

SESSION 6D

THE FEDERAL ROLE IN ENERGY EFFICIENCY PROGRAMS AND EVALUATION

Moderator: Fred Sissine, Congressional Research Service

Panelists:

- Jeremy Symons, U.S. Environmental Protection Agency
- Gretchen Jordan, Sandia National Laboratories
- Bob Wurster, U.S. General Accounting Office

SESSION SUMMARY:

This session develops a discussion around two major themes of federal policymaking: President Clinton's Climate Change Action Programs and the Government Performance and Results Act's (GPRA's) requirements for federal agencies to implement program performance assessments and outcome evaluations.

The 1992 United Nations Conference on Environment and Development (Earth Summit) launched worldwide efforts to curb carbon dioxide (CO₂) and other greenhouse gas emissions. The International Framework Convention on Global Climate Change (FCCC) was created to implement the Earth Summit agreements. Under the FCCC, national governments, including the United States, have attempted to reach short-term goals for stabilizing emissions by 2000 that now appear unattainable. They are now debating whether to adopt a more ambitious longer-term goals for reducing emissions by 2010. This debate was the focus of the Special Meeting of the United Nations General Assembly (Earth Summit +5) held in New York from June 23 to 27, 1997. It will also be the focus of the third meeting of the Conference of Parties (COP-3) under the FCCC, to be held in Kyoto, Japan, in December 1997. A fall White House conference will attempt to forge a consensus for the U.S. position at Kyoto on "binding limits" to greenhouse gas emissions. Energy efficiency and other programs at the Department of Energy (DOE) and Environmental Protection Agency (EPA) form the central core of the Clinton Administration's Climate Change Action Programs to address FCCC goals. Both agencies have begun planning the evaluation of these programs' impacts.

Meanwhile, GPRA requires, by September 1997, that federal agencies submit strategic plans and designs for comprehensive performance measurement and outcome evaluation. These plans, measures and evaluations are to be derived in "consultation" with the Congress. To some extent, GPRA requirements have been applied to energy efficiency and climate change programs at DOE and EPA.

Jeremy Symons will describe several climate action plan programs at EPA and their progress in market transformation, performance measurement, and impact evaluation that help meet GPRA requirements and address needs for keeping programs focused on goals to control greenhouse gas emissions. Gretchen Jordan will review a pilot GPRA project on DOE climate action plan programs, discuss three key evaluation methods used for these programs and other energy

efficiency programs, and describe how performance measures and impact evaluations are used to defend budgets, design programs and respond to GPRA requirements. Bob Wurster will recount GAO's study of four EPA climate action plan programs, focusing on the Agency's effort to separate program impact from confounding non-program impact on greenhouse gas emission reduction estimates.

EPA's Energy Efficiency Programs and Evaluation, by Jeremy Symons.

The United States Environmental Protection Agency (EPA) and Department of Energy (DOE) operate a range of voluntary, partnership programs designed to improve the diffusion of energy-efficient technologies and catalyze lasting market demand for energy efficiency. For example, EPA's Green Lights and Energy Star Buildings programs, together with DOE's Rebuild America program, are working with commercial and industrial building owners and community organizations to cost-effectively reduce energy use in buildings. Through the Energy Star labeling programs, EPA and DOE are working with manufacturers to label a variety of highly energy-efficient products and they are educating the public about the advantages of energy efficiency. In addition to raising the awareness of efficiency opportunities and providing reliable technical information, the energy efficiency programs use many additional tools to catalyze energy efficiency markets, such as partnerships with industry "allies," financing initiatives, and training of retailers and other service providers.

EPA considers program evaluation to be a critical component of successful program implementation and has established performance measures and goals for each of its programs. The Agency monitors and evaluates program accomplishments based on extensive information collection efforts. The Green Lights program, for example, has detailed information on investments and energy savings from over 14,000 completed energy efficiency projects that have been conducted by EPA "partners." EPA continually uses this and other information to improve this program's performance and more accurately assess its future potential. Measures and targets vary between programs depending on their goals and activities. In addition to tracking greenhouse gas emission reductions, the Agency monitors technology markets, energy savings, energy efficiency investments, and partner participation. This important information is used for a variety of purposes, including: program development and improvement, resource decisions, input to EPA's strategic plan under the GPRA, and input to energy and environmental planning and policy development. EPA continually seeks to improve its information collection and evaluation methods, for example, by seeking to reduce reporting requirements of its partners and by evaluating the full market impact of each program beyond the individual accomplishments of its partners.

Many of EPA's energy efficiency programs were launched or expanded by President Clinton's Climate Change Action Plan, initiated in October 1993. Together with other federal agencies, EPA has comprehensively reviewed its accomplishments, reevaluated its performance targets and reassessed the potential future impact of the Climate Action Plan programs. As part of an interagency review effort, the revised program estimates were integrated with estimates from other agencies and incorporated into a U.S. energy supply and demand model to determine their comprehensive impact. Although the U.S. will not meet its initial target of returning U.S. greenhouse gas emissions to 1990 levels by the year 2000, the Climate Action Plan programs are nevertheless playing a critical role by helping to cost-effectively control long-term emissions growth. Climate Action Plan programs as a whole are expected to reduce the growth in greenhouse gas emissions through 2010 by about 1/3 from the levels anticipated in baseline "business-as-usual" projections. With a binding international agreement to control greenhouse

gas emissions beyond 2000 expected to be reached in December's COP-3 meeting in Kyoto, early action to accelerate the penetration of energy-efficient products and to take advantage of equipment stock turnover opportunities is more important than ever.

DOE's Evaluation of Energy Efficiency Programs and Response to Government Performance and Results Act, by Gretchen Jordan.

DOE's Office of Energy Efficiency and Renewable Energy (EERE) has an Office of Budget, Planning and Customer Service (OBPCS, formerly Office of Planning and Assessment), that develops methods for consistent evaluation and performance measurement of key aspects of its energy efficiency (EE) programs. This includes participating as one of seventy GPRA pilot projects that tested methods for responding to GPRA requirements by setting strategic and annual performance goals and evaluating progress against those goals. The EE GPRA pilot, covering four of the U.S. Climate Change Action Plan (CCAP) programs, was expanded in 1995 to an EE-wide data collection effort.

Corporate evaluation efforts in EE have primarily used three evaluation methods: cost-benefit analysis, management monitoring of performance measures, and customer evaluations. These efforts have included both process and impact evaluations, as well as needs assessments. All the corporate evaluation efforts use the 1994 EE "Draft Strategic Plan" and related national energy planning documents to describe their goals for addressing national problems.

Four major evaluation questions are addressed by EE. One asks: "Is the program successful?" For science and technology (S&T) programs this is interpreted as the quality of the S&T. An ancillary question is, "What works and why?" A second question is relevance: "Is the program satisfying a customer need, having an impact, or implementing the strategic plan?" A third question is one of good program management: "Is the program operating in an economical and efficient manner?" The fourth question is one of great interest to Congress: "Are the programs cost-effective? Particularly in comparison to alternatives?"

Peer review is used to assess success for science and technology programs. "Success stories" (case studies) are also used, with the more rigorous of them requiring at least two methods of verification. A model survey covering most of DOE's CCAP programs asked partners to discuss the relative emphasis to be placed on different types of activities. By design, it identifies which types of activities work better than others and what drives satisfaction or dissatisfaction with the programs. EE has key corporate performance measures that it collects across programs. There are consistent methods for estimating and integrating energy savings, energy displacement, and carbon emissions reductions. Also, DOE also has six "Critical Success Factors" related to program management and a Business Management Oversight Pilot that is now operating DOE-wide. Individual programs and laboratories have conducted cost-effectiveness evaluations, which look at cumulative funding and estimate gross energy and emission savings that can be verified and traced to DOE activities.

These performance measures and evaluations have been used in three ways:

1. budget defense,
2. program design and improvement, and
3. accountability and response to GPRA.

For example, one cost-benefit analysis was so successful at a Congressional budget hearing in Spring 1996 that EE is broadening this type of evaluation effort. In this analysis, EE reported that since its inception in the late 1970s, \$7 billion had been appropriated. However, EE success

stories verified by the GAO, show that five programs alone had documented benefits of at least \$11 billion. Thus, the presently accrued benefits of just a few programs outweigh the past spending costs for all EE programs.

For more information, visit the EE R&D Performance Management Toolbox web site at <http://www.sandia.gov/eere/eerehp/htm>.

GAO's Evaluations of Climate Change Action Plans at EPA, by Bob Wurster

Increasing emissions of carbon dioxide (CO₂), methane, and other heat-trapping greenhouse gases generated by human activity are believed to contribute to global warming. In an effort to reduce greenhouse gas emissions, the United States issued its Climate Change Action Plan (CCAP) in October 1993. GAO recently reported on the results from four of the 20 CCAP programs at EPA. Specifically, we analyzed: (1) EPA's efforts to ensure that the greenhouse gas reductions it reports reflect only the results of its programs, as opposed to other explanatory factors, and (2) whether EPA's projected reductions are consistent with experience to date.

The four programs we focused on are:

1. The *Green Lights Program*, which encourages businesses and other organizations to install energy-efficient lighting in their buildings in order to reduce electricity use and its attendant CO₂ emissions.
2. The *Coalbed Methane Outreach Program*, which encourages coal mining companies to capture and use methane as an energy source, that would otherwise be vented to the atmosphere.
3. The *Source Reduction and Recycling Program*, which encourages businesses to reduce the solid waste they generate and increase the amount of waste they recycle.
4. The *State and Local Outreach Program*, which helps state and local governments understand the sources of, and possible solutions to, global warming and also supports selected demonstration projects.

For two of the four CCAP programs we reviewed, EPA lowered its reported emission reductions to account only for program effects. Specifically, for the Coalbed Methane Outreach and Source Reduction and Recycling programs, EPA determined that confounding non-program factors accounted for some of the reported reductions and, therefore, lowered its estimate of program-induced reductions. For the Green Lights Program, EPA officials said that some reported reductions were probably due to non-program factors, but these factors were not quantified because EPA believes it is not possible to do so. For the State and Local Outreach Program, EPA did not attempt to determine whether the reported reductions for one key project were due to non-program factors. In general, EPA officials said they limited quantification of the reported reductions resulting solely from programs due to analytical difficulties limited quantified attribution of reductions to programs, especially in the early stages of program development.

For three of the four programs, EPA's projections of future reductions in greenhouse gases were inconsistent with experience to date. For the Green Lights Program, the projected reductions assume that the participants will upgrade a larger proportion of their space in the future than they have previously. For the Source Reduction Program and Recycling Program, the projected reductions assume there is more source waste in the future than there was in the past. For the State and Local Outreach Program, the projected reductions are questionable because, for one key project, there is no clear causal link between EPA's program and estimated emission reductions.