



MEEA
Midwest Energy Efficiency Alliance

**CAPITALIZING ON OPPORTUNITY:
INDUSTRIAL EFFICIENCY ACHIEVEMENTS IN
THE MIDWEST**

MEEA Webinar

December 2nd, 2015

Webinar Agenda

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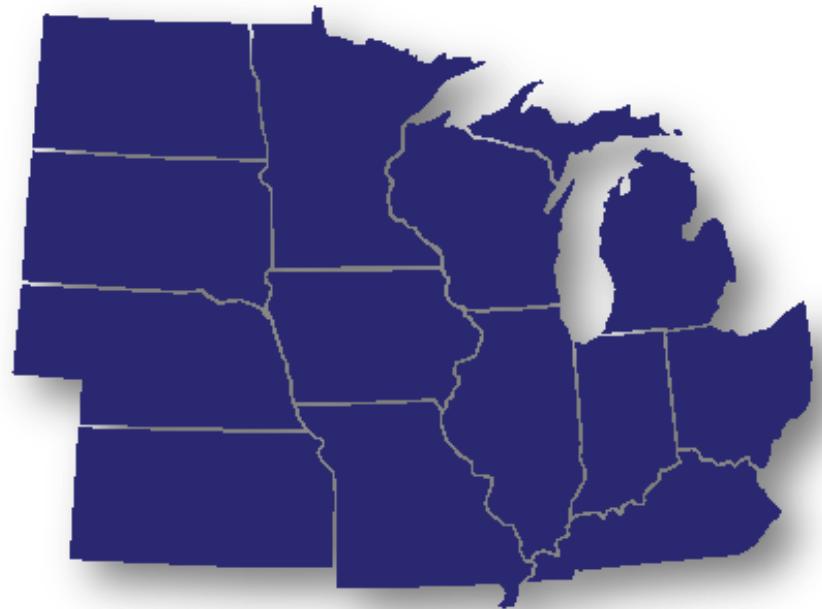
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Midwest Energy Efficiency Alliance (MEEA)

- MEEA is a collaborative network whose purpose is to advance energy efficiency to support sustainable economic development and environmental preservation.
- Founded in 2000 to bring strategic partners together to improve market conditions for energy efficiency.



MEEA Membership

- 150 Members:
 - State and Local Governments
 - Utilities: Investor-Owned, Municipal and Cooperatives
 - Academic and Research Institutions
 - Energy Service Companies
 - Manufacturers and Retailers
 - Contractors
 - Consultants for Profit and Nonprofit Organizations

MEEA's Role in the Midwest

- Nonprofit serving 13 Midwest states: IL, IN, IA, KS, KY, MI, MN, MO, NE, ND, OH, SD, WI
- Actions:
 - Advancing Energy Efficiency Policy
 - Facilitating Energy Efficiency Programs
 - Coordinating Utility Program Efforts
 - Delivering Training & Workshops
 - Evaluating & Promoting Emerging Technologies
 - Promoting Best Practices



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LIVING UP TO ITS POTENTIAL: INDUSTRIAL ENERGY EFFICIENCY IN THE MIDWEST

Gregory Ehrendreich
Midwest Energy Efficiency Alliance

*Originally presented at the ACEEE 2015
Summer Study on Energy Efficiency in Industry*

The Source on Energy Efficiency

Objectives

Explore Industrial EE in the Midwest – which states/utilities are the biggest players?

Examine impact of Industrial/C&I efficiency programs on the cost-effectiveness of utility EE portfolios

Consider the effects of new Industrial Opt-Out policies on EE portfolios

Discuss what could enhance understanding of Industrial EE in the Midwest

Industrial EE is Important in the Midwest

38%

of electricity in the Midwest states is consumed by the Industrial sector (*EIA 2014*)

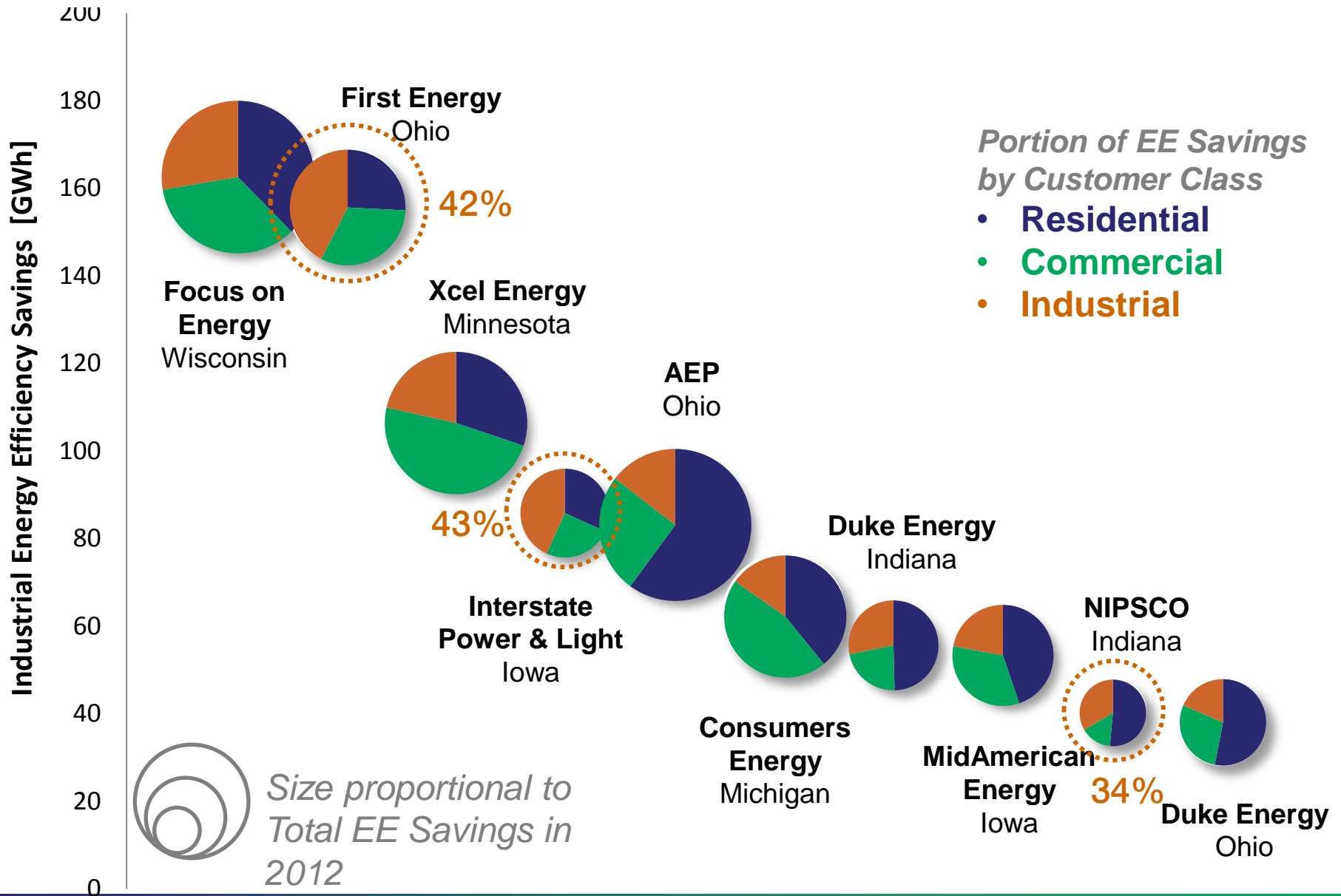
40%

of Industrial EE potential is found in Midwest (*McKinsey 2009*)

5

Midwest states are in Top 10 consumers of total energy in the industrial sector, and 4 more are in the Top 25 (*EIA 2014*)

Top Industrial EE Program Administrators in the Midwest



These 10 program administrators account for

82.4%

of **industrial** electricity savings *

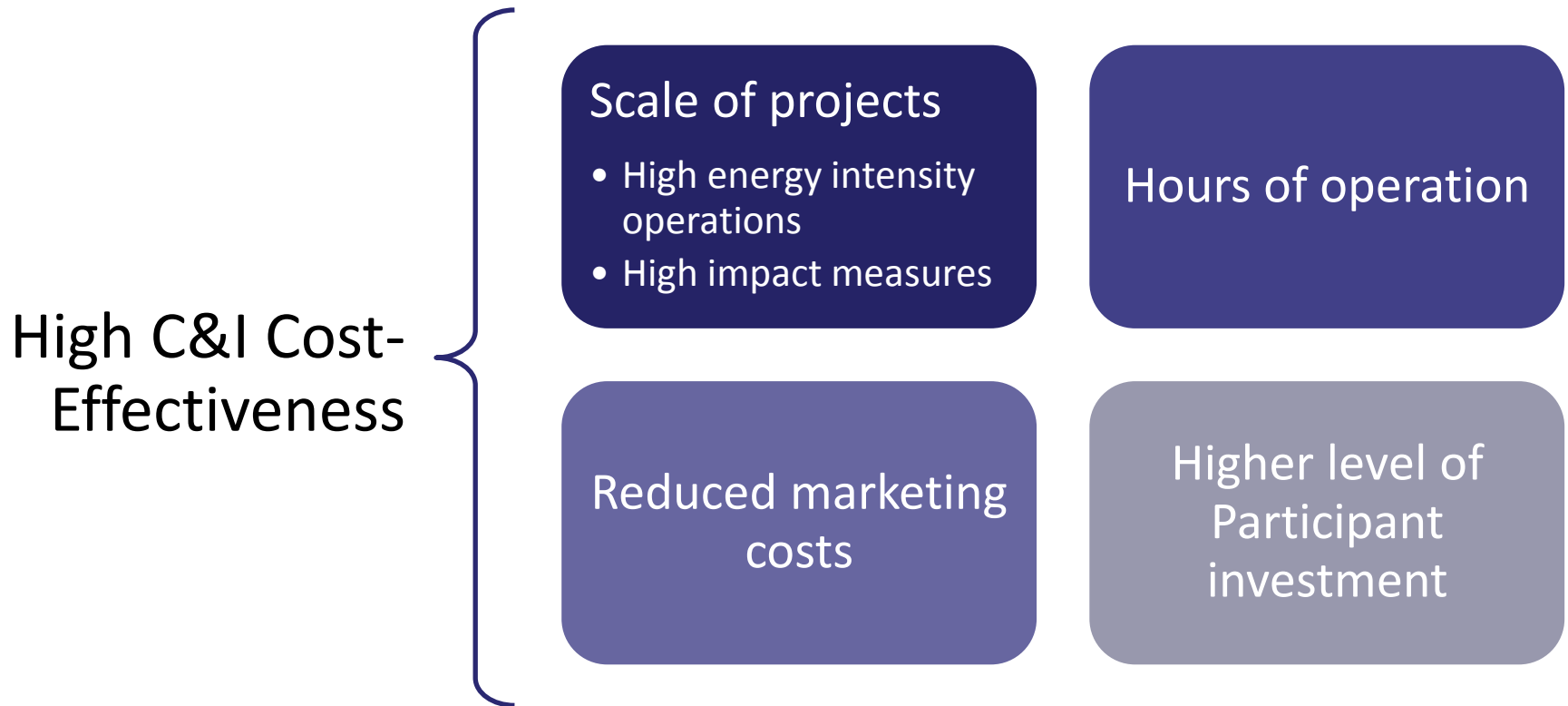
50.5%

of **total** electricity savings **

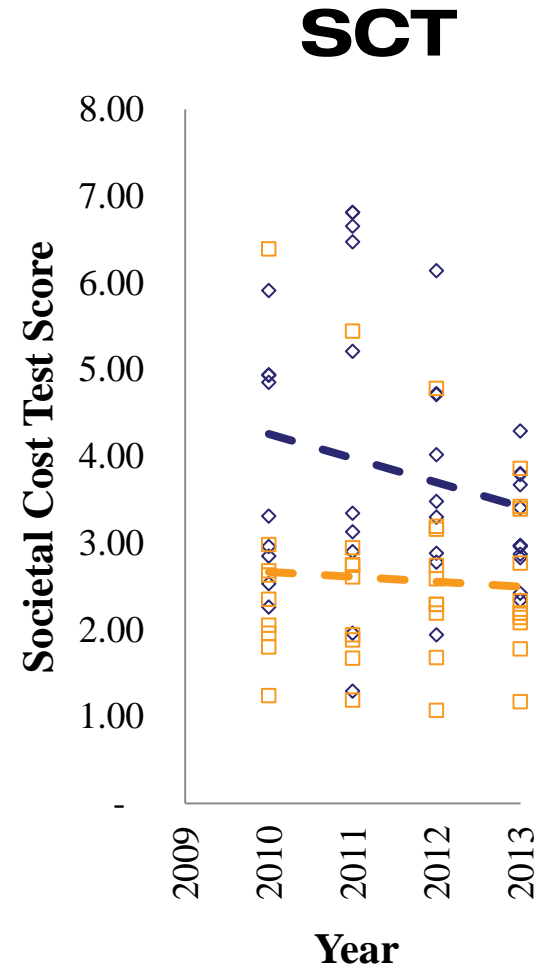
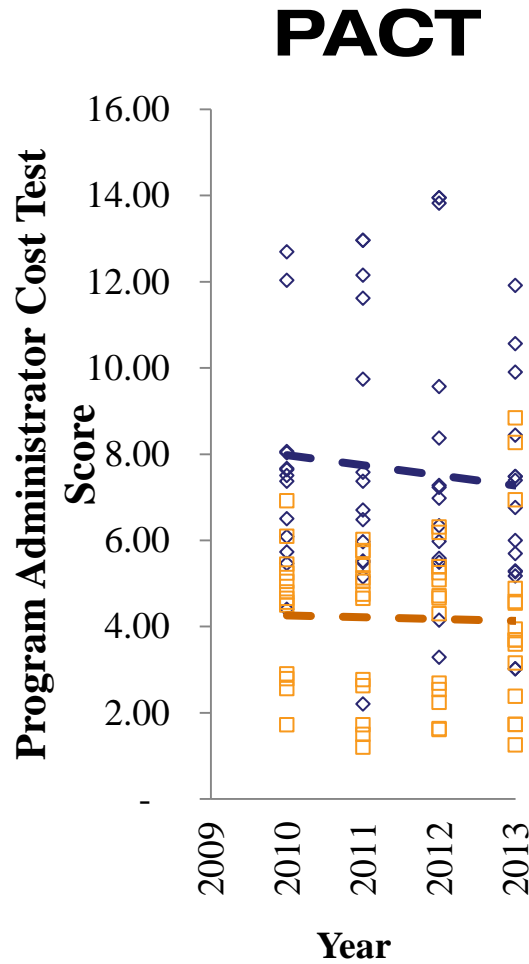
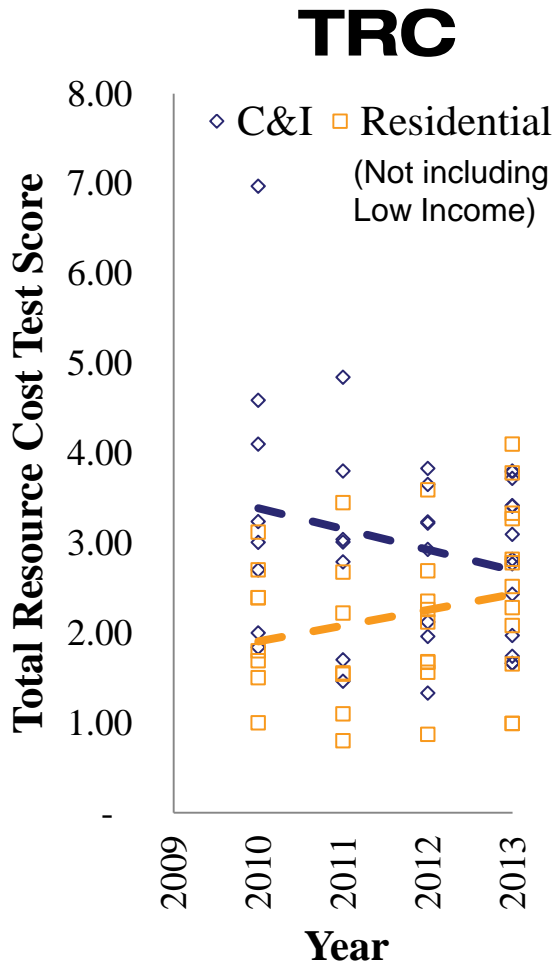
*out of 79 Midwestern program administrators that reported non-zero Industrial Incremental EE savings on 2013 EIA-861

**out of 192 Midwestern program administrators that reported non-zero Total Incremental EE savings on 2013 EIA-861

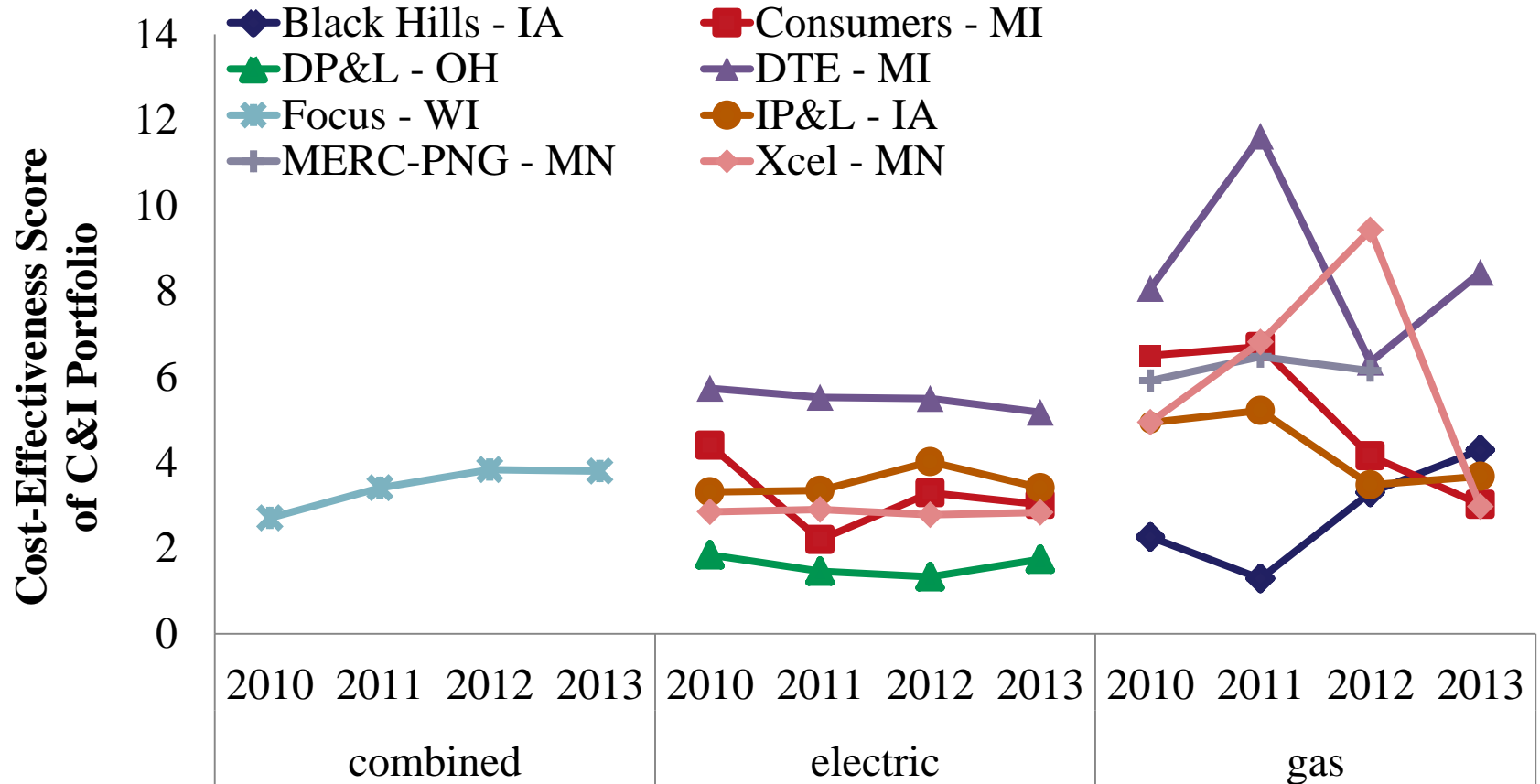
Some Factors that Influence C&I Cost-Effectiveness



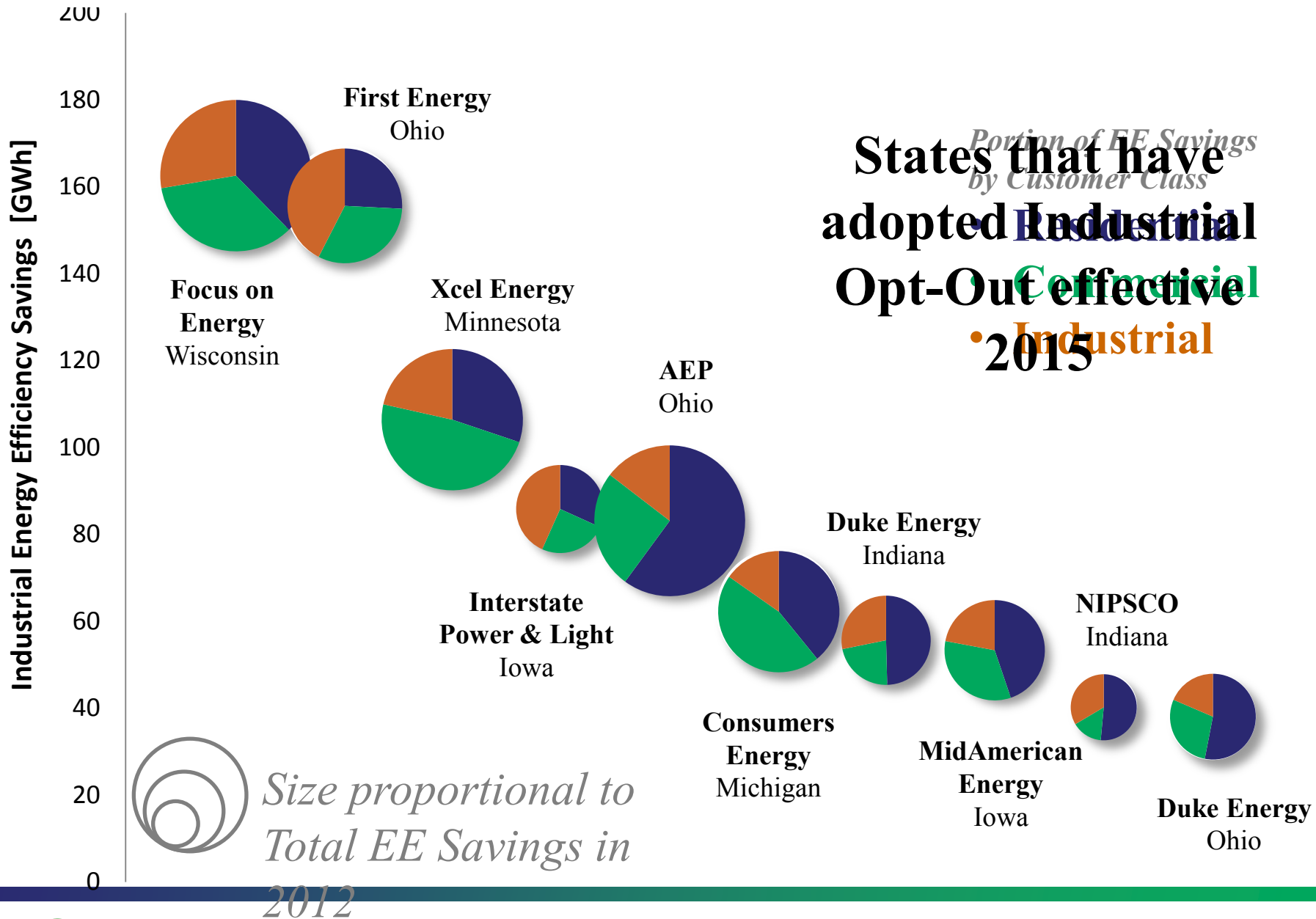
C&I is More Cost-Effective



No “Low Hanging Fruit” Problem for C&I Portfolios



Top Industrial EE Program Administrators in the Midwest



Magnitude of Lost Savings

In Ohio and Indiana, we have seen the following general trends in opt outs in current utility DSM Plan filings:

- 50-80% of eligible customers opted-out
 - Up to 65% of C&I sales
 - Up to 45% of total customer sales

Planned C&I energy efficiency savings reduced about 50% over previous impacts

Negative Impacts of Opt-Out

Reduces overall amount of energy saved

Loss of knowledge and data – utilities report EE spend & savings; opted-out companies don't report anything

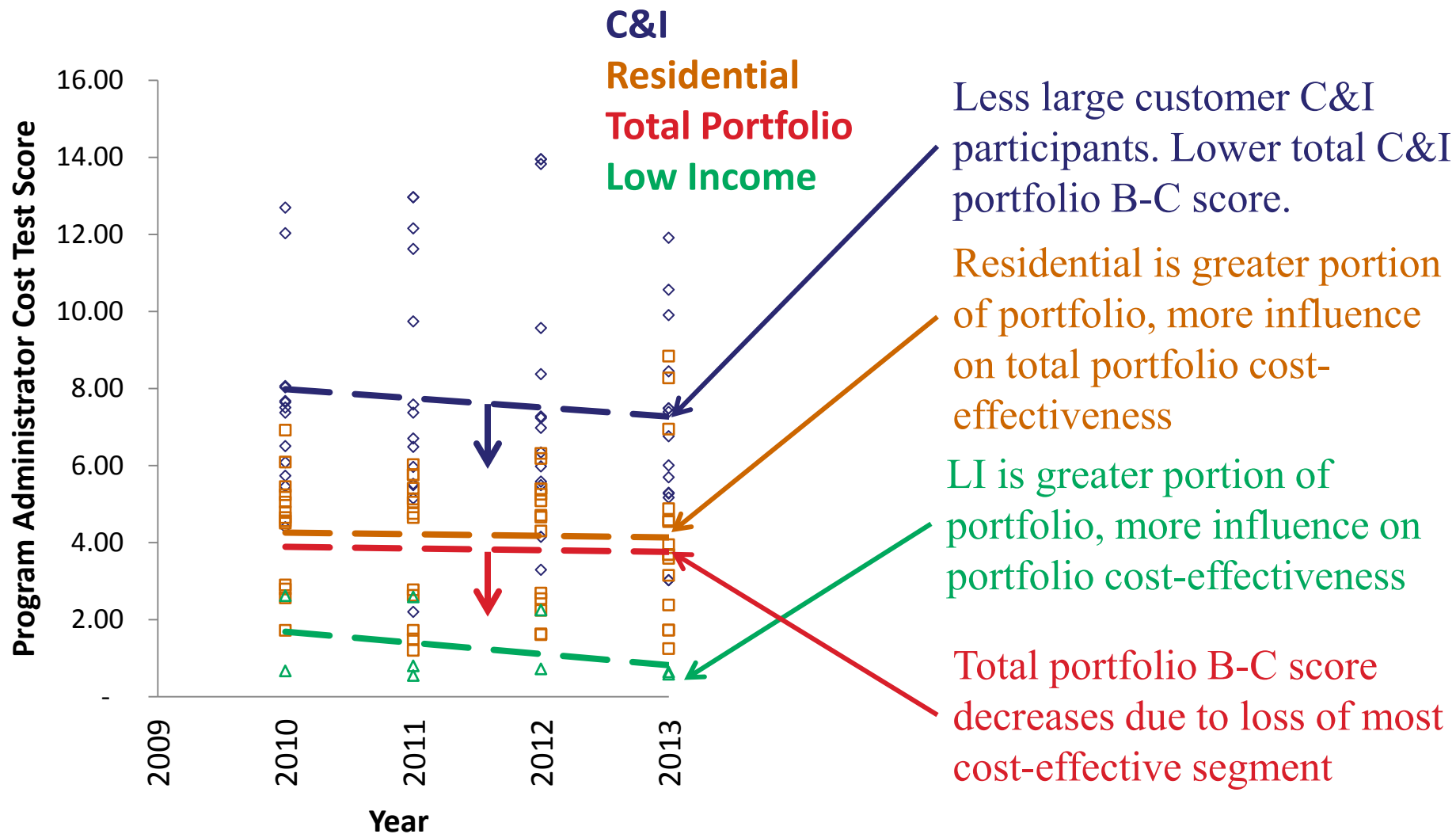
Portfolio costs all borne by residential & small business customers

Reduces potential of efficiency as a path for Clean Power Plan compliance

Less cost-effective programs are a higher percent of overall portfolio

Reduced cost-effectiveness of portfolio

How Opt-Out Impacts the Overall Portfolio



Better Alternatives

Michigan

- 2009 – 77 self-direct customers
- 2011 – threshold lowered
- 2013 – only 29 self-direct customers
- *“flexibility and comprehensive program options”* (MPSC 2012)

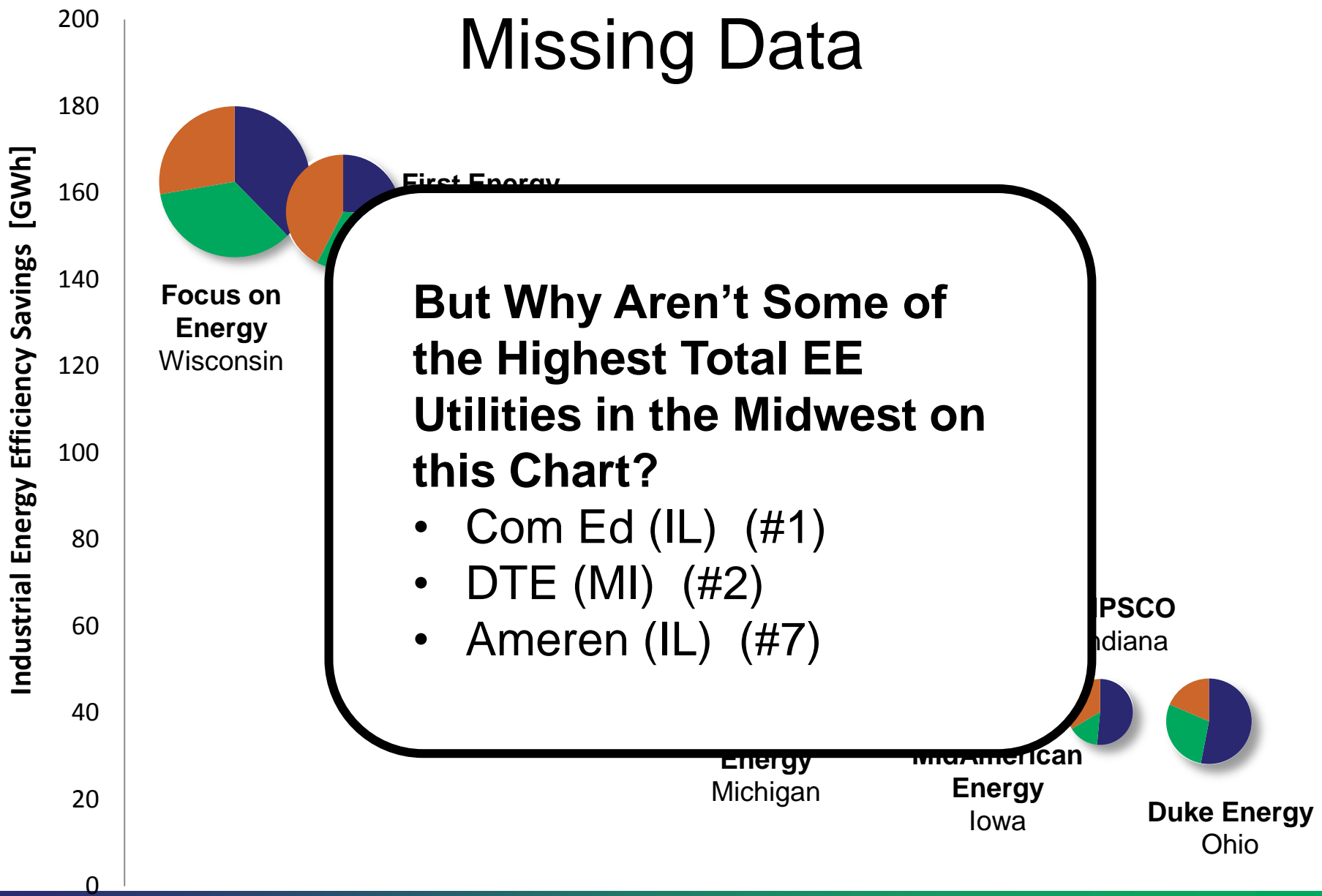
Minnesota

- Xcel’s self-direct program for 2013 expected ten participants for electric and natural gas. In fact both had zero participants.
- *“customers gravitate to holistic, full-service programs”* (Xcel 2014)

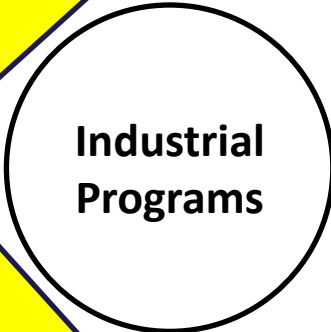
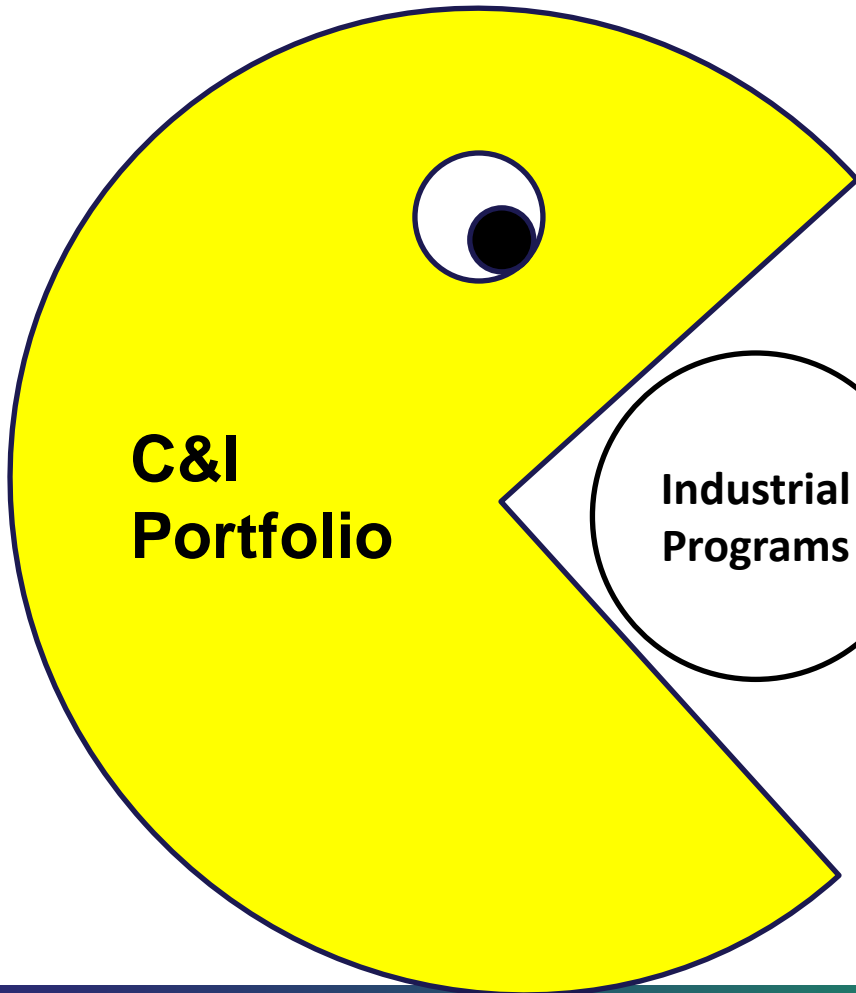
Iowa

- *“...the Board is not persuaded that allowing an opt-out is good public policy... All utility customers, even those who do not directly participate ...benefit from the avoided cost savings that are the primary goal of energy efficiency programs... Iowa has a strong public policy of supporting and developing energy efficiency and the Board will not undermine Iowa’s policy by allowing certain customers to opt-out of the energy efficiency paradigm”* (IUB 2013)

Missing Data

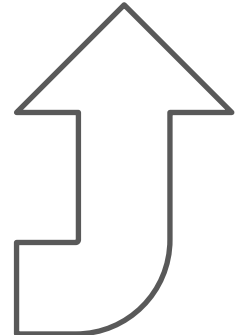


Gobbled Up by C&I



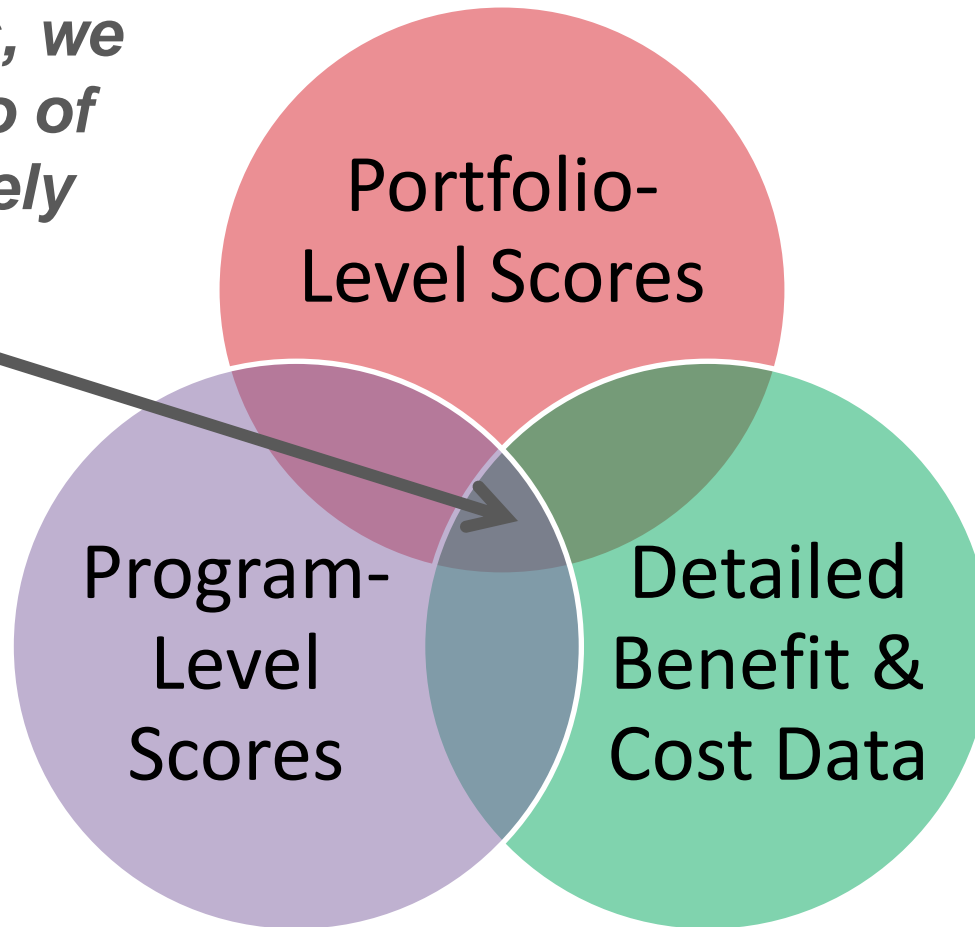
*Total C&I Portfolio reported
as Commercial EE*

**EIA-861
with zero
Industrial
EE**

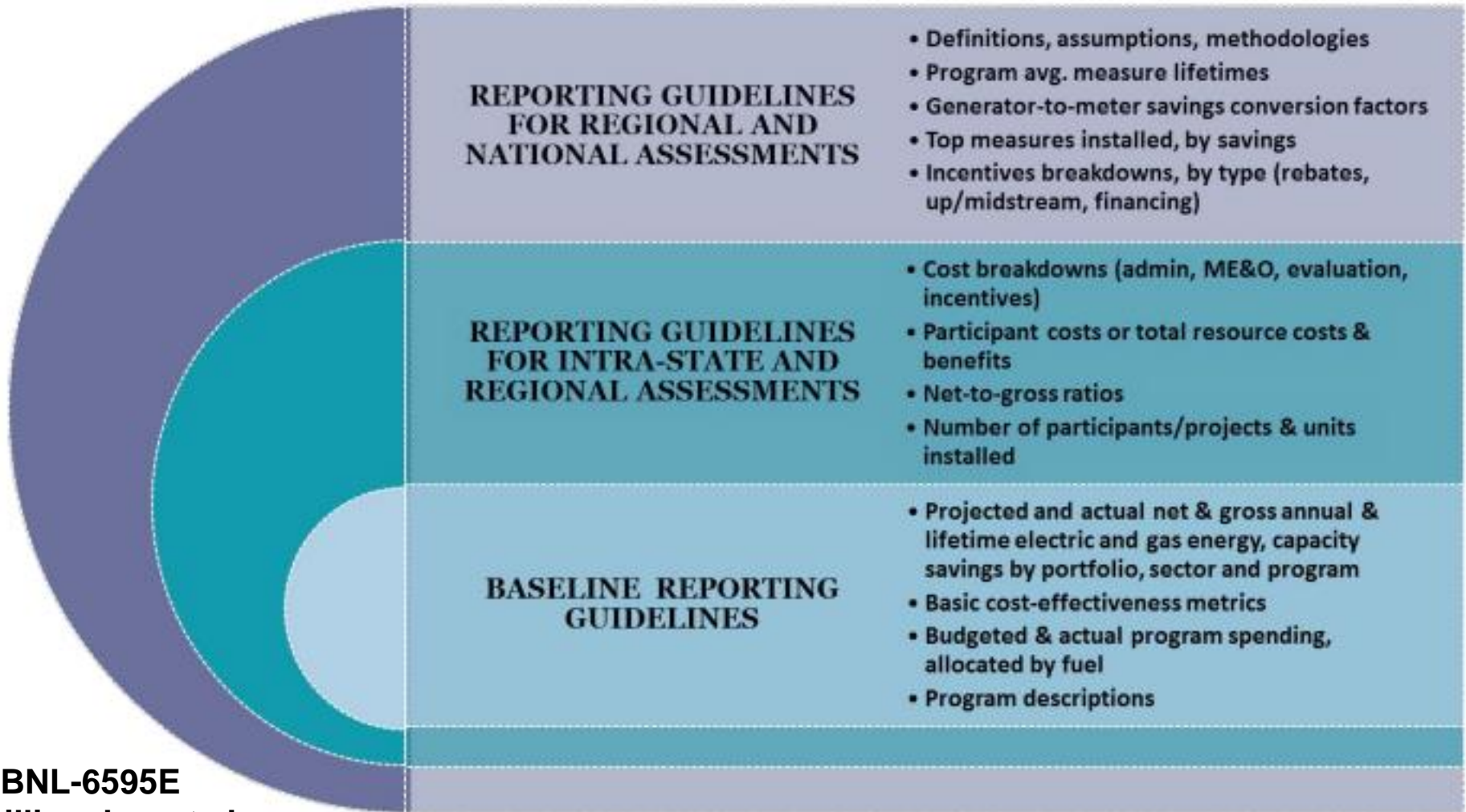


Some of the Data, Some of the Time

In most cases, we get one or two of these, but rarely all three.



How Do We Get Better Data?



LBNL-6595E
Billingsley, et al.
2014

Figure 5-1. Components of annual energy efficiency program reporting

Takeaways

Industrial EE is
A Big Deal
for the Midwest

C&I EE is the Most
Cost-Effective Part
of the Portfolio

5 of Top 10
Industrial PAs are
losing about ½ of
their Industrial EE

Opt-Outs Lose
Energy Savings
and Hurt Cost-
Effectiveness

Better Data Would
Help Us Better
Understand True
Scale and Impacts



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THANKS!

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INDUSTRIAL ENERGY EFFICIENCY PROGRAMS



KEYS TO SUCCESS

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focus on energy™

Partnering with Wisconsin utilities

CHARACTERISTICS OF INDUSTRIAL SEGMENT

- Highly technical segment
- Fierce competition for capital
- Incredibly savvy consumers
 - short window to earn respect / trust
- **TIME** is a critical barrier



INDUSTRIAL KEYS TO SUCCESS

Large industrials can be CONTINUOUS source of cost-effective savings

Program structure must:



- Minimize Hassle
 - Build Trusting Relationships
 - Focus on Customer's Needs
-
- Key to success is NOT a collection of offerings.
 - offerings are the easy part!!

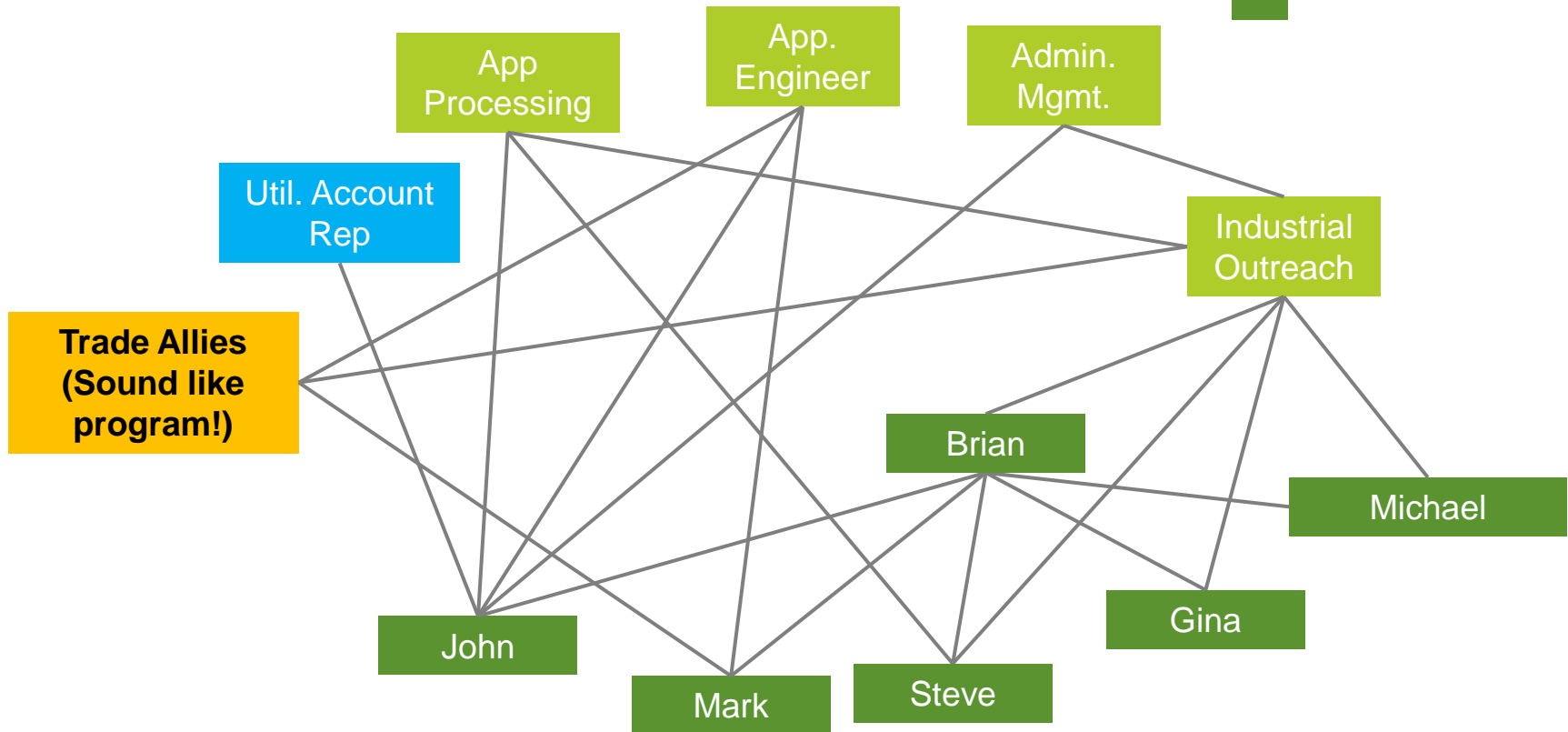
ENERGY ADVISOR MODEL

- Every large customer is assigned single Energy Advisor (EA)
 - EA provides single point of contact to ALL program offerings
 - All EAs have first-hand industry experience
 - Instant rapport with customers
- Technical capability: must be engineer
- Offer value beyond program info.
 - Assist with energy calculations
 - Facilitate energy teams
 - Act as customer advocate
 - Complete and submit applications

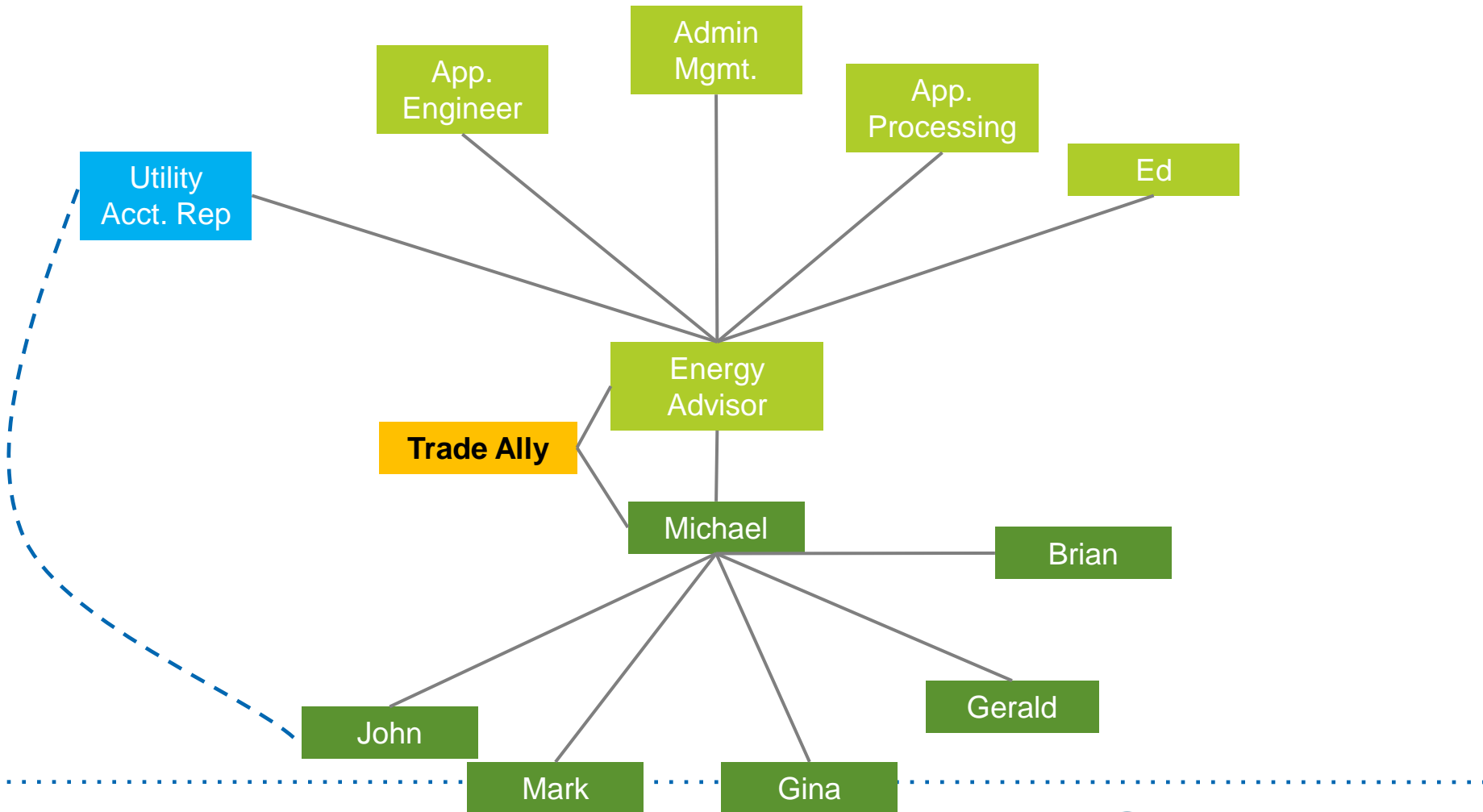


CAUTION! UNMANAGED RELATIONSHIP

 = Program Staff
 = Customer Staff



RELATIONSHIP MAP (GOOD)



PROGRAM EASE OF USE

- Strong but Flexible Custom Incentive Program
 - Committed Pre-Approved Custom Incentives with Minimal M&V
 - Requires strong technical implementer
 - Maximizes attribution
 - Real-world Flexibility
 - How can we make this work vs. How can I deny this application
 - Implementer administrator that understands intent of program rules and program design theory

CAUTION: DIVIDING THE SEGMENT

| |
|--|
| RCx (Implementer A) |
| S.E.M. (Implementer B) |
| Special Studies (Implementer C) |
| Custom / Standard (Implementer D) |
| Manufacturing Process (Implementer E) |
| Compressed Air (Implementer F) |

Market Expertise is More
Important Than Product
Expertise!

Challenges

- Implementers Compete
 - Push offerings vs. addressing customer needs
- Highest Perceived Complexity
 - Loss of Offering Design Consistency
- Customer Burn-Out
 - “Telemarketing” Effect
 - Too Many Program Contacts
- High Coordination Requirement
 - Documentation Needs Dominate Labor Time
- Reduces Flexibility/Creativity
 - Hard to be creative with one offer
 - Fire an implementer to end an offering
 - High turnover stunts customer relationships

CAUTION: THE TRADE-ALLY DRIVEN PROGRAM

- Sounds like a good way to save on outreach labor
 - Trade allies are already in the field = zero outreach cost!
- Reality
 - What is saved in outreach labor will be lost to increased app processing labor (invisible value to customer)
 - lower customer satisfaction
 - longer processing times, less visible value
 - Reduced control of relationships / messaging
 - Lose proximity to customer / situational awareness

DESIGN OFFERINGS THAT MEET CUSTOMER NEEDS

- Repulper Rotor Prescriptive
- Injection Molding Machine Barrel Band Heaters
- Industrial Retrocommissioning
- Staffing Grants
- Study Incentives
- Process Exhaust Filtration
- Partner with DOE offerings
- Strategic Energy Management / ISO 50001

SUMMARY

A Strong Industrial Program should have:

- Each customer assigned a single industrial-experienced point of contact
- Avoid dividing the segment
- Design program to reduce hassle of participation and meet the needs of the customer
- Be flexible!

2014-2015+ incentive cost-effectiveness:
\$0.37/therm & \$0.053/kWh
(250M kWh & 18M Therms)



Alliant Energy C&I Program

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Alliant Energy demand-side management programs

- Also known as *Energy Efficiency* programs
- Mandated by Iowa Utilities Board for investor-owned utilities
- Offered to Alliant Energy Iowa customers to help them reduce their energy consumption
- Funded through the Energy Efficiency Cost Recovery tariffs
- Includes the *Interruptible* rate program

Programs and services for commercial and industrial customers

- *Energy Audit*
- *Custom Rebates*
- Standard rebates
- *Feasibility Study*
- *Retro-Commissioning Study*
- *Commercial New Construction*
- Industrial new construction

Energy Audit

An *Energy Audit* provides information on the facility's energy performance and gives details to help prioritize investments in energy-efficiency upgrades.

Energy Audit

Find out how an Energy Audit helped Priority Envelope save.



Energy Audit

An *Energy Audit* involves:

- Collecting and studying historical energy usage
- Studying the building's operational characteristics
- Identifying and analyzing energy-saving opportunities
- Prioritizing strategies that have the greatest impact

Energy Audit

Your report will include:

- Description of energy-consuming systems
- Twelve-month billing analysis
- Determination of energy consumption by end use
- Benchmarking against peer facilities
- Energy-saving recommendations with estimated costs and financial metrics

Custom Rebates

- Cash incentives for high-efficiency equipment
- Net payback is based on a percentage of the annual energy dollar savings
- Incentive equal to 150% of annual energy dollar savings
- Minimum two-year payback required
- Pre-approval required

$$\frac{\text{PROJECT COST - REBATE}}{\text{ANNUAL ENERGY DOLLAR SAVINGS*}} = \text{NET PAYBACK}$$

2014 Program Custom Results

- Custom Rebate Projects: IPL achieved 117 percent of the electric program goal in 2014, with 80,413,847 in kWh savings and 206 electric projects rebated in the program. Natural gas projects increased this year, achieving 80 percent of the goal and generating 200,680 therm savings.
- Feasibility Studies: In 2014, 15 study proposals were pre-approved, 13 studies were completed and the customer reimbursed for the first half of the study costs. In addition, six customers who completed feasibility studies implemented the recommended energy-efficiency improvements and received reimbursement for the second half of their study costs.
- RCx: Milestones for the RCx program in 2014 include:
 - IPL completed five RCx projects resulting in 1,743,001 kWh and 14,671 therms saved.
 - Six ongoing projects are in various stages (from measurement phase to implementation) in K-12 education, hospitals, and manufacturing.
- BOC: IPL had five customers attend BOC training in 2014.

Custom Rebates

Example projects:

- Compressed air systems
- Combined heat and power projects
- Energy management control systems
- Heating, cooling and ventilation systems
- Lighting systems and controls
- Pipe insulation
- Processing equipment
- Refrigeration systems
- Variable frequency drives
- Ventilation
- Waste heat recovery systems

Custom Rebates

Franz Community Investors used a Custom Rebate to save money on a new building project.



Feasibility Study

- Analyzes current energy use and documents the feasibility, expenses, energy savings and cost effectiveness of potential energy-saving projects
- Frequently used for compressed air, lighting and HVAC
- Reimburses up to \$15,000 of the study if the business implements eligible projects
- Projects identified are also eligible for *Custom Rebates*
- Pre-approval is required

Retro-commissioning (RCx) Study

- Identifies ways to optimize your facility's direct digital controls (DDC) or process controls
- Reimburses 100% of the *RCx Study* cost after you've completed and verified projects with a payback of two years or less

Retro-commissioning (RCx) Study

Consider a *RCx Study* if your building has:

- 20,000 or more square feet
- DDC system or process controls two to 10 years old and not in need of any capital repairs
- No major system renovation plans for the area under consideration

Retro-Commissioning **Mercy Medical Center**

Mercy Medical Center's newest building was LEED-certified, but they knew their other facilities had room for improvement. A Retro-Commissioning Study from Alliant Energy helped the Medical Center assemble a list of energy-efficiency improvements and decide where to start.



They installed variable-frequency drives, replaced old lighting with LED and made improvements to air handling unit controls for an annual savings of 941,082 kWh or \$34,659.

Commercial New Construction

2015 Program successes –

- On track to achieve 245% of the therm goal, 104% of the electric (kWh) savings goal and 136% of our participation goal.
- Approved applications for 2015 are on track to be more than the previous two 2 years.
- Total square foot is higher and growing.

Program challenges –

- Stricter energy code and adjust incentives as needed to influence participation and deeper energy efficiency.
- Meeting the schedule of the designers.
- Projects have a 1-3 year lifecycles, depending on size and complexity, so the new applications in 2015 will provide results in 2016/2017/2018.

Launched Pilot this fall for Industrial New Construction

- Designed for businesses that have new construction, additions or renovation projects ***before the design phase***
- Customized energy model simulates energy use
- Building owner and design team work together to select strategies

INC Pilot Summary

The Industrial New Construction (INC) pilot provides design assistance services for new construction or additions to medium to large industrial facilities. Both owners and responsible members of the design team may be eligible for financial incentives. Owners or design teams are encouraged to apply if:

- the new facility will be a retail electric or retail gas/electric combo customer of Alliant Energy
- the industrial building project is at the conceptual or schematic design phase, and
- the owner is committed and financially able to implement short-payback energy efficiency measures as part of the facility construction.

The following sections describe the basic components of the proposed pilot structure.

1. INC vs. Commercial New Construction (CNC) Program

a. All manufacturing would be directed to the INC pilot. Examples include:

- Directed to INC: a large brewery or large commercial laundry
- Directed to CNC: a microbrewery/restaurant or neighborhood laundromat/drycleaner

b. Some commercial buildings with more than 50% unregulated loads would be directed to the INC pilot. Examples include grocery stores, ice rinks, data centers, and water parks. Unregulated loads are defined as those that are not covered by commercial energy code.

Cost Effectiveness of our Non-Residential Programs

| Nonresidential Energy Efficiency Portfolio | Lifetime Benefits | Lifetime Costs | Net Benefits | B-C Ratio |
|---|-------------------|----------------|----------------|-----------|
| Nonresidential Prescriptive Rebates | \$ 32,236,241 | \$ 7,711,969 | \$ 24,524,272 | 4.18 |
| Business Assessments Programs | \$ 9,531,671 | \$ 1,437,228 | \$ 8,094,443 | 6.63 |
| Custom Rebates | \$ 94,424,827 | \$ 17,327,886 | \$ 77,096,941 | 5.45 |
| Commercial New Construction | \$ 16,848,527 | \$ 13,670,591 | \$ 3,177,936 | 1.23 |
| Agriculture Sector Program | \$ 11,050,082 | \$ 2,095,380 | \$ 8,954,701 | 5.27 |
| Nonresidential Energy Efficiency Subtotal | \$ 164,091,347 | \$ 42,243,055 | \$ 121,848,293 | 3.88 |

Thank you!

Upcoming MEEA Industrial Webinar

Case Studies: Sustained Energy Savings Achieved Through Successful Industrial Customer Interaction with Ratepayer Programs

- Thursday, December 10 11:00 am- 12:00 pm CST
- <https://attendee.gotowebinar.com/register/5877540931956590594>



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QUESTION AND ANSWER