Intelligent Efficiency & Utility Programs:
Reports from the Midwest

2017 ACEEE National Conference on Energy Efficiency as a Resource

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MIDWEST ENERGY EFFICIENCY ALLIANCE

About MEEA

The Trusted Source on Energy Efficiency

Nonprofit membership organization with 160+ members, including:

- Utilities
- Research institutions
- State and local governments
- Energy efficiency-related businesses

As the key resource and champion for energy efficiency in the Midwest, MEEA helps a diverse range of stakeholders understand and implement cost-effective energy efficiency strategies that provide economic and environmental benefits.

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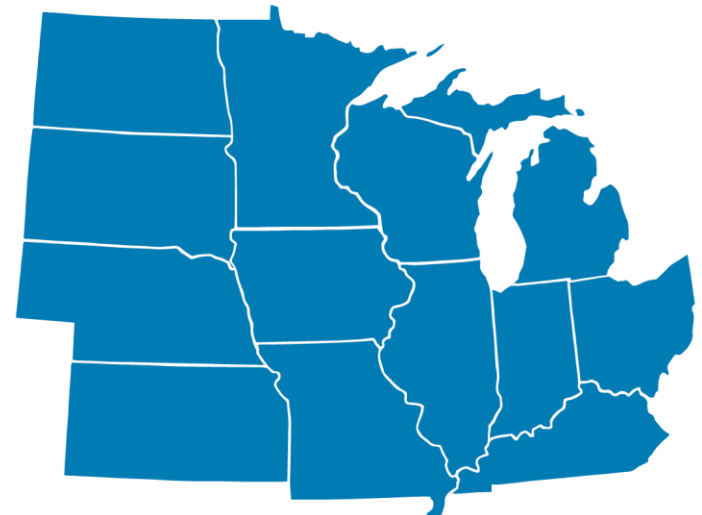
Acknowledgements
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MidAmerican Energy

Nest

Nexant

Nicor Gas

NEEP

Retroficiency

Schneider Electric

Simple Energy

University of Chicago

View Dynamic Glass

Xcel Energy

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What is Intelligent Efficiency?

Overview

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Intelligent Efficiency
Overview

- ACEEE 2013:
  - "...the deployment of affordable next-generation sensor, control, and communication technologies that help us gather, manage, interpret, communicate, and act upon disparate and often large volumes of data to improve device, process, facility, or organization performance and achieve new levels of energy efficiency."

Rogers, E. A., et al. (2013). Intelligent Efficiency: Opportunities, Barriers, and Solutions. American Council for an Energy-Efficient Economy.

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Intelligent Efficiency
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Intelligent Efficiency
Overview

- **Information and control technologies**
- **Collect and analyze data**
- **Improve efficiency at many levels**

- Adaptive, anticipatory and networked*

*ACEEE Elliot, Molina, & Trombley, 2012

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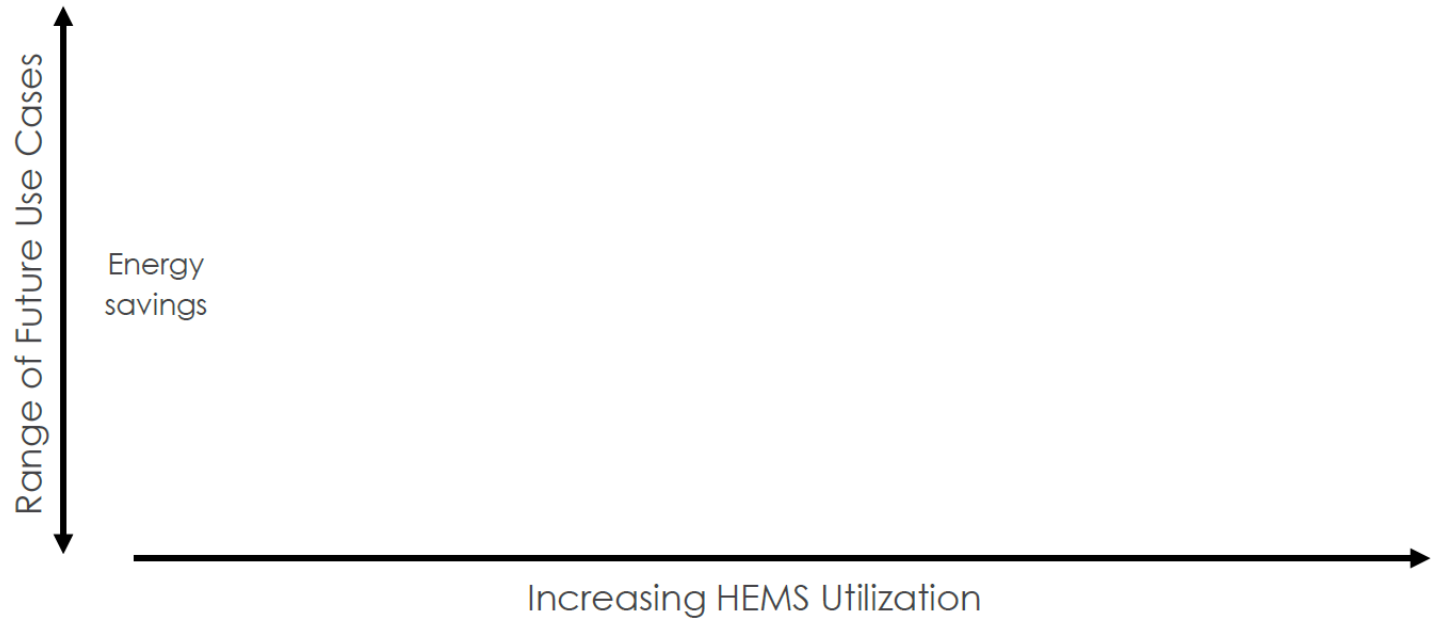MIDWEST ENERGY EFFICIENCY ALLIANCE

Intelligent Efficiency
Overview

- What it enables:
  - Multiple value streams at once
  - New value streams for both customers and program admins
  - Expanded non-energy benefits
  - New gateways to customers
  - More holistic approaches to whole-building energy savings
  - New market adoption strategies

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Intelligent Efficiency *Overview*

Figure 1: Potential Future Utility HEMS Use Cases
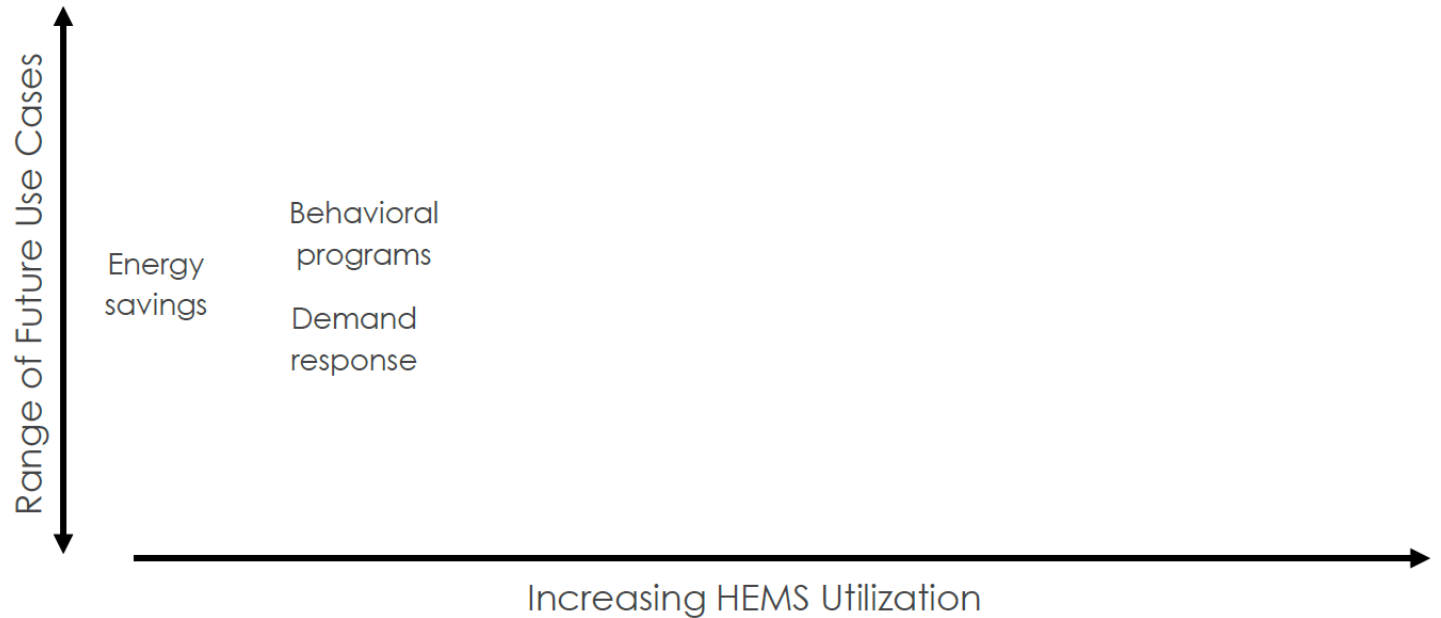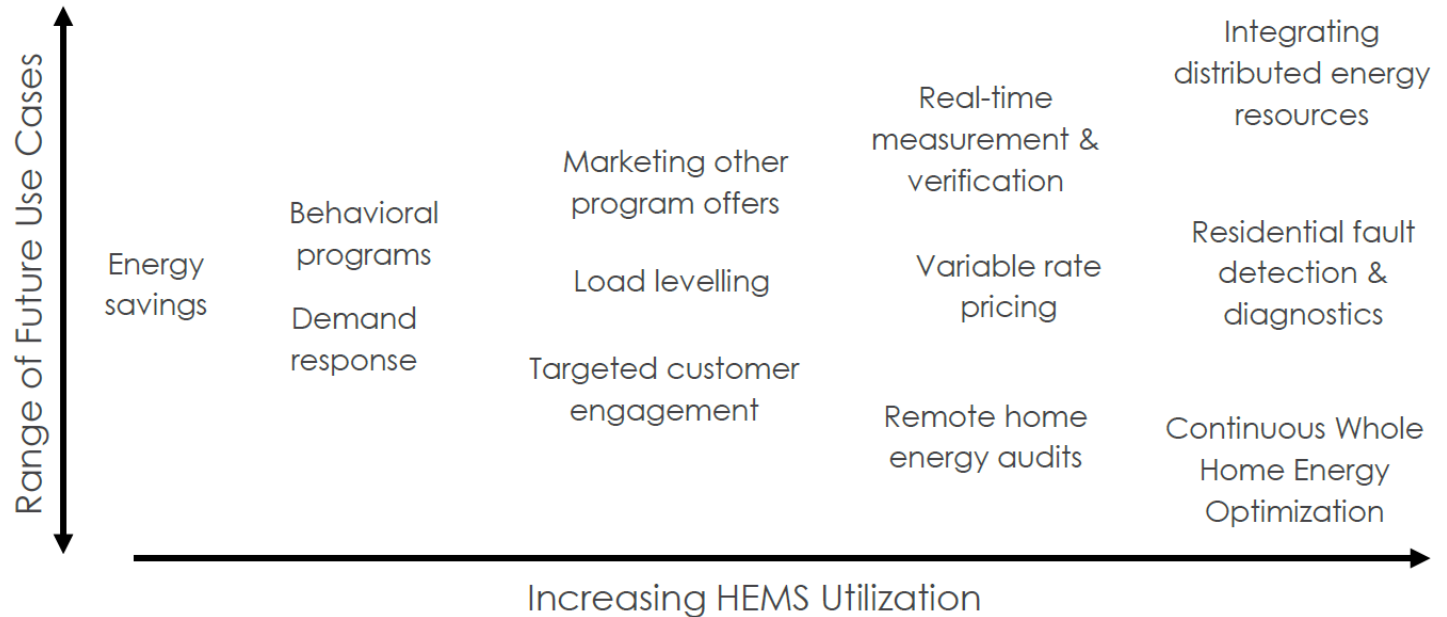
Intelligent Efficiency
Overview

Figure 1: Potential Future Utility HEMS Use Cases

Intelligent Efficiency
Overview

Figure 1: Potential Future Utility HEMS Use Cases

Reports from the Midwest

Topic Overviews and Examples

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Some types of intelligent efficiency

1. Home Energy Management Systems

2. Commercial Advanced Lighting Controls

3. Energy Management Information Systems

4. Smart Manufacturing

5. Smart Cities

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Home Energy Management Systems
DTE Energy

DTE Insight app

www.newlook.dteenergy.com/wps/wcm/connect/dte-web/insight/insight-app

Home Energy Management Systems
KCP&L

- Nearly 20,000 smart thermostats in last year and half

- DIY & BYOT options reduce implementation costs by 40%

Home Energy Management Systems
ComEd

- 95,000 device incentives
- ENERGY STAR® certified smart thermostats & qualified products list
- Nest Seasonal Savings and Rush Hour Rewards

Chicago program aims for 1 million 'smart' thermostats

WRITTEN BY

Kari Lydersen
October 8, 2015

There will be one million more smart thermostats in the Chicago area in five years if a new public-private program launched today meets its goals.

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Home Energy Management Systems
New Marketplaces

Comm. Advanced Lighting Controls
Overview

- Advanced Lighting Controls (ALC)
- Networked Lighting Controls (NLC)
- Match lighting output to need & curtail or eliminate all other output

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Comm. Advanced Lighting Controls
AEP Ohio

- Integrate advanced lighting controls with lighting incentive programs
- 80-90% lighting energy savings associated with LED lights and advanced lighting control packages
- Incentive based on facility square footage
- Complexity & trade allies

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Energy Management Info. Systems
Overview

Energy Management Info. Systems
Xcel Energy

- Lighting, heating and cooling, ventilation, and equipment scheduling

- Hybrid between custom and prescriptive program

- Trade allies!

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Smart Cities
Notable Midwest Projects

- Smart Columbus
  - US Smart City Challenge, $40 million US Dept. of Transportation prize & $90 million additional
  - Transit-focused, EVs & street lighting

- Chicago Smart Lighting Project
  - Upgrade 270,000 high pressure sodium street lights to LED for $10 million/year savings
  - Networked for better maintenance management & integration with city 311 system
  - Future integrations with 911 & police

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Barriers

Summary of Market & Regulatory Barriers

Summary of Barriers
Traditional Market Barriers

- Higher upfront cost
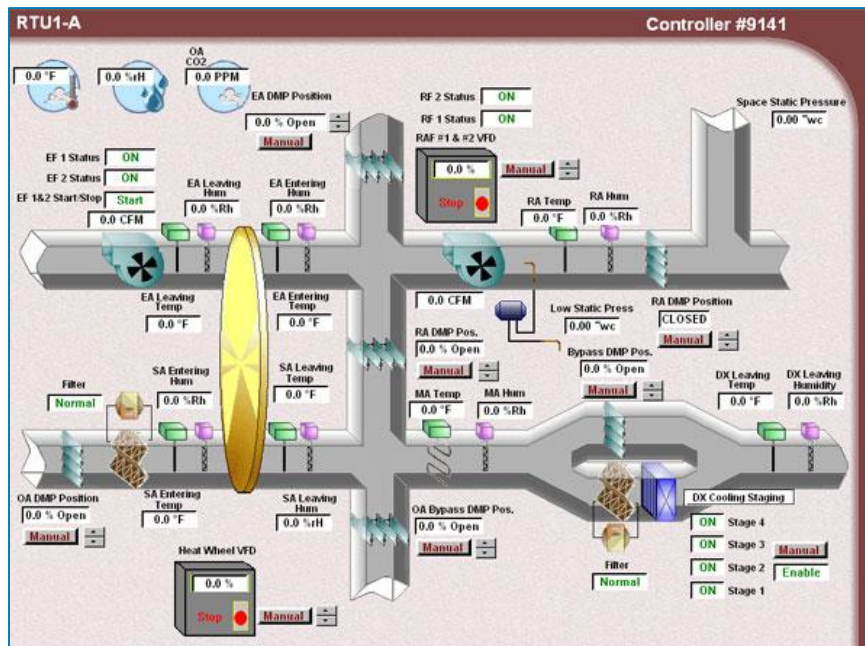- Lack of awareness

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Summary of Barriers
Additional Perceived Risk

- Product complexity
- Energy savings confidence
- Security/privacy

Summary of Barriers
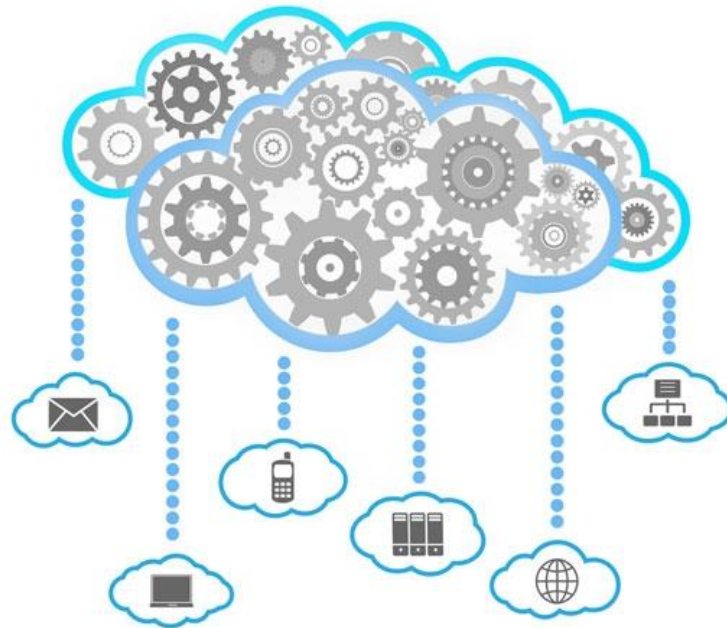## *Data Access and Interoperability*

- Data availability
- Data integrity
- Data access
- Communication protocols and interoperability

- Regulatory investment barriers
- The chasm of pilots

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Recommendations

Summary of Stakeholder Recommendations

Recommendations
Leverage Non-Energy Benefits

- Build market share by leveraging attractive non-energy benefits
- Create program efficiencies
- Look to future use cases

Recommendations
Increase Collaboration

- Recognize product design push-pull between utilities and manufacturers

- De-silo efficiency and demand response program efforts

- Invest in new and existing cross-industry collaborations

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Recommendations
Update Program Structures

- Evolve piloting methods

- Pilot new M&V strategies

- Include connected devices now

- Encourage updated regulatory treatment

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Thank you!

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