U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

STATE ENERGY PROGRAM
Retrospective Evaluation

OVERVIEW:

The U.S. Department of Energy (DOE) is pleased to summarize the results of a major national evaluation of the State Energy Program (SEP), under the Office of Energy Efficiency and Renewable Energy. The Retrospective Evaluation of SEP's Program Year (PY) 2008, a typical year in SEP operations, was a multiyear, peer-reviewed, statistically robust effort led by Oak Ridge National Laboratory (ORNL). It is the most comprehensive, detailed analysis ever conducted of SEP. The purpose of the evaluation was to develop independent estimates of key program outcomes, including: energy savings and renewable energy generation; job creation; carbon emissions reductions and avoided social costs (such as public health impacts, agricultural losses, the value of ecosystem services and flood damage associated with climate change); and bill savings and cost-effectiveness.

SUMMARY OF RESULTS:

The evaluation results show that SEP investments yielded substantially more in dollar savings to program participants than the amount spent by the program, resulted in cost-effective energy savings, created jobs, and helped avoid adverse economic and health effects associated with carbon emissions. Energy savings and renewable generation impacts are all reported in source million metric British thermal units (MMBtus), which takes into account all energy consumption saved, including losses due to storage, transmission and distribution of the energy to its final destination.

OVERVIEW OF BENEFITS FROM THE STATE ENERGY PROGRAM (PY 2008)	
Summary of Benefits:	
SEP-attributable Lifetime Energy Savings and Renewable Generation:	9.7 million MMBtus
Consumption Avoided Equivalency (annual average):	52,000 households[1]
SEP-attributable Lifetime Energy Cost-Savings	$94.6 million
Annual Energy Cost Savings Per Federal Dollar Spent over lifetime of measures installed	$4.50
Carbon Emissions Avoided (Associated with SEP-attributable Energy Savings)	0.57 million metric tons of carbon equivalent
Emissions Avoided Equivalency (annual average):	440,000 passenger vehicles[2]
Social-cost Savings due to SEP-attributable Reduced Carbon Emissions	$37.4 million
Jobs Supported	>2,000
Investment ($) Equivalency:	1 job per $12,500

[1] EIA, 2012. Annual Energy Review 2011, DOE/EIA-0384 (2011), September. Table 2.1a. Energy Consumption Estimates by Sector, Selected Years, 1949-2011.
[2] EPA, Office of Transportation and Air Quality, 2014. *Greenhouse Gas Emissions from a Typical Passenger Vehicle*, EPA-420-F-14-040a, May. (Note that this report gives emissions in terms of CO_2, which are then converted to Carbon by multiplying by 12/44.)

ENERGY SAVINGS AND RENEWABLE GENERATION:

The following is cumulative energy savings and renewable generation by sector in source million metric British thermal units (MMBtus) for all four Broad Program Area Categories (BPACs) studied for PY 2008. The combined energy impact from PY 2008 activities is 9.7 million source MMBtus for the 2008 to 2050 period.

SEP-Attributable Cumulative Energy Impacts by Sector (source MMBTu)			SEP-Attributable Cumulative Energy Impacts by BPAC (source MMBTu)		
Sector	***Energy Savings***	***Renewable Energy Generation***	**BPAC**	***Energy Savings***	***Renewable Energy Generation***
Residential	644,216	1,078	Clean Energy Policy Support	1.20 million	1.45 million
Commercial	297,793	220,879	Building Retrofits	1.25 million	-
Industrial	82,005	1.22 million	Loans, Grants and Incentives	2.74 million	-
Public Institutional	5.87 million	7,780	Technical Assistance	3.02 million	3,880
Private Institutional	1.33 million	-			
Total	**8.22 million**	**1.44 million**	**Total**	**8.21 million**	**1.45 million**

BILL SAVINGS:

For the PY 2008 areas studied, cumulative bill savings total $94.6 million through the year 2050. Bill savings distribute across different sectors over time, with the majority going to the public institutional sector from electricity savings, followed by the commercial and the private institutional sectors, with relatively fewer bill savings in the residential and industrial sectors. States are required to contribute 20% of state dollars towards SEP-funded activities, which resulted in greater SEP-attributable savings per SEP dollar because state investment would not have occurred in the absence of SEP funding.

Bill Savings for BPACs studied in 2008	
BPAC	***Bill Savings (in thousands)***
Clean Energy Policy Support	$33,868
Building Retrofits	$10,917
Loans, Grants and Incentives	$25,420
Technical Assistance	$24,429
Total	**$94,634**

EVALUATION APPROACH:

The Retrospective Evaluation was conducted by an ORNL evaluation team, and employed a peer review panel of third party experts to review the evaluation approach and results. The focus was on SEP program-wide outcomes rather than on individual state performance, and project selections were based on random samples of four broad program area categories (BPAC) – Clean Energy Policy Support; Building Retrofits; Loans, Grants and Incentives; and Technical Assistance. It did not cover other important activities conducted under SEP, such as energy assurance. The project data were derived from project-specific primary information, associated surveys, and on-site verifications by the evaluation team. The evaluation team examined key program outcomes for the 2008 program year (July 2008 to June 2009), a year funded at $33 million.[3] This evaluation focused on the future streams of impacts from only PY 2008 and did not address actions taken in subsequent program years. The amount of outside funds leveraged by SEP funds was beyond the scope of the study.

STATE ENERGY PROGRAM: GOING FORWARD

The National Retrospective Evaluation provides a comprehensive picture of the State Energy Program, including valuable information on the costs and benefits of SEP activities. The DOE will carefully review the results of the SEP National Evaluation and engage in discussions with key stakeholders, including the National Association of State Energy Officials.

[3] The amount of funding covered by the evaluation does not equal the total amount of SEP funding in that study period. In this case, the evaluation covered BPACs that represented $25.2 million of the total SEP funding in 2008.