



## A Net or Gross Energy Savings Approach:

# Perspectives at the MEEA 2012 Annual Meeting of the Membership

Midwest Energy Efficiency Alliance  
April, 2013

## Forward

### **About the Midwest Energy Efficiency Alliance (MEEA) – *The Source on Energy Efficiency***

MEEA ([www.mwalliance.org](http://www.mwalliance.org)) is a collaborative network whose mission is to advance energy efficiency in the Midwest through research and analysis, policy advocacy, program design, and by engaging a cross-section of stakeholders in the energy community. MEEA's members include utilities, manufacturers, academic research institutions, state and local governments, and advocates in the 13 Midwest states. MEEA is bridging the gap between energy efficiency policy adoption and program implementation.

Through MEEA, a network of stakeholders works together toward a shared vision for energy efficiency in the Midwest. As a membership organization, MEEA balances the interests of these diverse entities, while creating common ground to affect positive change. One of the many values of being a member of MEEA is having access to substantive content – authored by MEEA's staff or in collaboration with partners – on program and policy trends affecting the energy efficiency community. This paper provides top-level policy information for entities interested in the range of approaches used in the Midwest to determine the energy benefits of end-use efficiency programs. Specifically, the paper highlights technical discussions had at MEEA's 2012 Annual Meeting of the Membership, during which a panel of experts remarked on their experiences in applying either a **gross** or a **net energy savings approach** when evaluating energy efficiency program performance.

MEEA will continue to publish policy papers on similar evaluation, measurement and verification approaches and trends as they evolve in the Midwest region.

### **The Panelists**

In presenting the many sides of this issue, MEEA facilitated a panel representing three distinct perspectives – Evaluators, Regional Policymakers, and Investor-Owned Utilities:

#### **Evaluators** (*Moderator: Mike Li, U.S. Department of Energy*)

- ❖ Mike Messenger, Itron
- ❖ Mitch Rosenberg, DNV KEMA
- ❖ Julianne Meurice, Navigant Consulting
- ❖ Brad Kates, Opinion Dynamics Corporation

#### **Regional Policymakers** (*Moderator: Dan York, American Council for an Energy Efficient Economy*)

- ❖ Dave Kolata, Citizens Utility Board (Illinois Consumer Advocate)
- ❖ Joe Plummer, Minnesota Department of Commerce, Division of Energy Resources
- ❖ Becky Stanfield, Natural Resources Defense Council

#### **Investor-Owned Utilities** (*Moderator: Lisa Wood, Institute for Electric Efficiency*)

- ❖ Mike Brandt, Commonwealth Edison
- ❖ Tim Duff, Duke Energy
- ❖ Chuck Rea, MidAmerican Energy

Please contact MEEA for further information regarding this panel or future Meetings of the Membership.

# Contents

Fact Sheet and Introduction ..... iii  
Net v. Gross – What Does it Mean and Why Does it Matter? ..... 1  
The Panelists’ Discussion ..... 3  
    1. The Evaluator Perspective ..... 3  
    2. The Regional Policymaker Perspective ..... 5  
    3. The Utility Perspective ..... 8  
Conclusion ..... 9  
Bibliography and Additional References ..... 10

## List of Figures

Figure 1: Summary of Net vs. Gross in the Midwest ..... iii  
Figure 2: Net Savings Factors Considered in Midwest ..... 2

## Fact Sheet and Introduction

In July 2012, MEEA held its Annual Meeting of the Membership in Chicago, Illinois. A key focus was a panel of experts who remarked on their experiences in measuring the energy savings that result from end-use efficiency programs. Specifically, panelists provided their perspectives on the differences, benefits, and challenges inherent in using a *net savings* or a *gross savings* approach in their particular service territories.

Energy efficiency evaluation includes a range of assessment studies, calculations, and other analyses aimed at assessing the benefits attributable to efficiency programs. This overall process is typically known as **Evaluation, Measurement, and Verification** (EM&V). While there are many elements to an effective EM&V process, program evaluators will invariably be faced with the choice of calculating program energy savings from either (or sometimes both) a **net or gross** perspective. In basic terms, **gross savings** are the changes in energy consumption and/or demand that result from an energy efficiency program, *regardless of why consumers participated*. In contrast, **net savings** measure the changes in energy consumption/demand that are *specifically attributable* to an energy efficiency program, taking into account a number of inferences and effects (such as participant behavior). These definitions will be addressed in further detail in the body of this paper.

Selecting the appropriate approach for a given energy efficiency suite is essential to fairly and accurately attributing energy savings. This is particularly true in the Midwest region, where a number of States are required to comply with energy efficiency resource standards (EERS) or other annual savings targets.<sup>1</sup> Figure 1 illustrates the assessment approaches used in each of the Midwest States:

Figure 1: Summary of Net vs. Gross in the Midwest

Net or Gross Savings Approach	Midwest State
<b>Net</b>	Illinois, Kansas, Michigan
<b>Gross</b>	Minnesota, Ohio
<b>Both</b>	Indiana, Iowa, Kentucky, Missouri, Wisconsin
<b>Other</b>	Varies by utility in Nebraska, South Dakota; No program reporting has been identified in North Dakota

Regardless of the policies in each State, in determining which savings are attributable to energy efficiency programs, evaluators, policymakers, state energy offices, and utilities still face a number of daunting questions with respect to EM&V. The option of selecting either a gross or net savings approach is one of the key elements a State faces, but is also one of the most controversial. For example, net savings requires evaluators to assess the various influences on consumers' energy consumption – a determination that is often *quite complex*. Compounding this is a general lack of consensus among policymakers and regulators on which influences and effects *should be considered* when determining net savings, and how those influences are *defined*.

<sup>1</sup> A breakdown of energy efficiency policies and practices – including EERS and other energy savings targets – is provided on the MEEA website, at <http://mwalliance.org/policy/energy-efficiency-policies-and-practices-midwestern-states>. MEEA also published a report in 2012 entitled *Energy Efficiency Policies, Programs, and Practices in the Midwest: A Resource Guide for Policymakers*, that provides detailed, side-by-side comparison of energy efficiency policies in each of the Midwest States, available at [http://mwalliance.org/sites/default/files/uploads/MEEA\\_2012\\_EE-Policy-Midwest-Resource-Guide.pdf](http://mwalliance.org/sites/default/files/uploads/MEEA_2012_EE-Policy-Midwest-Resource-Guide.pdf).

This paper will address the key policy implications and concerns inherent in a net or gross savings approach, using a two-fold approach:

- ❖ *First*, we provide commonly-used definitions of what qualifies as net savings and gross savings. Rather than address the minute details of each approach, however, this paper will provide readers with only those considerations necessary for a foundational understanding, as well as basic information on the controversies concerning either approach.
- ❖ *Second*, we highlight key panelist remarks given at the 2012 MEEA Annual Meeting of the Membership, representing three distinct perspectives on these attribution issues.

While we provide a range of considerations that States typically address when determining net or gross energy savings, it is important to note that this paper *does not seek to settle the debate in favor of one approach over the other*. Rather, it is intended to inform the energy efficiency community of the specific attribution concerns the Midwest region is facing – and provide recommendations for how to overcome common barriers. These experiences and recommendations are likely to evolve as circumstances change within each State, particularly as the Midwest States reach their top-level EERS targets in the coming years.

We expect that the controversies over a net or gross savings approach will continue in the near future. MEEA and experts in the field will address this – and other EM&V issues –in future conferences, webinars, and policy papers.

## Net v. Gross – What Does it Mean and Why Does it Matter?

As indicated above, a key consideration in a State or utilities' overall EM&V process is whether to apply a **net or gross approach** in attributing energy savings to a given suite of efficiency programs. In December 2012, the State and Local Energy Efficiency Action Network (SEE Action) published its *Energy Efficiency Program Impact Evaluation Guide* (hereinafter referred to as "*Impact Evaluation Guide*") which collects the common terminology, structures, and approaches used for evaluating energy and demand savings from energy efficiency programs in the United States.<sup>2</sup> According to the *Impact Evaluation Guide*, the "energy efficiency community agrees on the basic definition of net savings[,] and – by extension – gross savings. *See generally*, Chapter 5 and pp. 5-1-5-3. These definitions are as follows:<sup>3</sup>

- ❖ Estimates of **gross savings** reflect the changes in energy consumption and/or demand that result from program-related actions taken by participants in an efficiency program, *regardless of why they participated*.
- ❖ In contrast, a **net savings** approach measures the changes in energy consumption/demand that are specifically attributable to or are a direct result of a particular energy efficiency program, *that would not otherwise have happened in the absence of the program*.<sup>4</sup>

*SEE Action Energy Efficiency Program Impact Evaluation Guide*, Chapter 3, p. 3-3.

We incorporate these definitions throughout this paper, unless otherwise noted.

It is important to note that while many evaluators agree on these basic definitions, controversy none the less arises *within* the net savings approach when evaluating what savings are fairly attributable to the energy efficiency program itself. There is a range of influences on consumers' energy use, such as self-motivation or the effects of prior and/or other programs. As a result, attributing savings to one cause or another can be quite complex. Further, there is a lack of consensus amongst States, utilities, and evaluators on *which factors* should be considered – and how those factors are *defined*.

Despite this controversy, however, evaluators tend to look at two primary factors when measuring net savings:<sup>5</sup>

---

<sup>2</sup> Because this paper provides only foundational information on these approaches, we encourage readers to review the *Impact Evaluation Guide* for more detail (including an entire chapter devoted to calculations of net and gross energy savings), as well as a range of other best practice EM&V considerations. *See* [http://www1.eere.energy.gov/seeaction/pdfs/emv\\_ee\\_program\\_impact\\_guide.pdf](http://www1.eere.energy.gov/seeaction/pdfs/emv_ee_program_impact_guide.pdf). Documents published by the U.S. Department of Energy's *Uniform Methods Project* also provide complimentary information. *See* Uniform Methods Project (2012), U.S. Department of Energy, available at: [http://www1.eere.energy.gov/office\\_eere/de\\_ump\\_protocols.html](http://www1.eere.energy.gov/office_eere/de_ump_protocols.html).

<sup>3</sup> These definitions are not absolute, but are intended to reflect commonly-used approaches to measuring net and gross energy savings across many jurisdictions. The *Impact Evaluation Guide* makes clear that there is "... a lack of consensus by energy efficiency policymakers and regulators as to which short-term and long-term market influences and effects should be considered when determining net savings and the role of net savings in program design, implementation, and "crediting" of savings to program administrators." *See Impact Evaluation Guide*, Chapter 5, p. 5-1.

<sup>4</sup> A comparison of annual gross and net savings, for example in Compact Fluorescent Lighting programs by utilities in the Midwest, is the following: Gross 41.8 – 66.0 kWh (n=6); Net – 39.0 – 46.1 kWh (n=6). Sources: Midwest Utility EM&V reports, 2010-2012 – IL, MN, MI, WI, OH.

- ❖ **Free rider** – A participant who would have undertaken the program’s measures even in the absence of the program.
- ❖ **Participant Spillover** – A participant who undertakes an energy efficiency program’s measures because of awareness of the program, but who does not receive a financial incentive.

See *Id.*, Chapter 3, p. 3-3; Chapter, p. 4-9; Chapter 5, pp. 5-1 to 5-3. Figure 2 identifies how free riders and spillover are addressed in the Midwest States that measure net savings:

Figure 2: Net Savings Factors Considered in Midwest

<i>State</i>	<b>Measures Free-Riders</b>	<b>Measures Spillover</b>
<b>Illinois</b>	✓	Partial/Sometimes
<b>Indiana</b>	✓	✓
<b>Iowa</b>	✓	
<b>Kansas</b>	✓	
<b>Michigan</b>	✓	✓
<b>Missouri</b>	✓	✓
<b>Nebraska</b>	Varies by utility	
<b>South Dakota</b>	Varies by utility	
<b>Wisconsin</b>	✓	✓

While there are differences of opinion in the Midwest on the appropriate attribution factors, it is important to note that program evaluation itself is a best practice and an essential component to ensuring a successful, ongoing energy efficiency suite. The *Impact Evaluation Guide* emphasizes the many benefits of an iterative EM&V process. See Chapter 2, p. 2-3. For example, evaluation identifies program approaches that are the most and least cost-effective, thereby enabling program administrators, third party evaluators, and regulators to improve programs in the future, as well to more effectively focus efforts to generate greater savings. Evaluations also provide accountability and transparency such that ratepayers can be sure their dollars are well-spent. According to the *Impact Evaluation Guide*, “evaluation is not an end unto itself but an effective tool for supporting the adoption, continuation, and expansion of energy efficiency programs, and the efficient use of energy.” See Executive Summary, p. xiv.

Beyond these essential benefits of implementing an EM&V process, the *Impact Evaluation Guide* also provides guidance on what factors will trigger either a gross or net savings approach in a given State. See Executive Summary, pp. xvii-xix; Chapter 4, p. 4-11. In some States, the approach is dictated by statute. Other times, however, selecting an evaluation approach is tied to other issues, including:

---

<sup>5</sup> Another approach often used is the difference between net and gross savings, i.e., the Net-to-Gross (NTG) ratio. While this can be an important factor for Midwest States in evaluating energy benefits from efficiency programs, this particular approach will not be discussed in this paper. For a more detailed discussion of how and why States use the NTG ratio, see *Impact Evaluation Guide*, Chapter 3, p. 3-7; Chapter 5, pp. 5-3, 5-7.

- ❖ The policy objectives of the program being evaluated (e.g., to achieve compliance with EERS)
- ❖ The scale of the program;
- ❖ Available evaluation budget and resources; and/or
- ❖ Specific aspects of the measures and participants in the program.

Panelists touched upon a number of these considerations at the Annual Meeting, which will be discussed in more detail in this paper.

Finally, the *Impact Evaluation Guide* suggests specific circumstances where either a net or gross savings approach is the most useful for administrators, implementers, and evaluators. See Chapter 5, p. 5-3. Generally, net savings may be of most interest in regulated State-run and utility programs, where a key factor is the wise investment of energy efficiency dollars. In contrast, gross savings may be of the most interest when assessing private sector energy performance contracts, or where looking solely at the natural resource and environmental benefits of reducing energy consumption via efficiency programs.

## The Panelists' Discussion

While the panelists at the 2012 Annual Meeting of the Membership touched on a number of the foundational issues outlined above, the main focus was each individual perspective on the differences, benefits, and challenges inherent in using a net savings or a gross savings approach in the Midwest States. The discussion below summarizes these key points, focusing on recommendations for how to overcome barriers, and identifies current policy trends in the Midwest with respect to attribution methods.<sup>6</sup>

### The Evaluator Perspective

The panel of evaluators introduced the concept of net and gross savings to the audience, and generally agreed with the findings in SEE Action's *Impact Evaluation Guide* – that the interplay of these methodologies is currently one of the most controversial issues with respect to EM&V both in the Midwest and nationally. The evaluators first provided history and foundational information on energy savings calculations, and then focused their remarks on identifying the main barriers they confront when using a net savings approach. They closed by providing a series of solutions that may minimize these barriers moving forward, as well as trends developing in the field.

From the evaluator's perspective, energy efficiency programs are designed to motivate consumers to do something that they wouldn't otherwise do, with the goal of promoting a public good. The utilities who design and implement these programs, and the regulators who authorize them, generally act in good faith; utilities are trying to provide the best possible energy services to their customers while delivering shareholder value, and regulators are trying to balance a wide range of public policy concerns, including energy costs and environmental quality. That being said, these entities are still tasked with the responsibility of making sure that

---

<sup>6</sup> Note that this paper does not attempt to summarize every remark made by the panelists, nor does it reflect comments that at times overlapped between each of the three panels. A complete transcript of the Annual Meeting is available to MEEA's members upon request.



utilities only claim credit— and thus ratepayer dollars are only used – for savings that actually resulted from their programs. This is the crux of the net vs. gross controversy.

The evaluators also note that utilities in the U.S. have been delivering energy efficiency programs, in varying degrees, for the last 20 years. In that time, neither the modes of program delivery nor evaluation have changed significantly. The net savings approach came into being when utilities started investing more ratepayer dollars into energy efficiency programs. This approach, in a sense, satisfies a utility’s fiduciary requirement to spend ratepayer dollars wisely, primarily to acquire new resources through efficiency.

The evaluators recognize, however, that there a number of issues and barriers inherent in a net savings approach, such as:

- ❖ *Uncertainty*, both as to how to calculate the savings, as well as whether the resulting energy savings are legitimately attributable to the energy efficiency programs at issue.
- ❖ Concerns over *cost*, i.e. that a great deal of resources are typically spent on determining net savings, which may not always yield more accurate results than a less-costly gross savings approach.
- ❖ Concerns over how to *accurately incorporate factors* that bear on the net savings calculation, such as the free riders. There is concern that the industry has focused heavily on the free rider measurement, to the exclusion of adequately measuring spillover. One evaluator also suggested that the industry should start looking beyond these traditional factors, to include market effects,<sup>7</sup> billing analysis, interview approaches, and other elements.
- ❖ Net savings methods tend to encourage program administrators to be *insular*; i.e., they may only look to the industry-standard methods without seeking outside input to improve upon these methods. This may arrest both the refinement of these accepted approaches, as well as the development of new ones.
- ❖ A net savings may result in an underestimate of savings potential and program cost-effectiveness, thereby preventing utilities from moving forward with *innovative programs* that, while less cost-effective in the short term, have great value in the long-term.

The main challenge for evaluators is how to move forward in a way that minimizes these problems, while still fairly and accurately attributing energy savings. Given their experiences in their particular service territories, evaluators recommend that States consider the following in selecting the appropriate approach:

*First*, they suggest identifying the *policy objectives* for the programs in question, and then selecting the attribution approach that best matches those objectives. For example, different Midwest States and utilities often have completely different reasons for evaluating energy savings. In States where the main goal of the EM&V process is to reassure ratepayers that their investments in energy efficiency are being well-spent, a net

---

<sup>7</sup> Generally, a market effects approach accounts for changes in the structure of a market or behavior of participants that are reflective of an increase (or decrease) in the adoption of energy-efficient products, services or practices, or the influence of a program on establishing an energy efficiency measure as common practice or part of a code or standard. See *Impact Evaluation Guide*, Chapter 3, p. 3-7; Chapter 5, p. 5-1.

savings approach may be appropriate. Evaluators commented that net savings is also a means of informing broader utility operations, such as forecasting and transmission planning. On the other hand, where the main goal is to reduce reliance on natural resources and thus benefit the environment, a gross savings approach may be sufficient to calculate a total reduction in overall energy consumption and demand.<sup>8</sup>

**Second**, evaluators recommend considering both *short and long term costs and effects* when selecting an attribution approach. Currently, there is a tendency to focus solely on short term energy benefits, i.e. determining the marginal net effect of a program in a given year. Evaluators believe this approach can prevent the selection of effective energy efficiency measures that, while seemingly costly in the short term, in fact are quite cost-effective when evaluated over a number of years.

**Third**, evaluators recommend that utilities and regulators take into account *historical experiences* with energy savings approaches for similar programs, *while* they are developing the program plans and negotiating savings goals. When this is done *ex post facto* (after a program is in place), it often becomes difficult to change. From the evaluators' perspective, utilities and regulators are mutually responsible and accountable for this.

**Finally**, evaluators remarked on overall trends in the energy efficiency community with respect to EM&V and attribution of energy savings. For example, evaluators believe that the selection of net or gross savings is often a function of the stage a State is in with respect to its efficiency programs. When efficiency programs first became prominent in the 80s, gross savings were typically measured. Once utilities and evaluators gained more experience in implementation and EM&V, however, there was a corresponding shift to net savings. The evaluators predict that, ultimately, experienced utilities that have gone through the net savings process will make a further shift to an "adjusted gross" approach for the purpose of setting and assessing progress towards savings goals.<sup>9</sup>

Other evaluators predicted that more dramatic changes afoot, such as a focus less on attribution methods, and more on marketing solutions to help consumers save energy. Another evaluator commented that in the next 20 to 30 years there will likely be a shift away from capturing net energy savings via efficiency programs, and towards maximizing customer service, connectivity and networks as a way of conditioning and reinforcing wise energy use behavior.

### **The Regional Policymaker Perspective**

The policymakers' panel built on the net and gross savings concepts introduced by the evaluators, and provided their own experiences in how these approaches function in their particular States. The panelists represented three distinct perspectives:

- ❖ That a focus on a *gross savings* approach is the most appropriate;

---

<sup>8</sup> One evaluator commented that, in their experience, the States where there is a better relationship – and thus a higher level of trust – between the utilities and the Public Utility Commission are more likely to use a gross approach in attributing energy savings.

<sup>9</sup> *Adjusted gross savings* typically refer to the change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated. It adjusts for such factors as data errors, installation and persistence rates, and hours of use, but does not adjust for free ridership or spillover. See Northeast Energy Efficiency Partnership's Regional Evaluation, Measurement and Verification Forum, *Glossary of Terms, Version 2.1*, July 2011, available at: <http://neep.org/emv-forum/forum-products-and-guidelines#glossary>.

- ❖ That a *net savings* approach should be required to achieve the most fair and accurate results and to drive optimum portfolio design; or
- ❖ That *either approach* is appropriate, as long as certain other factors beyond attribution are considered.

While the regional policymakers certainly differed in their opinions, at the same time they acknowledged that these differences are likely a function of the specific circumstances (policy objectives, savings goals, etc.) in their given States, and thus *may not be definitive* that one approach is better than the other.

Before beginning the panel, the moderator provided introductory remarks on the prevalence of net or gross approaches nationally. In early 2012, ACEEE conducted a national survey of State-level evaluation approaches.<sup>10</sup> Out of 49 States that participated, 52% reported using primarily net savings, 26% reported using gross savings, and 22% use both. Digging deeper, of the States that use net savings, 67% account for free ridership, while 44% measure and estimate spillover. Echoing the evaluators' remarks, the moderator concluded that this variation is a result of each State's specific policy objectives for using the data.

Panelist remarks were consistent with these observations. For example, regional policymakers who use a *gross energy savings* approach typically do so because it is consistent with their State's policy goals. While these policymakers still see value in net evaluations to determine how well programs are really working, a gross approach functions well in States that are trying to meet environmental requirements. In their perspective, "the environment doesn't care where the savings come from, [and] to some extent, the utilities don't care either." The goal, rather, is to capture *all* the savings that occur – and a gross approach meets that objective. Another benefit to measuring gross savings is that it's relatively simple and low-cost. By keeping evaluation costs low, the utilities are able to focus their funds on program activities to yield additional savings. Further, in some policymakers' opinions, gross savings may provide a greater level of certainty to utilities than a net approach. When gross savings are reported each year, utilities have a fairly high level of confidence that these savings will be approved and are non-controversial. This tends to lead to better relationships with regulators, as well as a greater level of trust and collaboration on new and more innovative approaches moving forward.

In contrast, other policymakers believe that using net savings to determine program results is critical for three reasons: ***First and foremost***, program administrators can and will make adjustments in program portfolios to either maximize or minimize free-ridership, and to either maximize or minimize spillover. From the environmental or customer perspective, the best outcome is the one that produces maximum spillover and minimum free-ridership. However, if the utilities are measured and rewarded on the basis of gross savings, there is a strong incentive to do the opposite – to tailor portfolios to maximize free ridership and ignore spillover because they get no credit for spillover savings. ***Second***, it is a waste of customer money to pay for savings that would have occurred without the incentives, and that money should be shifted to programs with lower free-ridership and therefore bigger impacts on customer bills. ***Third***, crediting savings that came from other policies or programs, and thereby wasting program dollars, is counterproductive to achieving the environmental benefits of energy efficiency.

---

<sup>10</sup> See Kushler, Martin; Nowak, Seth; and Witte Patti. February 16, 2012. *A National Survey of State Policies and Practices for the Evaluation of Ratepayer-Funded Energy Efficiency Programs*. American Council for an Energy Efficiency Economy, available at: <http://www.aceee.org/sites/default/files/publications/researchreports/u122.pdf>.

Other policymakers are *agnostic* when it comes to selecting a savings approach, because they find that factors other than attribution are of greater concern. For example, these policymakers feel strongly that supply-side resources should be treated on par with demand-side resources in utility resource planning in the Midwest. Allowing efficiency to compete on equal terms with coal and natural gas is the best way to ensure reasonable energy prices going forward. It was also suggested that, when evaluating energy savings, utilities should focus on energy bill data to get the most accurate picture of program effectiveness. From these policymakers' perspectives, once the above factors are in place, they are workable within *either a gross or a net savings* approach. Where a utility or State does use net savings, however, these policymakers made a few recommendations. **First**, where free riders are accounted for, spillover should also be included to provide the clearest picture of the interplay of these factors. **Second**, in calculating free riders, they recommend incorporating bill analyses to the extent possible.

Some of the policymakers also commented on the overall trends in the energy efficiency community with respect to EM&V. One panelist agreed with evaluator predictions that, as States become more experienced with EM&V the debate over net or gross will largely give way to an adjusted gross savings approach. Other policymakers commented that evaluation methods need to evolve to more effectively accommodate influences beyond free riders and spillover, such as: market transformation effects on programs; overlapping effects of more stringent codes and standards; and consumer behavior change resulting from increased feedback and connectivity between customers and their energy providers (e.g. Smart Meters).

**Finally**, some of the policymaker panelists also recommended moving toward a national, uniform EM&V method – particularly for net savings calculations – so that evaluation results can be compared across States and programs. The *Uniform Methods Project* is currently working on such an approach. From their perspective, consistency in the way utilities measure savings lends itself both to greater legitimacy for the benefits of energy efficiency, as well as the ability to generate more accurate national and regional load forecasts and future infrastructure planning.<sup>11</sup> This perspective stands in contrast to some of the evaluator comments. They worry that a uniform method may weaken efficiency programs overall by extinguishing the diversity that results when a State tailors evaluation to their own unique landscape. Evaluators believe it is from this diversity that best practices and innovation originate, and do not recommend policy that would chill their development.

---

<sup>11</sup> See Uniform Methods Project (2012), U.S. Department of Energy, available at: [http://www1.eere.energy.gov/office\\_eere/de\\_ump.html](http://www1.eere.energy.gov/office_eere/de_ump.html).

## The Utility Perspective

The panel of Investor-Owned Utilities closed the session by taking the discussion one step further – how a net or gross savings approach affects energy efficiency program implementation in their given States.

At the outset of the panel, the moderator offered a number of big picture “thought” questions for participants to consider when confronting the choice between net or gross savings.

- ❖ **First**, echoing questions posed by the evaluator and regional policymaker panelists, what are the objectives that the State or utility is seeking to meet? These objectives could be EERS or other energy savings goals. Other objectives may be to incorporate energy efficiency into utility system planning and demand forecasting. The best fit for a utility will be the attribution approach that most compliments their policy objectives.
- ❖ **Second**, what are the constraints? These could include State mandates requiring utilities to measure either net or gross savings, as well as caps on the amount a utility may spend on energy efficiency programs in a given year.
- ❖ **Third**, what is the future of this discussion? For example, measuring energy efficiency in a Smart Grid world could implicate vastly different approaches than just net or gross. These future considerations will be addressed at the end of this paper.

Panelists then touched on the effects of these policy objectives and constraints on program implementation in their service territories.

Illinois, for example, passed an EERS in 2007 that requires utilities to employ energy efficiency to reduce consumption by 2% by 2015. The State also imposed a program spending cap to minimize bill impacts on ratepayers. However, Illinois did not require by statute that the utilities use either a net or gross approach. Rather, in their first three-year program plans in 2008, the utilities *opted* to use a net savings approach, which has now become the *de facto* attribution method in Illinois. Since then, the utilities have observed the following with respect to net savings: **First**, in their experience net saving provides more accurate estimates of program impacts on the energy efficiency market. **Second**, they have learned that there is an important interplay between projected savings calculations and retrospective net savings. For example, one utility ended their commercial and industrial prescriptive measures program months early, upon realizing that it was exceeding projected savings goals. During the evaluation process, however, the net savings values turned out to be much lower than projected. Thus, in a net savings approach, utilities may risk not meeting savings goals. This can force them to “over-save” to cover any potential discount later applied with the net calculation.

Iowa takes a different approach. Utilities there assume that free ridership and spillover essentially cancel each other out, resulting in a *de facto* gross savings approach for the State. In their program reports to the regulatory commission, they focus on kilowatt hour savings and whether goals have been met – instead of on the details of the attribution method.

In contrast, South Dakota has no regulatory construct for energy efficiency. Despite the lack of requirements, however, some utilities still run programs and their EM&V decisions are made on a case-by-case basis. The Public Utility Commission there is very interested in the net savings calculation, particularly in the incorporation of free ridership.

Other utility panelists chose to focus less on their particular service territories, and more on the merits of applying a consistent policy across the board within a given State. From these panelists' perspectives, evaluation becomes unduly complex where there are split methodology requirements within a single program suite. For example, Indiana's EERS requires utilities to meet an eventual savings goal of 2% energy consumption reduction by 2019. While the EERS is set on a gross savings basis, corresponding utility incentives for meeting the EERS targets are calculated using net. These panelists recommend that where a State sets a policy objective to reduce energy consumption and demand, it impose consistent savings methodologies – regardless of whether net or gross savings are used. This would eliminate some of the complexity in attribution, as well as the resulting cost that is eventually borne by ratepayers.

Ultimately, panelists stressed that the energy efficiency community should always come back to the overarching goal of these efforts – to generate as much energy efficiency in the Midwest as possible. In finding the tools to meet this goal, panelists challenged participants to remember that the energy sector is changing. Whereas efficiency was at one time a distinct element of a utility's overall operations, with the advent of Smart Grid and other technologies, efficiency, resource planning, and customer service are becoming more and more integrated. This will bring about changes in how energy efficiency is viewed and valued. As both the evaluator and policymaker panels alluded to, the controversy over a net or gross savings approach – while quite pertinent today – may eventually recede in the coming years as the energy efficiency market evolves.

## Conclusion

As evidenced by panelist remarks at MEEA's 2012 Annual Meeting of the Membership, using a net or gross approach to measure the benefits of end-use energy efficiency programs triggers many differences of opinion. At the same time, evaluators, policymakers, and utilities tend to agree on a number of points: that policy objectives will dictate the appropriate attribution method; that even in a net approach, there is an opportunity to consider additional factors beyond free riders and spillover; that regardless of the methodology selected, there should be consistency in how it is applied; and that evaluation approaches should be designed to encourage the use of best practices in program design and implementation, as well as the development of innovative programs. In addition, panelist remarks reflected a potential overall shift in the coming years to a hybrid approach between net and gross savings, as well as more dramatic shifts away from traditional methods for measuring the effectiveness of energy efficiency programs.

A parting question was posed during the utility panel at the end of the session: Given these shifts in the ways in which consumers use energy, will the net vs. gross controversy be relevant moving forward? Moreover, what is the Midwest role in this discussion? While the Midwest region has made significant gains in energy efficiency in the last ten years, when compared with the West and East, it is relatively new to efficiency. This may put the Midwest States at an advantage, though, because they are less entrenched in a given set of methodologies and may be more open to new and innovative approaches.

We expect that these discussions will continue in the near future. Participant feedback following this panel indicates that MEEA members are interested in digging deeper into net and gross savings issues, and in broadening the discussion to include other aspects of program evaluation (cost-effectiveness tests, incremental costs, etc.), as well as innovative programs (such as behavior change). MEEA will provide substantive content to its members as these and other issues evolve.

## Bibliography and Additional Resources

Kushler, Martin; Nowak, Seth; Witte, Patti. February 2012. *A National Survey of State Policies and Practices for the Evaluation of Ratepayer-Funded Energy Efficiency Programs*. American Council for an Energy Efficiency Economy, available at: <http://www.aceee.org/sites/default/files/publications/researchreports/u122.pdf>.

Messenger, Mike; Bharvirkar, Ranjit; Golemboski, Bill; Goldman, Charles A.; Schiller, Steven R. April 2010. *Review of Evaluation, Measurement and Verification Approaches Used to Estimate the Load Impacts and Effectiveness of Energy Efficiency Programs*. Ernest Orlando Lawrence Berkeley National Laboratory, available at: <http://eetd.lbl.gov/ea/emp/reports/lbnl-3277e.pdf>.

Midwest Energy Efficiency Alliance. November 2012. *Energy Efficiency Policies, Programs, and Practices in the Midwest: A Resource Guide for Policymakers*, available at: [http://mwalliance.org/sites/default/files/uploads/MEEA\\_2012\\_EE-Policy-Midwest-Resource-Guide.pdf](http://mwalliance.org/sites/default/files/uploads/MEEA_2012_EE-Policy-Midwest-Resource-Guide.pdf).

Midwest Energy Efficiency Alliance. October 2012. *Technical Webinar: A New Approach to Estimating Free Ridership for Upstream Lighting Programs*, available at: <http://mwalliance.org/meea-publications/meea-technical-webinar-new-approach-estimating-free-ridership-upstream-lighting>.

Northeast Energy Efficiency Partnership's Regional Evaluation, Measurement and Verification Forum, *Glossary of Terms, Version 2.1*, July 2011, available at: <http://neep.org/emv-forum/forum-products-and-guidelines#glossary>.

Skumatz, Lisa. 2009. *Lessons Learned and Next Steps in Energy Efficiency Measurement and Attribution: Energy Savings, Net to Gross, Non-Energy Benefits, and Persistence of Energy Efficiency Behavior*. Berkeley, CA: California Institute for Energy and Environment, available at: [http://uc-ciee.org/downloads/EEM\\_A.pdf](http://uc-ciee.org/downloads/EEM_A.pdf)

State and Local Energy Efficiency Action Network. December 2012. *Energy Efficiency Program Impact Evaluation Guide*. available at: [http://www1.eere.energy.gov/seaction/pdfs/emv\\_ee\\_program\\_impact\\_guide.pdf](http://www1.eere.energy.gov/seaction/pdfs/emv_ee_program_impact_guide.pdf).