



Evaluating Commercial & Industrial Energy Efficiency Pilot Programs



Jeremy Kraft and Katie Cary
EMI Consulting

Michigan Public Service Commission
Energy Waste Reduction Collaborative
June 19, 2018



Background

- Consumers Energy has been implementing commercial and industrial (C&I) pilot programs since energy efficiency programs launched.
- Pilots are implemented for up to 3 years, allowing Consumers Energy to test hypotheses about a targeted technology, segment, or delivery channel before deciding next steps (scale to a full program, submit MEMD measure, etc.).
- Number of pilots has increased over time, with Consumers Energy currently fielding about 10 pilots of various sizes at any given time.
- EMI Consulting provides pilot evaluation support to help Consumers Energy understand the theories warranting pilots, to ensure pilots are designed to test these theories, and to decide whether to scale pilots into a full-scale programs.

Overview of Pilot Evaluation Process

Pilot evaluation approach: What is Consumers Energy trying to test by running a pilot?
Is the pilot designed to answer these questions?

Identify program theory and logic, identify key market needs, ensure evaluability

Review program logic to prioritize elements for pilot improvement and program scale-up

Develop research tasks and integrate into program planning

Conduct research activities that address the questions

Deliver results based on pilot evaluation activities



Case Study:

ADVANCED LIGHTING CONTROLS PILOT

ALC Pilot

- Consumers Energy launched the Advanced Lighting Controls (ALC) pilot in 2015 to test emerging ALC technologies
 - Because ALCs were new to the Michigan market, the pilot intended to support early adopters of the technology, collect information to support ALC commercialization in Michigan, and better understand energy savings potential
 - Through the pilot, Consumers Energy provided incentives that covered the full cost of new lighting systems that included ALCs at 11 sites
 - Pilot also included training to customers and trade allies about the benefits of ALCs
- Because of success of the ALC pilot, Consumer Energy decided to add an ALC offering as part of their larger Business Energy Efficiency Program in 2018

Identify program theory and logic; identify key market needs



- Customers lack awareness and understanding of Advanced Lighting Controls (ALC) offerings
- Trade allies are not familiar with ALC technology
- ALC projects offer substantial energy savings potential, but uncertainty around savings and equipment compatibility is a barrier for customers and trade allies

Review program logic to prioritize elements for pilot improvement and program scale-up



- Contractor awareness and education
 - How familiar are trade allies with ALC technology?
 - Do they have the information to sell projects?
- Customer use of controls
 - Do customers use the ALCs as planned (to save energy)?
- Design of incentive structure
 - How do peer utilities design their ALC programs?
 - What lessons could Consumers Energy learn?
- Energy savings
 - Is the program designed to demonstrate savings?
 - Are savings calculations accurate and complete?

Develop research tasks and integrate into program planning



- Iterative evaluation planning process
- Designed research objectives around market needs from the logic model
 - Understand trade ally knowledge of and experience with ALC offerings
 - Understand customers' experiences using ALC systems
 - Understand comparable program design
 - Assess program documentation and savings

Conduct research activities that address the questions



- Literature review on ALC programs at peer utilities
- In-depth interviews with trade allies
- In-depth interviews with participating customers
- Engineering desk review of program savings calculations

Deliver results based on pilot evaluation activities



- Presented a memo to Consumers Energy with key findings and recommendations:
 - Play an active role in supporting customers with ALC systems
 - Train trade allies on commissioning challenges observed during pilot phase
 - Consider additional support to encourage non-participating trade allies to participate in the program
 - While energy savings calculations reasonable and accurate, better documentation of baseline hours-of-use could help validate savings
 - Calculate demand savings for entire system rather than just controls

Transitioning Pilot to Scaled Program:

COMMERCIAL NEW CONSTRUCTION

NCx Pilot

- Consumers Energy launched the New Construction (NCx) pilot in 2010
 - Pilot focused on how to achieve energy savings during the construction of new buildings or major renovations of existing buildings
 - Pilot worked to engage and train building design professionals (architects and engineers)
 - Pilot provided financial incentives to both building owners and design teams, either for prescriptive measures or custom whole building modeled savings
- Because of success of NCx pilot, Consumer Energy added an NCx offering as part of their larger Business Energy Efficiency Program in 2013
 - Program has adjusted incentive structure as market for energy efficient new construction evolves

Past Pilot Evaluations Have Supported Development of Scaled Programs: New Construction

Pilot Phase: 2010-2012

2011 Pilot Evaluation

Engineering review of pilot projects
Program staff interviews
Engineer and architect interviews
Analysis of NCx market
Best practice review

Through the early New Construction (NCx) pilot evaluation, we identified:

- Ways to streamline program by leveraging LEED Certification
- New incentive structure to better engage design professionals
- Opportunities for additional LED savings

Past Pilot Evaluations Have Supported Development of Scaled Programs: New Construction

Pilot Phase: 2010-2012

2011 Pilot Evaluation

2012 Pilot Evaluation

- Engineering review of pilot projects
- Outreach staff interviews
- Participating building owner interviews
- Engineer and architect interviews
- Best practice review

Through the early New Construction (NCx) pilot evaluation, we identified:

- Ways to streamline program by leveraging LEED Certification
- New incentive structure to better engage design professionals
- Opportunities for additional LED savings

In last year of pilot, evaluation focused on helping Consumers Energy decide whether to scale NCx into full program by identifying:

- NCx program best practices that could help support a scaled program
- Recommendations on how to ensure that claimed savings well documented
- Recommendations for internal resources needed to support a scaled program

Past Pilot Evaluations Have Supported Development of Scaled Programs: New Construction

Pilot Phase: 2010-2012

Full Program: 2013-2018

2011 Pilot Evaluation

2012 Pilot Evaluation

Pilot evaluation helped support Consumers Energy's decision to scale NCx into a full-scale offering as part of their Business Energy Efficiency Program

Through the early New Construction (NCx) pilot evaluation, we identified:

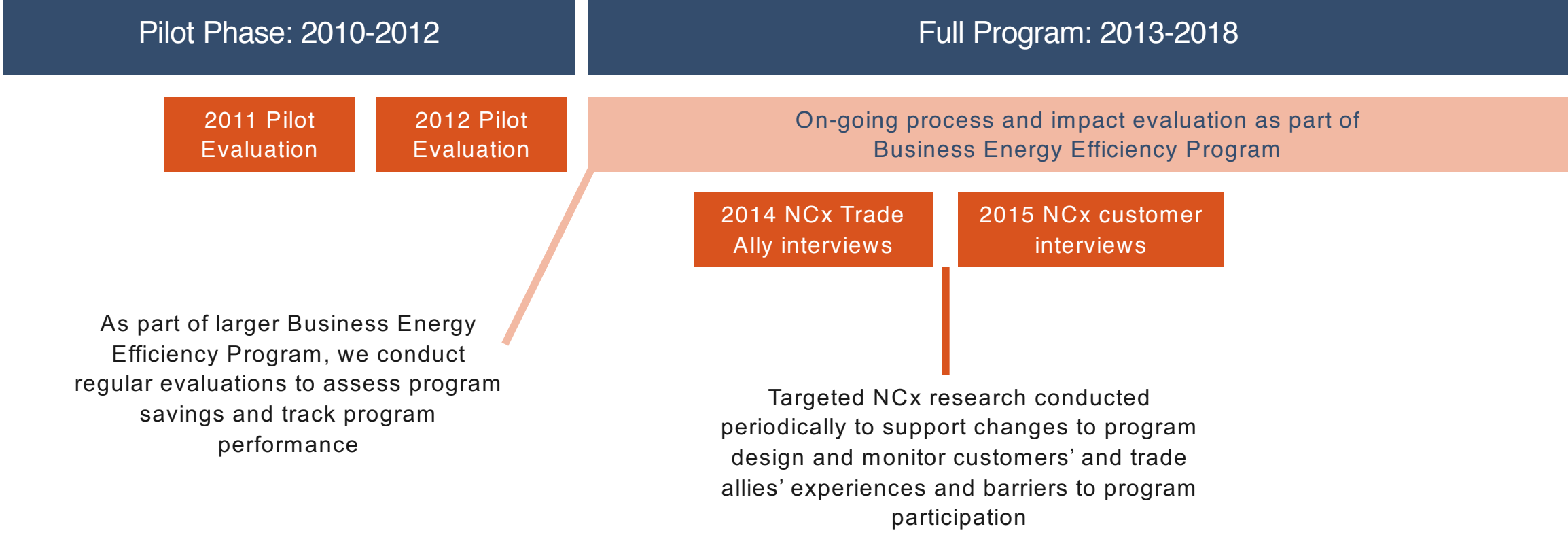
- Ways to streamline program by leveraging LEED Certification
- New incentive structure to better engage design professionals
- Opportunities for additional LED savings

In last year of pilot, evaluation focused on helping Consumers Energy decide whether to scale NCx into full program by identifying:

- NCx program best practices that could help support a scaled program
- Recommendations on how to ensure that claimed savings well documented
- Recommendations for internal resources needed to support a scaled program



Past Pilot Evaluations Have Supported Development of Scaled Programs: New Construction



Summary

- Pilot evaluation process helps Consumers Energy to identify the questions that need to be answered upfront and to have the information they need answer them
- Evaluation helps inform both process improvements and savings estimates
- Many pilots successfully transition to full-scale program implementation:
 - ALC and NCx currently offered through Business Energy Efficiency Program
 - Numerous other past pilots have been scaled into full program, such as Compressed Air, Agriculture, Building Operator Certification, Smart Buildings, and many more
- EMI Consulting has developed logic models for all current pilots and is currently working with Consumers Energy to evaluate 5 on-going pilots

Wrap-up

Questions & Comments?