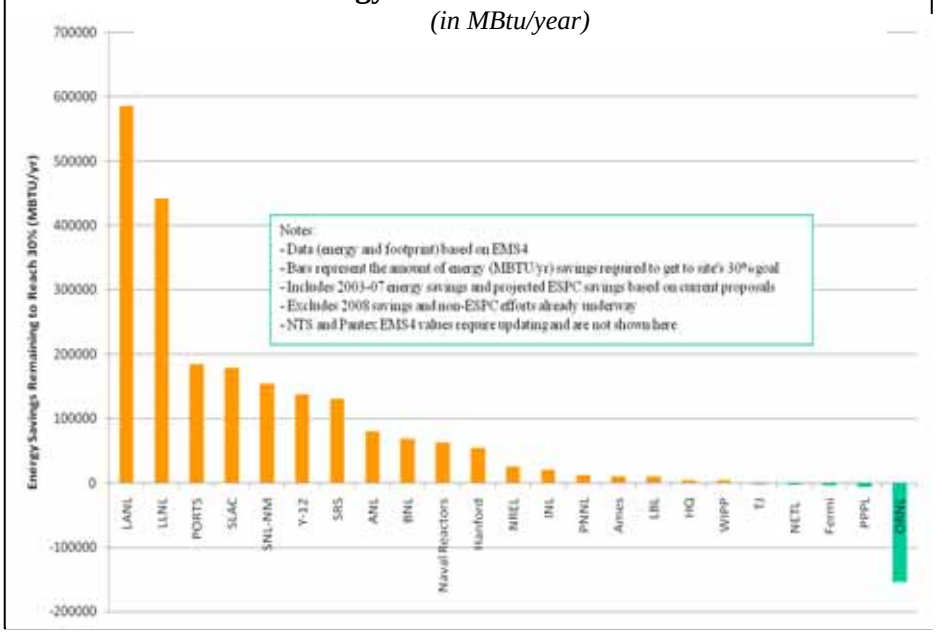
Key Factors for Future Success

Executable Plans: The Executable Plans are intended to result in accurate, data-driven projections of performance measures to be taken by each site for TEAM Initiative compliance, along with estimates of the resources required to execute the performance measures (Appendix 8). These plans should make maximum use of energy savings financing mechanisms per the Order of Operations.

Initial reviews of submitted draft Executable Plans suggest that additional detailed planning and execution measures will need to be taken by DOE Program Offices and sites. The data submitted does not yet project a performance path which fulfills all of the TEAM Initiative goals. Chart 3 shows the energy reductions still needed by DOE sites to achieve a 30% reduction in energy intensity. FEMP is continuing to work with Departmental offices to secure the critical data needed to accurately track DOE's current and future energy management performance.

Chart 3: Energy Reductions Needed to Reach 30%

(in MBtu/year)



Decisive Projects: Two proposed projects would dramatically improve DOE's energy performance by generating substantial amounts of clean, renewable power. The first, a steam-and-electricity cogeneration plant at DOE's Savannah River Site, would replace inefficient, 1950's-era power plants with plants that run on renewable waste products, and would constitute 3% of DOE's electricity consumption and 6% of its thermal power consumption. The other, a 100-megawatt concentrated solar power plant proposed at the Nevada Test Site, would meet the site's power demand and generate substantial excess power for sale to regional utilities.

These two projects could meet the TEAM Initiative goals, exceed the requirements of E.O. 13423, and substantially improve DOE's energy management performance, and FEMP is working with Departmental stakeholders to clear the way for their implementation.

Institutionalization: The TEAM Initiative is derived largely from existing laws and regulations, including E.O. 13423, EPAct 2005, and EISA. FEMP is developing policy mechanisms to ensure that the procedures developed under TEAM continue to transform DOE energy performance into the future. This includes senior-level accountability and reporting mechanisms as well as energy data benchmarking performance measurement.

Project Finance Leveraging: The TEAM Initiative has shown that using energy savings to finance energy improvements can have a dramatic performance impact, but over the long run it will be insufficient by itself to achieve the Federal government's energy performance goals. EISA allows Federal agencies to "use any combination of appropriated funds and private financing" to fund energy conservation measures. Supplementing financed projects with up-front funding can dramatically improve the scope of ESPC projects, particularly for renewable energy and other long-payback applications required to meet requirements. A DOE funding strategy and guidance should be developed to assist DOE procurement personnel in leveraging the maximum energy performance from their funding sources.

Franchising: The TEAM Initiative was designed to serve as a model for comprehensive, transformative energy management practices at Federal agencies. FEMP is working with agency partners to encourage the adoption of similar programs, and some key agencies have expressed interest. It will be incumbent upon DOE leadership to promote the use of far-reaching measures such as TEAM, and end the practice of 'incrementalism' which has thus far limited the government's ability to lead by example and serve as a sustainable role model to the nation. FEMP is looking forward to working with its leadership to advocate for dramatic improvements in the Federal government's energy performance.

Annotated List of Appendices

Appendix 1 – Executive Committee Plan to the Secretary
Prior to the establishment of the TEAM Initiative, the Secretary asked for senior DOE leadership to bring him a plan which would exceed the goals of E.O. 13423 and establish DOE as a recognized leader in effective energy management. This Executive Committee brought the plan outlined in this document to the Secretary on June 6, 2007.

Appendix 2 – Departmental Memo from the Secretary
Following the public announcement of the TEAM Initiative on August 6, 2007, the Secretary provided a memo to all Department officials requesting their compliance with the TEAM Initiative goals. This memo provided the Departmental authority for instituting the processes which would become codified in DOE Order 430.2b.

Appendix 3 – DOE Acquisition Letter
Most major DOE sites are operated by Management and Operating (M&O) contractors. In order to ensure that the TEAM Initiative goals were transmitted effectively to the contractors, a procurement action had to be taken. This Acquisition Letter instructed contracting officers to modify existing M&O contracts to ensure full cooperation by site contractors in implementing the TEAM Initiative goals.

Appendix 4 – DOE Order 430.2b
DOE Order 430.2b defines Departmental policy on energy, utilities and transportation management. The Order was signed on February 27, 2008, and included all of requirements of the TEAM Initiative. This order will be revised in 2009 to include new requirements under EISA, and FEMP intends to use the revision to institute some of the management practices which have proven effective under the TEAM Initiative.

Appendix 5 – Sample Tracking Report
At its inception, the TEAM Initiative facilitated a roll-out of ESCOs to over 40 DOE sites. This tracking report was designed to monitor the progress of each ESCO as it developed energy performance proposals. The report, along with a weekly summary of events, was updated and distributed weekly to all DOE stakeholders, providing the continuous management attention necessary to ensure rapid, effective execution. Certain fields have been deleted to protect procurement-sensitive information.

Appendix 6 – DOE Fleet Compliance Strategy
The Fleet Compliance Strategies provide an analytical platform to examine each site's vehicle and fuel procurement strategy, and devise a specific plan to replace conventional-fuel vehicles with alternative-fuel and high-efficiency vehicles, as well as the disposition of alternative fueling facilities.

Appendix 7 – DOE Fleet Alternative Fuel Vehicle Acquisition Report for FY 2007
Summarizes DOE progress in procuring alternative-fuel vehicles and providing access to alternative fuel, pursuant to the meeting the requirements of EPAct and E.O. 13423.

Appendix 8 – Briefing on TEAM Initiative – October 2008
One of the most effective processes implemented under the TEAM Initiative was regular, senior-level status briefings at the Undersecretary or Deputy Secretary level. These briefings focused attention and encouraged a high level of performance from DOE Program Offices and sites. This particular briefing was developed in October 2008, and reflects the progress as of that date.

Appendix 9 – Sample Executable Plan Review Summary
Executable Plans are reviewed by DOE Program Offices and FEMP. FEMP designed the Review Summary to capture key data for tracking current and future energy performance, as well as to provide feedback to the Program Offices and sites. When the final Executable Plans are submitted, the Review Summary data will be compiled into an overall DOE energy management picture, describing progress to date and projected performance in the coming years.