How Ratepayer-Funded Efficiency Can Support State Climate and Energy Planning

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

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This short presentation is intended give states and their stakeholders a vision for what it would look like to include ratepayer-funded energy efficiency programs in their climate and energy plans.

Ratepayer-Funded Efficiency as an Emission Reduction Approach

Possible Leads

- Utilities (investor-owned, rural cooperatives, municipal utilities)
- Non-utility program administrators

E-Savings

- Savings in compliance year vs 2012 baseline

Potential Program Components

- New and existing residential buildings (single family, multi-family, low income)
- Small, medium & large commercial buildings
- Industrial facilities

Activity	EM&V
Energy Savings Approaches	
• Program administrators generate energy savings from: - EE programs that support improvements to residential, commercial, industrial buildings	• Recent resources provide guidance, including: - *SEE Action Energy Efficiency Program Impact Evaluation Guide* - *SEE Action EM&V Resource Portal* - *DOE Uniform Methods Project* - *NEEP EM&V Forum* - *Regional Technical Forum of the Northwest Power and Conservation Council*
State Policy Options	
• Could include - Requiring a specified level of EE savings (e.g., EERS) - Requiring inclusion of EE as a resource in capacity planning (e.g., Integrated Resource Planning) - Regulatory policies to incentivize successful utility delivery of EE - Consider options for energy efficiency delivery agent	
Low Income Opportunities	
• EE programs in low income neighborhoods	

Why Ratepayer-Funded Energy Efficiency?

How Ratepayer-Funded Energy Efficiency Works

- Meet state clean energy goals
- Use energy efficiency as an energy resource to serve electric utility customers' needs
- Reduce unnecessary utility and system costs
- Lower customer bills by saving energy, including through:
  - Retrofitting commercial buildings with energy efficient equipment and lighting
  - Sealing a home's leaky windows and doors to keep the heated or cooled air inside
  - Embedding professional energy managers in industrial facilities

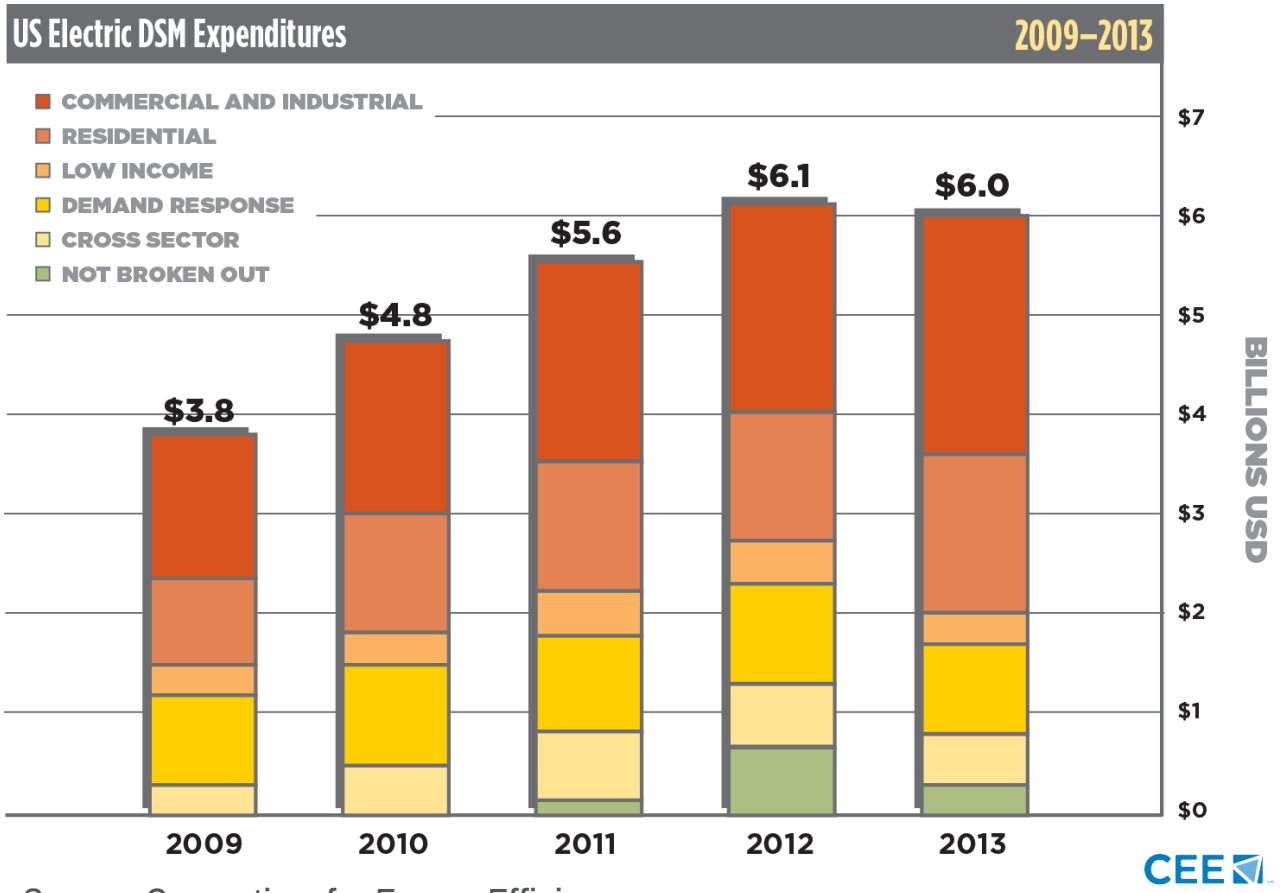
Benefits of Ratepayer-Funded Energy Efficiency

- Programs typically generate a significant portion of statewide electricity savings; have been refined over decades
- Can be offered in all economic sectors; opportunities in nearly every building / facility
- Can be readily incorporated into state power planning
- Reduces grid congestion and need for new infrastructure (power plants)
- Self-financing: programs supported by utility customers
- States determine energy savings goals and cost-effectiveness threshold for programs

Current Status of Ratepayer-Funded Energy Efficiency

Programs exist in all 50 states and DC

In 2013, program administrators* spent $6B on electric demand side management programs and reported gross savings of over 25,000 GWh.



Source: Consortium for Energy Efficiency

***Utilities, state or local governments, and third-party entities contracted to deliver energy efficiency**

State and Local Role in Ratepayer-Funded EE

Policy Actions

- State legislatures and public utility commissions can:
  - Set EE targets for program administrators to meet (e.g., EE resource standard)
  - Require that a utility plan to meet forecasted demand include EE (e.g., integrated resource plan [IRP])
  - Designate an EE program administrator if not utility
- Public utility commissions can independently:
  - Require utilities to offer energy efficiency programs
  - Incentivize utilities to deliver energy efficiency (i.e., program and administrative cost recovery, recovery of lost revenues, and incentive payments)

Implementation Actions

- Energy savings are generated when customers install EE measures or change behavior to save energy, as encouraged by ratepayer-funded EE programs

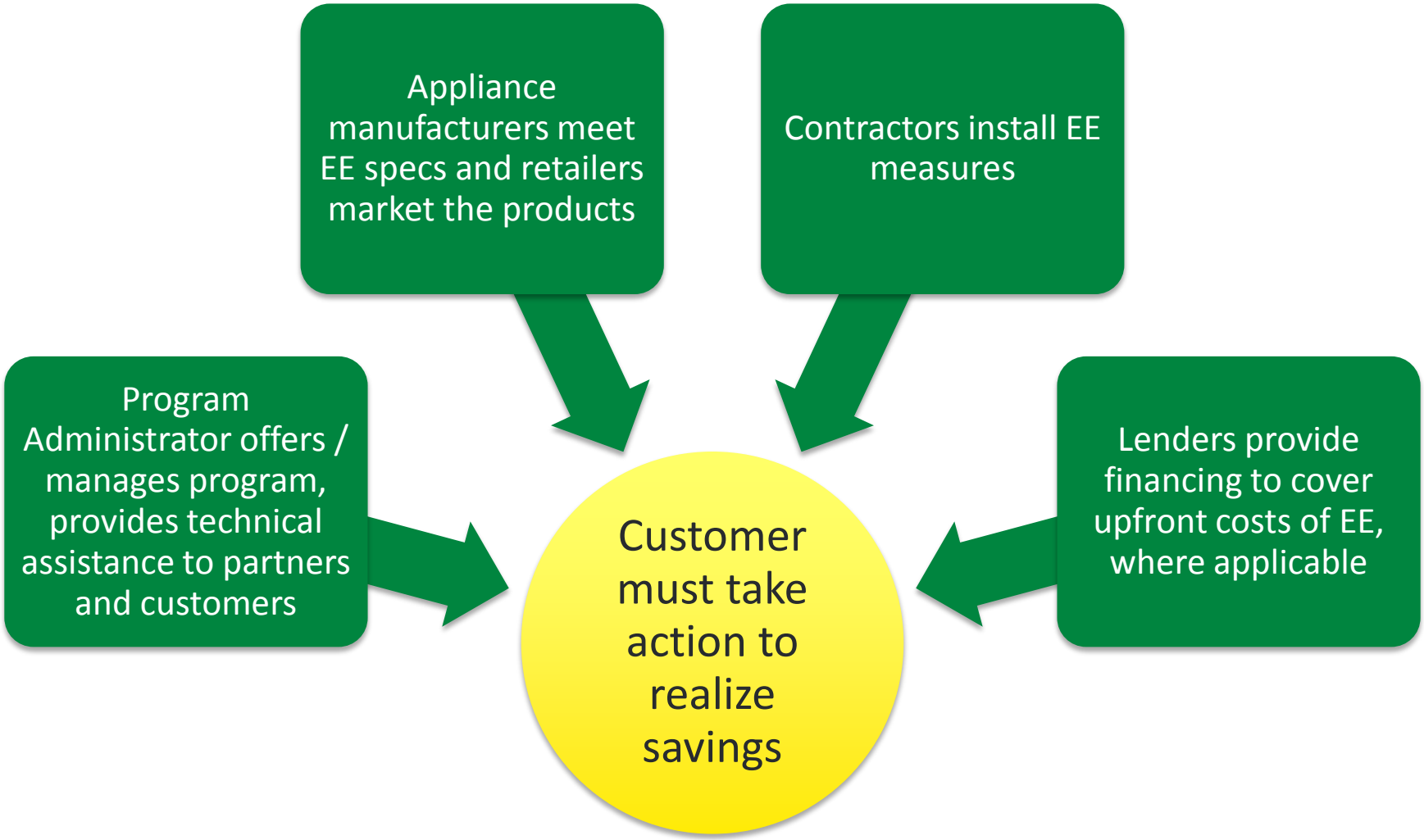
States employ a variety of accountability and oversight structures to ensure savings

- IOUs: investor-owned utilities are regulated by state public utility commissions (PUC)
- Independent Administrators: can be overseen by PUC, state energy office, or other agency
- Public Power: rural electric cooperatives and municipal utilities are overseen by co-op boards, municipal governments, or others

Program Types: Quick Start and Deep Savings

	Quick Start	Deep Savings
Summary	Proven, high-impact, programs that can be deployed quickly, are easy to operate, and build infrastructure for comprehensive programs to follow	Long-term initiatives that target significant energy savings through multi-measure approaches and outreach to customer segments that are more challenging to engage
Example program 1	Cash incentives to homeowners for surrendering their old, inefficient appliances to be recycled	Home Performance with ENERGY STAR® - Comprehensive home energy retrofit program
Example program 2	Incentives for retro-commissioning: systematically tune up a building's energy consuming systems to optimize operation	Custom programs for industrial or large commercial customers to make site-specific energy improvements

Partners Needed for Implementation



Best Practices in Ratepayer-Funded EE

States with successful track records have:

- Set aggressive yet achievable EE targets that ramp-up over time
- Included energy efficiency in an energy resource planning process (IRP)
- Established EE stakeholder collaborative* to work through issues
- Done their homework when developing energy efficiency programs
  - Offer programs in all economic sectors
  - Research the market and customer desires to design effective programs
  - Evolve in response to changing state electricity use baseline as building codes and appliance standards get deeper savings
  - Account for EE's full range of benefits in cost-effectiveness testing
  - Provide sufficient, timely, and stable program funding
  - Align utility incentives with the delivery of EE

Good models:

- Quick Start - AR, MS, LO, GA
- Deep Savings – NJ, OK, TX

* PUC-convened stakeholder collaborative could include: regulated utilities, large utility customers, state's consumer advocate, environmental organizations, other relevant state/local government agencies, etc.

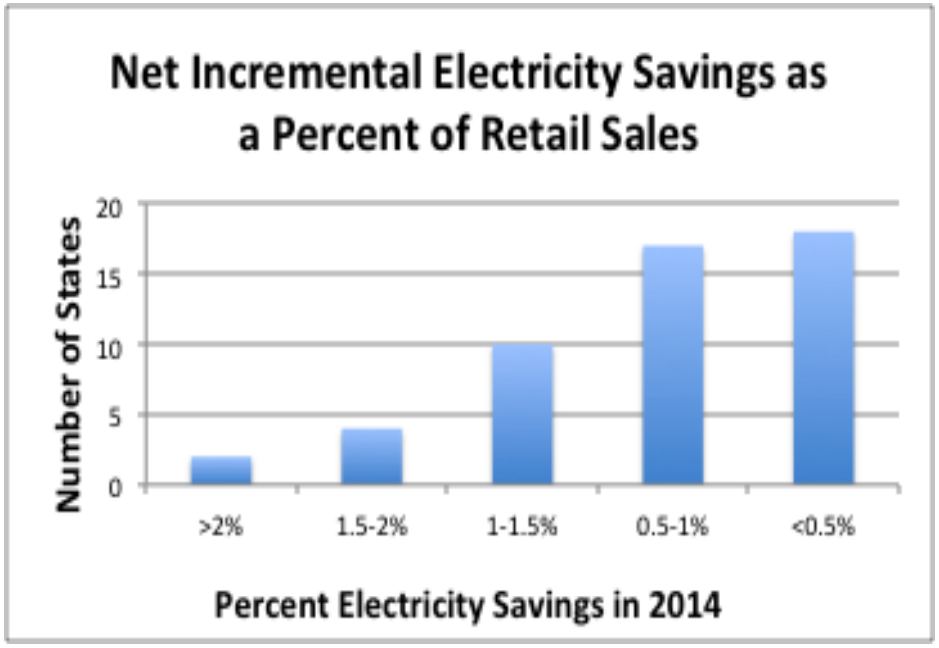
Complementary / Related Efforts

Set energy efficiency target: Drive programs through goal setting; half of states have targets.	SEE Action Setting Energy Savings Targets for Utilities
Do Integrated Resource Plan: Allow cost-effective EE as a demand-side energy resource to compete with supply-side resources.	SEE Action Using Integrated Resource Planning to Encourage Investment in Cost-Effective Energy Efficiency
Align utility and customer incentives: Allow program cost recovery, address disincentives, and provide incentives.	National Action Plan for Energy Efficiency Aligning Utility Incentives with Investment in Energy Efficiency
Consider options for energy efficiency program administrator: Successful models for EE administration and delivery range from utility, independent, government, or hybrid administrator.	Regulatory Assistance Project Who Should Deliver Ratepayer-Funded Energy Efficiency?

Savings Examples from Select States

Ratepayer-funded efficiency is producing results across states:

- 1/3 states achieving ≥1% annual incremental electricity savings
- 2/3 states achieving ≥0.5%



Top 10 States

State	2014 net incremental savings (MWh)	% of 2014 retail sales
Rhode Island	268,468	3.51%
Massachusetts	1,339,026	2.50%
Vermont	102,770	1.85%
California	4,082,256	1.58%
Arizona	1,190,123	1.57%
Hawaii	144,240	1.53%
Michigan	1,386,912	1.35%
Connecticut	387,863	1.32%
Maryland	792,354	1.29%
Oregon	595,548	1.27%

Source: ACEEE 2015 State Scorecard. Analysis includes 50 states and DC

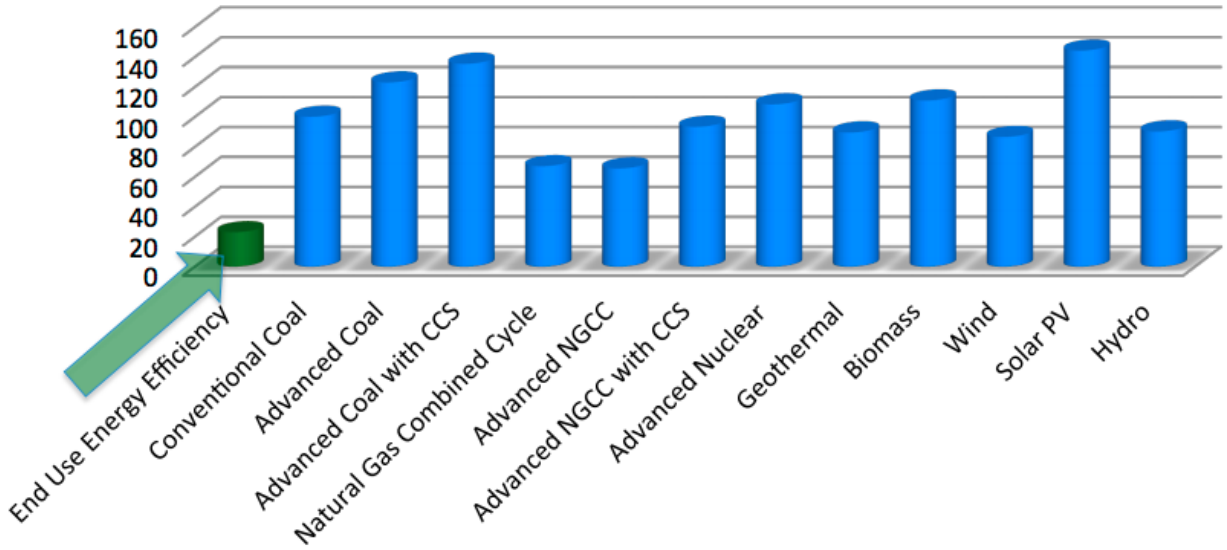
Ratepayer-Funded Efficiency Is Cost-Effective

EE is relatively cheap.

- **Total cost of saved energ**
  $0.046/kWh

Levelized Cost of New Electricty Resources in $/MWh

From a Utility Investment Perspective



The savings-weighted total resource cost for all efficiency programs in the U.S. is well below the cost of most generating resources

Source: Lawrence Berkeley National Laboratory

Ratepayer-Funded Efficiency Cost-Effectiveness

- 5 typical cost-effectiveness tests used by state commissions for over 20 years to review and approve wide ranges of energy efficiency programs
- Each test offers different perspective; multiple tests often used together
- Many non-energy EE benefits (incl. avoided environmental compliance costs) are not captured in screening as usually applied today
  - Result is efficiency is under-valued; less efficiency is implemented; compliance and customer costs higher than necessary
- Expert recommendations:
  - Identify the full set of public policy goals addressing EE
  - Use the benefit-cost test most appropriate to meet those goals
  - Identify the policy goals that the chosen test does not address
  - Address those goals outside the test framework
    - Ex: Use other evaluation methods; get stakeholder input; improve understanding to inform decisions
- For detailed analyses and recommendations see:

Synapse Energy Economics, Energy Efficiency Cost Effectiveness Screening: How to Properly Account for Other Program Impacts and Environmental Compliance Costs and Best Practices in Energy Efficiency Program Screening: How to Ensure that the Value of Energy Efficiency is Properly Accounted For

EM&V Methods for Ratepayer-Funded Efficiency

DOE Uniform Methods Project

- Set of easy-to-follow protocols for determining the energy savings from commonly-installed energy efficiency measures and programs, based on commonly accepted engineering and statistical methods.
- The protocols provide a straightforward method for evaluating gross energy savings for common residential and commercial measures offered in ratepayer-funded initiatives in the U.S.

SEE Action Energy Efficiency Program Impact Evaluation Guide

- Definitive EM&V resource for both novices and experts to assist with energy efficiency program evaluation. It focuses on the most common approaches to estimating energy efficiency savings: M&V approaches (based on IPMVP), deemed savings values, and large-scale billing analysis.
- Includes a comprehensive glossary of EM&V terms, concepts, and steps for calculating savings, avoided emissions, and other non-energy impacts of energy efficiency programs.

More resources at SEE Action EM&V Resource Portal

Resources for States

- DOE/EPA State and Local Energy Efficiency Action Network - Lessons learned from states using utility regulatory policy to encourage EE
- DOE/EPA National Action Plan for Energy Efficiency - Guides on critical issues in designing utility regulatory policy and EE programs
- Lawrence Berkeley National Lab Electricity Markets and Policy Group - Technical, economic and policy analysis on ratepayer-funded EE topics
- Regulatory Assistance Project - Nonprofit team of experts (including former state utility regulators and staff) providing assistance to PUCs and government officials on EE topics
- American Council for an Energy-Efficient Economy - Nonprofit energy efficiency research and advocacy organization that provides assistance to state and local governments
- Regional Energy Efficiency Organizations - Six regional nonprofits providing tools and resources to states to advance EE as a first order resource
- Consortium for Energy Efficiency - Consortium of US and Canadian gas and electric efficiency program administrators

New Release from SEE Action

Guide for States: Energy Efficiency as a Least-Cost Strategy to Reduce Greenhouse Gases and Air Pollution, and Meet Energy Needs in the Power Sector

- For state air regulators and other state policy makers / administrators and their stakeholders
- Practically-oriented, covering:
  - Established policy and program options to advance demand-side energy efficiency (both ratepayer-funded and non-ratepayer-funded)
  - Case studies of existing regional, state, and local policies and programs with sources for where to go for more information
  - Tools and methods that allow states to understand the range of expected savings from energy efficiency and common protocols for documenting savings