National Evaluation of US State Energy Program

International Energy Program Evaluation Conference
2012 Event – Rome, Italy – June 12-14

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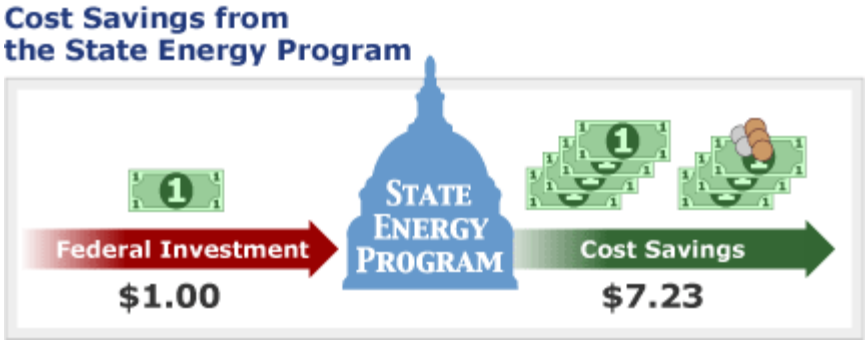
SEP Background and History

- Established by Congress in 1975
- Strategies to address state-specific energy priorities as well as national goals
  - Increase the energy efficiency of the U.S. economy
  - Reduce energy costs
  - Improve the reliability of electricity, fuel, and energy services delivery
  - Develop alternative and renewable energy resources
  - Promote economic growth with improved environmental quality
  - Reduce our reliance on imported oil
- Administered by State Energy Offices in 56 states and territories
- Funding distributed by formula and competitive grants
  - Funding levels between $25 and $45 million per year from 1996-2008
  - Expanded from $33 million in 2008 to $3 billion during ARRA period (2009-2011)
  - Expected to return to typical funding levels in 2012

Long standing program with significant state-level support needing ongoing federal-level justification.

SEP Benefits and Costs

For every $1 in federal investment SEP returns more than $7 in value



http://www1.eere.energy.gov/wip/sep_goals.html

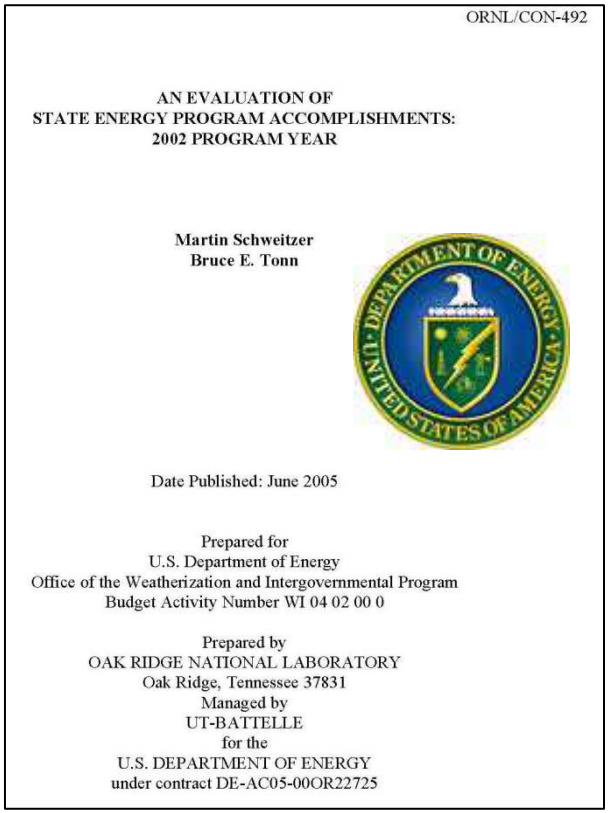
SEP funding levels reached 4% of DOE's budget in 2010

US Federal Budget *(Billion US$)*		
	2008	**2010**
Mandatory spending (e.g., social security, medicare, interest on national debt)	$1,788	$2,173
Discretionary spending (i.e., DOD, DOJ, DOE, DOEd)	$1,114	$1,378
DOE budget	**$24.3**	**$26.3**
SEP budget	**$0.03**	**$1.00**
SEP budget as percent of DOE budget	*0.1%*	*3.8%*

Significant benefits and costs require thorough, independent and ongoing evaluation.

Ten Years Since Last SEP Evaluation

- Weaknesses in prior SEP evaluation results
  - Imprecision of energy savings multipliers
  - Incomplete coverage
  - Ignored attribution issues
  - Excluded certain benefits
- Deloitte & Touche report also found significant flaws in prior studies
  - Not grounded in reliable impact evaluation methods
  - Lack of focus on key metrics (e.g., lifetime energy savings)
  - Not prioritized to focus on “most important, most costly or least well understood programs”



ORNL/CON-492

AN EVALUATION OF
STATE ENERGY PROGRAM ACCOMPLISHMENTS:
2002 PROGRAM YEAR

Martin Schweitzer
Bruce E. Tonn

Date Published: June 2005

Prepared for
U.S. Department of Energy
Office of the Weatherization and Intergovernmental Program
Budget Activity Number WI 04 02 00 0

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Prior evaluations hampered by inadequate funding, weak methods, incomplete analyses, and external criticisms.

Goals of Current National Evaluation of SEP

- To develop valid estimates of impacts attributable to SEP
  - Reduction in energy use and expenditures
  - Production of energy from renewable sources
  - Reduction in carbon emissions associated with energy production and use
  - Generation of jobs through the funded activities
- To direct future SEP funding toward most cost-effective activities
  - Building codes & standards
  - Retrofits
  - Renewable energy market development
  - Loans, grants and incentives
  - Technical assistance
  - Clean energy policy support

Evaluation needs to provide independent evidence to support funding justification at federal level and informed program planning decisions at state level.

Overview of SEP Evaluation Approach

- Current evaluation designed to provide comprehensive, comparative and rigorous feedback to both DOE (study sponsor), ORNL (study manager) and key stakeholders (state administrators).
- Overview of approach
  - Program characterization and evaluability assessment
  - Sampling plan and expansion to population
  - Estimation of impacts
    - Energy
    - Carbon
    - Employment
  - Attribution assessment
  - Benefit cost analysis

- Status: peer-reviewed evaluation plan finalized and submitted to OMB for approval.

Evaluation currently ongoing, preliminary results not yet available.

Program Characterization

Six "broad programmatic activities categories" (BPACs)

2008	Building Codes and Standards	Building Code Development and Support
		Generalized Workshops and Demonstrations
		Targeted Training and/or Certification
		Technical Assistance to Building Owners
	Building Retrofits	Building Retrofits: Nonresidential
		Building Retrofits: Residential
		Generalized Workshops and Demonstrations
		Technical Assistance to Building Owners
	Clean Energy Policy Support	Policy and Market Studies
	Loans, Grants and Incentives	Alternative Fuels, Ride Share and Traffic Optimization
		Building Retrofits: Nonresidential
		Building Retrofits: Residential
		Technical Assistance to Building Owners
	Renewable Energy Market Development	Generalized Workshops and Demonstrations
	Technical Assistance	Technical Assistance to Building Owners
ARRA (2009-2011)	Building Codes and Standards	Building Code Development and Support
		Generalized Workshops and Demonstrations
		Targeted Training and/or Certification
	Building Retrofits	Building Retrofits: Nonresidential
		Building Retrofits: Residential
	Loans, Grants and Incentives	Building Retrofits: Nonresidential
		Building Retrofits: Residential
		Renewable Energy Manufacturing
		Renewable Energy Projects
	Renewable Energy Market Development	Renewable Energy Manufacturing
		Renewable Energy Projects

Ten sub-categories that cut across some BPACs

Evaluation scope includes "most important, most costly and least understood" programmatic activities.

Sample Design

- Few activities excluded for evaluability risks
- Less important program activities funded at minimal levels excluded (e.g., administrative, marketing and outreach)
- Included activities sampled using probability proportional to size (PPS) sampling techniques

		2008			ARRA (2009-2011)		
		PAs	SEP Budget	Percent of SEP Budget	PAs	SEP Budget	Percent of SEP Budget
Excluded	Evaluability threshold not met	14	$1.71	3%	9	$17.73	1%
	Program "importance" threshold not met	115	$7.84	15%	147	$286.14	11%
	Minimum size threshold not met	47	$0.27	0%	22	$0.38	0%
Included	Reserve Sample	66	$7.46	14%	263	$1,835.08	71%
	Secondary Sample	21	$3.39	6%	14	$57.41	2%
	Primary Sample	**53**	**$33.11**	**62%**	**29**	**$378.47**	**15%**

SEP budgets in million US$

Greater emphasis on non-ARRA period

Evaluation scope includes 80% of SEP funding, accounts for evaluability risks, and reflects highly efficient sample design.

Sample Allocation

Sample Allocation By Broad Program Activity Categories			
Program	**2008**	**ARRA**	**Total**
Building Codes and Standards			
Buiding Code Development and Support	1		1
Buiding Codes and Standards: Codes		2	2
Generalized Workshops and Demonstrations (Participants maybe traceable)	3	1	4
Targeted Training and/or Certification (participants are traceable)	2	1	3
Technical Assistance to Building Owners	1		1
Building Retrofits			
Building Retrofits: Nonresidential	2	6	8
Building Retrofits: Residential	2	2	4
Generalized Workshops and Demonstrations (Participants maybe traceable)	5		5
Technical Assistance to Building Owners	6		6
Clean Energy Policy Support			
Policy and Market Studies; Legislative Support	8		8

Sample Allocation By Broad Program Activity Categories			
Program	**2008**	**ARRA**	**Total**
Loans, Grants and Incentives			
Alternative Fuels, Ride Share and Traffic Optimization	5		5
Renewable Energy Market Development: Manufacturing		2	2
Technical Assistance to Building Owners	3		3
Building Retrofits: Nonresidential	4	5	10
Building Retrofits: Residential	2	1	2
Renewable Energy Market Development: Projects		4	3
Renewable Energy Market Development			
Generalized Workshops and Demonstrations (Participants maybe traceable)	6		6
Renewable Energy Market Development: Manufacturing		1	1
Renewable Energy Market Development: Projects		4	4
Technical Assistance			
Technical Assistance to Building Owners	3		3
Totals	**53**	**29**	**82**

Evaluation Rigor

- Requires approximately 6,200 hours of respondent "burden"
  - Indepth interviews with program managers and key stakeholders, surveys with market actors, surveys with service recipients, site visits with service recipients
- Requires design, pretest and full-scale implementation of over 30 data collection instruments targeted at nearly 5,800 respondents
- Requires determination of evaluability at the programmatic activity level
  - Better understanding of uncertainty and risk
  - More effectively manage limited evaluation resources
- Requires methods consistent with established "high rigor" EM&V protocols
  - Verification for smallest projects with simple applications
  - Verification and engineering savings review for projects with site-specific information
  - Onsite installation verification and engineering savings review for largest projects
  - Metering and measurements for largest projects

Preliminary indications from OMB are encouraging.

Next Steps

- OMB approval expected in summer 2012
- Program evaluations not requiring OMB approval underway
  - Clean energy policy support
  - Renewable energy manufacturing
  - Transportation sector activities
- Due to close-out of ARRA activities in April 2012, data collection from some states may be delayed
- Full scale data collection effort to be completed in December 2012
- Preliminary reports developed as program evaluations are completed
- Final report expected in time for 2013 funding decisions

Stay in touch to receive updates and evaluation results as available!

Summary

- SEP is a long-standing program with significant state-level support needing ongoing federal-level justification
- Anticipated benefits and costs require thorough, independent and ongoing evaluation
- Prior evaluation efforts weakened by inadequate funding, less rigorous methods, incomplete analyses, and external criticisms
- Current evaluation underway, preliminary results not yet available
- Evaluation scope
  - Includes “most important, most costly and least understood” programmatic activities
  - Accounts for evaluability risks and reflects highly efficient sample design
  - Preliminary indications from OMB are encouraging

Current evaluation will provide credible evidence to inform state planning and federal funding decisions for 2013 and beyond.

Contact

- **DNV KEMA Energy & Sustainability**
  www.dnvkema.com
  - Committed to driving the global transition toward a safe, reliable, efficient, and clean energy future
  - Over 2,300 experts in more than 30 countries around the world
  - Headquartered in Arnhem, the Netherlands and part of the DNV Group

- National Evaluation of State Energy Program

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