Stakeholder Perceptions Around Supply-Side Energy Efficiency Potential & Policy Issues

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Summary

Wilder Research worked with the Center for Energy and Environment (CEE) to conduct in-depth qualitative interviews with key stakeholders in summer 2017 and recently completed a follow-up web survey in November 2018 about supply-side efficiency and Electric Utility Infrastructure (EUI). Wilder conducted interviews around supply-side efficiency with 25 stakeholders, and 23 stakeholders of varying organization types completed the web survey. This summary primarily focuses on the web survey's findings. Interview findings were previously presented to the EUI project team and the advisory committee, and can be found on the project website. Key highlights are included below.

Interview key findings

- 80% of stakeholders agreed that infrastructure improvements should continue to count toward CIP *savings* goals, and fewer (52%) agreed they should be counted toward CIP *spending* goals.
- To help overcome the barriers to implementing supply-side efficiency projects, stakeholders suggested reconsidering the 1% DSM rule, educating utilities on what can be claimed and how to claim it, and clarifying rules and processes.

Web survey key findings

- 78% of stakeholders thought EUI is an important component of energy efficiency policy. However, only 43% agreed that there should be more emphasis on EUI savings in energy efficiency policy.
- 74% said that uncertainty about claiming savings is a barrier to implementing EUI projects, and most (70%) said that the Minnesota Department of Commerce, Division of Energy Resources (DER) should invest more time to clarify the regulatory policy around claiming EUI savings.
- More respondents (91%) were familiar with the recent guidance "Claiming Energy Savings through Electric Utility Infrastructure Improvements and the Energy Savings Carry Forward Provision," than "Determining Normal Maintenance Activities and CIP Review Process for Electric Utility Infrastructure Efficiency Projects" (52%). Most stakeholders (81% and 64% respectively) thought both pieces of guidance would make it at least somewhat more likely that utilities would implement future EUI projects, however, very few (<10%) thought they would make it much more likely.

- While almost a third of respondents were not sure about the 0.13% estimated savings potential identified in the efficiency-potential study, of those who responded (N=16), half said the EUI savings potential seemed about right, and 38 percent said it was too low.
- 43% of respondents said the 0.13% estimated savings potential identified would not make it more or less likely for utilities to implement supply-side projects.
- Half of participants were not sure about the proportions of savings potential within the generation sector and about a third were not sure about the transmission and distribution sectors. Only two respondents (9%) did not agree with the proportions in the generation sector and only one respondent (4%) did not agree with the proportions in the transmission and distribution sectors.
- Measure-based goals and metrics (e.g. a Technical Reference Manual (TRM) for prescriptive EUI measures) were the most highly preferred EUI measurement type. 61% ranked this as their first choice for EUI goals and metrics.
- Participants suggested EUI measure additions to the Minnesota Technical Reference Manual including: repowering/upgrading wind turbines, wind and solar upgrades, capacitor banks to improve system power factors, installing mechanisms to better measure loads at distribution nodes in real time, smart meters (AMI), and VFDs on water well pumps.
- When asked about the biggest barrier to using the dedicated rider for cost recovery, nearly two-thirds of stakeholders (62%) said they were unfamiliar with the dedicated rider. Another 19% said the rider was too complicated to use.

Introduction

GDS Associates (GDS) and the Center for Energy and Environment (CEE) have been leading the Statewide Energy Efficiency Supply Side Potential Study to examine the potential for Electric Utility Infrastructure (EUI)/supply-side efficiency projects; that is, utility-owned projects that improve the overall generation, transmission, and distribution efficiency of the electric system. As the electric power industry is the largest single user of electric power, consuming an estimated 12%-15% of the nation's electricity production, it is important to examine the potential for energy efficiency savings.

This project is funded by a grant from the Minnesota Department of Commerce, Division of Energy Resources, through the Conservation Applied Research and Development (CARD) program, and is also supported through a State Energy Program Competitive Award through the U.S. Department of Energy. This supply-side study is being conducted alongside another CARD-funded study looking at energy saving potential on the demand-side. Together, these studies will provide information to help Minnesota consumers and businesses save energy, cut energy bills, and reduce air pollution. These efforts strive toward maximizing energy efficiency in homes, commercial buildings, power companies, farms, new construction, and other areas. You can visit the study's webpage to learn more about the supply-side study.

The study is also exploring and making policy recommendations as part of a stakeholder engagement process. As a part of this process, CEE contracted with Wilder Research to survey the familiarity, perceptions, and preferences associated with EUI efficiency. Wilder worked to conduct in-depth qualitative interviews with key stakeholders in summer 2017 and recently completed a follow-up web survey in November 2018.

This report discusses these two efforts, with a focus on the web survey's results. Interview findings were previously presented to the EUI project team and the advisory committee, and can be found on the project website. This report is more technical in nature and intended for those who have a prior understanding of key energy efficiency terms and concepts. If you have questions about technical content, please contact Jon Blaufuss at jblaufuss@mncee.org.

Methods

In 2017, Wilder Research worked extensively with CEE to develop a key informant interview to gather respondents' knowledge, perceptions, and preferences around both supply- and demand-side energy efficiency. Wilder Research conducted 90-minute interviews with representatives from municipal utilities, co-op utilities, investor-owned utilities, local government, clean energy organizations, and program implementers. CEE developed the list of key informants. In total, Wilder staff interviewed 38 of 59 potential respondents.

Representatives from utilities comprised 60-75 percent of respondents[1]. All 38 respondents answered questions about demand-side energy efficiency; fewer (25 people) answered the close-ended supply-side questions[2]. Knowledge of supply-side efficiency was more limited because representatives from gas utilities and non-utilities were often unfamiliar with EUI, and thus were not asked supply-side questions. The supply-side questions were also more open-ended and exploratory than the demand-side questions, as there were fewer preconceived or known perceptions and preferences. Interview results were compiled and presented to the advisory board for the two potential studies in September 2017.[3]

Throughout 2017 and 2018, GDS, CEE and their project partners continued to work on the supply-side efficiency-potential study and bring additional light to that area of work. In November 2018, Wilder developed a web survey to capture current knowledge, perceptions, and preferences focused only on supply-side efficiency. Wilder and CEE switched from the interview format to a web survey in this round of data collection in order to alleviate the time burden for respondents, and because CEE had a more defined set of research questions. As the questions were different in the interviews and the web surveys, there are no direct comparisons that can be made between data from the two different sources.

Wilder sent the web survey to 52 stakeholders, and 23 completed the survey (response rate of 44%). Essentially the same groups of stakeholders were represented in both data collection activities, though with the web survey, representatives from municipal utilities made up 43 percent of respondents, whereas in the interviews, no more than a quarter of respondents were from any one group (Table 1). It is important to note that the data presented throughout this report have that lens.

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1 This percentage varies by question as the survey diverged based on the participant's knowledge and sector.

2 Two additional people provided comments on supply-side open-ended questions, but said they did not know for the majority of close-ended questions. They are therefore excluded from that analysis.

3 The supply-side presentation can be found on the supply-side potential study website, and the demand-side presentation can be found on the demand-side potential study website.

1. Interview and web survey respondent organization types

Organization type	2017 interviews (N=25) N	2017 interviews (N=25) %	2018 web survey (N=23) N	2018 web survey (N=23) %
Municipal utility/association	6	24%	10	43%
Co-op utility/association	4	16%	1	4%
Investor-owned utility	6	24%	3	13%
Local government	1	4%	0	0%
Clean energy organization	3	12%	6	26%
Program implementer/consultant	5	20%	3	13%

Supply-side interview findings

In the first round of interviews, Wilder Research explored what stakeholders knew about supply-side efficiency projects and the decision-making process around implementing supply-side efficiency projects.

When deciding whether to implement a supply-side efficiency project, stakeholders noted that the important factors were cost, reliability, safety, and need. Fifty-five percent of the respondents (N=22) said that efficiency gains were moderately or extremely important in making a decision to implement a supply-side efficiency project. To help overcome the barriers to implementing supply-side efficiency projects, stakeholders suggested reconsidering the 1% DSM rule, educating utilities on what can be claimed and how to claim it, and clarifying rules and processes.

Stakeholders were also asked a series of questions about including infrastructure improvements with Conservation Improvement Program (CIP) goals. Most stakeholders (80%) agreed that infrastructure improvements should continue to count toward CIP *savings* goals (Table 2). Fewer (52%) felt it should count toward CIP *spending* goals. Including infrastructure improvements in CIP goals was particularly important for municipal and cooperative utilities as all nine respondents representing those utilities agreed it should be included in CIP *savings*, and nearly all (8 of 9 respondents) said it should be included in CIP *spending* goals.

2. Agreement with infrastructure improvements in CIP goals statements

CIP goals statements (N=25)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Infrastructure improvements should continue to count toward CIP savings goals.	40%	40%	16%	4%	0%
Infrastructure improvements should count toward CIP spending goals.	28%	24%	36%	12%	0%
The incremental difference between efficiency and standard infrastructure improvements should be paid for with CIP funds.	24%	40%	24%	8%	4%

Stakeholders were also asked to elaborate on the pros and cons of including EUI projects in CIP goals, which are condensed and listed in Table 3.

3. Pros and cons of including EUI projects in CIP goals

Pros	Cons
Builds awareness of systems and improvements	Free ridership
Allows more utilities to claim	Reduced DSM efforts
Demonstrates the importance of energy efficiency	Uneven across years
Considers that projects are complex and multi-year	Could inflate perception of energy efficiency potential
Accounts for the energy savings occurring	Projects are not counted if goal is not met
Helps to meet 1.5% target despite future challenges	Harder to track
Breaks down arbitrary barriers between DSM and EUI	Potential for double counting
	Little utility benefit outside of fulfilling the statutory requirement
	Customers may not see direct benefit

Web survey findings

After a year of further developing the EUI potential study and engaging stakeholders, the project team was interested in following up with stakeholders to understand more about their current thoughts and preferences around EUI policy, energy savings potential, goals and metrics, and the TRM and dedicated riders. The following section outlines the findings around each of those interest areas.

EUI policy and regulatory issues

While 78 percent of stakeholders thought that EUI is an important component of energy efficiency policy, only 43 percent agreed that there should be more emphasis on EUI savings in energy efficiency policy (Table 4). Most (74%) say that uncertainty about claiming savings is a barrier to implementing EUI projects, and most (70%) also say that the DER should invest more time to clarify the regulatory policy around claiming EUI savings.

4. Agreement with EUI in energy efficiency policy statements

Policy statements (N=23)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
There should be more emphasis on EUI savings in Minnesota's energy efficiency policy.	4%	39%	26%	26%	4%
EUI is an important component of energy efficiency policy.	13%	65%	13%	9%	0%
Uncertainty about claiming savings is a barrier to implementing EUI projects.	26%	48%	17%	9%	0%
The Division of Energy Resources (DER) should invest more time to clarify the regulatory policy around claiming EUI savings.	22%	48%	17%	9%	4%

Since the uncertainty around claiming EUI savings was a known barrier, the DER created two pieces of regulatory policy guidance concerning EUI conservation projects called "Claiming Energy Savings through Electric Utility Infrastructure Improvements and the Energy Savings Carry Forward Provision" and "Determining Normal Maintenance Activities and CIP Review Process for Electric Utility Infrastructure Efficiency Projects."

Almost all of the respondents were familiar with the first piece of policy guidance (91%, Table 5). Of those who were familiar with it, 81 percent said this guidance would make utilities at least somewhat more likely to implement future EUI projects, however, only 5 percent said it would make it much more likely. About half of respondents were familiar with the second piece of guidance, and a smaller percentage of those respondents (64%) thought it would make utilities at least somewhat more likely to implement future EUI projects.

5. Familiarity with regulatory policy guidance and likelihood to implement future EUI projects

	How many people were familiar with policy guidance		How much more likely do you think utilities will be to implement future EUI projects as a result of this proposed change?		
Guidance	**%**	**N**	**Much more likely**	**Somewhat more likely**	**Not more likely**
Claiming Energy Savings through Electric Utility Infrastructure Improvements and the Energy Savings Carry Forward Provision	91%	21	5%	76%	19%
Determining Normal Maintenance Activities and CIP Review Process for Electric Utility Infrastructure Efficiency Projects	52%	11	9%	55%	36%

Seven respondents suggested that additional guidance from the DER would be helpful. Their suggestions included guidance around:

- Electrification and fuel switching
- Energy savings estimates for equipment upgrades around transformers, conductors, and voltage reduction
- Wind turbine upgrades and maintenance
- New technology to incorporate into custom projects

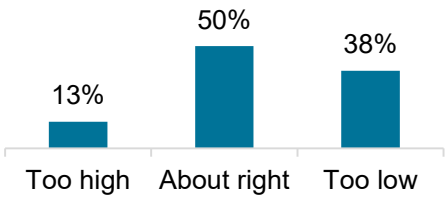
One respondent also noted that more credit should be allowed for renewable energy projects.

EUI energy savings potential

The recently completed EUI potential study found that the statewide achievable energy savings potential in the electric infrastructure sector is approximately 0.13% of annual electric retail sales over the next 20 years. We were interested in knowing if that number aligned with respondents' perceptions of the potential savings for EUI. Almost a third responded that they did not know what a reasonable estimate was. Of those who responded (N=16), half said that the savings potential seemed about right, 38 percent said it was too low, and 13 percent said it was too high (Figure 6).

Does the estimated EUI savings potential of 0.13% of annual electric retail sales seem too high, about right, or too low?

6. Perceptions of EUI savings potential (N=16)



Respondents were then asked why they perceived the savings potential as too high, about right, or too low. Given the small number of respondents, no true themes emerged, however, responses for those who felt it was too low or too high are listed below.

For those who felt the estimate was too low:

> *Seems like a very small number compared to the project that I know is going on.*
>
> *Additional measures could have been included, such as repowering wind turbines or VVO.*
>
> *Given the sheer volume of electricity either produced from power plants or transported across transmission and distribution lines, it would seem that the potential would be higher.*
>
> *I have seen projects within some of these facilities and I believe with the correct M&V could demonstrate greater savings.*

For those who felt the estimate was too high:

> *I assume some low hanging fruit to pick in the short-term, but 0.13% would be hard to achieve long-term.*
>
> *Infrastructure projects take place without the involvement of Minnesota Department of Commerce. The efforts to track those kWh savings through other internal departments will become a barrier.*

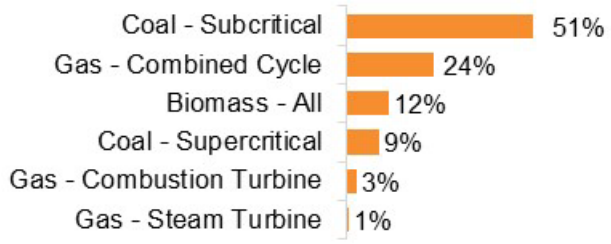
Respondents were also asked if the estimated potential of 0.13% would make it more or less likely that utilities will pursue implementation of EUI projects. Forty-three percent said it would make it neither more or less likely, and 39 percent said it would make it less likely (Table 7).

7. Likelihood of utilities pursuing EUI projects based on estimated potential

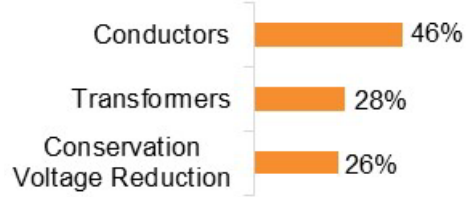
Does the estimated potential (0.13% of annual electric retail sales) make it more or less likely that utilities will pursue implementation of EUI projects? (N=23)	N	%
Much more likely	0	0%
Somewhat more likely	4	17%
Neither more or less likely	10	43%
Somewhat less likely	7	30%
Much less likely	2	9%

To dive further into respondent perceptions of energy savings potential, respondents were asked separately about the proportions of savings potential in the generation sector and in the transmission and distribution sectors. Respondents were asked if the proportions in the following graphs matched their sense of the opportunities for EUI energy savings potential in Minnesota's generation sector and transmission and distribution sectors.

Generation sector savings potential proportions



Transmission and distribution sectors savings potential proportions



When asked about the generation sector, over half of respondents replied that they did not know about the savings potential, and 39 percent said that they agreed with the proportions represented in the graph (Table 8). Only two respondents (9%) said that they did not agree with the proportions in the graph. Both said they thought the percentages for coal (subcritical) and biomass were too high.

Respondents were then asked about the transmission and distribution sectors. Thirty percent said they did not know about the transmission and distribution sectors and 65 percent said they agreed with the proportions represented in the graph. The one person who did not agree said they felt conductors were too high and conservation voltage reduction was too low.

8. Perceptions of EUI savings potential by sector

	Do all of the proportions in this graph match your sense of the opportunities for EUI energy savings potential? (for each sector)		
Sectors (N=23)	**Yes**	**No**	**Don't know**
Generation sector	39%	9%	52%
Transmission and distribution sectors	65%	4%	30%

EUI goals and metrics

Respondents were asked to rank three different types of goals and metrics according to how effective they thought they would be in encouraging utilities to pursue EUI projects. By far, the most highly ranked goal and metric type was measure-based, with nearly two-thirds of respondents ranking this first (Table 9). Respondents ranked performance-based goals and metrics as the next most effective, followed by expenditure-based goals and metrics.

9. Rankings of savings potential goals and metrics types

Goal and metric type (N=23)	**Rank 1**	**Rank 2**	**Rank 3**
Measure-based (kW and kWh saved) This could include: TRM manual for prescriptive measures; For custom projects, detailed descriptions of each measure installed as well as the baseline equipment	61%	26%	13%
Performance-based (total losses as % of baseline losses) This could include: annual loss study using agreed-upon methodology; reporting of all losses relative to generation/purchases and sales (both retail and wholesale)	22%	52%	26%
Expenditure-based (expenditures as % of revenues or capital budget) This could include: detailed expenditure data proving that it was spent on allowable activity; annual revenue or capital budgets for setting goals, etc.	17%	22%	61%

Two respondents offered different types of goals and metrics that should be considered, including more process-oriented suggestions.

> *No annual loss studies should be required. Lots of expense for little benefit, likely doesn't change that much.*
>
> *Not having to meet a minimum percentage on the use side in order to claim these projects towards our CIP goals.*

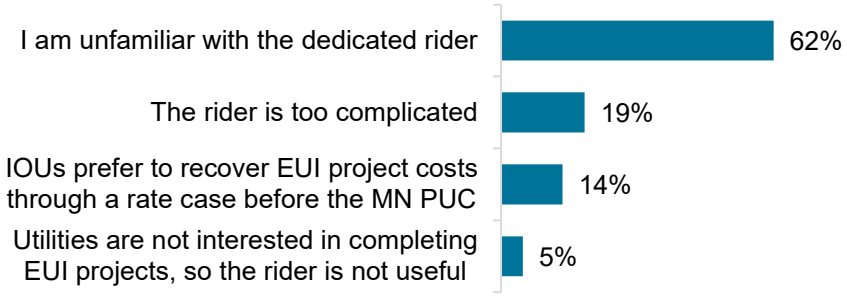
Technical reference manual and dedicated rider

The Minnesota Technical Reference Manual (TRM), developed and updated by the DER, provides guidance to utilities about how to calculate and claim energy savings for common electric and gas efficiency measures. Respondents suggested adding the following EUI measures to the TRM:

- Repowering/upgrading wind turbines
- Wind and solar upgrades
- Capacitor banks to improve system power factors
- Installing mechanisms to better measure loads at distribution nodes in real time
- Smart meters (AMI)
- VFDs on water well pumps

There is a dedicated rider for cost recovery of EUI conservation projects for utilities, but it is currently underutilized. When asked about the biggest barrier in using the dedicated rider, nearly two-thirds of respondents (62%) said they were unfamiliar with the rider (Figure 10). Nineteen percent said the rider is too complicated and another 14 percent said investor-owned utilities (IOUs) prefer to recover EUI project costs through a rate case before the Minnesota Public Utilities Commission (MN PUC).

10. Biggest barrier to using the dedicated rider (N=21)



Of the people familiar enough with the rider to suggest an answer (12 respondents), five thought IOUs would be much more likely to use the dedicated rider if it was streamlined, five thought they would be somewhat more likely, and two thought they would be no more likely.

Additional policies

Finally, respondents were asked about other policies that would help utilities implement EUI projects. Two respondents mentioned simplifying processes, and two others mentioned the CIP performance baseline thresholds. All suggestions are included below.

> *As I mentioned previously—by removing the barrier of having to meet one percent on the end-use side before we can claim any savings from these projects.*
>
> *Due to the long ROIs and the volatility of the utility markets in regard to renewables and generation, utilities are less likely to invest into these measures. There needs to be additional benefit to complete the project. Whether that comes from the state would be worth a discussion.*
>
> *Eliminate any baseline threshold for CIP performance before EUI will count toward a utilities goal.*
>
> *Financial incentives.*
>
> *Simpler recovery strategies.*
>
> *Simplify the process for utilities that do not have engineers on staff. A system that utilizes drop down boxes for calculations of energy savings based on generally known technical specifications to agreed on baseline levels for different operating conditions (conductor replacement, transformer upgrades, voltage management).*
>
> *There is really no incentive to encourage utilities to go through the regulatory process for approval of EUI projects other than meeting their 1.5% savings goal. DSM is different because customers like it - so even munis and co-ops have an incentive to do it (aside from the state mandate).*
>
> *To the extent DER uses as a metric the percentage increase in efficiency over a certain baseline (the ranking exercise to which you requested a response a few questions back), then achievements against these benchmarks could receive separate performance-based earnings treatment (another CIP shareholder incentive).*

Conclusions

Overall, stakeholders in both 2017 and 2018 think that EUI is an important part of the state of Minnesota's energy efficiency policies. However, there are mixed feelings about the best way to include EUI in savings and spending goals, and whether there should be more emphasis on EUI in energy efficiency policy. There are numerous pros and cons to consider when changing policy around EUI in CIP goals.

The DER has created some policy guidance to help clarify and streamline the process for claiming EUI projects. Stakeholders were most likely to be familiar with the Claiming Energy Savings through Electric Utility Infrastructure Improvements and the Energy Savings Carry Forward Provision, and most thought utilities would be somewhat more likely to implement projects because of the guidance.

After seeing the findings from the supply-side efficiency-potential study that found the EUI potential savings to be 0.13%, most stakeholders who felt they could answer thought the estimate was about right (50%) or too low (38%). Almost all stakeholders who could answer also agreed that the generation and transmission sectors and distribution sector breakdowns seemed about right. Respondents feel the 0.13% estimate will either neutrally impact the likelihood of utilities to implement EUI projects, or make it less likely for them to implement EUI projects.

When considering goals and metrics for encouraging EUI projects, most (61%) said measure-based goals and metrics would be most effective.

Finally, stakeholders provided several suggestions for additions to the TRM, as well as additional policies to consider. They also thought the dedicated rider was too complicated and thought streamlining it could make utilities more likely to use it.

While the sample size for interviews and web surveys was relatively small, and thus difficult to organize their open-ended responses into themes, the stakeholders offered many good suggestions, and we recommend reviewing responses individually to glean their ideas.

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