Sustainable impacts in the Midwest energy industry

AESP Midwest and Wisconsin Chapters
April 11, 2018
Agenda

• The e21 Initiative
• Xcel Energy’s Time-of-Use Rate Design Pilot Program
• Performance Metrics for Xcel Energy’s Electric Business
• Policy Considerations from Minnesota’s Demand-Side Management Potential Study
CEE’s nonprofit mission

The Center for Energy and Environment promotes energy efficiency to strengthen the economy while improving the environment.

Data-driven and community-engaged, we have a passion for discovering and deploying the most effective solutions for healthy, low-carbon economy.

*We provide practical energy solutions for homes, businesses, and communities.*
What we do

To navigate a complex and dynamic field, CEE employs mutually supportive, comprehensive strategies:

- Research
- Commercial Programs
- Residential Programs
- Engineering for Efficiency
- Lending Center
- Engagement & Education
- Public Policy
CEE Values

- Data-driven
- Design practical solutions
- Focus on outcomes
e21 Conveners

GREAT PLAINS INSTITUTE

CEE Center for Energy and Environment

e21 Initiative
e21 = Response to Changing Electric System

Analog & Manual → Digital & Automated

Centralized One-way flow → Cleaner More Distributed Multi-directional flow

Little consumer choice → More consumer choice
e21’s Distinguishing Features

**Proactive**
Done in advance of crisis
Agreement on arc of change could reduce transaction costs & improve outcomes

**Multi-interest & Collaborative**
Consensus-oriented
Safe space outside of formal regulatory process

**Voluntary**
Arose from mutual interest among participants
Opportunity for diverse interests to travel common learning curve
Phase I: Process

Agree on guiding principles

Transformative Scenario Planning

Blueprint for evolving regulatory framework and utility business model
Phase II: Whitepapers

Performance-Based Compensation

Integrated Systems Planning

Grid Modernization
Phase III: Ideas to Action

PHASE II
Implementation Plans

PHASE I
Consensus for Change

PHASE III
Ideas to Action
Phase III: Stakeholder Engagement

**Forums**
Example: Alternative Rate Designs

**Roundtables**
Example: Docket on Performance Metrics for Xcel Energy

**Project Workgroups**
Example: Xcel Energy Time of Use Rate Design Pilot
Xcel Energy’s Time-of-Use Rates: The Process

- Used the e21 Initiative model
- Stakeholder process led by CEE and Great Plains Institute
  - 6-months long
  - 8-meetings
- Xcel Energy hired an subject matter expert consultant
- Xcel Energy filed the Time-of-Use Rate Design Pilot Program on November 1, 2017
Xcel Energy’s Time-of-Use Rates: Stakeholders Involved

- Citizens Utility Board
- Energy CENTS Coalition
- Fresh Energy
- Department of Commerce
- Large Industrial Customer Group
- Office of the Attorney General
- Suburban Rate Authority
Xcel Energy’s Time-of-Use Rates: Stakeholder Meetings

- Public forum to kick-off the topic
  - Xcel Energy provided background
- 3 small group stakeholder meetings to:
  - Agree upon objectives and priorities
    - Must-haves vs. Nice-to-haves
  - Develop a list of issues to discuss
  - Develop initial suggestions for design
- Public forum to present on draft proposal
- 3 small group stakeholder meetings to:
  - Refine Xcel Energy’s draft proposal
Xcel Energy’s Time-of-Use Rates: Stakeholder Issues

• Defining and protecting low-income customers
  • LIHEAP recipients vs. LIHEAP-eligible

• Costs
  • Showing that costs are balanced with benefits
  • Cost of meters

• Post-Pilot Planning
  • Transitioning from pilot to permanent program
  • Continuity for participants
Xcel Energy’s Proposed Time-of-Use Rates Pilot

- 24-month project
- 2 geographic locations
- Opt-out structure
- Bill protection
- Strong price signal

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
<th>Average Cents/kWh</th>
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<tbody>
<tr>
<td>On-peak</td>
<td>3 – 8 pm (weekdays)</td>
<td>$0.238</td>
</tr>
<tr>
<td>Mid-peak</td>
<td>All other hours</td>
<td>$0.111</td>
</tr>
<tr>
<td>Off-peak</td>
<td>12 am – 6 am (all days)</td>
<td>$0.057</td>
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Feedback on Xcel Energy’s Time-of-Use Pilot Project Proposal

- Positive feedback
  - Stakeholder participants
  - Industry experts
  - Utility-focused media
- All Commenters recommended the PUC approve the Pilot
  - Some requested tweaks
- No big surprises for Xcel Energy or stakeholders

Has Xcel Minnesota designed the ideal residential time-of-use rate?

The pilot program, to determine if price signals can get customers to shift energy usage away from peak times, has garnered wide acclaim. The main concern? It doesn't start soon enough.
Performance Metrics for Xcel Energy’s Electric Business

• September, 2017: the MN PUC opened an investigation to *Identify and Develop Performance Metrics and, Potentially, Incentives for Xcel Energy Electric Utility Operations*

  • The Commission is interested in obtaining an understanding of how performance metrics and standards, and potentially incentives, could further align the focus of Xcel’s utility management with the public interest.

• GPI convened an e21 Roundtable of interested stakeholders and experts
Performance Metrics Stakeholder Meeting

Participants

• Advanced Energy Management Alliance
• Center for Energy and Environment
• Citizens Utility Board of Minnesota
• Energy Transition Lab, University of Minnesota
• Fresh Energy
• Midwest Cogeneration Association
• Minnesota Center for Environmental Advocacy
• Minnesota Power
• Office of the Attorney General
• Stoel Rives on behalf of the Minnesota Large Industrial Group
• Xcel Energy
Performance Metrics for Xcel Energy: The Process

- GPI convened an e21 Roundtable
  - 4 stakeholder meetings from November 2017- February 2018
- December, 2017: Parties filed Comments
  - e21 Initiative’s Performance Based Compensation Whitepaper
  - OAG Performance Incentive Mechanism Design Model Proposal
- March, 2018: Parties filed Reply Comments
  - e21 filed a summary of Roundtable meetings
  - CEE filed on behalf of CEE
  - Many expressed support for the OAG proposal
Office of the Attorney General “PIM” Proposal

• In its Comments, the Office of the Attorney General (OAG) proposed a process to identify goals, outcomes, and metrics
• Performance Incentive Mechanism (PIM) Design Process
• Focus on steps 1-4 with stakeholder involvement
Next Steps for Performance Metrics for Xcel Energy Docket

- Waiting to hear from the PUC
  - Should we move forward with the PIM model?
- Roundtable participants agreed to continue working
Learn More

- e21Initiative.org
  - Xcel Energy’s Time-of-Use Pilot: M-17-775
  - Performance Metrics Docket Investigation: CI-17-401
Minnesota Statewide Energy Efficiency Potential Study

Overview of study goals

Stakeholder engagement so far

Policy topics being discussed

Some cool data charts & Technical Potential by end use
MN Statewide Energy Efficiency Study Goals

1. Estimate statewide natural gas and electric energy efficiency and carbon saving potential in Minnesota for 2020 - 2029.

2. Produce actionable data resources for utilities regarding which market sectors, geographical areas, service territories, end uses, measures and programs should be targeted to help realize cost-effective energy efficiency potential.

3. Provide multiple opportunities for stakeholders to participate in the project to help advance robust energy policies and CIP programs in Minnesota.
Stakeholder work

• Survey of 40 stakeholders, representatives from:
  • Municipal, cooperative and investor-owned utilities
  • Consumer, environmental, local government and business organizations

• Individual interviews

• Advisory Committee
  • Held 3 meetings so far
  • Next one is May 15th in Rochester MN (observers invited as well)
Key takeaways on stakeholder work

- Generally feel like the programs and the regulatory oversight work well right now…

- But have concerns about the future, with increasing codes and standards reducing amount of savings that can be claimed by utilities, and other technology and market trends

- No congruence yet on the exact pathway forward
Experiences with CIP:
81% Favorable

“We've had some good success stories with saving our commercial or industrial customers a significant amount of money and they're able to expand their operations because of savings we found for them. I think it's a win-win. It helps build relationships with our customers and helps us defer systems expansions and helps keep rates down.”
Meeting the savings requirements in future years will be more challenging than in the past.

How challenging is meeting the savings requirements?

- In the past:
  - Extremely: 13%
  - Moderately: 56%
  - Slightly: 22%
  - Not at all: 9%

- In the future:
  - Extremely: 52%
  - Moderately: 42%
  - Slightly: 3%
  - Not at all: 3%

N=30-31
### Challenges with the CIP Program

**How challenging is it to reach customers with programs?**

<table>
<thead>
<tr>
<th></th>
<th>Extremely</th>
<th>Moderately</th>
<th>Slightly</th>
<th>Not at all</th>
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</thead>
<tbody>
<tr>
<td><strong>Residential</strong></td>
<td>13%</td>
<td>63%</td>
<td>17%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Low-income</strong></td>
<td>33%</td>
<td>37%</td>
<td>27%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Commercial</strong></td>
<td>17%</td>
<td>45%</td>
<td>31%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Industrial</strong></td>
<td>19%</td>
<td>26%</td>
<td>41%</td>
<td>15%</td>
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N=27-30

“I think sometimes low-income aren't in tune to utility programs and [we struggle with] how to get them educated with the programs. There may be language barriers in some communities, culture barriers, and I think just knowing who those customers are can be challenging.”

“[CAP agencies] run or meet the goal for us and they submit reports to us, but it's a challenge for them to spend the dollars we give them that we're required to spend on low-income.”
### Possible state efficiency goals

<table>
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<tr>
<th>Goal</th>
<th>Extremely important</th>
<th>Moderately important</th>
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<tbody>
<tr>
<td>Energy savings</td>
<td>55%</td>
<td>37%</td>
</tr>
<tr>
<td>Customer cost savings</td>
<td>45%</td>
<td>42%</td>
</tr>
<tr>
<td>Demand reduction</td>
<td>37%</td>
<td>45%</td>
</tr>
<tr>
<td>CO2 reduction</td>
<td>42%</td>
<td>34%</td>
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How important is each goal?

N=38
Potential changes to CIP

The following should be allowed (or have greater emphasis) in CIP

- **Demand response**: Strongly Agree 37%, Agree 45%
- **Behavioral and operational savings**: Strongly Agree 34%, Agree 39%
- **CIP targets based on achievable potential savings**: Strongly Agree 24%, Agree 46%
- **Beneficial electrification activities**: Strongly Agree 38%, Agree 27%
- **Combined Heat and Power (CHP)**: Strongly Agree 28%, Agree 36%
- **Carbon reductions**: Strongly Agree 17%, Agree 31%

N=36-38
Policy items discussed by Advisory Committee

- Accounting for Behavioral and Operational Savings
- Value of Carbon Reductions due to CIP
- Integration of Demand Response with CIP
- Strategic Electrification/Fuel Switching
- Basing CIP Target on Potential
Farm electricity

Cooperative utilities (87%)

Investor-owned utilities (13%)

Municipal utilities (1%)

Other (28%)

Crops (50%)

Motors (19%)

Irrigation pumping (6%)

Hogs (16%)

Ventilation fans (16%)

Other livestock (1%)

Lighting (12%)

Dairy (25%)

Process fans (5%)

Heat lamp (3%)

Poultry (8%)

Dairy milk cooling (6%)

Dairy vacuum pump (4%)
Natural Gas – Utility Group / Opt-out

Investor-owned utilities (94%)

- CenterPoint Energy (43%)
- Xcel Energy (22%)
- Minnesota Energy Resources (27%)
- Great Plains Natural Gas (2%)
- Greater Minnesota Gas (<1%)
- City of Duluth (1%)
- Austin Utilities (1%)
- City of Perham (<1%)
- Hutchinson Utilities (<1%)
- Owatonna Public Utilities (1%)
- New Ulm Public Utilities (<1%)
- Non-CIP municipals/private (2%)

Municipal utilities (5%)

Opt-out Customers (14%)

Non-opt-out Customers (86%)
Natural gas – Sector/Segment/End Use

Residential (42%)
- Single family (37%)
  - Space heating (59%)
    - Small multifamily (2%)
    - Large multifamily (4%)
    - Office (3%)
    - Healthcare (8%)
    - Retail (3%)
    - Public Assembly (1%)
    - Education (3%)
    - Other (2%)
    - Warehouse (1%)
    - Food sales (2%)
    - Food service (4%)
    - Farms (<1%)
    - Lodging (<1%)

Commercial (26%)
- Domestic hot water (10%)
- Cooking (3%)
- Clothes drying (1%)
- Space cooling (<1%)
- Process heating (23%)
- Other (4%)

Industrial (32%)
- Industrial (32%)
- Other (4%)
Technical Potential – Preliminary breakdown: C&I

- **Electric**
  - Refrigeration: 24%
  - Indoor Lighting: 43%
  - Plug Loads: 6%
  - Exterior Lighting: 5%
  - Cooking: 9%
  - Ventilation: 6%
  - Water Heating: 0%
  - Cooling: 3%
  - Space Heating: 0%
  - Total Electric: 4%

- **Gas**
  - Refrigeration: 6%
  - Cooking: 2%
  - Water Heating: 2%
  - Space Heating: 90%
  - Total Gas: 2%
Technical Potential – Preliminary Breakdown: Residential

**Electric**
- Space Heating: 40%
- Water Heating: 21%
- Appliances: 23%
- Cooling: 4%
- Exterior Lighting: 2%
- Indoor Lighting: 6%
- Plug Loads: 3%
- Ventilation: 1%
- Total Electric: 0%

**Gas**
- Total Gas: 0%
- Water Heating: 22%
- Appliances: 2%
- Space Heating: 76%
Timeline

• May 15\textsuperscript{th} – 4\textsuperscript{th} Advisory Cmte mtg – discuss preliminary modeling

• June – 5\textsuperscript{th} Advisory Cmte mtg – discuss draft recommendations

• Sept – Final report released