

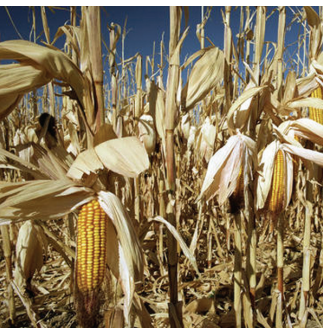


STATE ENERGY PROGRAM

# State Energy Program

## Strategic Plan

February 2007



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## Foreword

This strategic plan describes the challenges faced by the States and the four key goals established to meet those challenges. These goals will aid the State Energy Offices (SEOs) and the U.S. Department of Energy (DOE) in achieving their missions. The States and DOE believe that achieving the goals set forth in this plan will make a significant contribution to the Nation's efforts to increase the efficient use of energy by citizens and businesses and improve the Nation's energy security and reliability through the State Energy Program (SEP).

The following individuals made important contributions to develop this plan, along with the State energy officials. The result is a *State* Energy Program Strategic Plan.

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## State Energy Program Strategic Plan

This strategic plan charts the course of the State Energy Program (SEP) for the next 10 years in order to provide immediate energy solutions *today* and fully integrate new and emerging technologies that help secure a reliable energy *future*.

### Mission and Operations

SEP provides federal financial assistance and technical support to States to carry out cost-shared energy efficiency and renewable energy programs that meet each State's unique energy needs, while also addressing national energy goals such as energy security.

SEP emphasizes the State's role as the decision maker and administrator for the program activities within each State. The Energy Offices in each State and Territory are a vital resource for delivering energy benefits, addressing national energy goals, and coordinating energy-related emergency preparedness across the Nation.

Through the States, SEP funds cost-shared projects in every sector of the economy—State facilities, transportation, industry, local communities, schools, hospitals, businesses, and residences. The program's broad range of influence provides unique opportunities to increase the use of energy efficiency and renewable energy technologies across the country. SEP is the Office of Energy Efficiency and Renewable Energy's (EERE) only program that targets all market sectors and technologies.

### Current Energy Trends

**Demand for energy is growing in the United States and worldwide.** Total primary energy consumption in the United States is projected to increase from 98.1 quadrillion Btu (quads) in 2003 to 127.0 quads in 2025. Included in this estimate is the growth of renewable fuel sales, from 5.9 quads to 9.6 quads. Per capita U.S. energy consumption is also expected to increase from 336.5 million Btu in 2003 to 362.2 million Btu in 2025.

### State Energy Program Goals Strategic Alignment

#### National Energy Policy Act

- *Each State energy conservation plan...shall contain a goal consisting of an improvement of 25 percent or more in the efficiency of use of energy in the State in calendar year 2012 as compared to calendar year 1990*
- *Every three years...review and, if necessary, revise the energy conservation plan...Such reviews should consider the energy conservation plans of States within the Region and identify opportunities and actions carried out in pursuit of common energy conservation goals*

#### Advanced Energy Initiative

- *Changing the way we fuel our vehicles...by improving efficiency, expansion of alternative fuels*
- *Changing the way we power our homes and businesses...with renewable resources such as solar and wind*

#### DOE Strategic Plan

- *Energy diversity...increase our energy options and reduce our dependence on oil*
- *Improve the quality of the environment...from energy production and use*
- *Create a more flexible, more reliable, and higher capacity U.S. energy infrastructure*
- *Cost effectively improve the energy efficiency of the U.S. economy*

#### EERE Strategic Plan

- *Reducing oil imports*
- *Reducing the burden of energy costs for economically disadvantaged citizens*
- *Increasing renewable energy installations*
- *Increasing energy efficiency in buildings and industry*

#### State Energy Program Strategic Plan

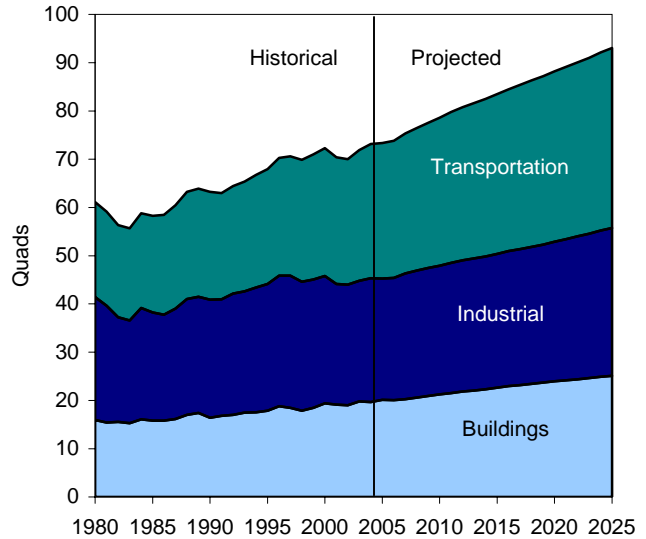
- *Increase energy efficiency to reduce energy costs and consumption for consumers, businesses, and government*
- *Reduce reliance on imported energy*
- *Improve the reliability of electricity, fuel, and energy services delivery*
- *Reduce the impacts of energy production and use on the environment*

U.S. energy intensity, as measured by energy use per dollar of gross domestic product (GDP), is projected to decline by 1.8 percent per year as efficiency gains and structural shifts in the economy offset growth in the demand for energy services.

Worldwide energy consumption reached 411.5 quads in 2002, and this is projected to grow to 644.6 quads in 2025. Worldwide *per capita* energy consumption is expected to increase from 65.7 million Btu in 2001 to 82.2 million Btu in 2025.

Key trends affecting energy supply and demand include the following:

- U.S. domestic production of petroleum is expected to decline, while petroleum imports are expected to rise from 59 percent of U.S. consumption in 2002 to 76 percent in 2025.
- Increasing customer demand for electricity will test our aging electricity transmission infrastructure, particularly during times of peak demand; failure of critical assets can have serious consequences, as shown by the August 2003 blackout.
- Renewable energy supply capacities are expected to increase, but will displace only a small portion of the increased demand for fossil fuels.
- The greatest increase in energy use per capita is expected in developing countries such as China and India, where the standard of living is rising (e.g., expanded automobile use, energy-intensive manufacturing and use of electricity-powered electronic devices).
- Efforts to reduce emissions of NO<sub>x</sub>, SO<sub>2</sub>, and CO<sub>2</sub> are expected to gain importance worldwide.



U.S. Energy Consumption by Sector  
History from 1980, Projected from 2004-2025

Sources: 2004 Annual Energy Review; 2006 Annual Energy Outlook

**Commercially Available Technology and Practices Can Significantly Reduce Energy Use**

**Average Efficiency of Sample Equipment**

	<u>In Use</u>	<u>State-of-the-Art</u>
Space heating	55-65 %	90%
Lighting	10%	40%
Space cooling	6-10 SEER	13 SEER

**Typical Energy Savings Opportunities**

<u>End Use</u>	<u>Savings Opportunity (%)</u>
Schools	25-50%
Hospitals	20-40%
Homes	20-50%
Industrial Plants	10-30%
Automobiles	25-60%

Sources: 2004 Annual Energy Review; 2006 Annual Energy Outlook

**Significant opportunities exist to improve energy efficiency and increase supplies of renewable energy in every sector of the economy.** A considerable portion of the energy delivered to end users is not used productively due to technology inefficiencies, improper use, and inherent thermodynamic losses. New, advanced technologies and best management practices can save money, and reduce energy consumption.

**National energy use is the result of choices made by millions of individuals, organizations, and policy makers.** How these energy choices are made varies by the type of energy consumer, the technology, geographic location, and resource availability. Understanding what drives decisions impacting energy use—and how to influence them—is key to promoting more informed energy choices.

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## Key Drivers

Two new requirements contained in the National Energy Policy Act of 2005 (EPAct 2005) related to SEP will significantly impact the activities that State energy decision makers undertake over the next several years that result in greater efficiency and use of renewable energy resources.

These requirements are:

*Each State energy conservation plan . . . shall contain a goal consisting of an improvement of 25 percent or more in the efficiency of use of energy in the State in calendar year 2012 as compared to calendar year 1990*

*Every three years . . . review and, if necessary, revise the energy conservation plan . . . Such reviews should consider the energy conservation plans of States within the Region and identify opportunities and actions carried out in pursuit of common energy conservation goals*

The goals of this plan reflect these requirements. The key drivers in the development of this plan include:

- Achieving 25 percent, or more, improvement in the efficient use of energy
- Quantifying results by refining SEP metrics and by bringing greater independence to the analysis process
- Collaborating activities across States and Regions, while supporting integrating EERE's technologies and practices with State plans
- Expanding the implementation of projects and analyses that deliver and link energy and environmental benefits
- Increasing the quality of State energy emergency plans

### Setting Goals and Measuring Results

The focus of this strategic plan, and a top priority in the administration of the program in coming years, is setting clear, measurable goals and substantially improving the evaluation process. While some States set aggressive State-level savings goals associated with their own energy initiatives under SEP, the national program lacks similar clearly stated, annual and long-term savings goals.

Two evaluations conducted by Oak Ridge National Laboratory (ORNL) show that SEP results in an annual energy savings of 42.3 million Btu, as well as substantial emissions reductions.<sup>1</sup> These savings are achieved with modest federal funding—the SEP budget is \$36 million for 2006.

While the ORNL study was independently peer reviewed, the Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART) recommended that DOE employ an independent evaluator, such as the National Academy of Sciences. One of the objectives of this plan is to establish a cost-effective path forward to improve the SEP evaluation process.

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<sup>1</sup> Schweitzer, Martin and Tonn, Bruce E., *An Evaluation of State Energy Program Accomplishments: 2002 Program Year*, ORNL/CON-492, June 2005.



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## **Energy Emergency Planning**

Under SEP, States have been required to aid in energy emergency planning and response since its origins during the energy crises of the 1970s. New threats to energy security and a strained energy supply system have resulted in greater urgency in this area.

While the energy savings contribution that SEP makes to the U.S. is the focus of the program and the States' work, this second element of SEP—energy emergency planning and response—is statutorily required and a critical DOE national security activity.

States participating in SEP must assist in the preparation of a State energy emergency plan for use by State, federal, and local entities responsible for energy-related emergency support functions. The plans in each State are used to prepare for, and respond to, energy supply disruptions, and are integrated with other critical infrastructure protection and energy reliability efforts led by DOE's Office of Electricity Delivery and Energy Reliability and the U.S. Department of Homeland Security. As energy and homeland security functions have evolved at the State and federal levels, the energy emergency functions supported by SEP are being fully integrated with State critical infrastructure planning and response efforts and are contributing to the Nation's readiness and response capability.

## **SEP Goals, Objectives, and Strategies**

SEP's greatest strength is its flexibility and network, which allows States to customize energy efficiency and renewable energy programs to meet local needs. The SEP approach to deploying technology and transforming markets is based on the idea that State officials are better positioned to make choices about how to advance the use of emerging technologies because of their proximity to local markets. A strong state commitment to clear national goals and metrics is needed in order for federal managers to measure progress reasonably and objectively.

The SEP goals developed by the States and DOE to address current presidential initiatives, regulatory requirements, and the mission of SEP are:

1. Increase energy efficiency to reduce energy costs and consumption for consumers, businesses, and government.
2. Reduce reliance on imported energy.
3. Improve the reliability of electricity and fuel, and the delivery of energy services.
4. Reduce the impacts of energy production and use on the environment.

### **Goal 1: Increase Energy Efficiency to Reduce Energy Costs and Consumption for Consumers, Businesses, and Government**

#### **Objectives**

- Achieve 25 percent, or more, improvement in energy efficiency by 2012 as compared to 1990
- Transform the market for energy-efficient measures and products
- Upgrade State codes and standards
- Coordinate and promote activities across States and Regions
- Focus activities in ways that achieve SEP goals more quickly and efficiently while supporting other EERE program market penetration goals

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## Strategy

- Support State development and implementation of plans to achieve these objectives

## Measurement

- Annual reductions in energy use leading to achievement of 25 percent, or more, improvement in the efficient use of energy over the 1990 baseline by 2012.
- Annual consumer expenditure savings

## Goal 2: Reduce Reliance on Imported Energy

### Objective

- Enhance domestic energy production through renewable energy and clean and sustainable domestic resources

### Strategies

- Assist the States in increasing their renewable energy capacity
- Assist the States to implement alternative fuel projects
- Assist the States in increasing the market penetration of biofuels and advanced transportation technologies, such as plug-in hybrids

### Measurement

- Annual reductions in use of barrels of oil and cubic feet of natural gas

## Goal 3: Improve the Reliability of Electricity and Fuel, and the Delivery of Energy Services

### Objectives

- Review and update energy emergency plans and address the key issues in the State Energy Assurance Guidelines<sup>2</sup>
- Coordinate energy emergency response planning
- Increase the resiliency and reliability of the infrastructure of the United States by increasing the use of renewable and distributed generation and demand response technologies

### Strategies

- States submit documentation that they have reviewed, maintained, tested, and evaluated their energy emergency plans using the State Energy Assurance Guidelines
- States identify and pursue opportunities for distributed generation and production, demand-side management, and other renewable opportunities
- States organize and participate in State and regional energy emergency response training modules

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<sup>2</sup> National Association of State Energy Officials, *State Energy Assurance Guidelines, Version 2*, for the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, November 2005.

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## Measurements

- Annual increases in installed renewable energy capacity, use of alternative transportation fuels, and reductions in primary energy use
- Number of states that have updated their energy emergency response plans and completed energy emergency response training

## Goal 4: Reduce the Impacts of Energy Production and Use on the Environment

### Objectives

- Integrate energy efficiency and renewable energy into environmental and air quality plans
- Support efforts to make communities more sustainable

### Strategies

- Identify market opportunities to incorporate energy efficiency and renewable energy projects into air quality plans
- Establish targets for reduction of pollutants and greenhouse gas emissions
- Encourage the sharing of best practices and cross-state clean energy trading mechanisms
- Expand support for efforts that deliver and link energy and environmental benefits by sharing and applying best practices at the State and regional levels

### Measurements

- Annual reductions in emissions of criteria pollutants (e.g., NO<sub>x</sub> and SO<sub>x</sub> and Mercury) and greenhouse gases from SEP activities
- Track number of States/Territories that submit documentation that their environmental and air plans have incorporated energy efficiency and renewable energy projects, or that their energy plans achieve similar reductions if not explicitly part of mandatory environmental or air plans.

## Performance Assessment and Management

SEP will establish a rigorous process for measuring results and managing the work to ensure that the program goals are met. This will include application of unambiguous metrics and use of a rigorous performance assessment process and a program management system that links funding decisions to program plans and tracks key milestones and decision points.

### Metrics

SEP will use the following metrics to inform program design at the national and state level and to measure results.

- Reductions in primary energy use (quads/yr)
- Reductions in oil (million barrels of oil per day annual reductions) and natural gas use (million cubic feet/yr.)
- Electricity use energy savings (kWh/yr)
- Increases in renewable energy installed capacity (MW installed/yr)
- Reductions in emissions of greenhouse gas emissions and criteria pollutants (tons/yr.)

- 
- Consumer expenditure savings (\$/yr.)

## **Performance Assessment**

SEP will use four primary performance assessment mechanisms to evaluate and track progress and adjust activities to maximize their impact:

- **Results evaluation by states**  
States will monitor and report results for each of the metrics described above for SEP supported activities. States will calculate the level of impacts that can be appropriately attributed to the SEP activity, separate from what would have otherwise occurred. DOE will develop standard methodologies and guidance and tools to assist states in calculating the market impacts of SEP activities and will offer states technical assistance as needed.
- **Program-wide impact assessment**  
SEP will conduct evaluations of program results and impacts, based on the data provided by the states and coupled with independent evaluation of program impacts. Program results data will be used to develop credible Government Performance and Results Act (GPRA) benefits estimates for future program activities.
- **Results reporting and tracking**  
DOE and the states will work together to develop concise summaries of SEP impacts by state (e.g. one page fact sheets) and for the nation as a whole and work together to effectively communicate program results. DOE will develop a user friendly data system for states to report program impacts and for tracking of progress.
- **Program review**  
SEP will conduct program review meetings with state and industry representatives to review results and lessons from past activities and help inform and improve future program plans. These program reviews will feed into development of Annual Operating Plans (AOPs) and revisions to the SEP multi-year plan. This review will engage other EERE programs that work with states to work toward a coordinated portfolio of DOE-state activities.

## **Planning and Decision-Making Process**

SEP will develop AOPs based on the goals, strategies, and activities defined herein. The AOPs will also reflect results from the program peer reviews and from the annual program impact assessment. In addition, SEP will develop and implement a system for tracking and managing key milestones and decision points to ensure program goals are accomplished.

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## Additional Benefits of SEP

The actions that will be taken by the States, with the support of DOE, to implement this plan reflect a strong commitment to strengthening the program, and ensure SEP remains as relevant in the years ahead as it has been to the States and Territories since its creation.

The *immediate* energy savings achieved through delivery of energy-efficiency technologies and practices by SEP and other efforts are of particular interest as energy prices escalate and consumers search for savings now, not at some point in the future. SEP funding results in 1.03 million source Btus in energy savings and leverages \$10.61 for every DOE \$1 invested— *annually*<sup>3</sup>.

The benefits of SEP surpass the energy cost savings and emission reductions that can be simply calculated with proven models. SEP activities also lead to important, significant secondary benefits in terms of air quality, job creation, health, and national security. Several of these benefits are described below to elucidate on the strategies of this plan.

### Market Transformation

The network of State Energy Offices (SEOs) is the essential mechanism for coordinating energy, environmental, and economic policies in response to the new challenges. By engaging in partnership with DOE, other federal agencies, communities, and private entities, the States are able to accelerate the adoption of energy efficiency and renewable energy technologies.

The program's partnership focus facilitates transitioning innovative technologies developed by EERE's research initiatives to the market. SEP grants provide incentives to States to undertake projects that would otherwise be financially difficult or unfeasible. Without the SEO network and the cost-shared projects, delivery of these technologies to the private sector would be significantly hindered. The States and DOE carefully coordinate these efforts to avoid duplication and to maximize resources across federal, State, and private sectors.

### Local Economic Benefits

SEP's investment in energy efficiency and renewable energy projects with the States generates a wide range of jobs in local energy, manufacturing, retail, and home services industries. This increases the tax base in communities throughout the country and indirectly supports other jobs.

Efficiency and renewable energy technologies help to stabilize energy costs, and provide consumers with more disposable income that can then be reinvested in the economy. Further, while energy prices have soared in recent years, the *reduction* of energy consumption by 19 percent realized through energy efficiency and renewable energy technologies has made a significant contribution to economy stability.<sup>4</sup>

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<sup>3</sup> Oak Ridge National Laboratory, *An Evaluation of State Energy Program Accomplishments: 2002 Program Year*; ORNL/CON-492, June 2005.

<sup>4</sup> Testimony of Patrick Quinlan, Energy Policy Director, The American Council for an Energy-Efficient Economy, DOE Public Hearings, Washington, DC, June 16, 2001; referencing EIA data.

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## The State-Federal Partnership

Achieving the goals of this plan will make a significant contribution to the Nation's efforts to increase the efficient use of energy by citizens and businesses, and improve our energy security and reliability. The plan moves the program toward a greater integration of SEP efforts with key EERE technology development activities—an important long-term activity.

To achieve the goals of this plan, the States encourage DOE to:

- Foster and support EERE market transformation activities as a cornerstone of DOE's functional responsibilities
- Bring greater independence to the collection and analysis of resulting data, ensuring that the results of SEP are more accurately measured and fully considered by the federal government and the States; create a plan to improve the metrics processes of the program by FY 2007 and implement the plan by FY 2008
- Review the mandatory provisions of SEP and make recommendations concerning the need to update them
- Increase the involvement of State and local decision makers in developing and implementing national technology development and adoption policies
- Assist the States by increasing understanding of the functions, roles, and responsibilities of EERE business and project management offices
- Identify and implement new means to foster regional cooperation and program delivery across a range of issues among States, local governments, and DOE
- Improve linkage among SEP activities (e.g., buildings) and related EERE technology development programs
- Expand cooperation among EERE programs and SEP, with the electricity and distributed energy programs of the Office of Electricity Delivery and Energy Reliability
- Assist States in establishing the CY 1990 baseline energy usage and establish a national baseline for use in grant planning processes and metrics reporting
- Coordinate regional activities by aiding in the review, development and implementation of State energy conservation plans
- Coordinate funding opportunities between federal agencies and States
- Provide assistance to identify and coordinate regional energy activities contributing to meeting the stated national energy savings goal
- Provide incentives to States
- Coordinate and promote EERE technology partnership activities across States and Regions by pursuing pilot projects (e.g., buildings, solar, and industry)
- Support regional meetings of State and federal program managers to provide technical assistance, sharing of case studies and best practices, and feedback on emerging technology projects to federal research managers

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## Conclusion

The wealth of experience the States have gained during SEP's first 20 years provides a solid foundation for achieving the goals established in this plan. A focused plan will allow the network of States to work together with the federal government to secure an energy future that is clean, robust, and secure. With a focused plan for the future, SEP will build on a solid history of successes. The achievements of the past two decades provides a solid foundation for developing a realistic plan of action to attain—and exceed—the goals and objective set forth in this plan, through:

- The inherent flexibility of SEP that empowers the States to tailor energy efficiency and renewable energy projects to meet local needs while achieving national goals,
- The SEP network that provides a strong link between government and private partnerships,
- The leveraging capacity that yields significant results from modest federal investment,
- The bridge provided by the States between federal research and technology development and market transformation,
- Cost-effective energy solutions for consumers, industry, and government, and
- Crosscutting energy sectors that produce energy and cost savings at every technology and economic level.