Enabling Cost-Effective Energy Efficiency in the Midcontinent ISO Resource Adequacy Construct

THE ADVANTAGES OF A SUPPLY-SIDE, GROSS ACCOUNTING FRAMEWORK

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Executive Summary

The Midcontinent Independent System Operator (MISO) is currently in the process of reviewing and updating its resource adequacy construct in order to better align with changing system needs and resource mix. Throughout these efforts, we recommend that energy efficiency (EE) resources continue to be enabled as a portion of the capacity resource mix under an accurate accounting mechanism that applies a technology-neutral framework for all capacity resources and business models.

We further recommend that MISO should continue to rely on a supply-side, gross accounting methodology as the most accurate and resource-neutral option for enabling cost effective EE to be developed and deployed across the MISO footprint.

The Benefits of Energy Efficiency

EE already plays a vital role in the US energy sector, providing a low-cost way to meet customers' electricity needs and meet environmental policy goals. The reduction in load that EE delivers provides a range of economic and social benefits, such as improved air and water quality, greater grid resilience, a lessening of inequitable energy burdens, and improved health and comfort. As a result, EE plays a central role as an increasing number of cities, states, and regions set ambitious clean energy and decarbonization goals.[1] Policy requirements for greater EE are amplified by the fact that the transition to clean energy for heating and transportation will have a significant impact to increase total demand for electricity across the United States. By one estimate, even accounting for increases in EE and other technological improvements, electrification could lead to a 5% to 15% increase in demand by 2030, and an increase of 25% to 85% by 2050 in regions that have adopted economy-wide decarbonization goals.[2] Consequently, reductions in demand achieved through verified, measureable EE deployments represent a fundamental component of the successful, economy-wide transition to clean energy.

In short, effective EE is and will continue to be a foundational element of many utility resource plans, consumers' energy supply planning, and policymakers' clean energy policies across the MISO footprint, as well as at a broader national scale. The challenge currently facing utilities and market operators is how to most effectively enable EE for maximum participation and impact.

1 Sergici, Sanem and Irwin, Nicole, The Brattle Group for Uplight. "Energy Efficiency Administrator Models: Relative Strengths and Impacts on Energy Efficiency Program Success," November 19, 2019.

2 Weiss, Jürgen, Hagerty, J. Michael, and Castañer, María, The Brattle Group for WIRES. "The Coming Electrification of the North American Economy: Why We need a Robust Transmission Grid," March 2019.

Why Supply Side Participation Is Necessary to Enable Cost-Effective Energy Efficiency Resources

Currently, MISO allows EE to participate in the capacity market as an "Energy Efficiency Resource" that can be accounted for under **supply side participation** as a capacity resource, as long as the market participant provides a robust measurement and verification (M&V) plan demonstrating that the EE measure creates savings compared to a baseline energy consumption during peak load hours. Load serving entities (LSEs) and/or electric distribution companies (EDCs) can also reduce their peak load forecasts to account for EE programs as **demand-side reductions.** This reflects these measures' impact on overall demand in the market.

Of these two options, only supply-side participation is a meaningful opportunity to account for merchant and customer EE investments. Distribution utilities, which are responsible for submitting MISO load forecasts, can effectively use this demand-side reduction approach, in addition to developing, funding, and implementing their own EE programs. However, this demand-side approach does not, and cannot feasibly, account for the other EE measures that could be developed and installed by end users that can successfully identify and deliver EE benefits to consumers. Unlike distribution utilities, customers and EE aggregators do not control the submission of peak load forecasts and thus have limited to no ability to privately capture and track the capacity value of their EE investments that are made outside the context of utility programs.

The supply-side capacity participation model currently allows EE aggregators to identify, measure, verify, and offer capacity in the MISO region. MISO qualification rules require that such an EE aggregator provide a robust M&V plan demonstrating that the EE measures in question were installed and subsequently reduced load below that baseline that was contemplated in the load forecast. Under this model, EE aggregators can sell the qualified capacity into the MISO resource auction or bilaterally, thus creating a revenue stream and business case for identifying and documenting the EE.

Why Gross Accounting for Efficiency Resources Provides the Most Accurate Resource Ratings

There are two accounting methodologies typically applied to EE resources. MISO currently relies on **gross accounting,** which calculates peak energy reductions from a given EE measure, as compared to a baseline energy consumption. For the purposes of accurate capacity market accounting, this baseline energy consumption must align with assumptions utilized in the load forecast. **Net accounting** is an alternative approach sometimes used in state oversight of ratepayer-funded EE programs. This net accounting framework adjusts the gross savings in an attempt to quantify what portion of the total savings were *caused* by the EE program and account for effects such as free ridership, spillover, and other factors that may affect EE program uptake rates. While net accounting can be useful for helping states and utilities determine the efficacy of their EE program funding, it is not the relevant measure of EE in wholesale capacity markets.

For wholesale capacity markets, gross accounting of EE is the most appropriate and accurate measurement of EE. Gross accounting ensures that installed EE measures are real and verified reductions in demand below the relevant baseline consumption assumed in the MISO peak load forecast. Gross accounting accurately captures whether the reductions exist and their magnitude, without requiring any investigation of *why* a customer or EE aggregator may have made the EE investment.

On the other hand, transitioning to net accounting of EE in the wholesale capacity market would limit supply-side participation of EE capacity to only those measures that would not have been implemented but for the existence of capacity payments or a specific EE program. All capacity resources (including generation, demand response, storage, and EE) may be developed for a number of reasons, including achieving energy market savings, achieving corporate sustainability goals, meeting risk management requirements, or any number of other reasons other than receiving capacity payments. The reason for adopting a particular resource has no relationship to the resource's ability to provide capacity. Applying net accounting for EE would single out EE measures for a fundamentally disadvantageous and discriminatory treatment compared to other resources.

Supply-Side, Gross Accounting for Energy Efficiency Offers Economic Benefits to the Region

By maintaining an approach that allows EE resources to participate as a supply resource measured by gross accounting, MISO will maximize opportunities for effective EE deployment system wide. Continuing to use a gross qualification approach will yield more accurate and cost-effective outcomes. By avoiding any causation test for EE measures, MISO can avoid under-measuring EE and subsequently over-procuring other capacity supplies. Further, supply-side, gross accounting enables an entirely separate and distinct business model for EE aggregators and customers to pursue and document their EE investments, thereby increasing competition in the market. Supply-side participation can be used to achieve binding commitments to deliver cost-effective EE, thus achieving greater consumer savings across the region.

I. Background: How Energy Efficiency is Incorporated in MISO's Resource Adequacy Construct

A. MISO and Utility Load Forecasting

Load forecasts for use in the resource adequacy construct are the responsibility of load serving entities (LSEs) in regions without retail competition and the responsibility of electric distribution companies (EDCs) in regions that do allow retail choice. These utilities develop load forecasts in accordance with general guidelines established within the MISO Tariff to ensure that MISO is able to aggregate these individual utility forecasts into the relevant system and locational coincident peak load parameters. Most such forecasts are developed using econometric modeling techniques that consider parameters such as population, economic growth, and historical consumption patterns.[3] Most relevant for the purposes of this paper, MISO contracts with Purdue University's State Utility Forecasting Group (SUFG) to prepare forward-looking forecasts of annual peak load in each participating state for the next 20 years. The econometric models behind these state forecasts are developed using publicly available data to produce an estimated compound annual growth rate (CAGR) for each state's load. From these statewide forecasts, the SUFG then constructs forecasts for each of MISO's 10 local resource zones (LRZs) based on a zonal CAGR. These LRZ forecasts are benchmarked against actual recorded retail sales from prior years and are adjusted to take into account factors such as distribution system losses, weather, and *utility* energy efficiency programs. Finally, the SUFG aggregates its 10 zonal forecasts into overall system-level peak demand.[4] MISO presents two annual forecasts on a system and zonal basis: a gross forecast without utility EE program adjustments and a net forecast with utility EE program adjustments accounted for on the demand side.[5] (Despite the similar terminology, these net and gross load forecasts do not have any relationship to net versus gross EE accounting practices that are the primary subject of this paper.)

[3] For example, as described in the 2019 Integrated Resource Plan (IRP) for Entergy Louisiana, the utility creates an hourly forecast as a "result of the calibration of a monthly peak forecast, the monthly sales forecast, and estimated load shapes for each customer class. The models used by this particular utility matches historical load data with weather and temperature data. It also adjusts for other variables like holidays, changes in demand on different days of the week, and transmission and distribution losses, which can cause spikes or drops in load demand. This historical data is then paired with future weather projections, dates of holidays and weekends, and projected transmission and distribution loss to create an hourly load forecast." Entergy Louisiana, LLC, "2019 Draft Integrated Resource Plan (Public Version)," 2018, p. 27.

[4] Liwei Liu, Fang Wu, Douglas J. Gotham, *et al.* (Purdue University SUFG) "2020 MISO Energy and Peak Demand Forecasting for System Planning," pp. 1-2

[5] *Ibid*, p. 41.

Throughout these formalized load forecast processes, utilities have opportunities to incorporate the effects of their own utility-run or state-mandated EE programs as reductions to the projected load forecast and thus reduce the required quantity of capacity procurements they must procure on behalf of their customers. However, these load forecast processes do not necessarily account for all of the EE measure investments that individual customers may pursue independently.

B. Supply and Demand Side Participation of Energy Efficiency Resources in the Planning Resource Auctions

EE measures can participate on either the supply or the demand side of a capacity market to contribute to meeting resource adequacy needs. Many markets, including MISO, enable EE within their suite of supply-side capacity resources that can participate in a capacity market either through bilateral sales commitments or through the centralized wholesale capacity market, known in MISO as the Planning Resource Auction (PRA). Because of this, the participation of supply-side resources in the market is readily apparent. In treating EE resources as capacity resources, MISO applies a gross-up equal to the amount of avoided transmission losses plus the applicable planning reserve margin.[6]

The accounting for EE resources in the demand side of the market is less straightforward. In MISO utilities typically account for the impact of demand-side EE in their load forecasts by subtracting the EE savings from their load projections. As a result, EE's participation on the demand side of the market takes place one step removed from utilities' final load forecasts, and each EE measure is not individually reviewed and approved by MISO as a discrete resource in and of itself.

When it was first implemented, MISO's resource adequacy construct did not enable EE resources to participate on the supply side of the market, although utilities were always able to account for EE as demand-side reductions to their load forecasts. Since MISO enabled supply-side EE accounting, the market has attracted significant increases in quantifiable incremental EE that would not otherwise be accounted for on the demand side. The PRAs for the 2018–2019, 2019–2020, and 2020–2021 Planning Years show considerable increases in energy efficiency resources, as summarized below in Table 1.[7]

TABLE 1: SUPPLY-SIDE EE OFFERED (UCAP MW) INTO THE MISO PLANNING RESOURCE AUCTION

2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
0	0	0	98	173	312	650

6 Federal Energy Regulatory Commission (FERC), "Midcontinent Independent System Operator – FERC Electric Tariff," March 1, 2018, Section 69A.3.2.

7 MISO, "2020/2021 Planning Resource Auction (PRA) Results," January 22, 2020, p. 10.

In parallel, utility companies within MISO have made their own progress on demand-side EE investments separately from the EE resources offered into the MISO PRA. For example, Duke Energy's 2018 Integrated Resource Plan notes the company's continued push to develop demand-side EE programs. Duke, which serves parts of Indiana (MISO LRZ 6), has programs that include promoting smart appliance systems, energy saver kits, free light emitting diode (LED) programs, and energy saver programs targeted at lower-income neighborhoods.[8] These investments stand to help the company reduce volatility in loads and promote greater energy efficiency within their service area. For its part, Xcel Energy's Northern States Power Company, which serves customers in Minnesota and portions of Wisconsin (MISO LRZ 1), aims to achieve between 2 percent and 2.5 percent in annual savings between 2020 and 2034.[9] Northern States' most recent IRP filing from 2019 is the first from the company to incorporate EE on a gross basis as a potential supply-side resource, as opposed to the net accounting measures used in previous forecasting.[10] Indianapolis Power and Light (IPL), which serves part of MISO LRZ 6, filed its most recent IRP in 2019. In it, IPL describes how it treats EE resources, along with DR, as part of its demand-side management program.[11] Additionally, IPL contracted with GDS Associates to conduct a demand-side management market potential study, which it included as part of its 2019 IRP filing. In this study, GDS Associates based their calculations on a gross accounting of EE measures that used IPL's existing evaluation, measurement, and verification data or state-level databases, primarily from Indiana but also using databases from other states if information was not available.[12]

Across the MISO footprint, utilities have opportunities to incorporate EE as a supply-side resource or demand reduction within both their utility resource planning process, and the MISO resource adequacy construct. It is useful to note that for utilities, submitting EE resources on the supply or demand side the market results in the same payment or avoided capacity market cost, respectively. For non-utility participants, only supply-side participation provides a benefit or revenue stream.

C. Gross vs. Net Energy Efficiency Resource Qualification Approaches

As a general conceptual matter, EE savings can be accounted for either as gross or net capacity savings.[13] Savings are defined relative to equipment efficiency baselines and assumed within the MISO load

[8] Duke Energy Indiana, "The Duke Energy Indiana Updated 2018 Integrated Resource Plan: Volume 1," March 23, 2018, pp. 135–144.

[9] Northern States Power Company (d.b.a. Xcel Energy), "Upper Midwest Integrated Resource Plan, 2020-2034 (Supplement)," Docket No. E002/RP-19-368, June 30, 2020, p. 65.

[10] Northern States Power Company (d.b.a. Xcel Energy), "Upper Midwest Integrated Resource Plan, 2020-2034," Docket No. E002/RP-19-368, July 1, 2019, p. 54.

[11] Indianapolis Power & Light Company, "2019 Integrated Resource Plan, Volume 1 of 3," December 16, 2019, pp. 91-93.

[12] Indianapolis Power & Light Company, "2019 Integrated Resource Plan, Volume 3 of 3," December 16, 2019, p. A-2

[13] Gross versus net EE savings are not to be confused with net versus gross load forecast, which are entirely separate and unrelated concepts with unfortunately similar terms.

forecast. Gross savings include all savings below the load forecast that occur from a specific set of EE measures. Net savings are derived from gross savings in an additional second step aimed at quantifying the subset of those savings that was caused by a specific program. Both gross and net savings are "adjusted" for various factors, such as operating hours, realization rates, persistency factors, in-service rates, and peak-load coincident factors, to determine a given EE resource's coincidence with system peak loads and its resulting contribution to resource adequacy. These adjustments are comparable to the approach used for translating generators' nameplate ratings into qualified capacity ratings based on resources' measured availability. Currently, MISO grosses up the zonal resource credits (ZRCs) from qualified EE resources by the amount of avoided transmission losses due to the EE resource.[14]

Quantifying an EE resource for participation in a capacity market means that M&V measures are used to develop "nameplate" peak time deductions for EE resources, similar to the way in which installed capacity (ICAP) is estimated for generating resources. Then, further deductions are made from this MW rating to adjust for the coincidence of the deductions with system peak hours. According to MISO's guidelines, "the EE Resource must achieve a permanent, continuous reduction in electric energy consumption during the defined EE Performance Hours that is not reflected in the peak load forecast used for the PRA for the Planning Year."[15] This establishes the "adjusted" savings of the EE resource. The resulting capacity value for the EE resource is, for planning purposes, the equivalent of unforced capacity (UCAP) for a generating resource. Based on this, gross EE savings include the calculated reductions from all EE measures included in an EE resource. Adjusted gross EE savings reduce that amount in order to determine the EE resource's contribution to relevant peak hours, similar to calculating a traditional resource's UCAP value. This gross accounting approach accurately measures the contribution to resource adequacy that a given EE measure will achieve.

Under a net EE accounting approach, the purpose is not to develop an accurate quantity of EE savings achieved but rather to establish *causation* and thus helps state regulators to evaluate the efficacy of the state or utility EE program funding. Net EE savings are determined from adjusted gross savings and attempt to quantify the portion of gross adjusted EE savings that were *caused* by and would not have occurred but for an EE program. Net adjusted EE savings include adjustments for "free ridership," "spillover," and "market effects." The free ridership adjustment subtracts from gross savings any savings by customers who would have implemented the EE measures even without the EE program (the so-called "free ridership"), and the spillover adjustment adds spillover effects for participants and non-participants and other market effects.[16] In combination this subtraction and addition defines a net-to-

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14 FERC, "Midcontinent Independent System Operator – FERC Electric Tariff," March 1, 2018, Section 69A.3.2.

15 See Section 4.2.10 of MISO Business Practice Manual 011 – Resource Adequacy.

16 Daniel M. Violette and Pamela Rathburn (NREL), *Chapter 17: Estimating Net Savings: Common Practices (The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures)*, September 2014, pp. 4-6.

Participant spillover: additional energy savings achieved when a program participant (as a result of the program's influence) installs EE measures or practices *outside* the efficiency program after having participated; non-participant spillover: additional energy savings achieved when a non-participant implements EE measures or practices as a result of the

Continued on next page

gross (NTG) ratio. The NTG ratio, which is typically—but not necessarily—less than 100%, is then applied to gross savings to calculate net savings.[17]

NTG conversion factors are typically developed through surveys and self-reporting approaches. They are sensitive to specific study assumptions and, as a result, can vary widely across states and EE aggregators and tend to change over time. Some states have historically used the "net" concept only in after-the-fact benefit-cost analyses associated with specific program expenditures, to assess the extent to which the state's program funding was the cause of the EE savings and determine if the state's financial support of the measure resulted in a positive return. Therefore, the net EE savings approach is designed to determine EE causation, not the total quantity of EE savings. While net EE savings can be a helpful tool for EE program administrators to understand the effect of various EE programs, this measurement is not relevant for wholesale capacity market purposes.

II. Gross Qualification of Energy Efficiency Resources Yields More Accurate and Cost-Effective Outcomes

In a regional resource adequacy construct, ensuring accurate accounting of reliability needs and resources' reliability contributions are of primary concern. Continuing to utilize a gross accounting approach for EE is the most accurate way to capture the contribution of EE measures toward resource adequacy needs.

Conversely, moving to a net savings would provide only a partial picture of the resources in MISO's system and is not relevant for the purposes of the resource adequacy construct. Under such a net participation model, there would be an additional onus on the EE aggregator to prove that their project is developed as the result of a capacity payment and would not have happened absent that payment. There are several problems with this approach. First, it would be a new discriminatory standard that is not applied to conventional generation resources. All capacity resources, including generation, storage, demand response, and EE, may be developed for a number of financial and non-financial reasons, only one of which may be to earn capacity market revenues. Applying a causation standard to EE or any other resource type would be likely to significantly under-count the relevant quantity of capacity contributed,

program's influence (for example, through exposure to the program), but did not participate in the program and are therefore not accounted for in program savings; market effects (not already captured by spillover): a change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of EE products, services, or practices and is causally related to market interventions (*e.g.*, influence on design professionals and vendors).

[17] See *Answer of ISO New England Inc.*, March 7, 2019, Advanced Energy Economy and Sustainable FERC Project. United States of America Before the Federal Energy Regulatory Commission, Docket No. EL19-43-000, pp. 16-17.

thus requiring an inappropriate over-procurement of other resources. Second, reducing the qualified capacity ratings would translate to under-compensating EE resources for the capacity value they provide. This would further increase the procurement of capacity to be served by higher cost conventional generators. The end result of this is higher costs for consumers with no corresponding benefit.

Net EE approaches also open the door to inconsistency across the regional footprint because net EE accounting approaches tend to rely on subjective impacts, such as free ridership, spillover savings, and market effects. As explained in a 2010 report by NMR Group and Research Into Action, "evaluators use different factors to estimate net savings for various programs and jurisdictions, depending on how a jurisdiction views equity and responsibility."[18] A 2014 report by NREL notes that while "evaluators almost always include free ridership, […] because of policy choices made in a jurisdiction, most do not always fully consider spillover and market effects [...] Most evaluators agree that spillover and market effects exist and have positive values, but determining the magnitudes of these factors can be difficult."[19] As a result, net EE qualification approaches can lead to inconsistent standards that may be applied across the region as associated with differences in policymakers' views on the methodologies to be considered in evaluating program efficacy. However, none of these net accounting methods are necessary to consider in the context of resource adequacy, because they are not intended to assess the total contribution toward meeting peak system needs.

III. Supply-Side Participation and Gross Qualification for Energy Efficiency Resources Offer Economic Benefits

A. Supply-Side EE Participation Enables More Accurate Resource Adequacy Accounting

Supply-side EE accounting yields more robust resource adequacy accounting for a number of reasons. First, supply-side EE participates directly in the capacity market and does not require partnership with utilities to capture the benefits of EE's impact on demand, allowing for more straightforward accounting and forecasting. This avenue is essential for enabling the accounting of EE that is not associated with a

18 NMR Group, Inc. and Research Into Action, Inc. *Net Savings Scoping Paper*. November 13, 2010.

19 Daniel M. Violette and Pamela Rathburn (NREL), *Chapter 17: Estimating Net Savings: Common Practices (The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures)*, September 2014, p. 5.

utility program.[20] Second, there is a delay between the time at which EE measures are implemented and when they are reflected in the historical data used for forecasts.[21] For example, a load forecast that utilizes ten years of historical data to help predict future consumption will not fully incorporate new EE measures for eleven or more years (ten years of history, plus one year forward timeframe of the forecast as relevant for the resource adequacy construct). Third, accounting for EE on the supply side makes it much easier to hold suppliers accountable for fulfilling their commitments. This makes supply-side accounting more certain than a demand-side approach.

For the reasons described above, demand-side EE accounting is likely to under-predict the quantity of EE investments being made across the region and systematically overstate demand forecasts. This means higher-than-necessary capacity procurement obligations for load-serving entities and excess costs that are ultimately borne by customers in the form of higher energy costs.

B. Standardized Measurement and Supply-Side Participation Enables EE Aggregators

Supply-side participation reduces market barriers for EE aggregators, enabling them to target certain cost-effective EE resources which otherwise might not be accounted for in the wholesale market. For example, consider an example of a new deployment of efficient LED lighting implemented by a customer in a medium-size office building (not within a utility program) in order to reduce the customer's volumetric energy bill savings. That customer would typically not have a feasible avenue or incentive to submit the projected peak load savings to the utility for treatment on the demand side of the capacity market. This is a barrier to entry that would prevent customer EE investments from being considered. If the measure is implemented on the basis of volumetric bill savings alone, it would be likely to remain unaccounted for in the utility load forecast and MISO capacity auction. Thus, MISO would procure excess conventional capacity resources on behalf of the customer until such time as the measure becomes adequately reflected in historical load data.

Now consider this same example but with the intervention of an EE aggregator. Because the aggregator is able to identify, measure, verify, and offer the EE savings using adjusted gross savings, it is able to value the EE without regard to the cause of the initial investment. This enables the entry and

[20] We note a similar advantage to supply-side accounting for demand response as documented in a recent paper for the Australian Energy Market Commission. Toby Brown, Sam Newell, Kathleen Spees, and Cathy Wang (The Brattle Group), "International Review of Demand Response Mechanisms in Wholesale Markets," June 2019, p. 23.

[21] Synapse Energy Economics, Resource Insight, Les Deman Consulting, North Side Energy, and Sustainable Energy Advantage. "Avoided Energy Supply Components in New England: 2018 Report," March 30, 2018, p. 106.

participation of the aggregator, which is paid directly by the RTO for its resource adequacy contributions.[22]

C. Supply-Side Accounting Can Be Used to Achieve Binding Commitments to Deliver Planned Efficiency Savings

Supply-side participation of EE requires binding commitments, which enables the market operator to have more confidence in the quantity and deliverability of EE measures relative to demand-side participation, which would involve no binding supplier commitments. In the event that an EE aggregator fails to aggregate, measure, and verify the load reductions to cover its capacity market commitments, the aggregator can be held financially responsible to cover the shortfall or be subject to fees and penalties for underperformance like any other capacity supplier.[23] This increases the extent to which market operators can count on the delivery of future EE measures, making those resources known and verifiable. The baseline accounting used for supply-side participation also makes it possible to develop more accurate load forecasting processes through reconstituted load that reflects the impact of EE resources in both historical and forecasted load data.

D. Supply-Side and Gross Participation Models Enable More Efficiency Projects and Achieve Customer Cost Savings

As described above, supply-side participation opens up more revenue streams for EE aggregators and can therefore boost the economic viability of an increasing number of EE projects. Because customers pay the wholesale cost one way or another, allowing the wholesale cost to be reduced by letting EE participate will ultimately result in savings to customers. Additionally, supply-side participation might also allow for greater coordination between DR/EE and conventional supply planning, allowing for a more optimized resource mix. We have previously explored these opportunities in a study for the

22 Similar factors and state regulations can prevent the participation of supply-side demand response. See: Robert Walton, "Voltus vies to unleash thousands of MWs of demand response capacity in challenge to MISO restrictions," *Utility Dive*, November 4, 2020.

23 Though MISO currently does not apply a strong penalty framework for under-performing capacity resources, such a framework can and should be applied equally to generation, storage, demand response, and energy efficiency resources if developed.

Electric Power Resource Institute (EPRI), identifying substantial system cost savings as a result of supply-side accounting for EE if utilized within integrated resource planning.[24]

Additionally, applying consistent supply-side gross accounting uniformly across the footprint of the wholesale capacity market can avoid inadvertent transfer payments. The less-consistent approaches used in demand-side participation and in net EE accounting have the potential to introduce transfer payments. For example, in the ISO-NE region different states assign different net-to-gross ratios to the same EE resources. This means that aggregators can be paid different amounts in different states for installing the same EE measure. This can cause inadvertent cross-subsidies when the market clears across multiple regions.

This issue can be resolved by enabling accurate gross EE accounting that is adopted in consistent practices across the region. Rigorous M&V measures, applied consistently throughout the market, will enable accurate valuation of EE resources. Additionally, the increased deployment of EE under standardized methodologies provides opportunities for benchmarked modeling of the impact of individual EE measures, which allows for more accurate gross accounting.

IV. Accounting Methodologies Should Not Impose Inconsistent Technology-Specific Restrictions

The measurement of eligible qualified capacity should apply uniform concepts across technologies and across individual resources to enable non-discriminatory market participation for all technology types. All resource types should be subject to M&V protocols to confirm their capacity values for participation in the capacity market. The technology and resource types that should be subject to these protocols include conventional generation technology, demand response, storage, EE, and imports. Of course, certain aspects of resource qualification must be technology specific. What conventional generation, DR, and EE resources should have in common, however, is that their eligible qualified capacity reflects the extent to which the resources can satisfy resource adequacy needs.

As described above in Section I.C, the determination of causation for the benefits of EE and other demand-side programs is often derived from the net savings calculated in after-the-fact benefit-cost analyses. The approaches for estimating net savings were thus designed to inform the need for state

24 The Brattle Group for the Electric Power Research Institute, "The Total Value Test: A Framework for Evaluating the Cost-Effectiveness of Efficient Electrification," August 2019.

investment in these programs and their cost-effectiveness.[25] This is the equivalent of investors wanting to understand the return on their investment (ROI), often measured by payback period.

For example, an analysis of net savings may show that out of 100 MW in EE-related peak load reductions, 80 MW of these reductions were directly caused by state financial incentives, while the remaining 20 MW relate to EE program adoptions that would have happened even without these financial incentives. While this program documented 100 MW in overall peak load reductions (gross savings not already in the load forecast), an analysis of the cost effectiveness of the savings driven by financial incentives would reflect the 80 MW directly resulting from state incentives. From the perspective of a participant in the MISO resource adequacy construct, however, the EE aggregator makes a financially binding commitment to deliver the full 100 MW of peak-load reduction, subject to measurement and verification. This allows the market operator to count on 100 MW of achieved load reduction that is not reflected in the load forecast.

A shift to net savings would limit supply-side participation of EE capacity to only those measures that it is found, through inconsistent and inherently subjective net savings calculation processes, would not have been implemented but for the financial inducement offered by the capacity market or a designated EE program, as described above in Section I.C. Such an interpretation of net savings—limiting EE resources to only those measures "caused" by the EE program—would impose an eligibility standard that is fundamentally inconsistent with the standard applied to resources of other technology types. The eligibility of conventional generation resources, for example, does not depend on them demonstrating that they would not be operational but for the receipt of capacity revenues. Rather, these generation resources are eligible to participate in the PRA consistent with their rated capacity irrespective of whether the capacity market is the cause for their market presence.

The purpose of measuring EE performance within resource adequacy should be to measure whether the EE measure achieves verifiable peak load reductions below what was assumed in the load forecast and that will help meet resource adequacy requirements. As long as this resource adequacy need is addressed, it is irrelevant whether the potential receipt of capacity market revenues, customer-side savings, corporate sustainability goals, or some combination of these reasons was the driver behind the implementation of a particular EE initiative. Similarly, for generation resources, it should not matter whether capacity revenues—as opposed to energy value, ancillary service value, clean attribute value, or other planning objectives—are the primary reason that a resource is in operation. In fact, very few or none of the generation capacity resources across the MISO footprint would be likely to pass an equivalent capacity payments "causation" test if one were applied broadly and on a resource-neutral basis to all capacity resources. Like EE measures, most generation resources are developed for a number of financial, policy, and other reasons that cannot be directly tied to capacity prices and PRA outcomes.

[25] Edward Vine, *et al.*, *Emerging Issues in the Evaluation of Energy-Efficiency Programs: the US Experience*, Energy Efficiency (2012) 5:5-17, published online November 26, 2010.

In all cases, what matters is that an EE or generation resource's respective qualified capacity rating is an accurate representation of its contribution to resource adequacy.

Imposing proof of "net" savings on merchant EE aggregators would increase participation costs, reduce developers' ability to achieve EE savings, under-count the total quantity of EE deployments, lead markets to procure more expensive (but unused) capacity resources, and increase costs for customers. A requirement to undertake studies to prove capacity market or EE program funding "causation" to determine net savings would also impose additional participation barriers and costs on EE aggregators that are not imposed on other market participants, thereby further reducing the cost-effectiveness of the resource adequacy design.

In addition, proving "causation" is a subjective determination at best. Incorporating this requirement into a market construct would require MISO staff to engage in a subjective and time-consuming "but for" analysis of a diverse array of EE resources across the market. This would put MISO in the position of having to justify these subjective determinations.

For all these reasons, eligibility of EE as a capacity resource should not consider whether a particular program drives EE deployment. Such a standard would be discriminatory when compared to the treatment of other capacity resources. Causation is not relevant to the resource adequacy construct, because the full scope of business reasons and revenue opportunities driving the decision to pursue EE—or any other capacity resource—has no bearing on the actual measured quantity of capacity contributions resulting from that resource.

List of Acronyms

CAGR	Compound Annual Growth Rate
EE	Energy Efficiency
EPA	US Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
ICAP	Installed Capacity
IPL	Indianapolis Power and Light
IRP	Integrated Resource Plan
ISO-NE	ISO New England
LRZ	Local Resource Zone
LSE	Load-Serving Entity
M&V	Measurement and Verification
MISO	Midcontinent Independent System Operator
NREL	National Renewable Energy Laboratory
NTG	Net-to-gross
OMS	Organization of MISO States
PRA	Planning Reserve Auction
PRM	Planning Reserve Market
ROI	Return on Investment
SFUG	State Utility Forecasting Group, Purdue University
UCAP	Unforced Capacity
ZRC	Zonal Resource Credits