



Evaluating the Need for a Regional Energy Efficiency Technical Resource Manual for Small Utilities in the Midwest

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Abstract

Utilities and energy efficiency program administrators frequently rely on technical resource manuals (TRM) in planning, quantifying and reporting savings from energy efficiency measures and programs. Though many states and large utilities have developed their own TRMs, smaller utilities often lack the resources necessary to do so. This is particularly relevant in many parts of the Midwest, where small utilities (especially rural cooperatives and municipally-owned utilities) serve a large portion of the states' electric load.

We conducted primary and secondary research, including discussions with a working group of experts and stakeholders, to develop an understanding of how TRMs are used in the evaluation and measurement activities of small utilities in the Midwest. This report summarizes our research, outlining the current strategies, their strengths and weaknesses, and suggesting pathways toward a simplified small utility TRM.

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Abbreviations used

Assn	Association
Coop	Cooperative utility
EE	Energy efficiency
EERS	Energy efficiency resource standard
EIA	US Energy Information Administration
EM&V	Evaluation, measurement & verification
G&T Coop	Generation & transmission cooperative
IOU	Investor-owned utility
IRP	Integrated resource plan
JAA	Joint action agency
MEEA	Midwest Energy Efficiency Alliance
Muni	Municipal utility
PPD	Public power district
TRM	Technical Resource Manual

What is a “small utility”?

In the context of this report, when we say “small utility” we generally mean cooperative and municipal utilities, but more specifically, we are really referring to a broad group of utility and utility-like organizations that build up the network of energy services providers that are not investor-, state- or federal-owned utilities. This list includes:

- Distribution cooperatives (Coop)
- Generation & transmission cooperatives (G&T Coop)
- Municipal utilities (Muni)
- Joint action agencies (JAA)
- Public power districts (PPD)
- State cooperative and municipal utility associations (Assn)

We wanted to gain a better understanding of the scale of the small utility space in the Midwest and including this whole spectrum of organizations (rather than a tighter ‘utilities only’ definition) helped provide a more holistic view.

We know from our experience with the state energy policies in several of the Midwest states – those with energy efficiency resource standards (EERS) that include non-IOU utilities – that the larger organizations that encompass multiple cooperative and/or municipal utilities can be significant actors in the energy efficiency space. For example, in Iowa the primary reporters to the Iowa Utilities Board for small utilities are the state associations, and in Michigan the state associations are one of the various administrative groups that provide energy efficiency services for their member utilities including planning, program administration, evaluation and reporting.

We are calling these “small” utilities, but in terms of service territory, number of customers served, retail energy deliveries and other metrics, some of these small utilities are in fact larger than some investor-owned utilities. We decided not to consider small IOUs in this research, however. There are too many regulatory and organizational differences between the utility types. A small IOU is still probably more like a large IOU than it is like a comparably-sized municipal or coop utility in this context.

Small utilities, like large utilities, invest in energy efficiency programs to help meet the needs of their customers/members with the least cost. The energy efficiency policies and practices in the state are the major determining factor in how those investments are made and the impact of those investments.

Energy efficiency policies & practices in the Midwest

Energy Efficiency Resource Standards

Like any other region of the country, the Midwest – defined here as the 13 states in MEEA’s footprint: Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin – has a patchwork of energy policies and priorities.

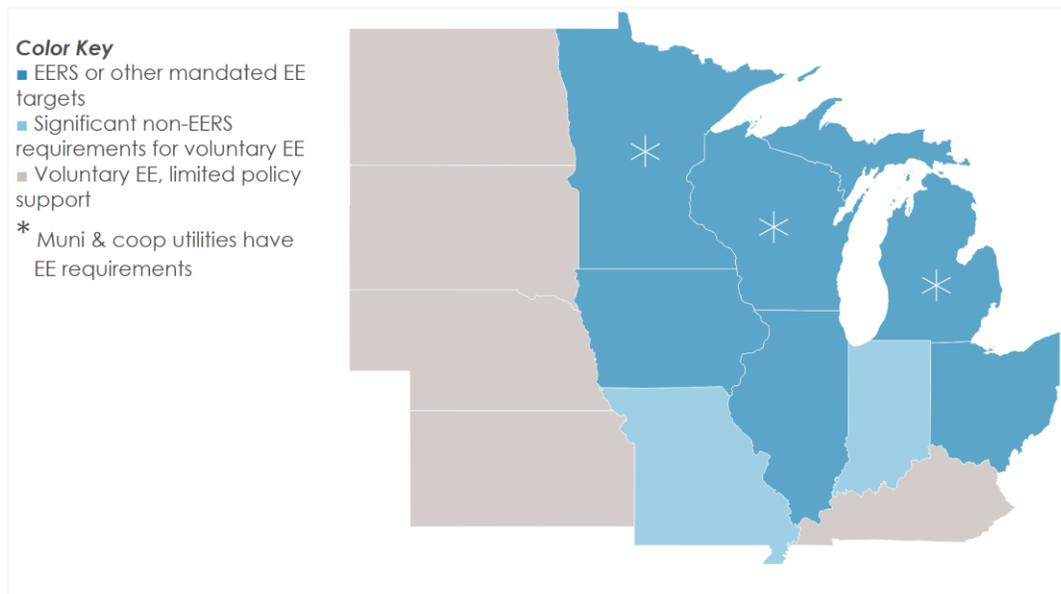
One of the key policies for advancing energy efficiency is the energy efficiency resource standard (EERS). The EERS is a policy that sets a long-term energy savings target for utilities/program administrators and requires customer-funded investments in energy efficiency.

Six Midwest states – Illinois, Iowa¹, Michigan, Minnesota, Ohio and Wisconsin² – have an EERS or substantially similar mechanism. Of the EERS states, Ohio stands out as being the only state with a requirement for electric energy efficiency but no requirement on the natural gas side, though natural gas utilities can still voluntarily provide energy efficiency programs for their customers.

For the non-EERS states, the policies to support energy efficiency vary.

- Indiana previously had a regulatory-ordered EERS, but it was eliminated by the state legislature in 2014. The state has enabling legislation and has maintained strong regulatory structures for voluntary energy efficiency from both electric and gas utilities. Indiana also has legislative requirements for integrated resource planning that support energy efficiency (see next section).
- Missouri has legislated, but non-binding, voluntary guidelines for energy efficiency savings and a relatively robust regulatory infrastructure for EE planning & reporting.
- Kentucky, Kansas and South Dakota allow energy efficiency under utility plans approved by state commissions, though without any specified targets or guidelines. While there is some policy support for EE in these states, it is limited as compared to that in Indiana and Missouri.
- North Dakota has little to no energy efficiency activity due to a lack of legislative or regulatory support.
- Nebraska's unique status as a state with only public power on the electric side creates a regulatory environment that is very different for electricity in that state from others in the region, with no established regulatory authority to require, approve or even report any electric energy efficiency and no state energy efficiency policy in place that supports natural gas efficiency.

Figure 1: Energy Efficiency Resource Standards (EERS) and other energy efficiency policy requirements in Midwest states



¹ Iowa's savings targets are set on a utility-by-utility basis rather than statewide

² Wisconsin has a funding-based rather than savings-based requirement

The EERS targets and applicability vary from state to state. In some states, all utilities are held to the EERS, while in others it applies only to investor-owned utilities. As previously noted, Ohio's EERS only applies to electric utilities.

Table 1: Utility applicability of EERS in Midwest states

EERS Status / Participation	All Utilities	IOUs Only
Has EERS	MI*, MN, WI *expires in 2021	IA*, IL, OH (electric only) *as of 2018 leg. session, non-IOUs were exempted
No EERS	IN, KY, KS, MO, NE, ND, SD	

There is a great deal of customer money being invested in energy efficiency – nearly \$2 billion annually for combined electric and natural gas energy efficiency across the Midwest by MEEA's 2018 estimate – and the utilities in EERS states were responsible for 86% of that investment.

In addition to an EERS, or as an alternative to one, a strong utility integrated resource planning process can also support enhanced investment in energy efficiency resources.

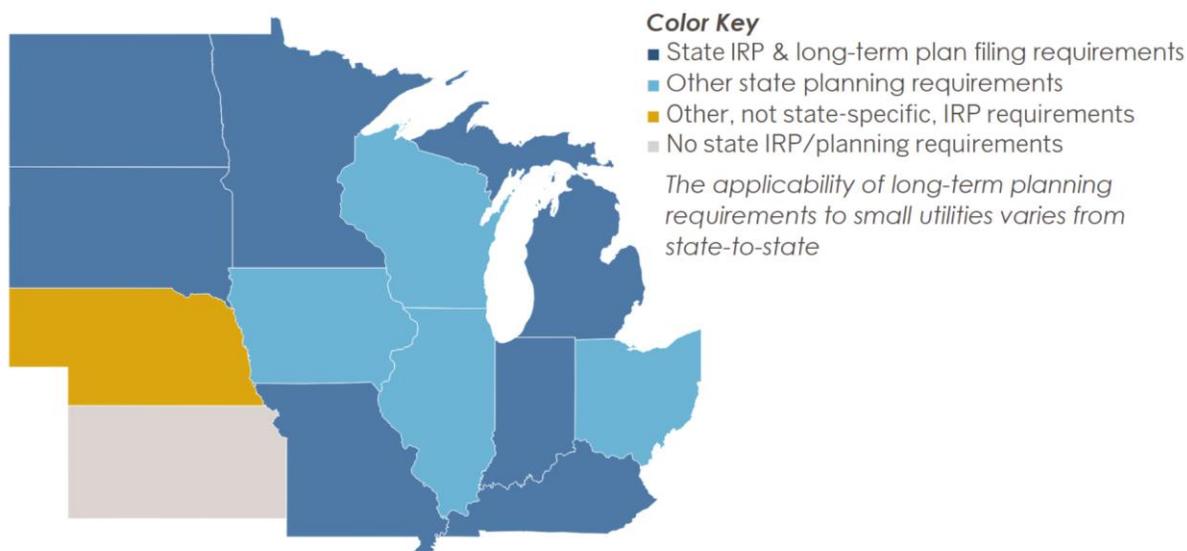
Integrated Resource Planning

Another policy that is a growing contributor to advancing energy efficiency in the Midwest is integrated resource planning (IRP). In IRP, utilities examine their long-term energy demand and projected costs to determine possible, and preferred, resource mixes to meet those future needs. IRP is a planning tool rather than a metric to set or track the achievement of particular goals. However, if the goal includes supporting investment in EE, then allowing demand-side resources to compete with supply-side options in resource optimization allows the IRP to select economic EE resources for the preferred plan.

In the Midwest, seven states have a formal IRP process for electric utilities and four more have another state electricity planning requirement that serves a similar role to an IRP – the Illinois Power Agency establishes statewide procurement plans for energy and capacity for the state's IOUs, Iowa's utilities file 20-year energy and capacity forecasts as part of their EERS filings, Wisconsin's PSC evaluates utility energy and capacity forecasts as part of its Quadrennial Review of energy efficiency and renewable energy targets for Focus on Energy, and Ohio's utilities file an annual long-term forecast report detailing their future energy and capacity needs. Nebraska's utilities, which are all public power, do not have state-specific legislative or regulatory IRP requirements, but they prepare and publish IRPs to meet the requirements of the federal Western Area Power Administration (WAPA). Kansas does not have a formal state IRP or long-term planning requirement, but the commission recently ordered the development of a utility IRP process in the approval of the merger of Westar and Kansas City Power & Light in 2018.³

³ Order Approving Merger, May 24, 2018 in 18-KCPE-095-MER

Figure 2: Integrated Resource Planning (IRP) and similar long-term planning processes for energy efficiency in Midwest states



In recent years, legislation in Indiana⁴ and Michigan⁵ has significantly increased the role of IRP in energy efficiency in those states, replacing the eliminated EERS in Indiana and ramping-up to fully replace Michigan's EERS when it expires in 2021. In both states, legislation requires that energy efficiency plans will be consistent with the energy efficiency levels identified in the utility's most recent IRP, though in practice it will probably take a few more IRPs before we really understand how the commissions are interpreting that consistency requirement. Minnesota's IRP process already included a strong energy efficiency requirement, including a statutory requirement that IRPs include scenarios for meeting 50- and 75-percent of energy needs through a combination of EE and renewable energy.⁶

Having an IRP process does not mean that energy efficiency and demand-side resources are considered, however. Energy efficiency and demand-side management are included as a component in the state electric resource planning in Illinois, Iowa, Kentucky, Missouri, Nebraska, Ohio and South Dakota and Wisconsin – though how strongly it is considered in comparison to the supply-side varies from state to state. North Dakota's planning is supply-side only and does not require or encourage any consideration of demand-side resources. Kansas and Nebraska do not have formal statewide requirement for long-term electricity planning. As previously noted, the commission in Kansas has ordered IRP as a utility merger requirement, however how that IRP will address energy efficiency is yet to be determined. Nebraska's WAPA IRPs include consideration of current and future demand-side resources.

A common starting point for determining the amount of energy efficiency to include in an IRP is an energy efficiency potential study. A potential study often starts with a broad list of possible energy efficiency measures – which will include TRM measures if a TRM exists, supplemented possibly with additional utility- or vendor-supplied measure data and assumptions. Using the

⁴ 2015 Senate Enrolled Act 412

⁵ 2016 Public Act 341

⁶ 2016 Minn. Stat. 216B.2422

measure data and market research, the potential study shows the amount of energy efficiency that is considered technically possible, economic, and achievable under current and forecasted market conditions. The potential – most likely the achievable potential – is used to forecast the energy efficiency level and measure types that are fed into IRP models for consideration against supply-side options. Potential studies are not the only way that energy efficiency is included in an IRP – for example Indiana’s Vectren used a ‘measure agnostic’ model of energy efficiency with incrementally increasing costs for acquisition of generic blocks of EE for their 2016 IRP – but potential studies are still the most common method in the region.

Statutory and regulatory requirements for small utility EE

State energy efficiency policies in the Midwest are generally more focused on the large investor-owned utilities. Whether municipal and cooperative utilities are subject to an EERS or required to file an IRP depend on the legislative history and the authority granted the state regulators and varies from state to state. For the most part, state commissions have limited authority over customer-owned utilities which are “effectively regulated”⁷ by their municipal governments or membership-elected boards.

Examples of varying energy efficiency policy & jurisdiction for small utilities in the Midwest include:

- In Michigan, all utilities are subject to the EERS legislation until it expires in 2021. In Minnesota, all utilities are subject to the EERS *except* for some small utilities that have been exempted. In Illinois and Ohio, on the other hand, the EERS only applies to IOUs. In Wisconsin, small utilities can choose to participate in the statewide Focus on Energy program administration or not but are still subject to the spending requirements for energy efficiency investment.
- In Minnesota, the regulator accepts energy efficiency plans and reports from small utilities and reports back whether the utility met the EERS targets but does not have the authority to approve or deny those plans and reports. Similarly, in Iowa, the regulator accepts and files energy efficiency plans and reports from the municipal and cooperative utility associations (and a few individual members) and issues a “grey memo” reviewing the reports and assessing whether they are in compliance, but no orders approving, denying or modifying any plans or reports.
- In Indiana, the small utilities (represented by their associations except for Hoosier Energy, a large G&T cooperative, which files on its own) are required to submit an IRP every 3 years, the same as an IOU, but are exempted from the requirements for a public stakeholder advisory process that the IOUs must undertake.
- In Nebraska, where the entire state is public power, the public service commission has limited power over natural gas and essentially none over the state’s electric supply.
- In Iowa, small utilities were required to file annual energy efficiency plans and reports through the state’s coop and muni associations until that requirement was repealed by 2018 legislation.

⁷ Bull. 2002. “Regulation of Energy Utilities in Minnesota” MN House of Representatives Research Department. <http://www.house.leg.state.mn.us/hrd/pubs/ss/ssequitil.pdf>

Because of the differences in policy & jurisdiction, utilities of similar size or operating characteristics might be very different regarding how they deliver and evaluate energy efficiency depending on their state. Utilities that operate across state lines may have substantially different requirements depending on which side of the border they are serving. States where there are strong EE policies with respect to IOUs may still have relatively weak support for EE from small utilities, or the infrastructure built to support IOU efficiency programs may provide an easier path to energy efficiency delivery for the small utilities even in the absence of a direct mandate. One of the infrastructure items that can support energy efficiency from small utilities is a TRM.

TRMs – Technical Resource Manuals

For utilities to receive cost-recovery for energy efficiency investments from their customers, those investments need to be demonstrated as cost-effective and prudent to stakeholders and the utility regulator. Programs need to be designed with the expectation that they will pass cost-effectiveness testing and will generate the savings that were expected, while program evaluation needs to be accurate and consistent.

The most common way of measuring energy efficiency is to count the number of installed measures (or program participants, depending on the type of program) and use either defined values for savings per-unit (deemed per-unit savings) or equations that use information on replaced and installed equipment (calculated savings) to estimate the energy saved from the efficiency program. At its simplest, these savings values can come from a measure list submitted by a single utility and approved by their regulator. The problem with such an approach, however, is consistency and equity. If each utility has its own individually-created measure list, then there is a possibility that the same efficiency measure could be counted differently by different program administrators and ultimately each utility's customers could be charged differently for the same efficiency measures. This consistency problem is mitigated by a statewide technical resource manual.

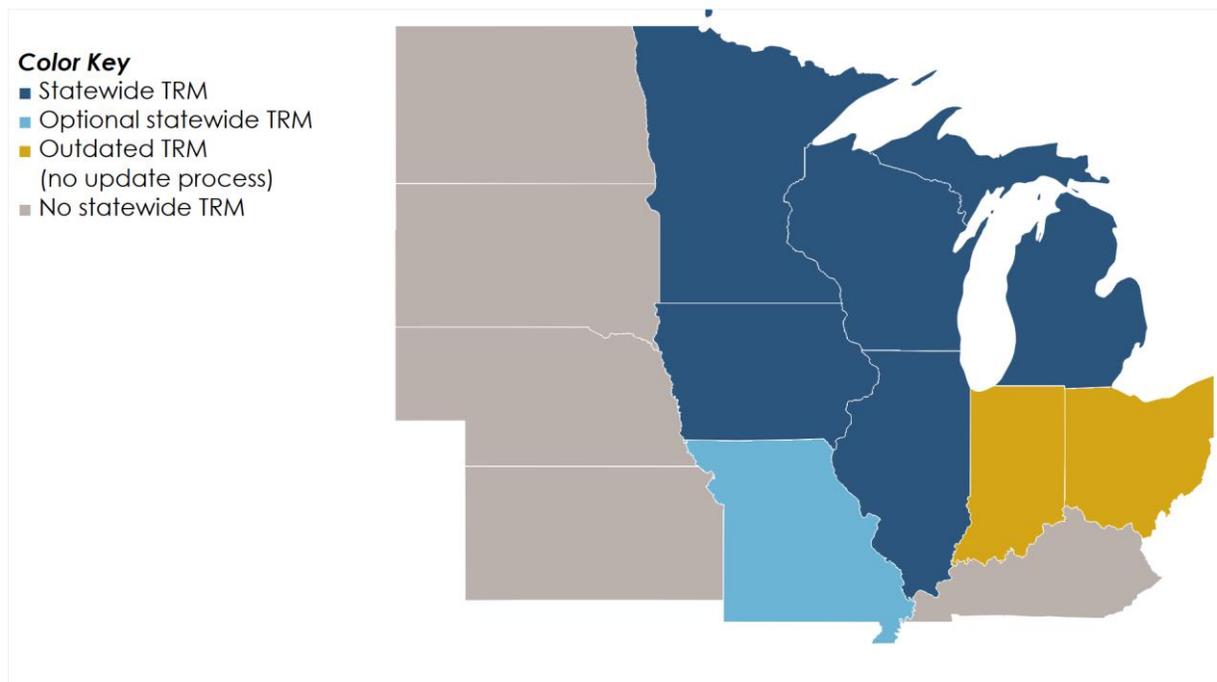
A TRM is a document (or database, software package, etc.) that provides deemed values or calculations for all the approved measures that a state's utilities use when designing energy efficiency program plans, and when measuring and verifying actual savings. A TRM places all program administrators on a level playing field and makes it easier for regulators and stakeholders to have confidence in the reported impacts. Beyond having accurate and defensible deemed values or calculations when it is first created, for a statewide TRM to retain its value as a planning and evaluation tool, it must have a process for review and updating – to add new technologies, to update measure values based on evaluation results or new research, and to remove measures that are no longer allowed or relevant. In the absence of an update process, a TRM becomes “stale” and utilities often revert to individualized measure lists, perhaps with the stale TRM as merely a guidance document.

TRMs in the Midwest

In the Midwest, Illinois, Iowa, Michigan, Minnesota, Missouri and Wisconsin have statewide TRMs. The Missouri TRM is approved as voluntary use rather required, and utilities in Missouri can choose to use their own measure list instead. Wisconsin's TRM is specific to the statewide Focus on Energy program administrator that provides energy efficiency services across the state, though there are a few small utilities that do not participate in Focus on Energy.

Indiana and Ohio have obsolete TRMs. Indiana's last (and presumably final) update completed under established contract in 2016 after the state's energy efficiency resource standard was already repealed. Ohio's draft TRM was published in 2010 but never finalized or formally adopted as a final product. Neither Indiana nor Ohio has a process for updating these TRMs. The utilities in those states file their own individualized, updated measure lists as part of their program planning, in addition to using the outdated TRMs as a "safe harbor" for already-approved measures, where needed.

Figure 3: Status of statewide TRMs for energy efficiency in Midwest states



The role of a TRM in EERS compliance is in making sure that utilities, their program implementers and their evaluators are working from the same "playbook" and that everyone is claiming the same savings for the same measures, serving to increase the confidence of stakeholders and regulators in the accuracy of reported and evaluated program impacts. In a non-EERS state, the role of a TRM is fundamentally the same as in an EERS state, since voluntary programs still need to be cost-effective for plans, cost-recovery and shareholder incentives to be approved. Depending on the state, required use of a TRM may apply only to utilities that are required to provide energy efficiency programs under an EERS, or it may be approved for use by any utility seeking cost-recovery for energy efficiency programs including those done outside of a standard.

Outside of the regulated, investor-owned utility sphere, TRMs are not so clear-cut. In some cases, even where there is a statewide TRM, the regulator cannot require all utilities to use it because it does not have jurisdiction to do so. For example, in Iowa the TRM is required for use by investor-owned utilities but is optional for consumer-owned utilities, whereas in Minnesota all utilities work from the statewide TRM.

Based on our research on statewide TRMs for our 2017 *Midwest TRM Inventory*⁸ project and discussion with our members at MEEA's annual member meeting the same year, we came to a general understanding of some of the issues that small utilities may have regarding TRMs and program evaluation:

- Lack of resources (both monetary and personnel expertise) to do full impact analysis or evaluation, measurement & verification (EM&V) for efficiency programs
- Lack of resources to develop individualized TRMs in the absence of an updated statewide TRM
- Lack of resources to participate in statewide TRM development & update processes, where those exist
- Difficulty adopting statewide TRMs due to complexity of the document or required input values not previously collected by the small utility
- In the absence of a statewide TRM – required or optional – relying on other sources such as vendor-supplied measure values, approved measure values from IOU utility-specific TRMs, or TRMs from other states
- Lack of a clear source for values for new measures and changing technologies

Considering these issues, we hypothesized that a regional TRM of some kind could help fill some of those gaps for small utilities – examples of a tool could be a turn-key, simplified small utility TRM or a maintained database of up-to-date values and algorithms for common and new measures that small utilities could use to build or add to their own customized TRM.

We developed this project to get a more analytical understanding of the scale of the small utility space in our region, how the small utilities are using existing TRMs, the possible need for such a regional tool and the pathway(s) that could be used to develop and disseminate a tool that would meet those needs.

Understanding the Midwest's small utilities

If we want to provide a tool like a TRM to help advance energy efficiency among small utilities in the Midwest, there are some broad questions that seem relevant:

- **Who needs a TRM?** How many small utilities are there in the Midwest? How many of them already use a TRM? Does a new resource or tool need to be for all the small utilities in the Midwest or is there a subset that needs a tool more?
- **Why do they need it?** Are they already doing energy efficiency and a tool would help them do more? Are they not doing any energy efficiency and a tool would help them get started?
- **How do we get it to them?** Is there an approach to promulgating a tool that would get it into the hands of the small utilities that would use it? Who are the key targets – the “influencers”, to borrow a term from social media – that could deliver a tool in a way that it would gain acceptance?

⁸ <http://www.mwalliance.org/sites/default/files/media/Midwest-TRM-Inventory-Feb2017.pdf>

To try to answer some of these questions, we needed to build a framework that would allow us to analyze the small utility energy efficiency space in the Midwest in a way that we have not done before.

The first step, obviously, was to develop a detailed list of the small utilities in the region. Working with diverse, disparate sources, we were able to build a comprehensive list of what we believe is all or close to all of the small utilities across MEEA's 13-state region. The Midwest small utility list has records for 1,690 small utilities across the spectrum of organization types that we previously discussed, including contact information, location data, how they connect through memberships and associations, and utility identification numbers used in federal reporting.

Once that list was developed, we then identified outreach targets to gather primary data on how small utilities provide energy efficiency services to their member-customers and their use of TRMs. We constructed a set of use case scenarios that we felt encompassed the possible variations throughout our region energy policies, TRM use and availability, and energy efficiency activities of the small utilities and used our outreach and additional research to assign those use case categories to all of the utilities in the list. We also used the unique identifiers for the utilities to connect to operational data from Energy Information Administration filings to add additional depth to our analysis.

Using analysis and visualization software, we were able to work with the use case and operational data to provide analytical intelligence to help answer some of the types of questions we posed above. The construction of this list and analysis provided insights into small utility energy efficiency in our region that our organization did not previously have, identified areas and utilities that seem to be key targets for development and promulgation of a small utility energy efficiency tool such as a TRM.

Analyzing the small utilities in the Midwest

Scoping discussions

To help scope out the project and get an initial understanding of what energy efficiency delivery looks like to some of the small utilities in our region, we had conversations with a few contacts from utilities, associations and state regulators – most from MEEA's membership and others drawn from MEEA's contact management system. Discussion included how their utility and other small utilities in their states deliver energy efficiency programs and use TRMs, review of the TRM use cases (discussed later in this paper), and approaches that we could use for outreach to small utilities. The contacts we spoke or emailed with in the early stages of this project included staff from:

- Ohio's Electric Cooperatives (MEEA member)
- Southern Minnesota Municipal Power Agency (MEEA member)
- Minnesota Department of Commerce (MEEA member)
- American Municipal Power
- East Kentucky Power Cooperative (MEEA Board of Directors)
- New Richmond Utilities
- Owensboro Municipal Utilities (MEEA member)

One of the key ideas to come out of these scoping conversations was that if we tried to get data by researching or reaching out directly to each of the individual utilities, we would have a

rather daunting task due to the large number of utilities and their staff's varying levels of experience with energy efficiency. Based on that, we instead focused our research and outreach on the larger groups that the individual utilities belong to and often work through to develop, administer, implement and report their energy efficiency programs – i.e. joint action agencies, state associations, generation & transmission cooperatives – in order to try to gather more meaningful data with a reasonable amount of effort.

Small utility groups

We knew that the groups that the small utilities belong to play a large role in some of MEEA's states in energy efficiency planning, program administration, program delivery and regulatory reporting. Our scoping discussions told us that these small utility groups play similar roles in the other states in our region. We wanted to build a comprehensive list that included all the small utilities, and we knew that we would be using these groups' membership lists as one of our data sources for building our small utility list. As part of the construction of the Midwest small utility list, we captured both the information about the utility groups and which groups individual utilities belong to. This membership information will help understand the relationships that the small utilities have with one another within various organizational structures:

- Distribution members of G&T cooperatives
- Municipalities served by public power districts (PPD)
- Utility members of joint action agencies (JAA)
- Membership in large cooperative federations
- Membership in utility associations
- Energy efficiency program administration groups

We identified 67 different small utility groups who are made up of in whole or in part by small utilities in the Midwest. It is very likely that there are additional memberships that we did not identify and capture in the list. Not all the small utility groups we identified play any role in energy efficiency, while others are key players. The groups vary in size from a few members of a small G&T coop to hundreds of members of a nationwide cooperative federation, and while some small utilities in the list do not belong to any identified group, others belong to multiple different groups. Some groups are state-specific, while others serve utilities in multiple states. We will review some of the memberships in the small utility characterization section of this report.

Building the Midwest small utility list

Data sources

The first research task in the project was to create a comprehensive list of the small utilities in the region. There was no single source that was useful to identify all the small utilities – indeed, a great number of sources had to be mined for data. We started with a top-down approach, using state and national associations to identify as many targets as possible then using the sources identified from those groups to identify additional targets. The data sources we used to build the list included:

- Utility/membership lists from:
 - State regulatory commissions
 - State utility associations
 - Joint action agencies

- G&T cooperatives
- American Public Power Association
- American Public Gas Association
- Touchstone Energy
- Wisconsin Focus on Energy
- MEEA's contact relationship management (CRM) system
- US Energy Information Administration annual reporting data
 - EIA-176 (natural gas)
 - EIA-860 and EIA-861 (electric)
 - EIA-923 (electric)

The data available varied from source to source. After mining the various sources, we had an initial “dirty” file, in Excel spreadsheet format, of almost 4,000 records. Since they came from so many sources, the records in the dirty list varied in naming conventions (e.g. “City of Springfield” vs. “Springfield, City of” vs “Springfield”; “Co-op” vs. “Coop” vs “Cooperative”; “Rockford” vs. “Rockford Municipal Light Plant”; etc.). They also varied in what data fields were contained in each record – some had location information, some had contact names, some had emails, some had phone numbers, some had URLs, and so forth.

Utility list data fields

The data we collected during the initial identification of the list of small utilities are shown in Table 2 (below).

Table 2: Data fields initially collected during small utility data mining

Field Name	Description/notes
Utility Name	Name of utility
Membership	Affiliations with associations, joint action agencies, G&T cooperatives, etc. (Varies from zero to six different groups identified depending on utility)
Ownership	Organization type; “ownership” field name was used for consistency with EIA usage
Type	Electric, natural gas or both
Contact name(s)	Name(s) of identified contacts, if any
Email	Email of identified contacts or organization general email, if any
Phone	Phone number of identified contact or organization general phone number, if any
Street Address	Street and/or mailing address information
City	City, village, town, etc. where organization is located
ZIP	Postal code of primary location
URL	URL for utility website, page on municipal website, etc., if any
Source	Places where information was gathered

Data cleanup

Because many of the small utilities were identified by more than one source, there was substantial duplication in the dirty list. Cleaning the data set was a complex task. After

normalizing the names as much as possible through various means such as eliminating strings like “city of” or “village of” and normalizing strings like “co-op” and “coop,” it was possible to identify some of the duplicates readily through exact name matches. Others were matched through duplicate URLs when name matches didn’t detect the duplicate (for example from misspellings or non-standard abbreviations).

After matching duplicates through automated methods, the remainder of the list was manually checked to identify additional possible matches records. When duplicate entries were found, the data from the two (or more) records was merged. The third-party Excel plugin software ASAP Utilities⁹ was invaluable for providing functions for tagging cell duplicates in data columns and for merging data between rows.

After eliminating duplication, we had a final clean small utility list for the Midwest. It contains 1,690 records, as shown in

Table 3, including:

- 25 associations
- 352 distribution coops¹⁰
- 29 G&T coops
- 31 joint action agencies
- 1,221 municipal utilities
- 32 public power districts

Table 3: Final count of records in the Midwest Small Utility List data set, by state and type of organization

Ownership	State													Total
	IA	IL	IN	KS	KY	MI	MN	MO	ND	NE	OH	SD	WI	
Assn	2	2	2	2	2	2	2	4		2	2	1	2	25
Coop	36	25	39	29	25	11	46	41	17	3	29	27	23	351
G&T Coop	4	2	2	2	2		1	6	4	2	1	3	1	30
JAA	3	3	1	2	3	1	4	1	1	4	2	3	3	31
Muni	160	94	84	171	73	44	138	106	14	123	94	38	82	1221
PPD										32				32
Total	205	126	128	206	105	58	191	158	36	166	128	72	111	1690

Additional data fields

After cleaning the list, we decided that there were two other fields that should be added to the dataset – the utility identification numbers from the Energy Information Administration (EIA) for electric and natural gas utilities.

Since some utilities provide both electric and gas services to their customers and have separate IDs in electric and gas EIA datasets, we kept the two EIA ID fields separated by type.

⁹ <https://www.asap-utilities.com/> Used under the terms of the software's Home & Student edition license, since MEEA is a registered 501(c)(3) nonprofit.

¹⁰ Among a few of the rural electric cooperatives, there were several different locations and no clear indication which (if any) was a “headquarters” office, so it seemed reasonable to include the multiple locations even though it is a single utility entity.

Table 4: Identifier fields added to Midwest small utility list after data cleanup

Field Name	Description/Notes
EIA ID electric	EIA identification number for electric utilities
EIA ID gas	EIA identification number for natural gas utilities

Adding these fields provided a unique identifier for most of the records that allowed us to connect the Midwest small utility list to operational data from annual federal filings. The large EIA data sets provided us with the ability to connect to additional information outside of the scope of the data we collected during our research and outreach – for example, reported electric energy efficiency savings, customer counts, annual energy sales to end-use customers, etc. We felt this would be useful in our analysis to help identifying future targets for additional research.

In order to match the utilities with federally-filed utility operations data, where possible, EIA ID numbers were identified for the utilities in the small utility list. Even with the naming inconsistencies between the data sources we were able to semi-automate most of the matching process. To match utilities to ID numbers, we used Excel INDEX-MATCH formula lookups of various levels of “fuzziness” to match as many of our recorded utility names as possible to the utility name columns in the EIA data sets. Once we had matched as many utilities as possible using formula-based approaches, we manual checked the small number that couldn't be matched through those methods. For any utilities that we were unable to identify ID numbers in the 2016 data sets, we also looked back at the 2012-2015 data for possible matches.

For small electric utilities (including those that provide both electric & gas), 96% of the records have an EIA ID identified with a high of 98.3% in Minnesota and a low of 93.3% in Kentucky. On the natural gas (or both) side, EIA IDs were identified for 93% of the records, with a high of 100% in Indiana, Michigan and Wisconsin, and a low of 40% in South Dakota.

To check why the state-by-state matches were incomplete, we also looked at the counts of EIA IDs by Ownership type.

Table 6 shows that the individual muni, coop and G&T coop utilities are very well matched to EIA IDs and it is the other organizational types – which as previously noted may play a role in utility activities including energy efficiency program delivery and state-level reporting – are not strictly utilities and thus not necessarily EIA reporters.

Those organizations that are not strictly coop or muni utilities but are matched to EIA reporting IDs on the electric side are ones that serve functions that make them required EIA-861 reporters such as demand-side management program administration, wholesale power marketing, providing energy services or producing electric power¹¹; those non-utility organizations in the list that are not matched to an electric EIA ID are likely not serving any of those reportable functions. For the natural gas side, EIA-176 reporters are only the pipeline, distribution, storage and production companies.¹² The non-reporting entities – primarily joint action agencies and utility associations – are the main reason that the total match rate of our list to EIA IDs not 100%.

¹¹ Form EIA-861 Annual Electric Power Industry Report Instructions
https://www.eia.gov/survey/form/eia_861/instructions.pdf

¹² Annual Report of Natural and Supplemental Gas Supply and Disposition Form EIA-176 Instructions
https://www.eia.gov/survey/form/eia_176/instructions.pdf

This is especially true on the natural gas side and in the states where there are only a small number of entities in the total list.

Among the electric utilities, the G&T cooperatives were matched 100%; municipals, over 99%; coops, 97%; and public power districts were over 90% matched. Only about half of the joint action agencies matched to an EIA ID, and (as expected) none of the associations had an EIA ID for electric.

On the natural gas side, as with electric, the utilities matched very high – the one electric G&T coop that also supplies natural gas matched, along with over 97% of municipal and 92% of coop gas utilities. None of the gas associations or joint action agencies, of which there were very few to begin with, matched to an EIA ID for natural gas, as expected since they are not utilities and not reporting on the EIA form.

Table 5: Counts of small utilities in the small utility list by state and matches to EIA identification numbers for electricity and natural gas fillings

State	Count of Utilities by Name	Count of EIA ID Electric	% matched elec
MN	178	175	98.3%
IA	184	179	97.3%
MO	137	133	97.1%
KS	154	149	96.8%
OH	117	113	96.6%
IN	116	112	96.6%
MI	58	56	96.6%
WI	111	107	96.4%
NE	162	155	95.7%
IL	73	69	94.5%
SD	69	65	94.2%
ND	34	32	94.1%
KY	60	56	93.3%
Total Electric	1,453	1,401	96.4%
State	Count of Utilities by Name	Count of EIA ID Gas	% matched gas
IN	20	20	100.0%
MI	1	1	100.0%
WI	3	3	100.0%
IA	55	53	96.4%
KY	54	52	96.3%
IL	71	68	95.8%
KS	70	66	94.3%
MO	44	41	93.2%
NE	18	16	88.9%
MN	34	30	88.2%
OH	15	13	86.7%
ND	2	1	50.0%

SD	5	2	40.0%
Total Gas	392	365	93.1%

Table 6: Utilities in the small utility list by ownership type and matches to EIA identification numbers

Ownership	Count of Utilities by Name	Count of EIA ID Electric	% matched elec
G&T Coop	30	30	100.0%
Muni	997	993	99.6%
Coop	345	336	97.4%
PPD	32	29	90.6%
JAA	25	13	52.0%
Assn	24	0	0.0%
Total Electric	1,453	1,401	96.4%
Ownership	Count of Utilities by Name	Count of EIA ID Gas	% matched gas
G&T Coop	1	1	100.0%
Muni	364	352	96.7%
Coop	13	12	92.3%
Assn	6	0	0.0%
JAA	8	0	0.0%
Total Gas	392	365	93.1%

The overall high match rate between our small utility list and the EIA datasets is valuable because it enables us to connect to additional data about the utilities in our list, but also as a check of the quality of our list. If our list had large numbers of utilities that did not match to an EIA ID, or if the EIA data had large numbers of small utilities that were not captured in our list, that would indicate that we needed to do additional research or cleanup on the list. The high match rate is a good indication that we have successfully captured an accurate list of the small utilities in our region. The small number of remaining unmatched utilities may be identifiable in later EIA datasets or further research could help identify whether they are associated with another entity that is reporting on their behalf.

Classification of the small utilities

TRM use cases

To create a classification schema for the small utilities, we created a series of “use cases” – descriptive ideas of how the “users” (in this case, the small utilities) are likely to interact with the product or service (energy efficiency & TRMs). The use cases that we developed attempt to describe the possible variations that may exist regarding how the small utilities deliver energy efficiency and use TRMs. They are based on existing policies and identified practices of small utilities and utility groups, but they don't necessarily answer the question of whether any particular utility is or is not providing customers with EE programs – we are trying to be forward looking to answer the question “if the small utility offers EE programs now or in the future, how are they likely to use existing TRMs?”

First, we started with 4 general categories:

- A. The small utility or utility group has indicated that it does not do any energy efficiency activities
- B. Initial respondent was unsure/unclear on details or provided conflicting answers, requiring additional research to assign a use case
- C. Small utilities are mandated to provide energy efficiency along with the IOUs
- D. Energy efficiency is voluntary for small utilities in the state, irrespective of whether it is mandated for IOUs

Within categories C and D, we then further subcategorized by:

- Whether the state has a statewide TRM, and whether it is required for use by all utilities, is an optional tool available for use or whether it exists but is outdated because of a lack of an update process
- Whether the small utility uses the statewide TRM – either because they are required to or because research indicated that they are using it in practice
- Whether the small utility has participated in development of the statewide TRM or has been active in the update process – this is included because it identifies whether the small utility has a high level of familiarity with TRMs and would be a likely participant in future efforts
- Whether the small utility has indicated that it uses some other TRM besides a statewide TRM from their own state, such as a statewide TRM from another state or a utility-specific TRM from another utility

Combining the categories and subcategorization criteria, we developed the following fourteen possible use cases.

Table 7: Small utility TRM use case descriptions

Use Case ID	Description
A	Does not do EE
B	Initial respondent was unclear on EE details/conflicting answers/etc.
C1-1	Mandatory EE, statewide TRM exists, uses statewide TRM, has participated
C1-2	Mandatory EE, statewide TRM exists, uses statewide TRM, has not participated
C1-3	Mandatory EE, statewide TRM exists, does not use statewide TRM, uses some other TRM
C1-4	Mandatory EE, statewide TRM exists, does not use statewide TRM, does not use any TRM
C2-1	Mandatory EE, no statewide TRM, uses some TRM
C2-2	Mandatory EE, no statewide TRM, does not use any TRM
D1-1	Voluntary EE, statewide TRM exists, uses statewide TRM, has participated
D1-2	Voluntary EE, statewide TRM exists, uses statewide TRM, has not participated
D1-3	Voluntary EE, statewide TRM exists, does not use statewide TRM, uses some other TRM
D1-4	Voluntary EE, statewide TRM exists, does not use statewide TRM, does not use any TRM
D2-1	Voluntary EE, no statewide TRM, uses some TRM
D2-2	Voluntary EE, no statewide TRM, does not use any TRM

Table 8: Details of small utility use case schema

Use Case ID	Energy Efficiency	Statewide TRM	Uses Statewide TRM	Participates in Dev/Update	Uses Other TRM
A	Does not do EE				
B	Initial respondent was unclear on EE details/conflicting answers/etc.				
C1-1	Mandatory	X	X	X	
C1-2	Mandatory	X	X		
C1-3	Mandatory	X			X
C1-4	Mandatory	X			
C2-1	Mandatory				X
C2-2	Mandatory				
D1-1	Voluntary	X	X	X	
D1-2	Voluntary	X	X		
D1-3	Voluntary	X			X
D1-4	Voluntary	X			
D2-1	Voluntary				X
D2-2	Voluntary				

Assigning use cases to small utilities

After deciding on our use cases, we then had to assign the small utilities to them. Ideally, we would obtain direct information from every small utility, but that would be infeasible in our timeframe and due to incomplete contact information. Accordingly, we create a multi-pronged approach to assigning small utilities to use cases, incorporating the following:

- Direct phone outreach to associations and joint action agencies
- Email outreach to all email addresses identified in the Midwest small utility list
- Review of websites of joint action agencies and associations for energy efficiency materials
- Review of state commission records
- Inference from membership in associations and joint action agencies, state policies, etc.

Phone outreach

Following the advice of our outside experts, our first approach was to contact the associations and joint action agencies since they often provide energy efficiency services for their member utilities. We devised a phone script with a series of questions that would lead to a use case categorization for the group and its members. The script included questions about whether the organization's members worked through the organization grouping for energy efficiency services or worked individually, whether the group or its members use a statewide TRM if available, and whether they participated in any TRM development or update process. That script is attached as Appendix A.

Email outreach

Like the phone outreach, we created a series of survey questions using Google Forms to capture the same categories of information as through the phone outreach. The link to that form was emailed directly to all emails we identified in the Midwest small utilities list. This included all of the small utility ownership types, not just the groups like in the phone outreach. The survey questions

are attached as Appendix B. Of 401 emails sent, 38 were undeliverable and we received 20 responses from the 351 emails that were deliverable – a 5.6% response rate.

Web & commission research

To fill in some of the gaps when we couldn't reach groups through the phone and email outreach, we reviewed additional information from websites and commission filings. On the website side, we visited the sites (if available) for any associations and agencies that we had not otherwise categorized. We looked for energy efficiency pages or information on the sites, to determine whether the group was offering aggregated energy efficiency services to its members or directly to customers of its members, and any references to statewide TRMs where relevant. On the commission side, we reviewed group efficiency filings to see which members were filing through the group, TRM meeting attendee and service lists, and commission summary reports.

Inferred categorization

Using the information that we obtained from our research the state energy efficiency policies, we categorized the remaining small utilities where we did not have direct information.

Group membership was a key factor in assigning inferred use cases. We started by making sure we had use cases assigned to each group, whether from direct information or inferred and then assigned a use case to that group's member based on the group's use case. In the case of groups that we know participated in TRM update activities (use case C/D1-1) we assumed that the individual members of the group did not also participate in the TRM updates and assigned their use case accordingly (use case C/D1-2).

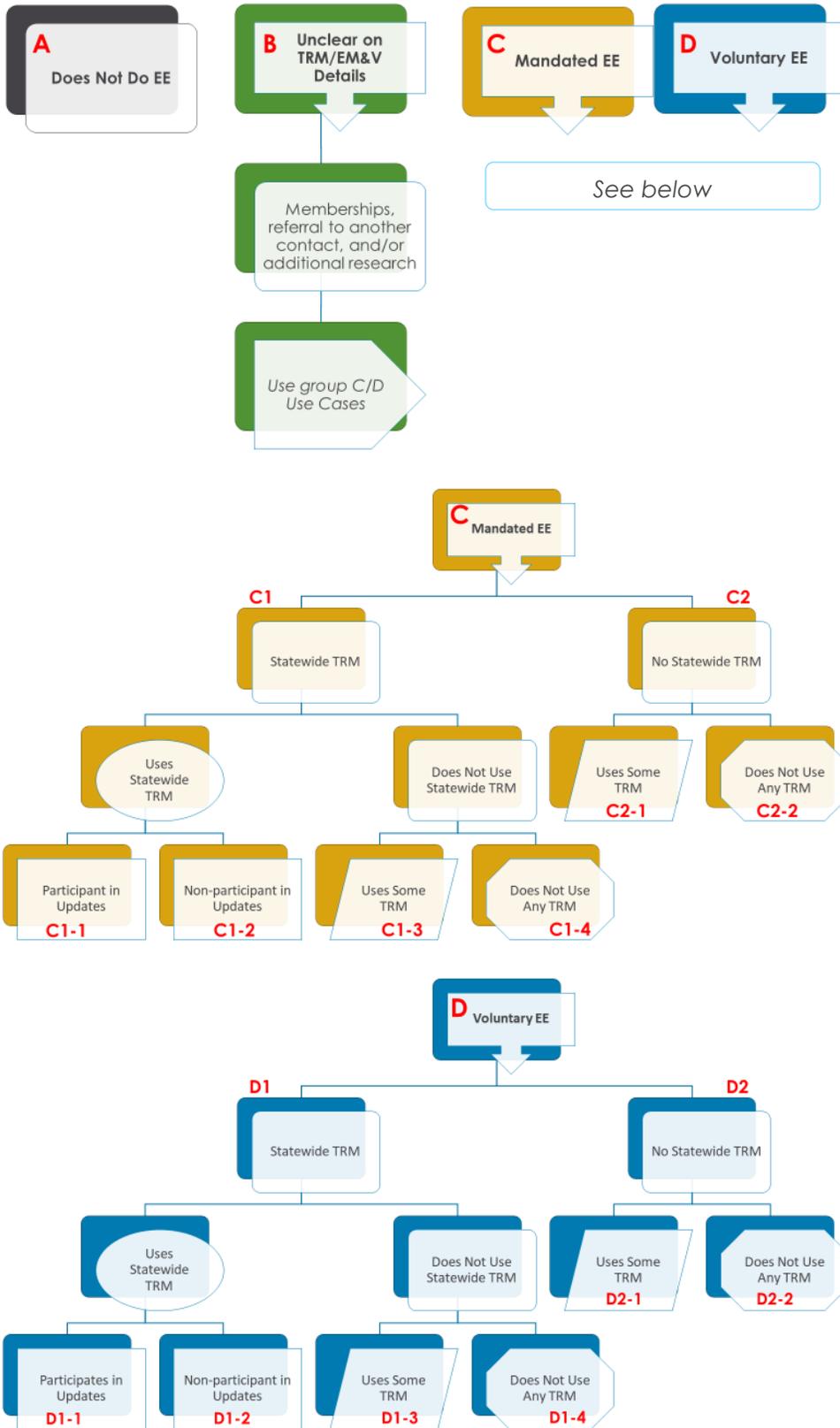
For the small utilities that did not belong to any group or only to a group we identified as use case A (does not do EE), we used known information about state policies to assign these utilities to the broad use case categories – C1, C2, D1, D2 – which indicate whether there is municipal/coop energy efficiency is required in the state (C vs D) and whether there is a statewide TRM (1 vs 2).

Note on use case classification

While it would be ideal to have direct information on what each small utility is actually doing with regard to energy efficiency, the inferred categorization is still useful to us as we contemplate a regional small utility TRM. The broad use case categories still help us understand the potential for the utilities in a state to be users of a statewide TRM even if we were unable to directly assign a detailed use case. They still help us to characterize the scope and scale of the issue and have a better understanding of areas where a regional approach might or might not be useful.

Following up on this initial study with research to identify additional email contacts, followed by a refined email survey and additional direct outreach would be useful to help move utilities from the broad use case categories into the detailed ones.

Figure 4: Flow chart for determining small utility TRM use cases



Mapping locations of small utilities

We visualized the distribution of the small utilities across the region using the city, state and ZIP fields in Tableau Desktop. Where Tableau was unable to correctly identify a latitude and longitude based on those criteria, we used Google searches to identify locations to input for those records.

The following maps show the location, by city, of each small utility in our Midwest small utility list. Figure 5 shows the distribution of small utilities across the region based on fuel type. Electric small utilities are the most widespread throughout MEEA's states, while the distribution of natural gas or both gas & electric small utilities varies much more state-to-state, with higher concentrations in the central/southern states in the region. While it would have been valuable as well to map these small utilities by service territory to show the largely rural area covered by these utilities, the lack of consistent and comprehensive geographic information system (GIS) shape files of service territories for each state and utility made that infeasible at this time.

Figure 5: Mapped locations by city of small utilities in the Midwest, by utility fuel type

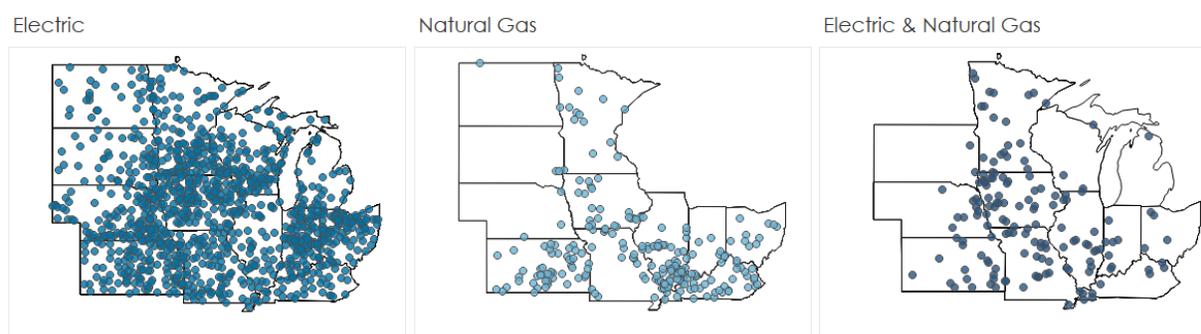
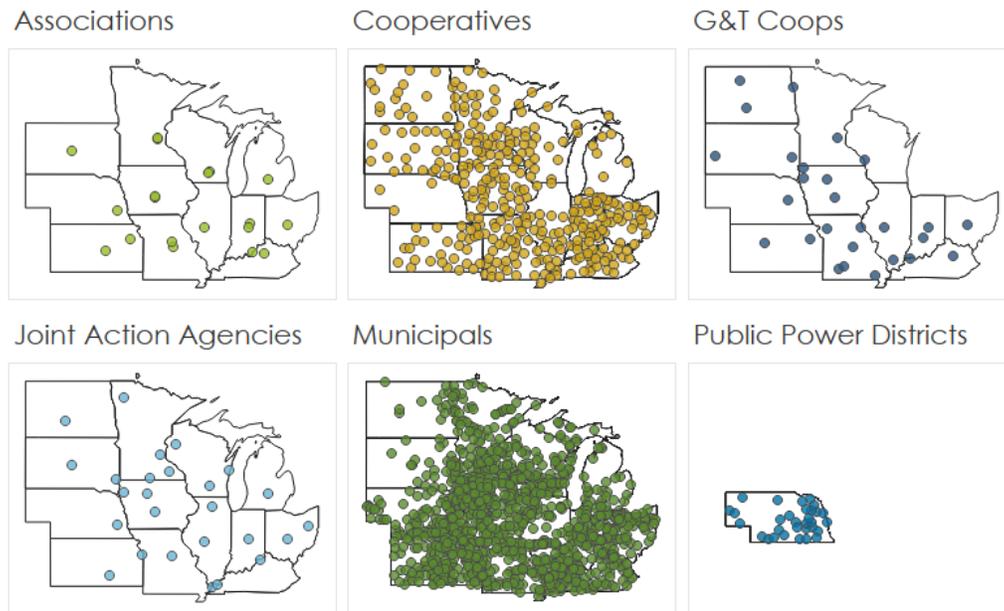


Figure 6 shows the distribution of small utilities based on utility type (the Ownership field). In the Midwest, most of the ownership types are distributed throughout the states, except for public power districts found in Nebraska only. The largest number of small utilities are municipals, which are more concentrated in the central/southern states in the region.

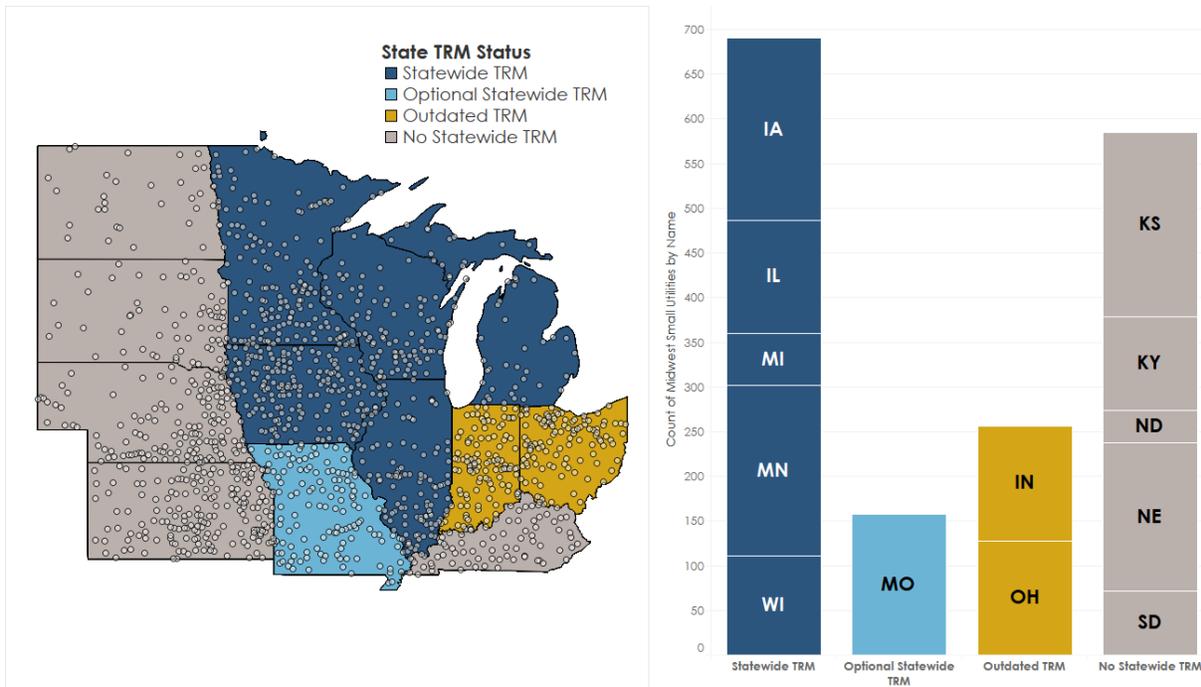
Figure 6: Mapped locations by city of small utilities in the Midwest, by organization type



Characterizing small utilities by TRM status

If we take the TRM status map from Figure 3 and overlay it with the locational data from the Midwest small utility list, we can count the number of small utilities by state as shown in Figure 7.

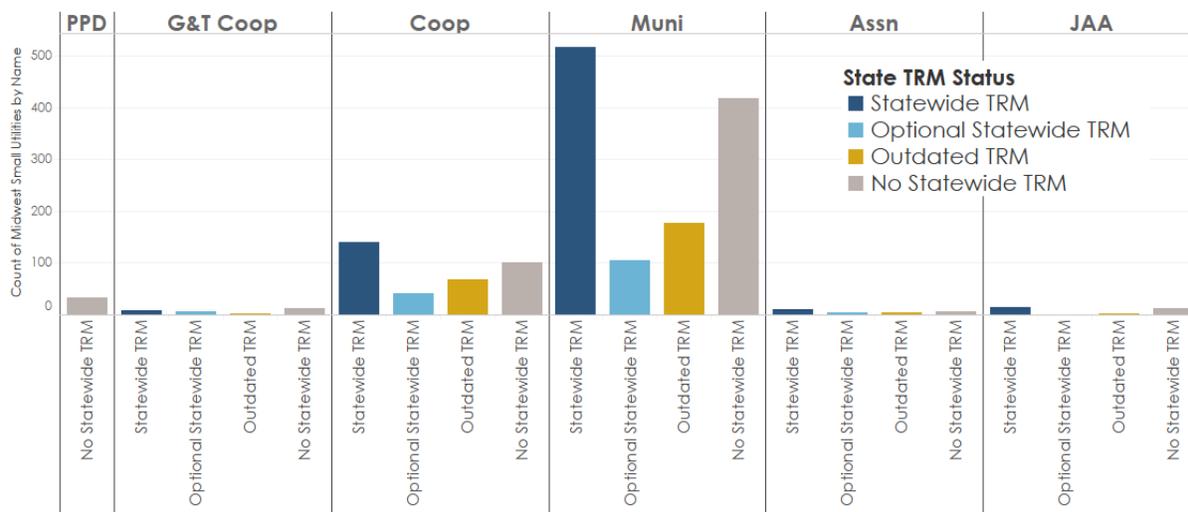
Figure 7: Location and count of small utilities with statewide TRM status for Midwest states



If we consider states with a statewide TRM or an optional TRM (dark & light blue) as a “Have-TRM” group and the states with an outdated TRM or no TRM (orange and grey) as a “No-TRM” group, the counts are near equal – 849 “Have-TRM” to 841 “No-TRM.”

Parsing the data further by ownership type, the same pattern holds true – the “Have-TRM” and “No-TRM” numbers are generally balanced within the ownership groups, as shown in Figure 8. The exception is public power districts, which only are found in Nebraska, a non-TRM state.

Figure 8: Counts of small utilities by utility ownership type and state TRM status



This shows that about half of the small utilities, whether coop or municipal, in the Midwest do not have access to an up-to-date statewide TRM that they could use to support their energy efficiency planning and evaluation. If these utilities are providing energy efficiency services to their customers and making sure they do so cost-effectively, they are most likely relying on their groups and/or vendors to supply measure values. These are the utilities that are most likely to benefit from the consistency and accuracy in measure values that a small utility TRM could provide.

Characterizing small utilities by use case

The use cases that were assigned and counts for each use case are shown in Figure 9. The most common use case among small utilities that are required to do energy efficiency was use case C1-2 – mandated energy efficiency, with a statewide TRM, not directly participating in TRM development/update process. Among small utilities that are voluntary providers of energy efficiency, the most common use case was D2 – voluntary energy efficiency, without a statewide TRM, without further information.

The reason that C1-2 is the most prevalent among the mandated EE small utilities is that, for the most part, when there is small utility participation in the TRM development or update process, it is the associations that participate in the process rather than their individual utility members. Some of the larger joint action agencies, generation and transmission cooperatives and distribution cooperatives may also participate in the TRM process, but that is a very small number (e.g. only 4 non-association small utility participants in Minnesota).

The reason that D2 – voluntary EE, no TRM, no further information – is the largest use case category for the voluntary EE states is that the small utility groups (associations, joint action agencies, G&T coops) in these states are not aggregating energy efficiency services on behalf of their members and we were not able, therefore, to infer any further granularity based on the available information.

Figure 9: Counts of use cases in the Midwest small utility list (reference

Table 9 for use case descriptions). The mandatory small utility EE use cases are shown in the cool (blue) colors while the voluntary small utility EE use cases are shown in the warm (orange) colors.

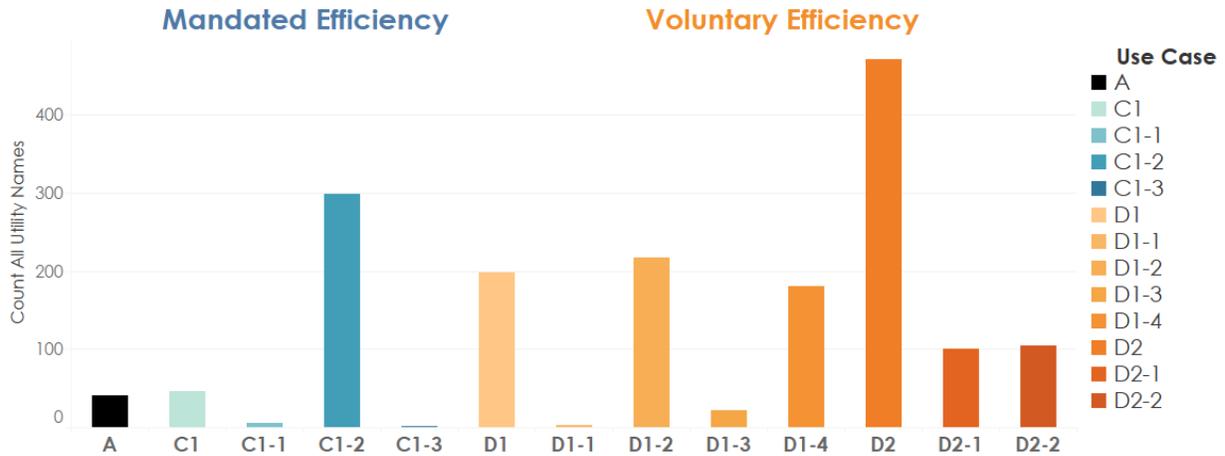


Table 9: Small utility TRM use cases that were assigned to small utilities as shown in Figure 9 (see Table 7 for details of all use cases including those that were not assigned)

Use Case ID	Description
A	Does not do EE (mainly applies to groups that play no role in the EE activities of their members, though those members may still do EE on their own or through another group)
B	Used only in initial survey coding – no utilities remained in this group after further research
C1	Mandatory EE, statewide TRM exists, no further information identified about EE activities or TRM use
C1-1	Mandatory EE, statewide TRM exists, uses statewide TRM, has participated in TRM development/updates
C1-2	Mandatory EE, statewide TRM exists, uses statewide TRM, has not participated
C1-3	Mandatory EE, statewide TRM exists, does not use statewide TRM, uses some other TRM
D1	Voluntary EE, statewide TRM exists, no further information
D1-1	Voluntary EE, statewide TRM exists, uses statewide TRM, has participated
D1-2	Voluntary EE, statewide TRM exists, uses statewide TRM, has not participated
D1-3	Voluntary EE, statewide TRM exists, does not use statewide TRM, uses some other TRM
D1-4	Voluntary EE, statewide TRM exists, does not use statewide TRM, does not use any TRM
D2	Voluntary EE, no statewide TRM, no further information
D2-1	Voluntary EE, no statewide TRM, uses some other TRM
D2-2	Voluntary EE, no statewide TRM, does not use any TRM

After assigning use cases to the small utilities in the clean list, it turns out that some of our possible use cases did not end up assigned to any utility. The use cases that had no assignees are shown in Table 10.

Table 10: Use cases that were not assigned to any small utility

Use Case ID	Description	Reason not assigned
B	Unclear on EE details/conflicting answers/etc.	This use case was used only in initial survey coding. Additional research helped assign any initial B items to other use cases
C1-4	Mandatory EE, statewide TRM exists, does not use statewide TRM, does not use any TRM	There were no small utilities in mandatory EE states where this use case applied
C2	Mandatory EE, no statewide TRM, no further information	All mandated EE states in the Midwest have some form of statewide TRM so these use cases did not apply
C2-1	Mandatory EE, no statewide TRM, uses some TRM	
C2-2	Mandatory EE, no statewide TRM, does not use any TRM	

If we look at the use case classifications by state TRM status, as shown in Figure 10, we can see that in the “Have-TRM” states – the states with an up-to-date statewide TRM whether required or optional – that our use cases are mixed between the mandatory and voluntary EE cases, with 35% in the C1-2 use case (i.e. mandatory EE, has TRM, has not participated) and 26% in the D1-2 use case (voluntary EE, has TRM, has not participated). The majority (56%) of the “No-TRM” small utilities – those without a statewide TRM or with an outdated one – fall into the D2 use case (i.e. voluntary EE, no TRM, no further information).

Figure 10: Small utility use case classifications by state TRM status

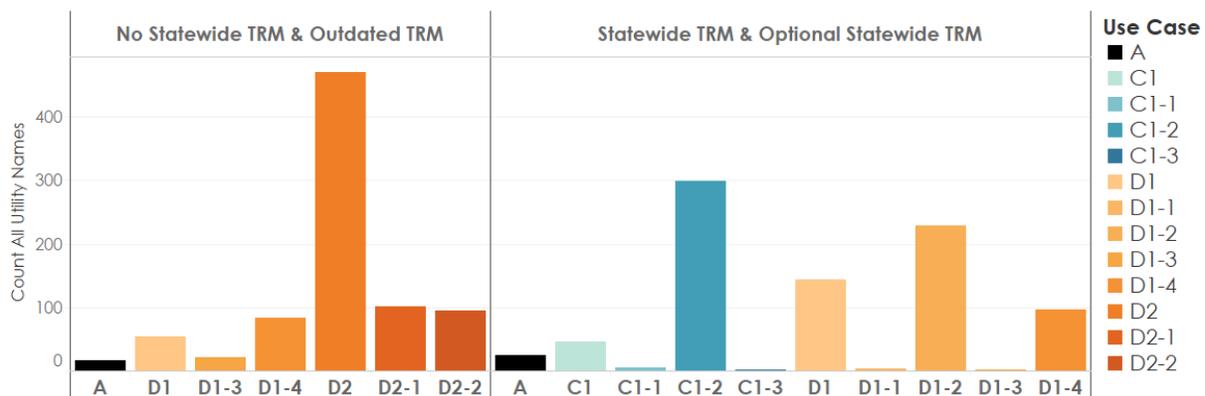
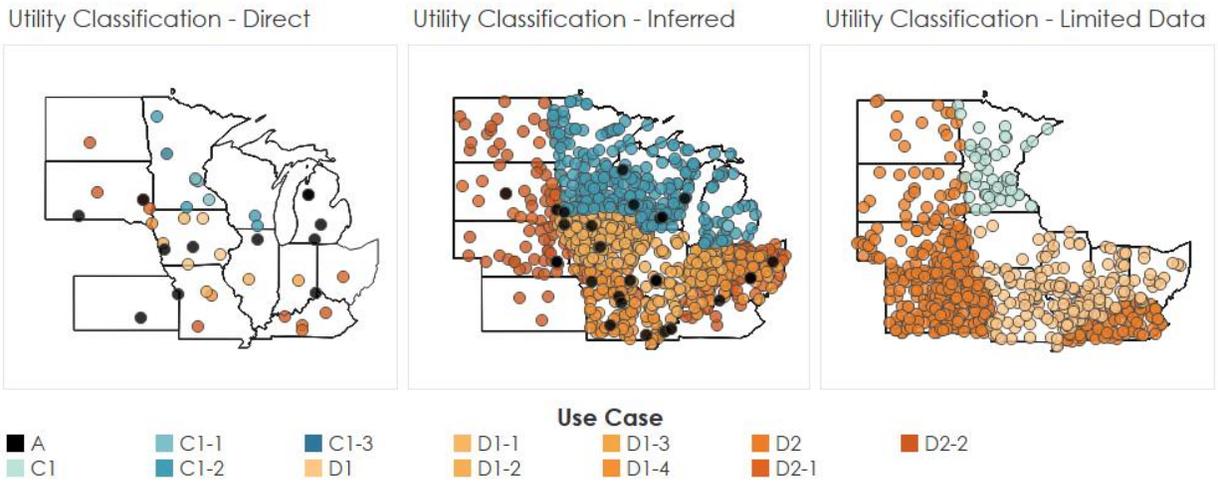


Figure 11 shows how the use case classifications split up between the directly obtained data, the use cases that were inferred based on group membership and additional research, and the use cases that were assigned based on limited data (i.e. the utilities assigned to the broad C1, D1, and D2 groups).

Figure 11: Use case classifications of Midwest small utilities, indicating whether the classification is derived from direct information, inferred from available data, or based only on limited data from state energy efficiency policy status



Characterizing small utilities from EIA data

Energy sales and number of customers

Using the EIA Electric ID numbers in the small utilities list, we were able to connect the Midwest small utility list to utility-reported data from the Energy Information Administration.

Small utilities serve a large proportion of the electric load in the Midwest. According to EIA-861 data, the small electric utilities in our list were responsible for almost 523 TWh of electricity in 2016 – or about 45% of the region's total retail electricity sales as reported. The small electric utilities served 8.4 million electric customers across the Midwest.¹³

On the other hand, small natural gas utilities serve a much smaller proportion of the natural gas needs. According to EIA-176 data, the small natural gas utilities in our list delivered 155 million MCF in 2016 – or about 2.6% of the region's total delivered natural gas as reported. The small natural gas utilities served 888,700 electric customers across the Midwest.¹⁴

EIA data quality

Unfortunately, not every identified small utility has records in the EIA data files for 2016. In fact, only 56% of the Midwest small utilities we identified by an EIA electric ID reported on EIA-861 in 2016, as shown in Table 11.

Table 11: Count of small electric utilities by state based on whether they filed Form EIA-861 in 2016

Reported	IA	IL	IN	KS	KY	MI	MN	MO	ND	NE	OH	SD	WI	TOT
yes	88	33	60	65	47	34	111	74	22	80	54	42	74	784
no	91	36	54	86	10	22	64	60	11	78	59	23	33	627
% yes	49%	48%	53%	43%	82%	61%	63%	55%	67%	51%	48%	65%	69%	56%

¹³ EIA-861 data files <https://www.eia.gov/electricity/data/eia861/>

¹⁴ EIA-176 data files https://www.eia.gov/naturalgas/ngas/all_ng_data.zip

On the other hand, 94% of the natural gas utilities we identified in the Midwest small utilities list reported on Form EIA-176 as shown in Table 12.

Table 12: Count of small natural gas utilities by state based on whether they filed Form EIA-176 in 2016

Reported	IA	IL	IN	KS	KY	MI	MN	MO	ND	NE	OH	SD	WI	TOT
yes	52	67	19	51	50	1	30	40	1	16	11	2	3	343
no	1	1	1	15	2	0	0	1	0	0	2	0	0	23
% yes	98%	99%	95%	77%	96%	100%	100%	98%	100%	100%	85%	100%	100%	94%

Form EIA-861 and Form EIA-176 are both mandatory filings under 15 U.S.C §772. The fact that we have identified EIA IDs for these electric and natural gas utilities (as summarized in Tables 5 and 6) would indicate that these utilities are EIA reporters – otherwise a number would not have been assigned and we would not have matched it. It is not evident, though, why nearly half of the small electric did not report 2016 operations on EIA-861, while nearly all the ID-matched small natural gas utilities reported on EIA-176.

One possible reason for non-reporting could be that the utility is no longer in operation under that ID due to merger, acquisition or ceasing operations. Since we matched against EIA IDs using data files from 2012-2016, and we did identify several utilities that had merged during our cleanup process, it is reasonable to assume that there may have been additional mergers or other organization changes that could affect filing status. Another factor that could affect filing status is whether the small utility is reporting on its own or is incorporated into an aggregated value reported by a larger entity to which it belongs. Determining why each of the small utilities is not reporting to EIA is outside of the scope of this project, however.

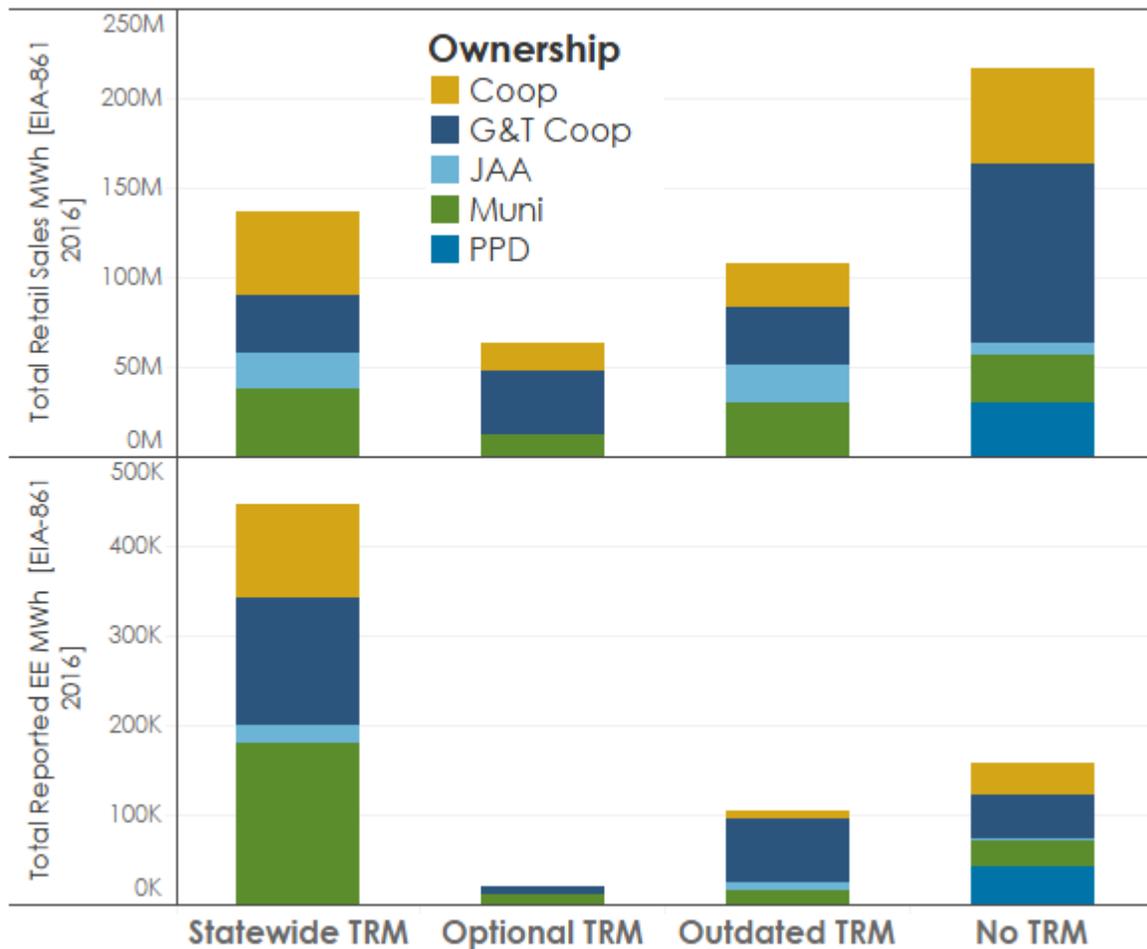
Noting that there is a possible issue with the completeness of the data, as we discuss analysis based on the EIA data, it is important to remember that the discussion relates only to those utilities that reported on the relevant form for their operations in 2016.

EIA energy efficiency data analysis

There is no energy efficiency data for natural gas utilities tracked at the federal level, so further discussion will focus on the electric data only.

Comparing utility data from the 861 “Sales to Ultimate Customers” and “Energy Efficiency” data files for 2016 allowed us to compare total electricity sales from small utilities with small utility energy savings. While the small utilities from states without a statewide TRM reported twice the total electricity sales as compared with TRM states, the TRM states had two-and-a-half times the electric energy efficiency savings from small utilities – Figure 12.

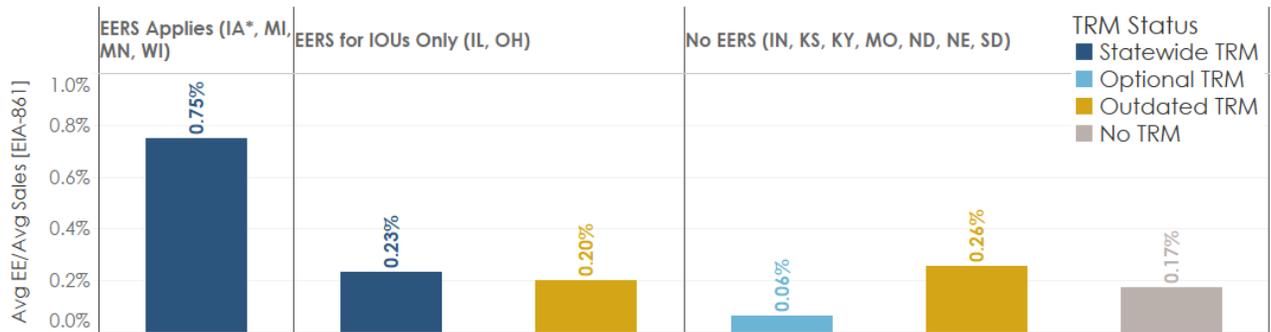
Figure 12: Total retail electricity sales compared to total incremental electricity savings from small utilities in the Midwest, as reported in EIA-861 2016, aggregated by state TRM status (note that the two graphs are not to the same scale)



It seems logical that small utilities in TRM states would report more energy efficiency than in non-TRM states. It could be that having a TRM available for use makes it easier for utilities to provide energy efficiency – they don't have to write the book on their own. However, we also know that in some of the TRM states – Iowa, Michigan, Minnesota and Wisconsin – the small utilities have a requirement to provide EE, while in others – Illinois and Missouri – they do not.

To examine how the energy efficiency policies impact the savings from small utility energy efficiency, we normalized to energy efficiency as a proportion of retail sales – MWh saved / MWh sold – which is a common measure used for comparison of energy efficiency performance between states and utilities, as shown in Figure 13.

Figure 13: Reported energy efficiency as a percentage of total retail sales for small electric utilities in Midwest states that reported both EE and sales in EIA-861.

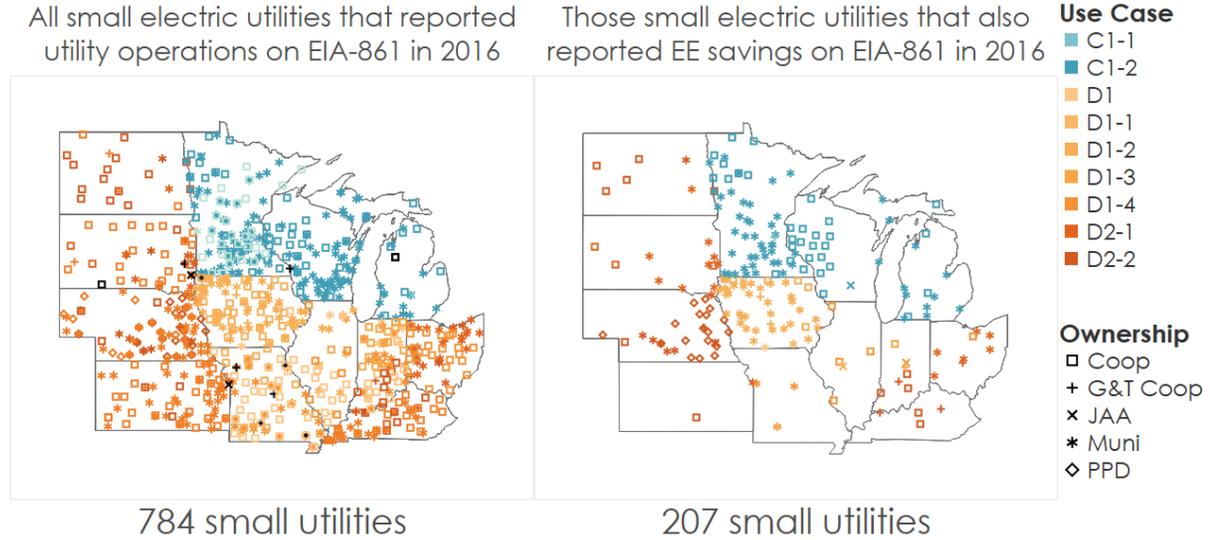


*IA EERS applied to small utilities in 2016 when this data was reported, but the policy changed due to 2018 legislation

As is clear from Figure 13, if just having a statewide TRM was the driving factor in the level of savings, then we would expect that the dark blue bar for Illinois – which has a statewide TRM but EE is voluntary for small utilities – would look more like the bar for the states that have an EERS for small utilities. Instead, the levels are closer to those seen for the optional TRM states (OH and IN). Having a TRM, even an outdated one, may help these utilities have slightly higher EE performance compared to states with no TRM, but a statewide savings requirement that includes small utilities still is likely the driving factor in higher performance. Since this data is from 2016, Iowa's small utilities were still subject to the state's EERS requirements and Missouri's optional statewide TRM was finalized in 2017, so it is possible that there could be some shifts upwards if the Iowa munis and coops that have experience with EE shift into the voluntary group but continue to provide efficiency programs or if Missouri's small utilities make use of the opportunity to start using the state TRM as a path toward increasing their EE investment.

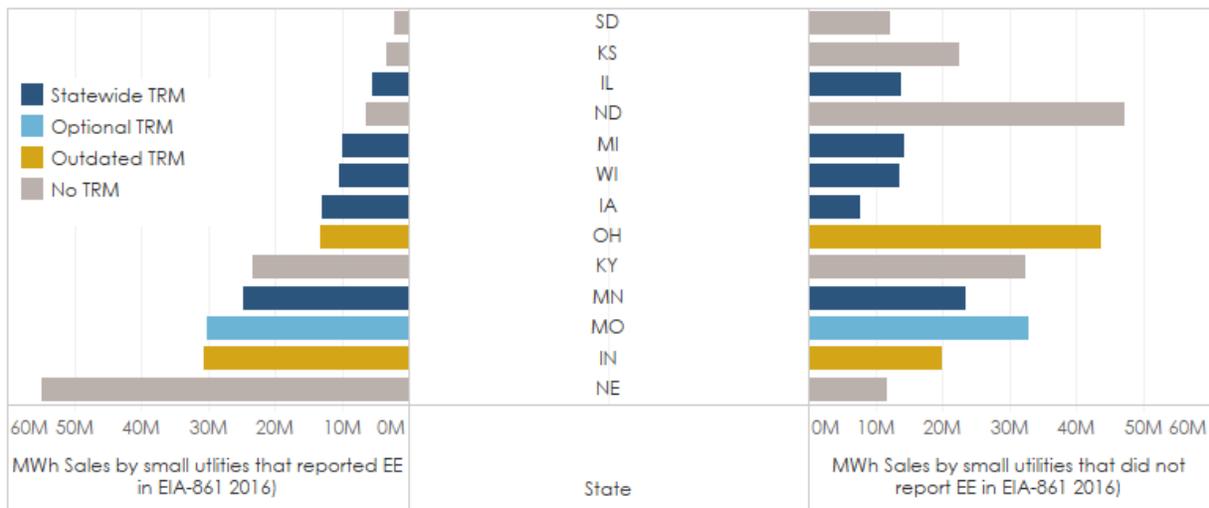
Reporting vs non-reporting could also be a factor – EIA-861 is a self-reported compliance filing, and it is possible that values are misreported or omitted. Figure 14 compares the distribution of all small utilities with those that reported energy efficiency savings on Form EIA-861. Most EE-reporting on EIA-861 2016 comes from states where the small utilities were required to provide energy efficiency – Iowa (prior to 2018), Michigan, Minnesota and Wisconsin, but even in those states there are many small utilities that did not report any energy efficiency savings at the federal level.

Figure 14: Comparison maps of the location all small electric utilities that reported operations and those that reported EE at on form EIA-861 in 2016



In Figure 15, we compare the total MWh retail electricity sales from utilities based on whether or they reported any EE savings on Form EIA-861 for 2016. The bars on the left represent the volume of total electric sales from utilities that reported EE savings, and the right bars represent the total electric sales from those utilities that did not report any EE savings.

Figure 15: Total MWh retail electric sales from small utilities that reported energy efficiency compared with small utilities that did not report energy efficiency in 2016



It is interesting to note in Figure 15 that while we know that state energy efficiency policy requires small utilities to provide energy efficiency in Iowa, Minnesota and Michigan, there is still a substantial portion of the small utility load that is being served by utilities that did not report any efficiency savings in 2016. Part of this could be the aggregation issue – a larger group is reporting the EE savings while individual utilities are reporting their own sales. This is almost certainly the case in Wisconsin where most of the small utilities participate in the statewide Focus on Energy program, which reports aggregated EE savings as the statewide program administrator rather than for individual utilities. A state-by-state, utility-by-utility comparison of which small utilities are

and are not reporting efficiency savings might be a useful next step if we wanted to further explore the issues associated with EIA reporting – for example looking at the small utilities that we know from commission filings are indeed providing energy efficiency to see whether they are reporting it to EIA, and whether the reported values are similar between sources. Discussion with staff at EIA responsible for the EIA-861 filings and data could provide additional insights, as well.

Overall, the EIA data is useful to look at how EE compares with sales and how those impacts may be influenced by the factors we are examining – TRMs and state EE requirements – but it is also important to remember the limitations of the data and that nearly half of the electric utilities in our small utility list do not even show up in the 2016 data.

Strategies for developing a Small Utility TRM

Making the case – which small utilities is it useful for?

Now that we have done the necessary steps of identifying, classifying and analyzing the small utilities in the Midwest, we need to consider how that intelligence can help lead us toward development of a useful tool to enhance energy efficiency for utilities and states that want to pursue it.

It seems evident from the EIA data that state policies that require energy efficiency from all utilities are the biggest driving factor in the amount of energy savings from small utilities. Having a TRM as a planning and evaluation tool still benefits these utilities, as it does for the investor-owned utilities, providing consistency, reliability and easing the burden of proving to regulators (or member-owners) that energy efficiency investments are prudent and justifiable. In the Midwest states where small utilities are required to provide energy efficiency services, the state and the energy efficiency stakeholders have already established and maintained statewide TRMs. While small utilities may still have some implementation issues, the tool is already available.

Consideration of changing state policies that require energy efficiency savings from small utilities is far outside of the scope of this project. However, as with IOUs, an EERS requirement is still the strongest policy path towards increasing energy efficiency. Without a legislative mandate, small utilities (as with the large ones) still do provide energy efficiency services on a voluntary basis. In two of these states where small utilities are voluntary efficiency providers – Illinois and Missouri – there is a maintained statewide TRM that is available for small utilities to use. In two more – Indiana and Ohio – the existing TRM is outdated and while it can be used there is no process for keeping it from becoming more and more stale. Especially when (or if) new federal lighting and appliance standards go into effect, values for deemed savings and algorithms for calculated savings are not being updated in these documents and the burden falls on the utility to provide updated values. In the remaining voluntary energy efficiency states in the Midwest, where there is no statewide TRM at all, the small utilities are fully responsible for their own energy efficiency measure values.

About half of the small utilities in the Midwest are in states that are already covered by an approved, up-to-date TRM. Whether they are required to use the statewide TRM (e.g. Minnesota) or the TRM used by the IOUs is available for use by small utilities if they choose to do so (e.g. Illinois), the tool is still available. While it is possible that a simplified TRM could be a useful option for some of these small utilities, it is also possible that finding ways to increase the use of the statewide TRM would be more beneficial from a policy perspective – technical assistance for

small utilities to help them learn to use the existing TRM would help maintain consistency across the state and could increase small utility stakeholder confidence in the program impacts and benefits. It is possible that developing state-specific small utility TRMs based on the statewide TRM could be beneficial for the utilities that are not already required to use it, providing a simpler implementation path that still maintains statewide consistency. That would include small utilities in Illinois, Missouri and the small utilities in Wisconsin that do not participate in Focus on Energy.

Where there is not a statewide TRM – the states that have about half of the small utilities we identified – there is a better case to be made for development of a small utility TRM. First, there would be no competition with an existing statewide tool. Second, it could help provide consistency and stability in energy efficiency program planning and evaluation for the small utilities. Third a TRM could make reasonable and prudent energy efficiency investments easier for small utilities to justify to their members, owners and stakeholders.

In the states where there is an existing, obsolete statewide TRM, a small utility TRM could also be a useful tool. While an outdated TRM might still be better than no TRM at all, the older and staler it becomes and the farther the IOU approved measure lists deviate from it and each other, the harder time the small utilities in that state have in developing their own measure lists, since there is no definitive source. The case for a small utility TRM for these small utilities is basically the same as for those where there is no TRM.

Table 13: The case for a small utility TRM depending on current state TRM status

State Category	Good case for a Regional Small Utility TRM?	Other Options
Has TRM, already used by small utilities	No	Increase adoption through technical assistance to small utilities on how to use the statewide TRM
Has TRM, optional for small utilities	No	Increase adoption through technical assistance; simplified TRM for small utilities based on statewide IOU TRM
No TRM	Yes	
Outdated TRM	Yes	

In terms of our classification schema, the utilities that would have the best case for a small utility TRM would be our Use Case D2 group – those utilities that are optional EE and no TRM at all – D2, D2-1 and D2-2. Second would be the subset of the Use Case D1 group that is in states with outdated TRMs. They could be considered secondary due to at least having the outdated TRM as a consistent baseline, so a small utility TRM might not be seen as being as valuable to them – unless it provided additional measures or easier/more accurate savings calculations. On the other hand, their experience with energy efficiency and using an existing TRM could be helpful in stakeholder-driven development and adoption efforts.

There does not seem to be as strong a case for to be made for creating a small utility TRM for utilities that already have a statewide TRM or are already using an optional one though as a tool was developed it would still be useful to see if the utilities that fall into those use case groups had any interest.

Table 14: Highest priority targets for small utility TRM outreach and development

Priority for Small Utility TRM process	States	Use cases & counts of utilities
Primary	North Dakota South Dakota Kansas Nebraska Kentucky	D2 (471) D2-1 (101) D2-2 (94)
Secondary	Ohio Indiana	D1 (54) D1-3 (21) D1-4 (84)

These priority targets still add up to 666 primary targets and 159 secondary targets. Within these subsets, it would be sensible to start with the ones that we know the least about – the broad D1 and D2 categories – to refine the dataset and the analysis. It also seems reasonable that lists could be prioritized for outreach based on criteria such as customer counts or volume of energy delivered since we have access to that data.

What about other measure sources?

While we were not able to gather enough specific data from our outreach to make any robust conclusions, we did hear from small utilities that did not use a statewide TRM that they – or the groups they work through to aggregate energy efficiency planning and administration – used the following sources for measure values:

- Vendor-supplied values
- TRMs from other states
- Approved measure lists from in-state IOUs
- Internally-maintained measure lists
- Any or all the above

As we previously discussed, while these sources may very well provide accurate and usable measure information, they also can introduce uncertainty and inconsistency. For example, using vendor-supplied measure lists could create problems of transparency and accountability from not knowing the source and vintage of the measure values and from the lack of independent, third-party review. TRMs from other states can often have weather and location-specific calculations that might not include the proper values for out-of-state use and may not reflect all the measures that are relevant to a state (for example limited agriculture-specific measures). IOU measure lists may be different among the state's IOUs and issues could arise from deciding which list or lists to draw measure values from. Internally-maintained lists rely on the expertise of small utility staff to update based on research, evaluations and new technology.

The problems that could arise from using these other measure sources are not fundamentally different than they would be for an IOU in the same circumstances, but the IOUs typically have far more resources to use for developing and maintaining their own measure lists than the small utilities do. Just like a statewide TRM helps to level the playing field for all utilities, a small utility TRM would help to level the playing field for the small utilities that do not have staff and monetary resources to properly maintain their own measure lists or check the assumptions and inputs that are incorporated into third-party lists.

Additional outreach and research to help identify which specific measure sources are being used by small utilities might be helpful to come to a better understanding of the prevalence of each of these possible other sources and help further differentiate them within our Use Case scenarios.

We still see a statewide TRM as the best measure source for all the utilities in a state, IOU and small utility alike. For those without a statewide manual, and without the policy impetus to develop one, a regionally-supported small utility TRM might be the best possibility for enhancing planning and EM&V for small utilities across multiple states.

Key stakeholders for a small utility TRM development process

As with the development of a statewide TRM, the development of a regional small utility TRM should be a stakeholder-driven process. Stakeholder involvement benefits the TRM development process by building consensus on issues and gaining early buy-in from potential users.

Unlike development of a statewide TRM, the stakeholder involvement for a regional small utility TRM would necessarily be a cross-state process. It would require the facilitator to seek involvement from various key stakeholders from the states that are being targeted for involvement. A list of potential key stakeholders and discussion of why they should be included in any development of a small utility TRM follows. This is not an exclusive list, of course, since any small utility in the region could be considered a stakeholder, but these stakeholders are ones that are suggested by our analysis and MEEA's experience with energy efficiency stakeholder processes.

- **Groups that are already providing EE services to member utilities** – including the joint action agencies, state associations, and G&T cooperatives that are already providing efficiency to their members would provide experience in understanding program delivery to small utilities and the measures that are already being included in small utility efficiency programs. Buy-in from these groups would exponentially increase the reach of a small utility TRM through their membership. They would also be an end-user of the product.
- **Individual utilities that are already reporting EE to EIA** – small utilities that are voluntarily investing in energy efficiency and reporting it on annual federal reporting – whether or not they are part of the groups noted above – would be valuable stakeholders because they are a potential end-user of the product. Having established EE programs means they are already experienced with using some version of a measure list and would know which measures have been the most- or least-useful in their program delivery. They could serve as peer-influencers to the other utilities in their states as well.
- **State associations** – even associations that are not directly involved with energy efficiency program delivery are still major influencers for their membership. Though they may not have the direct experience with measures and programs that the EE-providing groups, they have the experience with outreach to their members for input and to disseminate information and with working with the policy processes in their states. They could also be peer-influencers for associations that do not participate.
- **Touchstone Energy** – there are 345 small utilities in the Midwest that are Touchstone members, 174 in states that do not already have a statewide TRM. Touchstone would

have valuable insights into operations of their member utilities and how and where their members are delivering efficiency programs. As with associations, they are a major influencer for their membership and their buy-in would be crucial to spread a product to their members. Touchstone could also provide understanding of how to promulgate a tool across state boundaries and get diverse utilities to adopt a new tool.

- **Consumer advocates** – the customer voice is important in energy efficiency stakeholder processes. Though small utilities represent their own member-owners, the consumer advocates represent all the utility customers in the state including those utilities that have not chosen to be involved. If the consumer advocates that have already been supporters of EE and TRM development – e.g. Indiana’s Citizens Action Coalition – also are involved in the development of a consensus small utility TRM product, then it is also possible that they could help as peer-influencers for advocates in other states where there has not been as much support for EE. The consumer advocates also already have experience working with, and against, the small utilities in their states and could provide valuable insight into how to influence them. Early involvement from consumer advocates could be a key to developing a product that would be widely accepted.
- **State regulatory staff** – in any state where small utilities are required to file program plans or reports with a state commission, including staff from those commissions would help to make sure that the effort generates a product that would meet the needs of their various regulatory jurisdictions, increasing the possibility of uptake and acceptance.
- **State energy office** – like commission staff, energy office staff would be useful in making sure that a tool conformed to their state’s energy policies. Especially in cases where the regulator does not have substantial oversight of small utility activities – or on the other side of the coin, where they do have oversight but pending cases would preclude them from participating – the state energy office would be a representative of the state policy sector. Their role as non-regulatory policy support gives them a ‘big picture’ viewpoint of the issues that face their state’s utilities and energy customers as well as into how to navigate the regulatory processes in their state if a small utility TRM required formal approval.
- **Implementers** – including program implementers would make sense as they would be an end-user of the product. The implementers that deliver energy efficiency programs on behalf of small utilities or small utility groups could provide their experience with the measures that have substantial uptake in the small utility space and what measures would not make sense to include. There could be some implementers have a vested interest in maintaining the status-quo rather than advancing a regional small utility TRM – i.e. organizations that already sell proprietary measure lists to small utilities. On the other hand, some organizations that do program implementation also have experience in TRM development – e.g. VEIC – and could add that experience to the discussion or even be contracted as a developer/facilitator. How to include implementers and which ones to include would likely require additional discussion with the other stakeholders.
- **Evaluators** – as with program implementers, program evaluators would be another product end-user. The evaluators could provide insight into how a small utility TRM could be built to be most useful for them and their small utility clients – for example deemed vs.

calculated savings, input data requirements for calculations, types of measures to include, etc. Making an evaluation tool that the companies that do evaluations for small utilities would use – and even recommend to their clients – would be another path towards increasing uptake.

As much as ‘one big stakeholder group’ might seem like a good idea to get as much input as possible, putting these diverse entities from at least seven states together in one room would be impractical from a logistical and facilitation standpoint. Some collaborative stakeholder process that involves these groups would certainly be required though. Online collaboration tools and conference calls are useful up to a point but can when the scale gets too large it can devolve into a top-down mode of information dumping rather than listening and collaborating.

Rather than an ‘all interested participants’ model for a stakeholder process to develop a small utility TRM, it would make sense to use the current analysis and additional research and outreach to identify some specific organizations and people drawn from these stakeholders and create a collaborative process that could include a steering committee, working groups and a system for collecting stakeholder feedback. That collaborative’s working groups could consider the policy, product development and promulgation aspects of building a small utility TRM and build an initial conceptual framework that could be shared with the broader stakeholder community for facilitated discussion and feedback. Additional future work steps including building a working group are discussed in the next section.

Pathways for future work

There are two initial pathways for future work – a stakeholder path and a research path. The paths would merge at some point in the process to become a development path.

The stakeholder path

The stakeholder path would involve building a collaborative process drawn from the key stakeholders to start creating a consensus model for small utility TRM development. This collaborative would ideally have a mixture of the key stakeholder groups but be kept to a small enough size to allow meaningful discussion and collaboration. Perhaps a steering committee of 1-2 representatives from each stakeholder type, with 1-2 from any given state could be a good starting point. That steering committee could then identify additional key members to create working groups as needed.

A policy & practices working group could explore different models for TRMs to consider their usefulness to small utilities. They could also consider the policy implications for different states and approaches that could be acceptable across jurisdictions. That group’s initial goal would be to put together a model (or models) that could be shared as part of broader stakeholder efforts.

A meetings & communication working group would also provide guidance for the steering committee on how to create that broader stakeholder effort that includes relevant stakeholders from individual states and industries and gathers their input in a meaningful way. A possible model that the working group could consider would be the ‘roadshow’ model, holding open stakeholder meetings in different locations across the states to introduce the model, get input, and make refinements before bringing it to the next meeting. After the series of stakeholder

meetings, a consensus model based on all the input could be shared with previously-involved stakeholders and others for final comments before finalizing.

A consensus conceptual model of a small utility TRM based on research and stakeholder feedback would be the input of the stakeholder collaborative process into the development path.

The research path

The research path would by necessity precede or work in parallel with the stakeholder path. There are several areas of additional research that would help guide the collaborative process and feed into that process along the way.

First, additional research is needed to continue identifying direct contacts for outreach. Even with the extensive list cleanup, there are still many small utilities in the list where we have no contact information. The more contacts we can identify, especially email addresses, will be important for gathering additional data and for outreach efforts for stakeholder meetings. A likely source for obtaining additional contact information would be to outreach to EIA directly for the contact information for the people who submitted the annual EIA reporting forms on behalf of their utilities.

Besides contact research, additional surveying of identified contacts to refine the data set would also be valuable. Some of the previously-asked questions could be refined to give more pertinent and specific information. For example, targeted outreach to small utilities in non-TRM states that reported EE on EIA-861 could ask for more specific information on the source of their measure lists. Small utilities that are part of multiple groups could be asked specifically which group or groups provide energy efficiency services for them. General surveys could be sent out to the broad group that had not previously responded to help refine their categorization and to learn their sources of measure values. Additional data points suggested by the previous research or identified by stakeholder path could be included in a survey to help increase the understanding of areas not previously considered.

At some point, additional research has limited returns. At that stage, when additional contacts have been identified and relevant data gathered, the research path merges into the development path.

The development path

The development path for a small utility TRM would take the consensus model of a small utility TRM from the stakeholder path and the knowledge from the research path and use those to build the TRM.

Likely steps in a small utility TRM development path would include:

- Secure funding and create preliminary budgets
- Build a development working group and work plan
- Put out an RFP for a developer to build a tool that meets the conceptual model
- Work with the developer to review existing measure list and TRMs and the research data to include in the product

- Additional research to update measure values, resolve conflicting values and include emerging technologies
- Beta testing the tool – for example using it to evaluate historical programs to compare with pre-TRM evaluation results
- Release and promulgation of the finalized tool
- Building an update process for maintaining the tool

Another possible consideration in the development path is how the small utilities evaluate the cost effectiveness of their programs. Depending on the legislative and regulatory environment, the small utilities may or may not have specific benefit-cost testing requirements. Perhaps the National Standard Practice Manual (NSPM) framework¹⁵ could be applied to develop a 'small utility test' that could meet the broad goals of small utilities in general while still allowing for individual jurisdictions to adjust it to include additional impacts that are relevant to their constituents. The easier that we could make it for the small utilities to justify energy efficiency investments to their member-owners or constituents through a well thought-out, transparent cost-effectiveness test that incorporates all the relevant impacts, the more likely we would see increased investment in EE from the small utility sector.

Conclusion

Small utilities are a large part of the energy system infrastructure in the Midwest, responsible for 31% of total electricity sales in the region (with a high of 99.45% of statewide sales in Nebraska).¹⁶ These small utilities, however, can be overlooked by the policies and practices that drive energy efficiency; legislation and regulations that apply to investor-owned utilities do not always apply to small utilities, and tools that are created for IOUs might not be useful for the small utilities. Only about half of the small utilities in the Midwest have access to an up-to-date statewide TRM for their state.

Better understanding who the small utilities are, how they deliver and evaluate energy efficiency programs and how their needs are being met provides insight that can be used to create and disseminate a tool, such as a small utility TRM, which could enhance energy efficiency efforts.

The trends and targets identified by initial stages of research provide a basis for additional research, stakeholder involvement and product development that would be necessary to bring a small utility TRM to the Midwest.

¹⁵ <https://nationalefficiencyscreening.org/national-standard-practice-manual/>

¹⁶ EIA-861, 2017

Appendix A: Outreach Survey Form v1.0

Group:

Outreach Survey: NREL Resource Development (Small Utility TRM) Project – Summer 2018

Utility/Assoc	
Date	
Contact Name	
Contacted via	Phone / Email
Contact Phone	
Contact Email	
City	
State	
STATUS/Notes	Completed / Declined / Left Message / Referred / Other:

Hello, this is _____ from the Midwest Energy Efficiency Alliance. We're doing a project for the Department of Energy, focused on better understanding energy efficiency practices at municipal and cooperative utilities in the Midwest. We have just a few questions about how you and your member utilities approach energy efficiency.

Do you have a few minutes to talk?

NO/DECLINE: Is there a time that would be better to talk? [SCHEDULE SOMETHING]

-or-

Can you recommend anyone else for me to talk to? [COLLECT INFORMATION]

-or-

Thank you for your time. [END CALL]

YES: [GO TO Start]

START: Does your municipal/co-op member utilities participate in any energy efficiency efforts?

NO: Thank you for your time. [END CALL] [ASSIGN GROUP A]

YES: Are energy efficiency programs run through your agency or some other kind of administrative **group**, or do individual utilities **run their own** programs?

RUN THEIR OWN: Do you know any of the details about how energy efficiency programs are run & evaluated by your members?

NO/UNSURE: Can you recommend anyone for me to talk to that knows details? [COLLECT INFORMATION]. Thank you for your time. [END CALL] [ASSIGN GROUP B]

YES: Part of our project with DOE is to study some of the details about how energy efficiency savings are measured and evaluated at small utilities. We have a few more questions about that. [GO TO Matrix]

GROUP: Do your agency/association **run the efforts**, or is there **another group** that organizes the energy efficiency efforts?

RUN THE EFFORTS: Do you run those efforts **in-house** or do you use a **third-party** like a contractor?

IN-HOUSE: Part of our project with DOE is to study some of the details about how energy efficiency savings are measured and evaluated at small utilities. We have a few more questions about that. [GO TO Matrix]

THIRD-PARTY: Do you understand the evaluation process they use for those efforts?

NO: Can you recommend anyone for me to talk to that knows details? [COLLECT INFORMATION]. Thank you for your time. [END CALL] [ASSIGN GROUP B]

YES: Part of our project with DOE is to study some of the details about how energy efficiency savings are measured and evaluated at small utilities. We have a few more questions about that. [GO TO Matrix]

ANOTHER GROUP: Do you know any of the details about how energy efficiency programs are run & evaluated by that other group?

NO/UNSURE: Can you recommend anyone for me to talk to that knows details? [COLLECT INFORMATION]. Thank you for your time. [END CALL] [ASSIGN GROUP B]

YES: Part of our project with DOE is to study some of the details about how energy efficiency savings are measured and evaluated at small utilities. We have a few more questions about that. [GO TO Matrix]

MATRIX: STATE INFORMATION

STATE	STATEWIDE TRM	REQUIRED MUNI/COOP EE
IA	X	X
IL	X	--
IN	X	--
KS	--	--
KY	--	--
MI	X	X
MN	X	X
MO	(X)	--
ND	--	--
NE	--	--
OH	X	--
SD	--	--
WI	X (Focus)	X

USE THE INFORMATION ABOVE TO PICK A QUESTION SET

<i>From above</i>	X	X	Set C1
	X	--	Set D1
	--	X	Set C2
	--	--	Set D2

Set C1: Required muni/coop EE, has TRM

- Note: for MI – substitute "Michigan Efficiency Measures Database (MEMD)" for TRM

ASK: Do you use the statewide Technical Resource Manual for savings calculations & values?

NO: Do you use some other form of energy efficiency measure database?

NO: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP C1-4]**

YES: What do you use instead? [COLLECT INFORMATION] Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP C1-3]**

YES: Did you participate in any of the TRM development workshops or do you participate the annual TRM update process?

NO: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP C1-1]**

YES: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP C1-2]**

Notes:

Set D1: Voluntary muni/coop EE, has TRM

- Note: Indiana and Ohio have TRMs but do not have any update process in place.

ASK: Do you use the statewide Technical Resource Manual for savings calculations & values?

NO: Do you use some other form of energy efficiency measure database?

NO: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP D1-4]**

YES: What do you use instead? [COLLECT INFORMATION] Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP D1-3]**

YES: [only IN or OH] Did you participate in any of the TRM development planning when it was created?

NO: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP D1-1]**

YES: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP D1-2]**

YES: [not IN or OH] Did you participate in any of the TRM development or do you participate the annual TRM update process?

NO: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP D1-1]**

YES: Thank you. That concludes our questions. [END CALL] **[ASSIGN GROUP D1-2]**

Notes:

Set C2: Required muni/coop EE, No TRM

- Note: There may be nobody that fits this set

ASK: What do you use as a source for energy efficiency measure savings calculations & values? [COLLECT INFORMATION]

SOME OTHER STATE/UTILITY TRM: Thank you. That concludes our questions. [END CALL]
[ASSIGN GROUP C2-1]

NO TRM/VENDOR SUPPLIES DATA/ETC. Thank you. That concludes our questions. [END CALL]
[ASSIGN GROUP C2-2]

Notes:

Set D2: Voluntary EE, No TRM

ASK: What do you use as a source for energy efficiency measure savings calculations & values? [COLLECT INFORMATION]

SOME OTHER STATE/UTILITY TRM: Thank you. That concludes our questions. [END CALL]
[ASSIGN GROUP D2-1]

NO TRM/VENDOR SUPPLIES DATA/ETC. Thank you. That concludes our questions. [END CALL]
[ASSIGN GROUP D2-2]

Notes:

Appendix B: Email & Google Forms Survey

Email body

Greetings. We are researchers for the Midwest Energy Efficiency Alliance (MEEA), working on a US DOE-funded project to look at energy efficiency practices at municipal and cooperative utilities in the Midwest. We're reaching out to these utilities and their member associations in the region for information for this project, which looks at how practices vary across the Midwest's states and will try to identify whether there are regional efforts that could support energy efficiency at our small utilities.

MEEA Survey - Small Utility Efficiency Midwest Outreach

This survey is for a DOE-funded project being run by the Midwest Energy Efficiency Alliance (MEEA). The project is focused on gaining a better understanding of energy efficiency practices at municipal and cooperative utilities in the Midwest. Data from this survey will be used to categorize the energy efficiency efforts by state & utility groups to look for patterns, differences from practices at investor-owned utilities, and regional trends.

[Fill out form](#)

This may be the first time some of you have heard from MEEA, but we hope it won't be the last. We are a membership organization that seeks to advance energy efficiency across a 13-state region. Our members include state agencies, manufacturers, businesses, energy efficiency advocates and utilities, including municipal and cooperative utilities and associations. Scott Drake from the East Kentucky Power Cooperative sits on our current board of directors.

We have a short survey with a couple of questions about energy efficiency measurement at your utility and/or members. If you could take a few minutes, your input would be greatly appreciated. Even if you can't answer them all, perhaps you can provide another contact who might be better to talk to. And if you don't do any energy efficiency, that's okay too. We would still appreciate it if you tell us that in the form.

Please feel free to forward this survey to appropriate colleagues and contacts.

Thanks for your time. If you have any questions or comments, feel free to contact us via the contact information below.

-Greg & Alyssa

Survey questions

MEEA Small Utility Midwest Outreach

This survey is for a DOE-funded project being run by the Midwest Energy Efficiency Alliance (MEEA). The project is focused on gaining a better understanding of energy efficiency practices at municipal and cooperative utilities in the Midwest. Data from this survey will be used to categorize the energy efficiency efforts by state & utility groups to look for patterns, differences from practices at investor-owned utilities, and regional trends.

* Required

Email address *

Utility/Association Name *

City *

State *

Your Name *

Does your municipal/co-op utility (or member utilities if you are an association or joint action agency) participate in any energy efficiency efforts? *

Yes

No

Do you/your members provide electric or natural gas energy efficiency programs?

electric

natural gas

both

If you have efficiency programs, are they run through an association or some other administrative group, or do individual utilities run their own programs?

Group

Individual Utility

Unsure

Other:

Are your/your members' energy efficiency programs run by in-house staff or through third-party contractor(s)?

In-House

Third-Party

Varies

Do you (or your program provider) use a public Technical Resource Manual (TRM) for measure savings calculations & values? (This would include the MEMD for Michigan utilities.)

Yes

No

Unsure

If your state has a TRM, did you participate in any of the TRM development activities?

Yes

No

Unsure

If your state has a TRM, do you participate in the update process?

Yes

No

No formal update process (IN & OH)

If you don't use a statewide TRM, what do you use as a source for energy efficiency measure savings calculations & values?

Values provided by program implementer or evaluators

A TRM from another utility in my state

A TRM from another state

Other:

Is there anyone else that might be able to answer these questions if you were unable to answer them (name & phone please)?

Do you have any further comments related to this survey or energy efficiency at your utility?

Thank you very much for your responses.