



CADMUS

Do Energy Efficiency Investments Deliver? Yes!

Presentation to Energy Optimization Collaborative

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Introduction

- Some have asked recently if Energy Efficiency Programs really deliver?
- In Michigan, the answer is Yes!



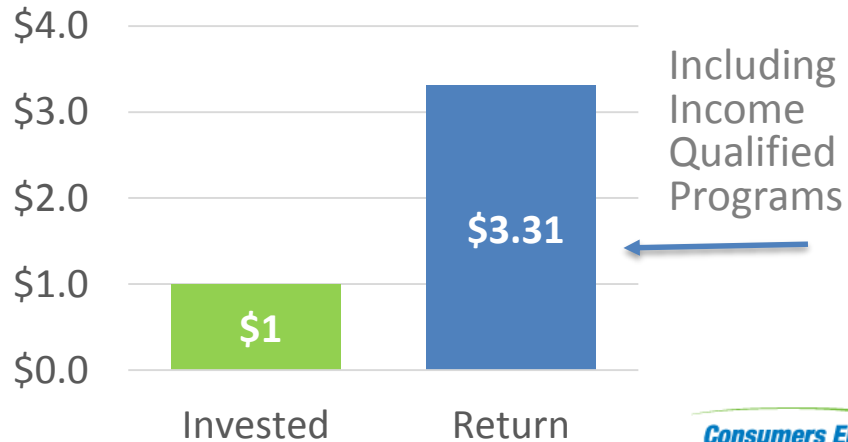
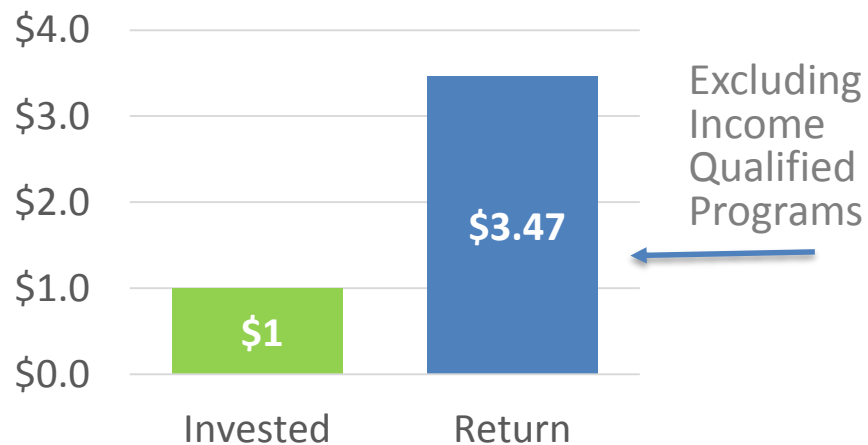
Michigan's Clean, Renewable & Efficient Energy Act

- Michigan's 2008 energy law requires Michigan utilities to offer cost-effective energy efficiency programs to their customers
- Requires utilities' portfolio of EE/EO programs to provide positive overall return on investment & provides incentives for achieving a 25% overall return on investment (i.e. a benefit-cost ratio of **1.25** or **\$1.25** back for every \$1 invested)
- The initial goal was to reduce electricity use by 5.5% and natural gas use by 3.85% by 2015
- Through 2014, the \$540 million EE investment in Consumers Energy programs has reduced electrical use by **6%** and natural gas use by **4%**



Energy Efficiency Provides a Strong Return on Investment

In 2014, every \$1 invested in Consumers Energy EO/EE programs resulted in \$3.47 in benefits. Even when including Income Qualified programs, each dollar invested yielded \$3.31 in benefits.

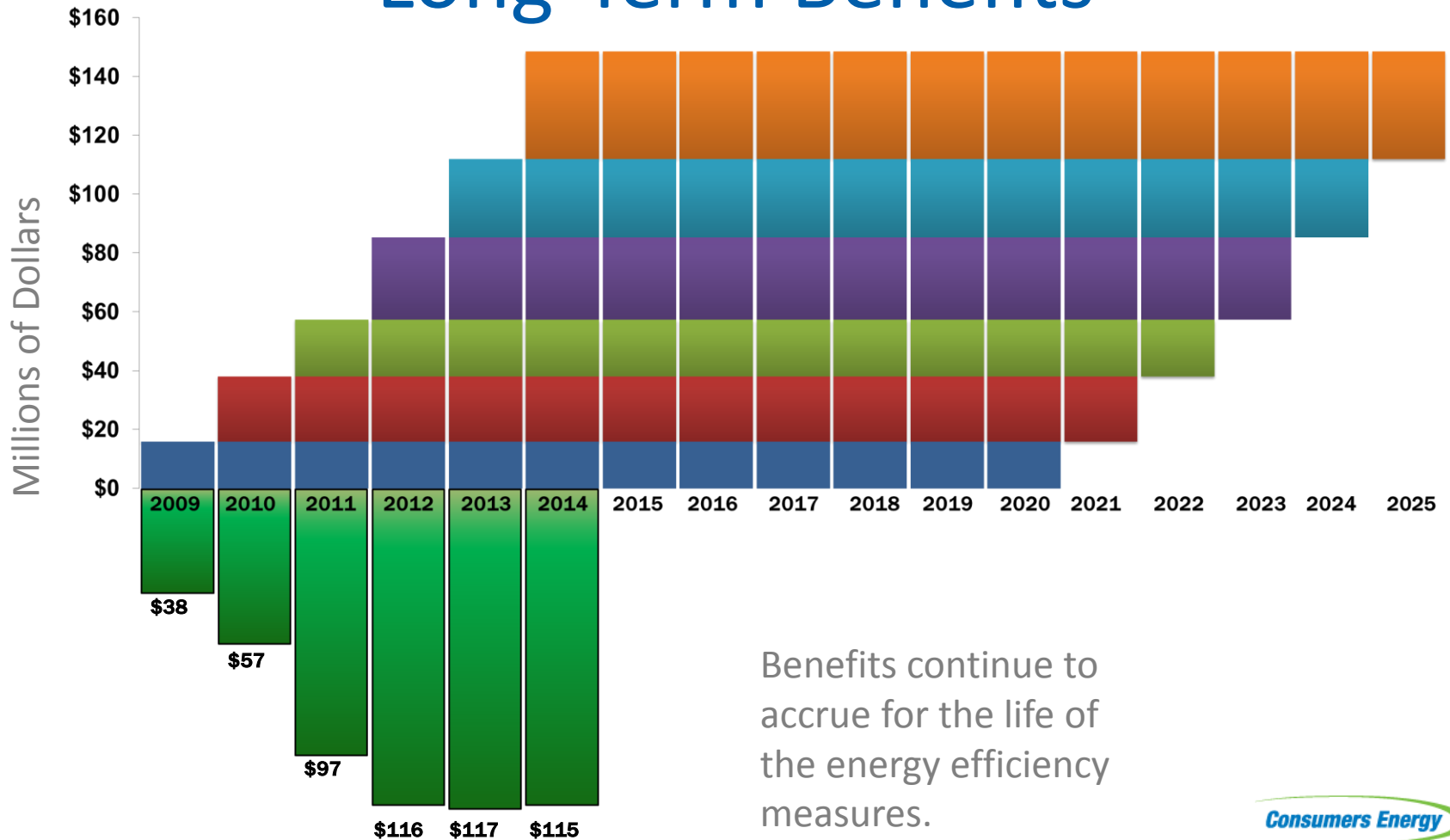


<http://efile.mpsc.state.mi.us/efile/docs/17831/0002.pdf>

Consumers Energy
Count on Us



Energy Efficiency Delivers Long-Term Benefits



Benefits continue to accrue for the life of the energy efficiency measures.



Income Qualified Programs

- While income-qualified programs are an important part of the portfolio of programs, they delivered 8% of residential gas savings and just over 2% of residential electric savings
- Income-qualified programs are designed to deliver both energy and non-energy benefits
 - Standard metrics for cost-effectiveness don't tell the whole story
 - Programs improve home value, health and safety



Evaluation of Energy-Efficiency Programs

- Energy efficiency programs in most states, including Michigan, are subject to rigorous evaluations both before (ex ante) and after the fact (ex post)

Measure Savings Calibration

Process through which the independent evaluation teams conduct studies to assess the per-unit impacts (including calculations, algorithms and inputs) of select MEMD measures.

Process Evaluation

The gathering of information on the effectiveness of program delivery, including participant and trade ally engagement, the effect of new program designs, and overall program influence.

Impact Evaluation

Ex post assessment of energy savings based on measure persistence, operating conditions, technology performance, measure interactions, and occupant or operators actions.



Evaluation Techniques in Use

Stakeholder interviews

Participant surveys

Market partner interviews

Focus groups

Evaluability assessment

Materials & database review

Field observation

Benchmarking

General population surveys

Trade ally panel study

Field verification

Engineering review

Billing analysis



Evaluation Breadth

Program Evaluations

ENERGY STAR
Lighting

ENERGY STAR
Appliances

HVAC and Water
Heating

Income Qualified WX

Appliance Recycling
Multifamily

Think!Energy

ENERGY STAR
Lighting

ENERGY STAR
Appliances

HVAC and Water
Heating

Appliance Recycling

Multifamily

Think!Energy

Home Performance
w/ ENERGY STAR

PY2011

*ENERGY STAR
Lighting*

ENERGY STAR
Appliances

HVAC and Water
Heating

Income Qualified WX

Appliance Recycling

Home Performance
w/ENERGY STAR

Think!Energy

New Construction

PY2012

ENERGY STAR
Lighting

Multifamily

Think!Energy

Home Energy Analysis

Insulation and
Windows

Home Performance
with ENERGY STAR

OPower

PY2013

Home Energy Analysis

Income Qualified WX

Home Energy
Reports

*Appliance
Recycling*

Home Performance
with ENERGY STAR

HVAC and Water
Heating

PY2014

Smart Energy
Portal

PY2010

OPower

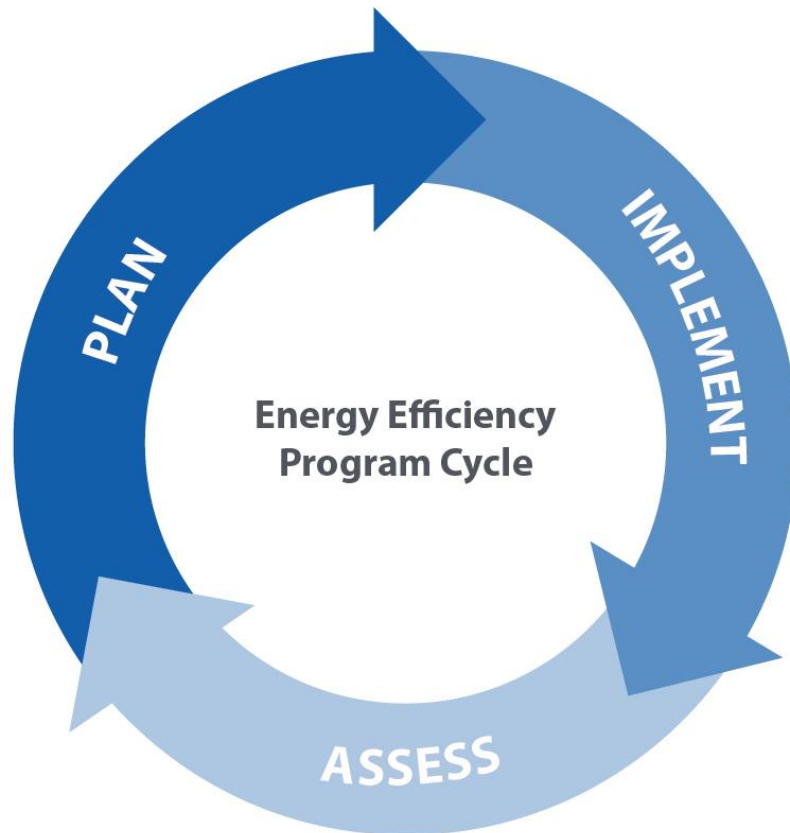
Ongoing Customer
Satisfaction

Pilot Evaluations

Programs listed in italics included MEMD calibration.



Rigorous Evaluation Supports Continuous Improvement



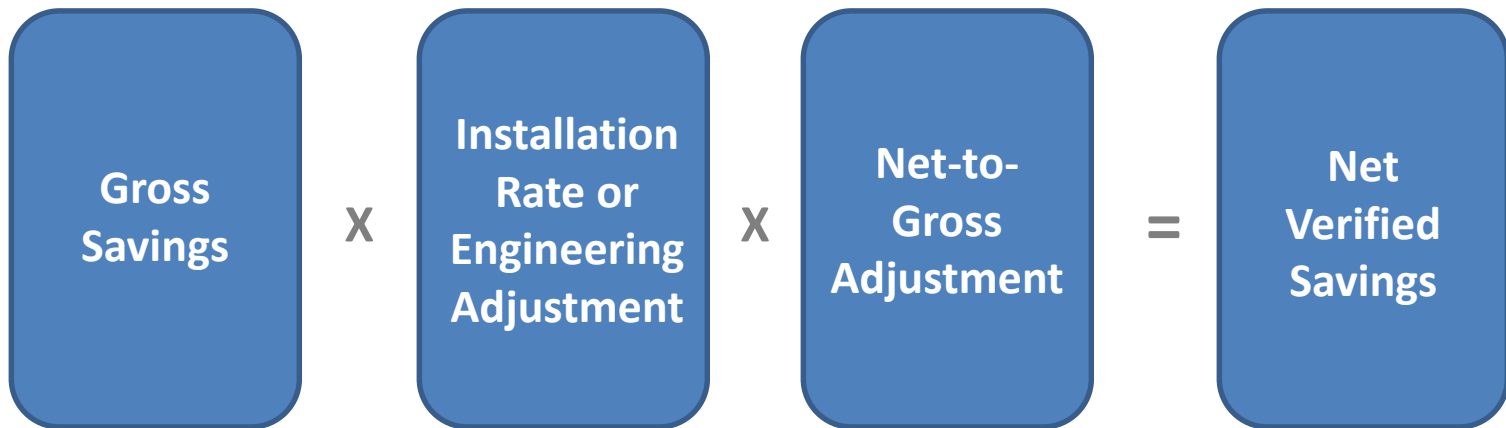
- Planning -
What energy efficiency opportunities that exist? How are customers currently using energy?
- Implementation-
How do we most effectively deliver savings? What are the barrier that customers face and how effectively does the program address those barriers?
- Assessment-
What influence did the program have? What is the actual energy savings and how do those savings persist? How do costs of savings compare to the cost of new generation?



Net Savings Calculation

Based on assessment of measures in use (through customer surveys or site visits) savings are adjusted to reflect persistence or actual operating conditions.

Program cost-effectiveness based on the net savings.



Gross savings estimates come from the MEMD or custom measure calculations – MEMD measures are regularly calibrated.

Adjusts savings based on influence of the program – currently deemed for most programs.



Other Energy Efficiency Objectives

- Meet/exceed required energy savings goals
- Lay the groundwork for market transformation
- Provide participation opportunities for all customers
- Implement “tried and true” programs & pilot new approaches
- Support Michigan-based trade allies and businesses
- Educate customers on how to use energy more efficiently
- Coordinate with other Michigan energy efficiency programs





Business & Residential Customers



Trade Allies



Retail



Direct

Implementation Contractors



Business Programs



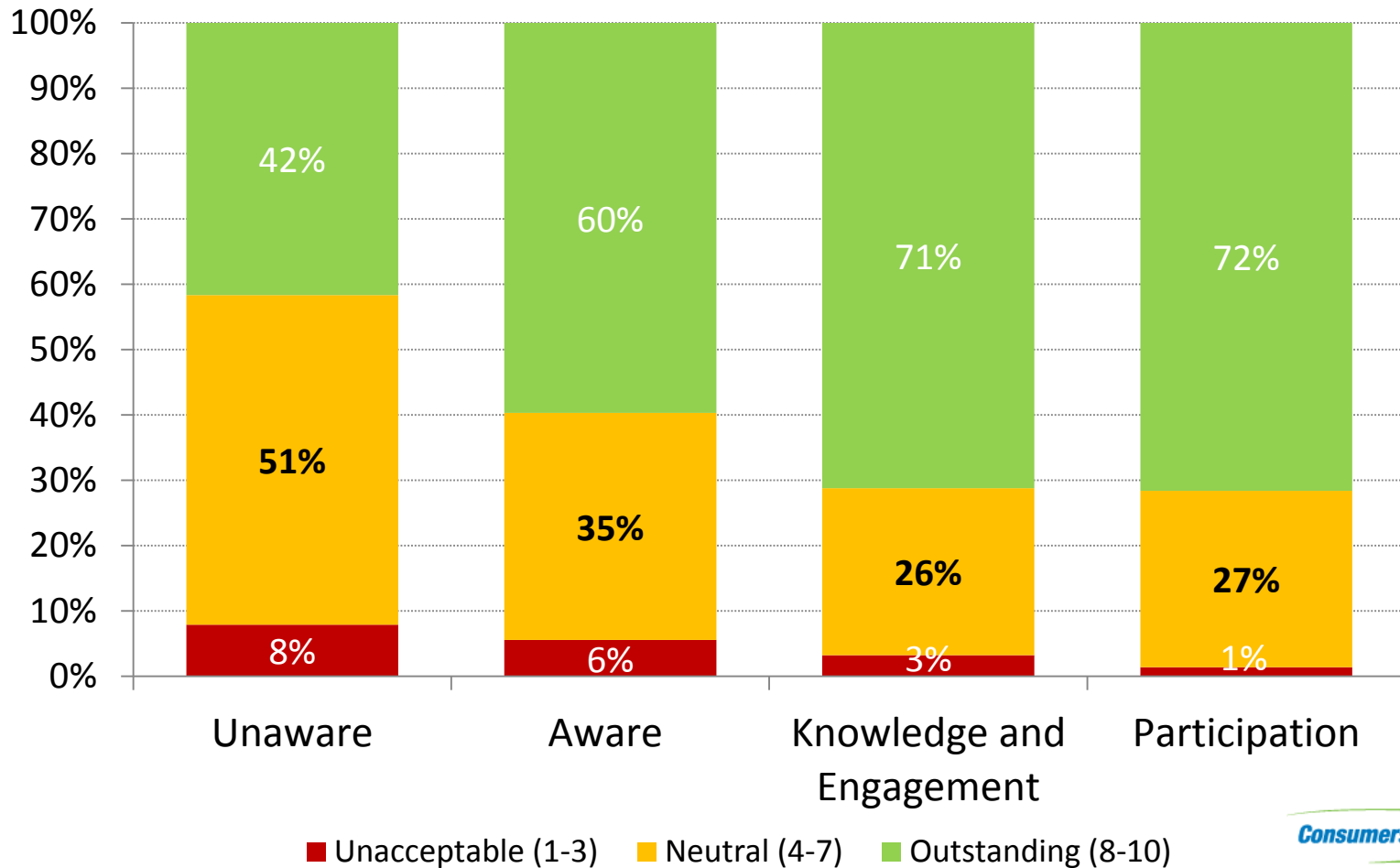
Residential Programs



Development of a strong infrastructure provides statewide benefits.



Awareness, Knowledge & Participation of EE/EO Programs Drives Increased Customer Satisfaction



Do Energy Efficiency Investments Deliver? Yes!



- Since 2009, Consumers Energy has successfully provided a range of EE programs to more than 347,615 residential and 98,078 business customers
- It created \$855 million in customer bill savings by delivering energy savings of 2,042,681 MWh and 10,053,466 MCF
 - Enough energy to power and heat homes in two cities the size of Grand Rapids



Resources & Discussion

- <http://energy.gov/eere/articles/getting-it-right-weatherization-and-energy-efficiency-are-good-investments>

