

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 National Evaluation of SEP during the American Recovery and Reinvestment Act (ARRA) provides insight into the unique program that was administered by DOE in the national effort to create jobs and promote economic recovery. The National Evaluation was a multiyear, peer-reviewed, statistically robust effort led by Oak Ridge National Laboratory. 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 during the ARRA 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 THE BENEFITS OF THE STATE ENERGY PROGRAM (ARRA 2009 - 2013)

<i>Job Creation</i>	
Jobs Supported	>135,000
Investment (\$) Equivalency:	1 job per \$14,000
<i>Energy Savings</i>	
SEP-attributable Lifetime Energy Savings and Renewable Generation	2.8 billion MMBtus
Consumption Avoided Equivalency (annual average):	15 million households
Carbon Emissions Avoided (Associated with SEP-attributable Energy Savings)	164.14 million metric tons of carbon equivalent
Emissions Avoided Equivalency (annual average):	126 million passenger vehicles
<i>Bill Savings and Cost-Effectiveness</i>	
SEP-attributable Lifetime Energy Cost-Savings	\$7.8 billion
Annual Energy Cost Savings Per Federal Dollar Spent over lifetime of measures installed	\$3.50
Social-cost Savings due to SEP-attributable Reduced Carbon Emissions	\$11.9 billion

ENERGY SAVINGS AND RENEWABLE GENERATION:

The following table represents energy savings and renewable generation for the four ARRA-period, broad program area categories (BPAC) studied, combined by sector. The combined energy impact from ARRA-period activities is about 2.8 billion source MMBtus for the 2009 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	288.66 million	2.54 million	Building Retrofits	89.17 million	-
Commercial	82.54 million	1.67 million	Building Codes and Standards	326.23 million	-
Industrial	40.18 million	2.06 billion	Loans, Grants and Incentives	271.65 million	231.62 million
Public Institutional	220.32 million	4.63 million	Renewable Energy Market Development	1.10 million	1.84 billion
Private Institutional	56.45 million	1.26 million			
Total	688.16 million	2.07 billion	Total	688.16 million	2.07 billion

BILL SAVINGS:

This section presents findings on bill savings for the ARRA-period SEP activities studied. Bill savings are presented in 2009 dollars and include bill savings from energy efficiency and on-site renewable generation, as well as customer bill savings related to utility scale generation. For the ARRA-period, bill savings total \$7.8 billion through year 2050. Bill savings are distributed across different sectors over the entire period of analysis, with most coming from the residential sector, followed by the public institutional sector, then the commercial, industrial and private institutional sectors. The majority of bill savings are related to electricity savings.

Bill Savings for BPACs studied in 2008	
BPAC	Bill Savings (in thousands)
Building Retrofits	\$835,684
Building Codes and Standards	\$4.01 million
Loans, Grants and Incentives (without loans)	\$2.77 million
Renewable Energy Market Development	\$130,165
Total	\$7.76 million

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 BPACs –Building Retrofits; Loans, Grants, and Incentives; Building Codes and Standards; and Renewable Energy Market Development. 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 ARRA period (2009-2013), a period funded at \$3.1 billion.¹

¹ 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 \$1.8 billion of the total SEP funding for the ARRA period