MINNESOTA EUI STATEWIDE ENERGY EFFICIENCY POLICY REVIEW
STAKEHOLDER MEETING #2 - EUI OPPORTUNITIES AND BARRIERS
**TODAY’S AGENDA**

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TODAY’S GOAL

- Review ongoing EUI conversations
- Learn about EUI policy/planning
  - Around the country – Rich Sedano, RAP
  - Here in MN – Mary Santori, Xcel Energy
- Discuss possible, preliminary ideas for MN policy changes to drive EUI efficiency
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Infrastructure is any equipment or facilities owned by a utility used to deliver electric energy to consumers

- Generation, Transmission, Distribution
- Everything upstream of the meter
- Also called supply-side
Projects owned by a utility that:
- Replace or modify existing infrastructure to conserve energy
- Conserve energy by recovering waste heat from infrastructure
An estimated 12-15% of the nation’s electricity production is consumed by generation auxiliary loads, transmission and distribution losses, and substation consumption.
EUI Efforts in Minnesota

- TRM Measure Development
  - Completed 2016

- Potential Study
  - Underway - to be completed early 2018

- Policy Review (includes today’s meeting)
  - Underway - to be completed late 2018
  - [https://www.mncee.org/mnsupplystudy/about/](https://www.mncee.org/mnsupplystudy/about/)
OVERVIEW OF EUI POLICY REVIEW

- Project Goals:
  - Understand existing policies concerning EUI
  - Examine (dis)incentives to improve EUI efficiency
  - Recommend policy changes or clarifications to leverage EUI efficiency to meet MN goals
- Conduct 4 public stakeholder meetings (Today is #2)
- Develop roadmap to increase EUI efficiency
- Funding from DOE grant
- Minnesota is leading the country
Meeting 1 – 7/28/2017 - EUI Technologies
Meeting 2 – 10/20/2017 – EUI Policies
Meeting 3 – Early 2018 – EUI Financing
Meeting 4 – TBD – Comprehensive EUI Landscape in Minnesota
Held 7/28 - Focus on EUI Technologies
Ron Schoff, EPRI
Lisa Severson, Minnkota
Group discussions about barriers to implementing EUI efficiency projects
Summary/materials posted to project site: https://www.mncee.org/mnsupplystudy/project-resources/
Meeting 2 Content

- National Policy Perspectives
  - Rich Sedano – RAP
- Identified Policy Barriers with Preliminary Possible Policy Recommendations
- Integrate Policy with Planning
  - Mary Santori – Xcel Energy
  - Panel Discussion
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20 October 2017

Bringing Resource Planning to Utility Side Efficiency

Utility Infrastructure Efficiency Stakeholder Meeting #2

Richard Sedano  50 State Street, Suite 3
President and CEO  Montpelier, Vermont
The Regulatory Assistance Project (RAP)®  United States

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raponline.org
Bringing Resource Planning to Utility Side Efficiency…

• … Means considering the **motivation** provided by regulation
  • Does motivation **align with policy intent?**
Infrastructure Investment – Why?

- Replace in kind
- Provision for load growth
- Build out for new service connections
- Deploy new technology
  - Which may be more efficient
- Promote, adapt to renewable integration
- Critical infrastructure
Measuring System Efficiency

- Cost – delivery service within a budget
- Sales – delivery service consuming less energy (at peak?)
- Benchmarking – identify key performance indicies
- Avoid Confounding metrics
  - System Load Factor
California

- Starting place: long history of decoupling
- Distribution Resource Plan (DRP)
  - **Transparency** into the black box
  - Motivated by **renewable integration**
- Utility Procurement Reform (IDER)
- IRP Reform – all resources **including wires**
  - Can take DSP info and motivate efficiency-driven investment – we’ll see
California
Focusing on Renewable Energy

• Supply side efficiency not a featured purpose
• All steps will tend to promote more supply side efficiency
  • More visibility on all steps of distribution and resource planning and resource procurement
  • Decoupling likely supports attention to supply side efficiency already
New York
Reforming the Energy Vision

• Distribution System Implementation Plan (DSIP)
• Part of a large package
  • Including rebooted cost-effectiveness guidelines
    • Takes a societal perspective
    • Applies to all utility investment (not just EE)
  • Including Performance Regulation
    • Including “System Efficiency” metrics
New York focusing on improving market performance

- Supply side efficiency not a featured purpose
- All steps will tend to promote more supply side efficiency
  - More visibility on all steps of distribution and resource planning
  - Decoupling likely supports attention to supply side efficiency already
Sidebar on Performance Regulation

- **System Efficiency Metric** will tend to promote system-wide supply side efficiency
  - Peak load reduction
  - Sub-station loading reduction
  - Energy intensity
- Among anticipated utility efforts:
  - volt-var optimization
- **NY Energy efficiency metric** focuses on customers
Rhode Island

- Power Sector Transformation Initiative
  - Distribution planning track
  - Infrastructure Safety and Reliability Plan (ISR)
    - An annual process to set capital budget plan and revenue recovery for it
    - Yes, this is selective updating
    - Provides a forum for innovation
  - Decoupling in place
Massachusetts

• Also authorizes a capital updating process between rate cases
• Decoupling in place
Ohio Energy Efficiency Resource Standard

- Intent to motivate supply side energy efficiency with a comprehensive EERS
  - Utility system efficiency programs to count
  - Has not made an apparent impact on supply side efficiency
Outside US

- Denmark
  - Motivate distribution system operator efficiency to achieve performance of top 10% within 4 years
  - Able to benchmark distribution companies
Illustrative Example of Danish Quality of Supply Benchmark

The example includes five DSOs: A, B, C, D and E. Company A has the lowest weighted SAIFI while Company B has the second lowest and so forth. Together, Company A, Company B, Company C and Company D have precisely 80% of the aggregate transmission network.

Source: DERA (2009)

Company D has a weighted SAIFI of 0.09. Thus, companies which have a weighted SAIFI higher than 0.09 are penalised with an up to 1% reduction in their allowed operational costs. In this example, Company E is penalised.
All Resource Procurement

- California and New York are directing their utilities to consider all resources without bias for the needs of the system
- Rhode Island PST process is heading that way, no decisions yet
- Most other places retain historic silos
Experimentation

- Use A Pilot or Demonstration
  - Drive efficiency in one or more ways
    - See how they work
    - Will regulatory climate tolerate experiments that might fail?
Issues

- Apply to all utilities?
  - Smaller utilities may go about system efficiency in different ways
  - Performance standards: benchmark or utility-specific
- How does “alternatives” apply to supply-side efficiency?
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org
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EUI Policy Review Outcomes

This slide originally from project kickoff webinar

- Inform participants
- Facilitate discussion
- Solicit ideas
- Provide specific recommendations to create a roadmap to driving EUI efficiency deployment

You (stakeholders) can shape EUI policy

Today begins process to get to recommendations
Policy Barriers

- Identified, updated and refined via stakeholder meeting #1, informal survey, formal survey, and Advisory Committee
- Possible policy recommendations open for discussion today
- Limited to CIP-related barriers for length, full list of barriers on project webpage
Discussion Goals

- Review/understand identified barriers
- Discuss possible policy solutions
- Consider actual impacts of policies
- Importance of each barrier/solution
- Difficulty of implementing policy solution
- No bad ideas today… but better ones?
Lack of standardized savings calculation methodology introduces uncertainty to planning EUI efficiency projects.

Some TRM measures are defined – iteratively improve them and eventually develop protocols for more complicated EUI projects.
Cost Recovery Issues

EUI efficiency rider (IOUs) is too complicated. Value proposition (COUs) is not well-enough proven.

Could streamline the rider. Develop cost-benefit analysis tools. Demonstration pilot projects.
Performance incentives are not available for EUI projects

Allow EUI spending to count toward calculation of performance incentive
Currently, EUI savings cannot be claimed until a utility meets their 1% conservation goal on the demand side.

Construct careful guidance to allow utilities to claim EUI savings before meeting demand goal. 1% demand-side goal will remain. (Carryforward guidance in 2017)
Define “Normal Maintenance”

EUI projects must achieve savings above the course of “normal maintenance,” which is poorly defined.

Requires collaboration and consensus – some precedent (Clean Air Act) and some attempt in TRM to define. Needs work.
Spending on EUI projects does not currently count toward CIP spending goals.

Could change provision to allow EUI spending to count, but a discussion about second-order effects needed. Will it draw resources from demand-side programs?
No urgency currently to invest in EUI efficiency for CIP reasons because demand-side programs are meeting goals.

Laying the groundwork important now for future when demand-side programs slow down – EUI may also be more cost effective in some cases.
More barriers were identified, but we limited the discussion today to only CIP-related ones. Full list of barriers (so far) can be found in the Literature Review document on the project webpage.
COFFEE BREAK
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Distribution System Planning
Utility Infrastructure Efficiency
Stakeholder Meeting

October 20, 2017
Mary Santori, Manager, Distribution System Planning & Strategy
EUI Refresher

• On the utility side of the meter
• Efficiency > normal maintenance activity
• Must be in public interest (benefit > cost)
• Includes electric produced from waste heat

• Counts toward goal once 1.0% is achieved
• Savings can be carried forward
About Xcel Energy

Gas Customers: 2 Million
Electric Customers: 3.5 Million
Electric Power System Overview

1. Power generation
2. Transmission structure
3. Serves one or multiple communities
4. Serves 1,500 to 8,000 customers
5. Serves 40 to 400 customers
6. Serves 4 to 12 customers
Distribution System Planning Process

1. **Memo**: Creation of a plan and budget
2. **Budget Create**: Development of a budget
3. **Mitigation Plans**: Planning to address potential risks
4. **Risk Analysis**: Evaluation of potential risks
5. **Load Forecast**: Projection of future load requirements
6. **Design & Construct**: Creation of design and construction plans

**Special Initiatives**
- ADMS Design
- Hosting Capacity
- Long range plans
- Asset Health projects
- AGIS support
Reliable Feeder Design

Feeder Breaker
Feeder #1

Fault

Feeder 1
Section 1
Loading = 25%

Feeder 1
Section 2
Loading = 25%

Feeder 1
Section 3
Loading = 25%

Tie to Feeder #2

Tie to Feeder #3

Tie to Feeder #4

Switch

Key
- Green Switch - Normally Open
- Red Switch - Normally Closed

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Distribution System Planning for the Future

- Forecasting impacts
  - Quantity and dependability of Distributed Energy Resources (DER)
  - Electric vehicle adoption
  - New types of conservation & load control
- Move from “peak only” forecasting to 24/7
- Improve planning & forecasting tools
Hosting Capacity Analysis

- Definition of hosting capacity
- History
  - Other utilities
  - NSPM
- Possible future enhancements
Intelligent Distribution System

- Advanced Distribution Management System (ADMS)
- Secure Field Area Network (FAN)
- Expand SCADA coverage
- Advanced Field Devices
  - Monitoring & Control Equipment
    - Capacitor Controls
    - Smart inverters
  - Automated field switches (FLISR)
  - Dispatchable Resources (DG, Storage, DER)
Energy Efficiency – Surge Arresters

• Xcel Energy utilizes Cooper Power Systems’ Evolution Arresters for all overhead line applications
• Approximately 90% lower energy losses vs the 2 major competitor products.
  – 2 watts vs 25 watts
Energy Efficiency – Outdoor lighting

• Large project to convert from high pressure sodium to LED outdoor lighting in all 8 states that we serve
  – Equivalent LED lights consume between 38% and 61% less energy than the high pressure sodium lights
Energy Efficiency - Transformers

• Major utilities assign equivalent present value for:
  – costs of no-load losses
  – costs of load losses
• Transformer manufacturers select designs and core materials that reduce losses in an economic manner
• Present value for the cost of losses is added to the prices in order to select the unit with the lowest total cost of ownership
Energy Efficiency - Transformers

• In recent years the federal Department of Energy (DOE) has implemented efficiency regulations that dictate minimum efficiency levels.

• These energy conservation standards are specified in the Code of Federal Regulations at 10 CFR 431.196.

• For Xcel Energy and most Midwest utilities, the DOE requirements significantly exceed the efficiency level that would be selected based on the previously mentioned economic calculations.
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Varying perspectives on EUI planning, design, and impacts of possible policy recommendations

Mary Santori – Xcel Energy – Investor Owned Utility
Jeff Haase – GRE – Cooperative Utility
Kevin Lawless – Forward Curve – Non-Utility
Rich Sedano – RAP – National Perspective

Moderator: Jessica Burdette - DER
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Next Stakeholder Meeting

Date TBD – Early 2018 – Watch your inbox

Topic: EUI Financing

More national and local expert speakers

Continue policy recommendation discussion
Talk to people in your organization to get reactions about possible policy recommendations and impacts

- Will they actually work to drive more implementation of EUI efficiency?
- Any unintended consequences?
- Even better ideas?
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651-539-1798

Project Website: https://www.mncee.org/mnsupplystudy/home/