

LESSONS LEARNED FROM 40 YEARS OF ENERGY EFFICIENCY PROGRAM EVALUATION

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OBJECTIVES OF PRESENTATION

Present major lessons from 40 years of energy efficiency evaluation in US

Discuss how those lessons can shape emerging efforts in Asia

LESSON ONE: WE DID IT

- From the very beginning, evaluation has been an essential component of every energy efficiency and renewable effort in the US.
 - Early program efforts at Federal agencies and later utilities needed to prove they were capable of replacing centralized electricity generation.
 - Programs are spending at least 1% of budgets on evaluation
 - California: 2016 spent \$49.2 million (4.0% of \$1.24 billion)
 - Massachusetts: 2013-15 spent \$43.5 million (2.2% of \$1.99 billion) -- budgeted 3%

4 EVALUATION CAN COVER A BROAD RANGE OF RESEARCH QUESTIONS

- Questions at End of Program
 - **How much energy and demand were saved, how confident are we that savings occurred?**
 - How much generation is avoided?
 - How much of the savings is attributable to the program intervention?
 - What other benefits did program produce? What were the costs? Is program worth continuing?
 - Is intervention still needed (Is the market transformed)? What changes are needed if we do it again?
- Questions during Program
 - Is program performing as expected?
 - Why didn't the program save what we expected it to? What can be done to increase performance?
 - Are products, trade allies, markets behaving as expected?
 - Is my participation as expected? Who are the participants?
 - Who are the non-participants and why am I not reaching them?
- Questions at Initiation of Program
 - What do I need to know to design my program?
 - What market failure necessitates our intervention?
 - How does market work, and how does my intervention affect market?
 - What do we expect the program intervention to do?
 - What external factors may effect performance?
 - What are the uncertainties and risks?

BROAD FOCUS ON ALL ASPECTS OF EVALUATION.

- Impact evaluation important
- Larger programs have devoted considerable time and money to process and market assessments.

BENEFITS OF COLLABORATIVES

- Movement away from utility control of evaluations, particularly impact evaluations
 - Wolf guarding the henhouse
 - Value of a third perspective
- Collaborative process better able to integrate all evaluation components

REGIONALIZATION A POSITIVE STEP

- Small studies have limited budgets, and limited value.
 - Small sample sizes, large overhead
- Larger studies can establish better, more robust results
 - New England Residential Hours of Use study
 - Able to measure HOU by room type, housing type, demographics

IEPEC CONFERENCES A MAJOR CONTRIBUTION

- Professionalized work and created a viable industry
- Peer review of work. No alternative facts
- Other outgrowths
 - Archive of papers
 - Training workshops
 - Ad hoc studies
 - Expansion to IEPPEC

COULD HAVE DONE BETTER

- Inability to Recognize/Accept the Imprecision in What We Do
- Haven't Done a Good Job in Setting Limits on What Policy Folks Require
 - Incentives based on precise energy savings—should be based on achievements that can be more easily measured.
- Programs constrained by evaluation limitations.
 - Equipment emphasized over market transformation
- Tendency to get buried in weeds and accept bad answers
 - Emphasis and Expenditure on Free Ridership