



# Grid-Interactive Efficient Building Landscape in the Midwest

Nov 14<sup>th</sup>, 2019



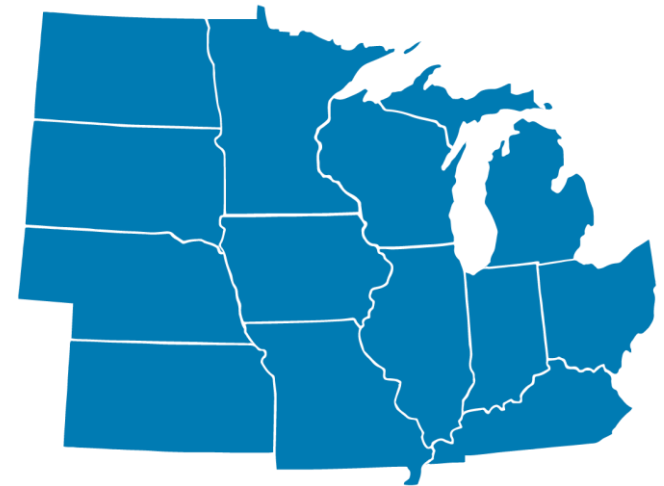
# About MEEA

## *The Trusted Source on Energy Efficiency*

We are a 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.





# Agenda

- Definition of Grid-Interactive Efficient Buildings
- State Initiatives for Grid Modernization
- Deployed Technology
- Utility Programs and Projects
- Barriers
- Solutions



# Focus of MEEA Research

- Current utility research and development related to GEB
  - *Technology development, performance testing, product demonstrations, pilots and cost analyses*
  - *Analysis by state*
- What are the leading GEB initiatives, who is involved and what is driving them in the Midwest?
- Identify technology, products and market information gaps
- Additional research and development needed to advance GEB

# Key Characteristics of GEB



## EFFICIENT

Persistent low energy use minimizes demand on grid resources and infrastructure



## CONNECTED

Two-way communication with flexible technologies, the grid, and occupants



## SMART

Analytics supported by sensors and controls co-optimize efficiency, flexibility, and occupant preferences



## FLEXIBLE

Flexible loads and distributed generation/storage can be used to reduce, shift, or modulate energy use

Image Source:



U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



**MEEA**  
MIDWEST ENERGY EFFICIENCY ALLIANCE

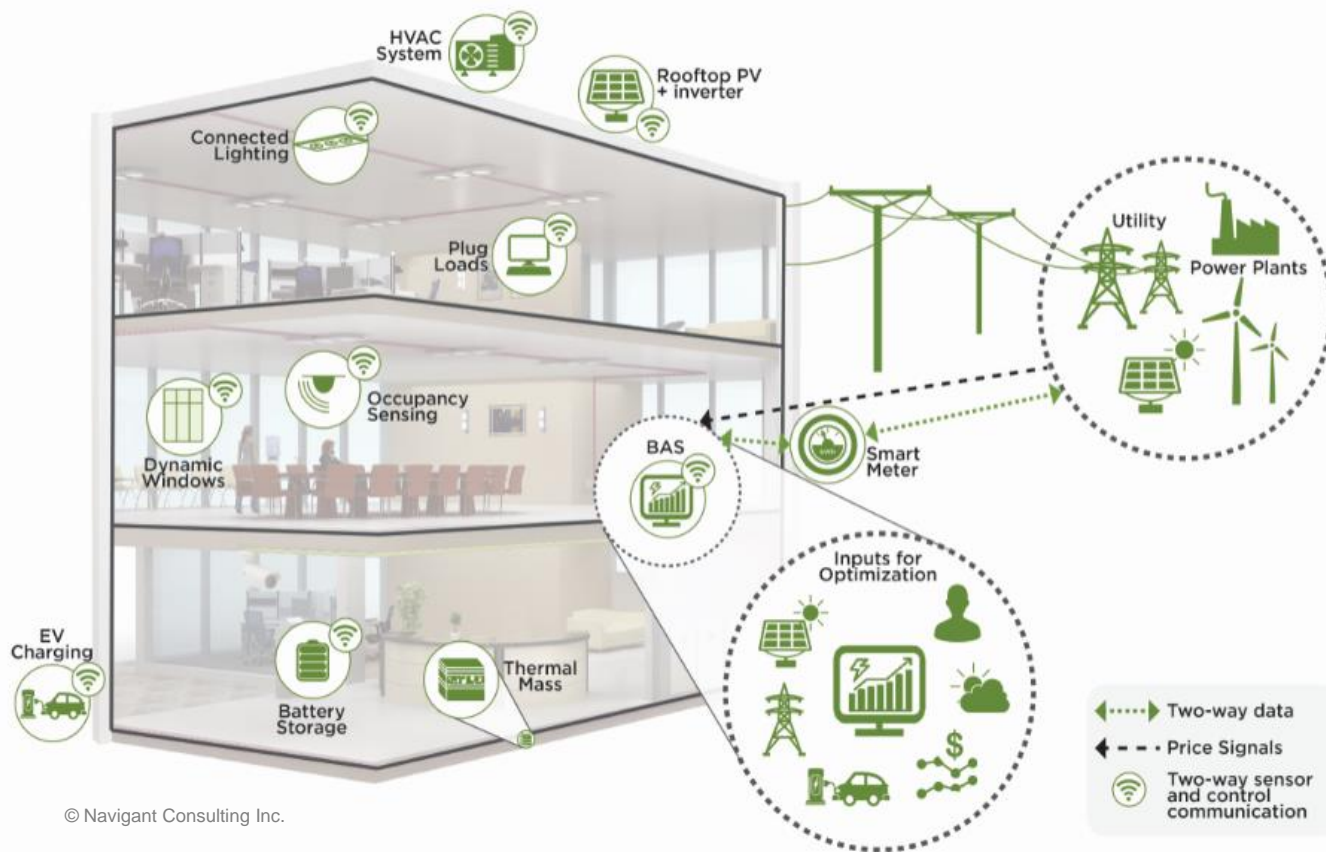


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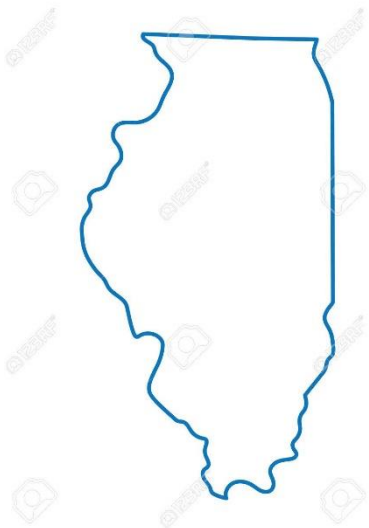
Energy Efficiency &  
Renewable Energy



# Current Regional Status

*Illinois*

- **NextGrid : Illinois Utility of the Future Study**
  - New Technology Deployment and Grid Integration
  - Metering, Communications and Data
  - Customer and Community Participation
  - Regulatory, Environmental and Policy Issues
  - Reliability, Resiliency and Security
  - Electricity Markets
  - Ratemaking





# Current Regional Status

## *Minnesota*

- **E21**
  - Grid modernization and distribution level planning
  - Performance –based compensation for utilities
  - Integrated system planning



# Current Regional Status

## Ohio

- **Power Forward**

- Grid Architecture
- Distribution System Operations
  - Distribution System Market
  - Distribution system planning for entire territory of the electric distributed utilities
  - Rate Making



# Current Regional Status

## Michigan

- **Consumers Energy**

- Residential Peak Power Savers Program: Offers customers direct control and behavioral DR programs (2017)

- Energy Savers Club: Pilot program designed to reduce the energy load on our Swartz Creek substation



# Current Regional Status

## *Michigan*

- **DTE Energy**

- CoolCurrents Program: Utility can adjust AC on a high demand day
- DOE Pilot study to install 1 MW of Distributed Community Energy Storage units and a grid connected storage battery on a circuit with a solar park



# Current Regional Status

## *Indiana*

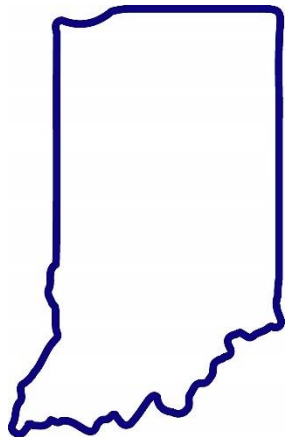
- **Indianapolis Power & Light Company (IPL)**

- IPL revAMP is a seven-year Plan to invest \$1.2 billion in the modernization of IPL's electric grid.

- **Vectren**

- Investment in Transmission & Distribution Upgrade and Smart Meter

- **Total investment of \$3.1 billion towards grid modernization initiatives**





# Deployed Technology

Efficient  
Systems and  
Appliances

Microgrid

Grid-  
Interactive  
Efficient  
Buildings

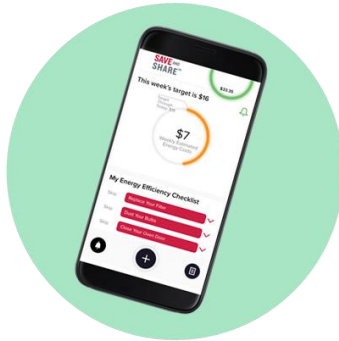
Communications  
and Controls

Smart  
Connected  
Technology

DERS's

# Utility Project *ComEd*

## ComEd's Smart Grid and Smart Community Project in Bronzeville:



Save and Share app



Electric Vehicle Mobility



Microgrid



Community Energy Storage



Off-Grid Renewable Lighting



Smart Kios

# Utility Project

## *Ameren IL*

- [Ameren IL](#) is testing multi-sourced microgrid in Champaign IL as of 2017.
- Total capacity of 1,475kW to power 190 homes
- The leased generation assets located on site include a 100kW Northern Power Systems Wind Turbine, 125 kW Yingli Solar Array, 1000kW Caterpillar Natural Gas Generator, 250kW S&C Electric Company Battery Storage.

# Utility Programs

## *Xcel Energy*

- Peak Partner Rewards
- Critical Peak Pricing Opt-In
- Batteries/Storage
- Home Energy Management (HEM)
- AC Rewards Smart Thermostat Program

# Utility Programs

*Ameren MO*

- Advanced Load Management Pilot Program
- [St Louis Park Place Project](#)



# Other Projects

- [Shedd Aquarium of Chicago](#)
  - 65-KW rooftop system
  - 1-MW/250-kWh lithium-ion battery energy storage system
- AMI deployment
  - Ameren and ComEd in IL About to finish AMI deployment
- Chicago Transit Authority
  - Electric bus deployment for public transport

# Midwest Barriers

- Policies separate EE and DR
- Information gap on demand side performance
- Education, training and awareness
- Equipment communication
- Transparency and readily available information
- Regulatory requirements for cost-effectiveness and EM&V
- Silos within utility departments

# Path Forward

- Break down the silos between the different program departments
- Create training and educational opportunities
- Easily available information for pilots, policies and demonstrative programs
- Support industry to advance interoperability and controllability
- Collaboration with ESCOs
- Incorporation of gas utilities?
- Local governmental involvement?



## Questions

# Questions?

## Contact

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