

Utility Infrastructure Efficiency Opportunities and Barriers

Stakeholder Meeting #2 (of 4) Summary Report

Convened October 20, 2017



Prepared By:



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Background

The State of Minnesota requires electric and natural gas utilities to invest in energy efficiency by statute.¹ For over three decades, Minnesota utilities have developed Conservation Improvement Programs (CIP) to meet their efficiency requirements. Most utility CIPs have focused on demand-side efficiency by providing incentives to customers for installing more energy-efficient end-use equipment.

Utilities' CIP efforts have not significantly focused on improving the efficiency of Electric Utility Infrastructure (EUI), or supply-side, of the system even though EUI accounts for approximately 12-15% of total electric consumption. Minnesota statute explicitly allows EUI efficiency to count toward conservation goals, but the number of such projects in the state remains relatively small.² The reasons for this include technical uncertainty as well as numerous policy questions.

Meeting Purpose

On October 20 at the McNamara Alumni Center in Minneapolis, the Department of Commerce and its project partners GDS Associates and Center for Energy and Environment hosted the second (of four) public stakeholder meetings exploring opportunities and barriers to utility infrastructure efficiency.

This second stakeholder meeting is part of a [U.S. Department of Energy \(DOE\) funded project](#) aimed at clarifying the existing policy landscape concerning EUI efficiency and developing a roadmap to help drive future implementation. The project will include a series of four stakeholder meetings to spur discussions and solicit feedback from stakeholders on existing incentives and disincentives for utilities to achieve greater system-wide efficiency, regulatory and policy issues, as well as cost recovery mechanisms to fund EUI projects.

The topic of the second meeting was to explore EUI policy and process approaches, with the goal of identifying potential improvements that would more effectively connect existing utility infrastructure planning and energy efficiency activities in Minnesota. National expert Rich Sedano, President of Regulatory Assistance Project (RAP), spoke about utility infrastructure policies and how they relate to efficiency. Travis Hinck, GDS Associates, provided an overview of EUI policy barriers and potential solutions related to the Conservation Improvement Program (CIP). Mary Santori, Manager of Distribution System Planning & Strategy at Xcel Energy, provided stakeholders with an overview of Xcel's utility infrastructure planning process.

The meeting concluded with an expert panel discussion examining ideas for how to more effectively connect existing utility infrastructure planning with energy efficiency activities in Minnesota.

Resources from the second stakeholder meeting can be accessed on the project website [\[here\]](#). Stakeholder meeting #3 for this project will be held early 2018. A formal announcement will be distributed to stakeholders who have [signed up to receive email updates](#) about this project.

¹ Minnesota Statutes §216B.241, subd. 1c(b) establishes an annual savings goal of 1.5 percent of average retail sales for electric and natural gas utilities.

² Minnesota Statutes §216B.241 subd. 1c(d) allows a utility or association to claim energy savings resulting from EUI projects on top of a minimum energy savings goal of 1 percent from energy conservation improvements, provided the EUI projects result in energy efficiencies greater than what would occur through normal maintenance activity.

Meeting Notes

I. Introduction – Jessica Burdette

- a. Not a lot of guidance in MN Statute 216b.241 regarding EUI – only a few sentences are devoted to EUI policy in the context of CIP.
- b. DOE funded this EUI study to perform stakeholder outreach, gather information, and help inform policy discussions.

II. Meeting Kickoff - Travis Hinck

- a. Later in the meeting, the group will discuss **potential, possible** changes to MN EUI policy –
- b. EUI/supply side efficiency have significant potential for continued energy savings in MN.
- c. TRM Measures – stakeholders should offer feedback on the measures to improve their effectiveness
- d. MN is one of only a few states examining these types of infrastructure efficiency opportunities, and this study will help other states and projects across the country.
- e. Check out the notes from EUI Review Meeting #1 mncee.org/mnsupplystudy/project-resources

III. Regulatory Infrastructure Policies; National Perspective - Rich Sedano (Regulatory Assistance Project)

- a. RAP helps states with new and innovative policies. Today, want to present some ideas and lessons learned from other states that can inform the discussion in MN.
- b. Utilities should do things that align with public policy – e.g. increasing efficiency. Should design policies to align utility motivations with public goals.
- c. Many ways to update infrastructure is time-specific.
- d. Increase in solar is giving utilities an opportunity to expand infrastructure and system improvements.
- e. Measuring System Efficiency
 - i. Looking at the entire system – may allow for greater efficiency.
 - ii. Benchmarking utilities may identify opportunities to improve and learn from other utilities.
- f. California Example
 - i. Decoupling state – utility is not motivated by sales.
 - ii. Reforming IRP process – formally integrated wires resources – should bring system efficiency into the process of investment. This is a new process so there are no results yet. But it is promising. We could consider adding EUI efficiency incentives to the IRP process.
- g. New York Example
 - i. New York Reforming the Energy Vision – overhaul distribution planning process.
 - ii. Revised cost-effectiveness guidelines that apply to all utility investments, including the wire system.
 - iii. Performance Regulation Plans – “system efficiency” to drive supply side efficiency (not featured purpose).
 1. Performance Regulation
 - a. Promotes system wide efficiency – including peak load and energy intensity.

3. Fundamentally there is a scale issue – because it is many things at one time that may need to be updated to help improve system efficiency.
- iv. Follow up question: Power purchase agreements with larger organizations – any experience with those relationships to drive efficiency?
 1. All-requirements contracts are a problem. There is not a lot of flexibility in these contracts (currently there is no real incentive for EUI efficiency as a goal under all-requirements contracts)
- v. Are you aware of any states or utilities that are using microgrids to help this?
 1. Most microgrids are around protecting critical infrastructure. Example in Boston – to provide better service to class A commercial space
 2. Likely microgrids are a new technology that can be applied to improve system efficiency.
- vi. Is there a difference state to state between open and closed markets?
 1. Not a lot of difference – it maybe allows more thinking about innovation in open markets. But everyone has a distribution system – so system efficiency is not fundamentally different

IV. Minnesota Utility Infrastructure Policy Barriers and Opportunities – Travis Hinck (GDS Associates)

- a. My presentation focuses on CIP specific barriers to EUI projects. The project team has identified many other barriers – please identify any barriers you can think of and send them to [Adam Zoet](#) or [Travis Hinck](#).
- b. There is a handout available on our project website that provides a summary of each of these barriers and potential solutions: mncee.org/mnsupplystudy/project-resources
- c. Some recommendations may require statutory change, regulatory guidance, or increased awareness. These are a list of **potential/possible** changes in guidance/statute
- d. EUI Savings Calculations Are Uncertain.
 - i. If you are considering to do a project – check out the [MN Technical Reference Manual's EUI measures](#) to help guide energy savings calculations. The TRM defines a set of approved EUI measures with standardize savings calculations. The TRM does not include an exhaustive list of EUI measures, and for any EUI measures that are not listed in the TRM, utilities can contact Department staff to determine eligibility of EUI projects.
- e. Cost-Recovery Issues.
 - i. Streamlining the rider is a potential update – stakeholders have expressed that it is burdensome in its current form.
 1. One possible change - the provision in the rider requiring documented justification showing a reason the EUI investment wasn't included in the previous rate case could be removed.
 2. This would clarify that utilities are being rewarded for investing in EUI improvements – currently it is structured such that it is a punishment for not already making the investments under the normal rate case.
 - ii. Develop cost-analysis tools to help utilities to identify benefits and costs for the customers may help drive utilities in making these calculation.
 1. Cost-benefits tool may not be one-size fits all – so maybe incorporating size, customers, sales, and/or other inputs to help the tool apply to other utilities in the state.

- f. Lack of Direct Incentive.
 - i. Performance Incentive not available for EUI projects.
 - 1. Allow EUI investments to count in performance incentive – but perhaps easier said than done.
 - 2. We do not want EUI projects to displace DSM incentive programs.
- g. 1% DSM Minimum Requirement.
 - i. This provision is in place because we do not want EUI to displace DSM program savings – but this causes utility uncertainty about whether their EUI savings will even count.
 - ii. Department could clarify/change policy guidance around this so that if a utility submits a CIP plan that includes 1% DSM savings – but then comes up a little short of 1% when reporting the actual results of this plan – EUI savings would still be able to be claimed toward their total savings achievements.
 - iii. EUI savings can also be carried forward for 5 years with utility CIP reporting, which is another value proposition for these types of projects.
- h. Defining “Beyond Normal Maintenance Activities”
 - i. MN Statutes 216B.241 subdivision 1c(b) requires that “[EUI] projects must result in increased energy efficiency greater than that which would have occurred through normal maintenance activity.”
 - ii. If you cannot define a baseline for EUI measures then you cannot calculate savings, performance metric etc. so this is an important issue. Very difficult to establish a broad definition of “normal maintenance activity.”
 - iii. TRM EUI measures takes a shot in defining baselines – by inputting baseline protocols, and continuing to improving these measures would help this process.
 - iv. Clean Air Act defines normal maintenance for generation facilities – so there may be some historical guidance
- i. EUI spending does not count towards CIP goals
 - i. Most utilities have stated that not concerned with meeting spending goals
 - ii. The potential solution of allowing EUI spending may have unintended consequences i.e. reducing DSM spending
- j. Currently easier ways to meet CIP energy savings goals
 - i. LED lighting will not always be there to drive efficiency
 - ii. EUI may be more cost-effective – raising awareness about these projects could help drive this change
 - 1. This stakeholder engagement project is helping address this barrier by facilitating discussion
- k. Question - These barriers are similar to DSM barriers
 - i. Opt-out customers – providing guidance
 - ii. Custom projects – department has to define normal upgrades etc.
 - iii. Overall, there are some parallels
 - 1. Utilities can always run the EUI project by Department staff beforehand to get savings approvals
- l. Question - These are very specific CIP issues where are the decision making interjection points? How do those discussion occur related to efficiency in addition to reliability and safety?
 - i. As we have this CIP specific discussion – it is important to keep in mind the distribution engineer’s perspective to help this process.

- m. Comment – Most customers really like DSM projects and EUI projects do not have customer engagement opportunities.
 - i. This is an important consideration.
 - ii. Difference between widget efficiency and system efficiency
 - 1. DSM can help keep bills flat when rates are rising
 - 2. Expanding what DSM efficiency really means – to explore EUI and other supply side ways to improve the system
 - 3. Can we look at system efficiency and performance metrics to help meet goals
 - 4. Other metrics to help utilities to meet CIP goals (statute does not mention kWh or therms).
- n. Question – Could microgrid projects be claimed to meet goals?
 - i. Many technologies and initiatives have overlap with this study.
 - ii. Yes – there is potential to overlap the goals of a changing system.
- o. Comment - Strength of CIP EUI is high-level metrics for spending and savings.
- p. Comment - EUI does not have any goals in statutes – or even appropriate measurements of losses in the baseline.
 - i. High-level goals that states maybe reducing losses from 13% to 10% to spur change.
 - ii. Code and standards – potential solution to improving EUI.
 - iii. Suggest that EUI efficiency goals and programs should be constructed outside of CIP – parallel and similar, but with separate goals and incentive mechanisms. This ties back to the discussion about setting state-level EUI efficiency performance goals. This is a good discussion to have, but would require statutory changes to implement. A discussion of long-term possible policy updates (such as performance goals) should be included in the project report. However, for now the main focus of the report is on the possibilities of near-term use of existing tools (CIP) to drive EUI efficiency.
- q. Comment - One major goal should be to increase transparency of the EUI design process. For the most part, regulators, legislators, and public advocates treat EUI as a black box. Improving efficiency is great, but it's not well-understood how much improvement is possible or should be expected. Note – this also touches on one of the strengths of CIP – transparent reporting of improvements

V. Existing Utility Infrastructure Planning Process - Mary Santori (Xcel Energy)

- a. The goal of this conversation is to connect efficiency-oriented ideas with the people who design the EUI system – distribution and generation engineers are the ones who will actually implement EUI efficiency – very important to understand their perspective.
- b. Generation and transmission issues usually do not interrupt customers usage.
- c. Load forecast is generated each year – risk analysis – inform the budget, design and construction. Looking 6-10 years out
- d. Looking at distributed energy resources. Need to look at dependability as more electric vehicles on the grid.
- e. It's a 24/7 system – integrated tools will help with forecasting
- f. Hosting Capacity Analysis
 - i. Looks at total DER that can be taken into the system
 - ii. Over 1,000 feeders analysis
 - iii. Heat map is being created displaying ideal sites for greatest DER capacity

- g. Smart Grid – many initiatives are being created
- h. Energy Efficiency – Xcel standardizes their equipment – important for reliability and safety
 - i. Surge Arresters – 2W compared to 20W (could create a TRM measure for these)
 - ii. LEDs for outdoor street lights
 - iii. Transformers - minimum efficiency of the new transformers meet the federal standards
- i. Question – Is there a point where efficiency concerns can be put in the cost-effective analysis?
 - i. When a change happens it is a large change because of large service territory
- j. Question – ADMS – what kind of software are you using? Is Xcel up to date?
 - i. Huge initiative – Xcel’s software is up to date.
 - ii. Would it be possible to include efficiency incentives as a consideration in the software design tool? One more variable to move the needle toward more efficiency (but wouldn’t override reliability and safety decision points).
- k. Question – What are your thoughts about overall system losses as a metric to determine efficiency improvements in the system?
 - i. It is tough for the distribution system because the losses are so different around the system. There may be a way to implement this metric.
- l. Question - 24/7 system modeling – would AMI feed into system planning?
 - i. Yes, Xcel is rolling out AMI – Colorado is ahead of Minnesota – also looking at time of use rates. Will help with planning and outage management
 - 1. A big problem with EUI efficiency is that a lot of the technologies *enable* efficiency improvements rather than achieve them directly (AMI in particular). Designing a reward for improved efficiency still leaves uncertainty in the planning process when deciding whether to invest in enabling technologies because the payoff is not known directly at the time costs would be incurred.
- m. Locational benefit in the PUC for renewables – how would this relate to the resource planning?
 - ii. Locational value – planning team looked at this – 9 different areas in Minnesota - it is an ongoing process.

VI. Panel Discussion on Local EUI planning and Efficiency Opportunities

- a. Panelists:
 - i. Jeff Haase, Great River Energy
 - ii. Kevin Lawless, The Forward Curve LLC
 - iii. Mary Santori, Xcel Energy
 - iv. Rich Sedano, Regulatory Assistance Project
- b. Jeff Haase:
 - i. Distribution infrastructure planning - defining ‘normal’ is very tough – because the proliferation of new technologies.
 - 1. AMI – and time of use rates – California is conducting a great experiment on these rates.
 - ii. Understanding the processes with the distribution planners and engineers
 - 1. GRE and the Co-ops do meet often to discuss and incorporate new technologies – utilities can be thought of as laboratories to test innovative

- ideas to meet goals and bring those ideas back to other stakeholders – as long as the goals aren't too rigid.
- iii. Lots of experience implementing DSM – demand reduction but not a lot of integration with EUI.
 - 1. Complicated process – counting and integrating this system is a process.
 - c. Kevin Lawless:
 - i. EUI efficiency has been implemented to some degree in Minnesota for over 20 years.
 - ii. Late 1980s/early 1990s Xcel wanted to set an example to be energy efficiency. Projects at larger power plants also helped efficiency.
 - iii. Performed a high level assessment for Xcel – conclusion we should set a goal. This may be missing in this project – the goals drive activity.
 - iv. We may get stuck – in this process – with driving this within the CIP framework.
 - v. T&D loses 8-12% of generation – lets set a goal to reduce this by 1% over ten years- we may not know how to get there (Note: this would require statutory change).
 - d. Question - What about setting a goal? CIP has been successful because of the goal – what would this look like?
 - i. Rich Sedano – Performance standard is consistent. We have societal outcomes- public policy should drive this – utility actions should support these outcomes.
 - 1. Collaborative process – where we can identify where to achieve and push these outcomes.
 - ii. Mary Santori – Always good to start with a goal, but hard to identify what the goal would be.
 - 1. Standards are changing - we always rely on standards in our designs. It makes it easier to train line workers who have to understand every piece of equipment they come to at 2AM in a thunderstorm. And it makes managing inventory easier. Note: influencing the standards used to more heavily weight efficiency considerations may be the most direct path to implement EUI efficiency goals right now.
 - iii. Kevin Lawless – CIP as DSM has gone through a number of phases – Xcel started out spending only 3 million because there was not a goal in place
 - 1. Incentivizing the goals is an important process as well
 - 2. Looking at priorities and the 'low-hanging fruit' would be the place to start
 - 3. Utilities would publish loss numbers at some point – then the goal would say let's reduce this loss by a percent or two over several years – system wide averages would be used
 - e. Question - Would it be possible to define an intermediate solution that converts reducing loses into kWh for CIP goals?
 - i. Jeff Haase – Growing load is more efficient than older loads.
 - 1. Reliability is first and foremost – what is going to be the natural transition in the next 10-20 years.
 - 2. Establishing a way to calculate the savings – because the main purpose is maybe not efficiency.
 - ii. Jessica Burdette – Efficiency is usually not the deciding factor in making upgrades, but looking at efficiency in the decision making process is way to implement these technologies.

- iii. Mary Santori – Efficiency is looked at indirectly in the economics of the solution – but safety and reliability is key.
- iv. Rich Sedano – Use cases is one way to go about this – as a way to promote efficiency in the system.
- v. Jeff Haase – Allows us to get the efficiencies in place if the technologies and communications are also in place – lessens the negative loading of a substation. Integration will be a challenge but efficiencies can be created in the system
- vi. Question – What would a % goal for EUI look like?
 - 1. What about generation efficiency gains who to count that?
 - a. Lot of the generation is on a retirement plan – so you do not need to integrate efficiency goals.
 - b. Focus will be to make them more market competitive – looking at the horizon.
- vii. Comment - Good discussion, but it is the ‘crumbs.’ Power plants newer ones are 60% efficient – locate generation at the customer base – would increase efficiency to almost 90% - UMN CHP project has a payback of about 8-10 years - overall bigger moves are needed.
- viii. Question - What are some challenges with goal settings with member co-ops?
 - 1. Goal with increasing the efficiency is really important – do not believe a EUI regulatory goal is needed.
 - a. Lifecycle costs – why would utilities not want to reduce losses?
 - b. Discussion is about having a regulatory process to incentivize this when it is not economical in of itself.
- ix. Comment - It may be worth setting up a standing meeting (in parallel with the TRMAC?) to continually review utilities ideas for driving EUI efficiency and discuss successes/lessons-learned.

Next Steps – EUI Stakeholder Meeting #3

Stakeholder meeting #3 for this project will be held early 2018. Participants will have the opportunity to hear from more national and local expert speakers, and help continue building roadmap for EUI efficiency implementation in Minnesota.

A formal announcement with the meeting agenda and registration info will be distributed to stakeholders who have signed up to receive email updates about this project. To learn more about this project, and to sign up for periodic study updates, please visit the project website at:

<https://www.mncee.org/mnsupplystudy/home/>