Department of Natural Resources
Division of Energy
Initial Recommendations for Utility DSM Plans under the
Missouri Energy Efficiency Investment Act (MEEIA)
Missouri PSC Case No. EW-2010-0265

May, 2010

Introduction

The Missouri Department of Natural Resources (MDNR) welcomes the opportunity to take part in this essential process for drafting rules to implement the Missouri Energy Efficiency Investment Act (MEEIA). MDNR appreciates Staff's organizing and conducting the workshop sessions to discuss this rule, and respectfully provides these initial comments and recommendations to the Commission.

Initially, MDNR strongly encourages the Commission to establish aggressive energy savings targets as a means for Missouri's utilities to attain MEEIA's goal of achieving all cost-effective demand side savings. Based upon analysis of practices in Midwestern states, we also submit for consideration a proposed cost recovery mechanism, a proposed performance incentive structure, and recommendations supporting the development of a Missouri-specific Technical Resource Manual (TRM) to facilitate the calculation of energy savings, and the establishment of evaluation standards.

Specifically, in an effort to develop clear effective rules consistent with the intent of the Missouri Energy Efficiency Investment Act to encourage utilities rather than penalize them for pursuing increasing levels of demand-side savings, MDNR recommends the Commission:

- Establish aggressive but attainable energy savings targets for utility DSM program plans.
- Establish a process of approving DSM plans that allows program review by interested parties, stakeholders and the public.
- Provide a basis for determining cost recovery and performance incentive amounts by linking annual review of program activities, annual cost estimates and annual savings estimates to the annual reports specified in Section 393.1075.12 RSMo
- Allow expensing of DSM program costs to provide "timely cost recovery".
- Develop a shared net-benefits performance incentive to encourage high levels of DSM program savings.
- Develop a Technical Resource Manual (TRM) and deemed savings database to establish standards for calculating gross savings and provide for periodic review and revision of the TRM.

- Adopt performance incentives in lieu of a recovery mechanism for "lost sales" or "lost margins."
- Establish standards for the conduct and reporting of evaluations.

Executive Summary

- **Establish aggressive but attainable energy savings targets for utility DSM program plans.**

As a means of attaining MEEIA's goal of achieving all cost-effective demand-side savings, the Commission should establish a set of aggressive but attainable energy savings targets. Energy savings targets will lead to more significant levels of commitment to energy efficiency, which should be a prerequisite to any special cost recovery mechanism or shareholder incentive. MDNR recommends that the savings targets should ramp up to 1% and 2% of annual savings in energy and demand. We consider this an essential element in the implementation of MEEIA, which is regrettably missing from Staff's proposed rule. Several states have provisions for a ramp-up of savings during the first ten years of their savings plan. All but one of these states has an ultimate target for annual savings within the 1% to 2% range proposed by MDNR. A savings target that ramps up to 2% of annual sales is consistent with other states in the Midwest. Staff's proposed rule language that "demand-side programs that are included in a utility's preferred resource plan shall be deemed to meet a statutory goal of achieving all cost-effective demand-side savings" is inadequate, and an unacceptable implementation of the MEEIA goal, in light of the historically low levels of DSM considered or analyzed in utilities resource plans -- much less the levels actually included in utilities' preferred resource plans. MDNR's position is that the current Staff draft of the Chapter 22 rule revision does not provide any assurance that more aggressive levels of DSM will be included in preferred resource plans and would simply accept the levels adopted by utilities as meeting the MEEIA goal.

- **Establish a process of approving DSM plans that allows program review by interested parties, stakeholders and the public.**

DSM plans should be developed in consultation with interested parties, stakeholders and the public. While utilities are responsible for program implementation, inclusion of these groups assures that customers' interests will be represented and that information from diverse viewpoints will be considered. The approval schedule should include time for a full review and opportunity for negotiations to seek consensus on programs, savings and evaluation details.

- **Provide a basis for determining cost recovery and performance incentive amounts by linking annual review of program activities, annual cost estimates and annual savings estimates to the annual reports specified in Section 393.1075.12 RSMo.**

MDNR proposes that the annual reports required by MEEIA be used to determine the amounts to be included in any rate adjustments associated with cost recovery and utility performance incentive payments. This report should provide a narrative of program activities and be used to evaluate prudency of the past year's program activities and provide criteria for allowing recovery of costs for associated program activities. The energy savings impacts could be used to determine the level of performance incentive awarded to the utility.

- **Allow expensing of DSM program costs to provide "timely cost recovery" for utilities as directed in 393.1075.3.(1) RSMo**

Staff's position that post-implementation verification of savings attributed to DSM programs is required before allowing recovery of program costs does not permit "timely cost recovery" under MEEIA. Staff's draft rule provides for capitalizing program expenses until the completion of a post-program evaluation and then by amortizing the resulting regulatory asset account balance over three years (Section 10.A.ii). Capitalization and amortization of DSM program costs provides an obvious, significant disincentive to higher levels of DSM investments. Some Missouri electric utility representatives have suggested that if staff's position prevails, it may result in **reduced** levels of DSM program spending in Missouri. Further, postponing any recovery until after implementation and evaluation and verification of savings delays recovery beyond what is permitted in the pre-MEEIA regulatory environment and thus is clearly inconsistent with the "timely recovery" mandate of MEEIA. Capitalization and amortization separates DSM program activity from its rate impacts and reduces the transparency of utility DSM actions. It produces confusing price signals, when customers today are paying for DSM investment from several years ago. MDNR endorses annual expensing to resolve this cost recovery disincentive against investment in DSM programs.

Review of 10 Midwestern states with cost recovery policies showed that all 10 allow annual expensing of DSM program costs in either statute or commission orders. This is accomplished through an "Automatic Adjustment Clause tariff", a balancing account (Indiana), or other annual administrative adjustment. Two states are slightly different: South Dakota employs a system of individual DSM cost riders that are authorized in individual rate cases rather than established in statute or commission order as the other states; and Michigan provides for both expensing and capitalization, where utilities have the option of expensing DSM

expenditures or capitalizing program expenses that have an effective life greater than one year.

- **Establish a net benefits performance incentive based on achievement of Commission-set targets.**

MDNR proposes a performance incentive approach that would reward utilities for meaningful energy savings, using the net benefits approach specified in 393.1075.5 RSMo. Individual states structure performance incentives differently, some using a "step function" that provides discrete levels of incentives/awards for discrete levels of performance. MDNR recommends a continuous incentive function that links performance award levels to a performance level in a linear fashion, but with established floors set at a threshold level of poor performance and ceilings set at a threshold level for high performance. In testimony filed in ER-2010-0036, MDNR described such a performance incentive system with award levels increasing in a linear fashion, increasing 1 percent of award for every 5 percent of increased performance, up to a ceiling of 20 percent of award for performance at 150 percent of the savings target[1]. This incentive includes a percentage penalty for performance below 50 percent of the savings target. This penalty would increase, again by 1 percent for each 5 percent decrease in performance, to a floor of 5 percent of expected net benefits for savings at 25 percent (or less) of a savings target.

- **Develop a Technical Resource Manual (TRM) and deemed savings database to establish standards for calculating gross savings.**

A full analysis and verification of savings each year is impractical. Rather than conducting such an analysis, MDNR proposes allowing utilities to verify the gross savings associated with a program in annual reporting and using a deemed savings database to document savings. A system of deemed savings established by a Missouri-specific deemed savings database, known as a "technical resource manual" (TRM) is one tool used by several states to document and standardize reporting of energy savings. According to MDNR's research, there are18 states, including 5 of the 13 Midwest states, plus 2 regional energy associations that use either statewide, utility-specific or association-specific deemed savings databases in their determination of DSM program savings. Many states' TRM materials are available online. Thus, Missouri need not develop a deemed measures database entirely on its own. TRM materials from another state could be customized to reflect the weather conditions or other factors specific to Missouri. Creation of such a database would help to simplify the measurement of gross savings by standardizing the savings attributable to individual efficiency measures. Once established, these

[1] See the full document for a comparison with similar state incentive programs and a rationale for setting the maximum performance award at 20% of net benefits.

measures should be reviewed periodically and revised using evaluation-based estimates of savings derived from the post-program evaluations, and updated for new technologies and other factors.

- **Adopt performance incentives in lieu of a recovery mechanism for "lost sales" or "lost margins"**

The basic difficulty of attributing reductions in electricity sales to DSM programs, and then accurately applying these reductions to recover losses in fixed costs is one reason not to address this disincentive in the current rules. Other states' experiences with over-recovery of lost margins, along with the general movement of states towards adopting decoupling schemes, lead MDNR to recommend that lost margin recovery should not be addressed at this time. Rather, the performance incentive structure proposed by MDNR should provide a substitute for recovery of the more generic "lost revenues". Policies for addressing lost margin disincentives (e.g., revenue decoupling, annual true-ups of revenues, etc.) are not addressed by MEEIA.

- **Establish standards for the conduct and reporting of evaluations**

Staff's draft rule proposes that a "commission approved EM&V independent evaluator" design and conduct verification studies (see Section 8). The evaluation goals described Section 8.E.i.a appear to be focused on a limited range of programs and only considers impact evaluation (called "process evaluations" in the rule). MEDA's draft rule does not address issues of evaluation design or timing, leaving this to the discretion of the utilities (see Paragraph 3.A.iii.2).

MDNR's review of evaluation activities in the Midwestern states suggests that a middle ground is appropriate. Based on MDNR's review of evaluation policies in the Midwestern states, we recommend that utilities contract for third-party evaluators, but that the Commission develops a set of evaluation standards appropriate to a wide range of program designs and monitors for compliance with the standards. The general approach to evaluation in the Midwestern states emphasizes impact evaluations, i.e., evaluation studies designed to demonstrate the effectiveness of particular measures, programs or portfolios. While no state prohibits "process" or "market penetration" evaluations, the emphasis is on developing estimates of the savings impacts of different interventions. Once established, these estimates can be used to calculate cost effectiveness and verify that expected savings (such as those derived from engineering estimates) have been realized.

Additional Materials

This document describes each of these points, beginning with a statement of key points of the MEEIA legislation. Additionally, one appendix accompanies this document:

- *Appendix A: Evaluation Designs and Sampling Requirements* discusses issues of evaluation design and the need to conduct probability samples in studies estimating the savings impacts of DSM programs.

The analysis below compares parts of the MEEIA legislation and the Staff's draft rules to the policies of the 13 Midwestern state members of the Midwest Energy Efficiency Alliance. This comparison provides useful context for Missouri's policy development. MDNR looks forward to further discussions in the workshop process.

Statutory Provisions

The MEEIA language states that the commission shall:

1) Provide timely cost recovery for utilities;
2) Ensure that utility financial incentives are aligned with helping customers use energy more efficiently and in a manner that sustains or enhances utility customers' incentives to use energy more efficiently; and
3) Provide timely earnings opportunities associated with cost-effective measurable and verifiable efficiency savings. (393.1075.3 RSMo.).

The law also states "The commission shall permit electric corporations to implement commission-approved demand-side programs proposed pursuant to this section with a goal of achieving all cost-effective demand-side savings." (393.1075.4 RSMo.)

The commission may also provide rules and procedures that "approve corporation-specific settlements and tariff provisions, independent evaluation of demand-side programs, as necessary to ensure that electric corporations can achieve the goals of this section." (393.1075.11 RSMo.) Finally, MEEIA requires that "[e]ach electric corporation shall submit an annual report to the commission describing the demand-side programs implemented in the previous year." (393.1075.12 RSMo.)

These passages from MEEIA form the basis of MDNR's proposal for a regulatory framework governing utility DSM programs. The proposal, discussed below, describes the approval process as cited in 393.1075.4 RSMo., specifies procedures for both cost recovery and performance incentive payments, and establishes verification criteria for the annual reports described in 393.1075.12 RSMo. These verification criteria include the development of a Missouri-specific Technical Resource Manual (TRM)

for determination of deemed savings, and specific requirements for different types of post-intervention evaluations.

Energy Savings Targets

The Commission should establish a set of aggressive but attainable energy savings targets that will produce benefits for Missouri residents. MDNR recommends that the savings targets should ramp up to 1% and 2% of annual savings in energy and demand. Setting and achieving aggressive targets for utility savings will legitimize the cost recovery and performance incentives discussed below, and should be a prerequisite to any non-traditional accounting structure implemented by these rules. In MDNR's opinion, meeting these savings targets could satisfy the "all cost-effective DSM" requirements of the statute. We consider this an essential element in the implementation of MEEIA, which is regrettably missing from Staff's proposed rule.

Staff's proposed rule language that "demand-side programs that are included in a utility's preferred resource plan shall be deemed to meet a statutory goal of achieving all cost-effective demand-side savings" is very concerning and an unacceptable implementation of the MEEIA goal, in light of the historically low levels of DSM considered or analyzed in utilities resource plans -- much less the levels actually included in utilities' preferred resource plans. MDNR's position is that the current Staff draft of the Chapter 22 rule revision does not provide any assurance that more aggressive levels of DSM will be included in preferred resource plans and would simply accept the levels adopted by utilities as meeting the MEEIA goal. Therefore, Staff's proposed MEEIA draft rule language would fail to meaningfully incorporate the MEEIA goal of achieving all cost-effective savings and would result in no additional commitments in energy efficiency, clearly not meeting the intent of MEEIA.

The state of Missouri is well behind neighboring Midwestern states in terms of setting energy and demand savings targets. Table 1 contains information compiled by ACEEE showing the savings and demand reduction targets for the seven Midwestern states (Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Ohio, and Wisconsin) that have such targets in statute or Commission orders. These figures refer to electrical savings only; savings for natural gas use are generally equal to or lower than the targeted savings for electricity.

All but one of the states has an ultimate target for annual savings within the 1% to 2% range proposed by MDNR. The exception, Kentucky, has a plan to achieve cumulative savings in demand of 18% reduction between 2008 and 2025, which translates to an average reduction of 1.06% per year. Several states have provisions for a ramp-up of savings during the first ten years of their savings plan. Based on this compilation, a savings

target that ramps up to 2% of annual sales is consistent with other states in the Midwest.

Table 1 Energy Efficiency Targets in Midwestern States

States	Intermediate Target			Final Target			Notes and Sources
	Level	Date	Energy sales, use or demand	Level	Date	Energy sales, use or demand	
Illinois	0.2%	2008	Sales	2.0%	2015	Sales	Annual Savings; Energy Efficiency Resource Standard Established in Public Act 481 12-103 (2007)
Indiana	0.3%	2010	Sales	2.0%	2019	Sales	Annual Savings; Commission Order
Iowa	1.5%	2007	Sales				Annual savings target contained in SB 2386
Kentucky	18.0% Cumulative Reduction	2008			2025	Demand Reduction	Cumulative savings; Kentucky State Energy Plan, 2008
Michigan	0.3%	2009	Sales	1.0%	2012	Sales	Annual savings; Energy Efficiency Resource Standard Established SB213, 2008[2]
Minnesota	1.5%	2007	Retail Sales				Annual savings; New Generation Energy Act of 2007 (Minnesota Statutes 2008 § 216B.241)
Ohio	0.3%	2009	Use	2.0%	2019	Use	Annual use; Ohio Revised Code 4928.66
Wisconsin	2.0%	2008	Sales				Proposed annual savings, dependent on completion of Commission Quadrennial Energy Plan Review Docket 5-UI-115

Source: ACEEE State Energy Efficiency Policy Database,

http://www.aceee.org/energy/state/index.htm

[2] Michigan's Energy Efficiency Research Standard specifies annual targets for electricity savings: 0.3% in 2009, 0.5% in 2010; 0.75% in 2011; and 1.0% in 2012 and each year thereafter. (ACEEE, 2010)

Filing and approving DSM programs

The existing rules governing electric utility IRP filings (4 CSR 240-22.050) describe a process for proposing DSM programs and portfolios. These rules require utilities to conduct research, propose programs and propose evaluation plans for DSM programs that are cost-effective, but these rules do not require the implementation of programs. Sections 3 through 5 of Staff's draft rule address procedures for proposing, reviewing and revising utility DSM programs (see "Demand Side Program Investment Rule", Staff, 2010).

MDNR recommends the Commission rule require that utilities submit a DSM program plan for approval in a procedure where interested parties are provided a full opportunity to have input into the plans. The program plan filing should include these minimum elements:

- Specify the revenue class (e.g., residential, commercial or industrial) the program serves.
- Specify a baseline from which to measure electricity savings.
- Estimate energy and demand savings from the proposed programs sufficient to meet the targets established by the Commission.
- Specify the design and measures used by the program.
- Specify the effective duration of the program for purposes of program evaluation[3].
- Provide an implementation plan for the program, including a schedule for achieving key program targets and milestones.
- Provide a plan for documenting annual energy savings.
- Provide a detailed plan for post-implementation evaluation.
- Provide a set of expected program costs, program benefits and energy savings for each program year. These costs will be broken out to allow the calculation of the TRC test as specified in the current Chapter 22 rules. The schedule of annual reporting of expected costs and savings will allow programs to accommodate the ramp-up of new program impacts. The forecasting of program outcomes in this way will account for periods where the program costs are expected to be high while the associated energy savings are expected to be low.
- Specify how the total DSM portfolio of the utility is targeted toward achieving all cost-effective demand-side savings and how the utility plans to achieve the targets set by the Commission.

[3] This envisions discrete DSM programs to facilitate post-program evaluations. In the case of programs designed without a definite end, evaluation activities should be scheduled after program ramp-up and after programs have been operating for several years.

Staff's proposal in the April 12 workshop meeting was to have a separate DSM program filing to propose programs and general rate case to authorize cost recovery (see Staff, 2010: Section 9B). MDNR recommends a proceeding that allows reporting and reconciling expected levels of spending and savings to actual levels over the effective life of a DSM program. Procedures for reconciling expected costs and savings with actual cost and savings will depend on the outcome of the workshop process.

MDNR recommends a thorough review of annual and total cost and savings estimates by interested parties. The review process is intended to insure that appropriate levels of program investments and program outcomes are specified in a Commission-approved DSM program plan. Once approved, the DSM program plan would be used to assess actual program performance in the annual reports required in 393.1075.12 RSMo.

Scheduling and format of a DSM Program Plan filing

DSM plans should be developed in consultation with interested parties, stakeholders and the public. While utilities are responsible for program implementation, inclusion of these groups assures that customers' interests will be represented and that information from diverse viewpoints will be considered. The approval schedule should include time for a full review and opportunity for negotiations to seek consensus on programs, savings and evaluation details.

Linking annual DSM program review to cost recovery and performance incentives

MDNR looks forward to the workshop discussion of how the recovery of DSM program costs and the provision of a performance incentive will work. We are in favor of annual expensing of program costs and annual award of a performance incentive or penalty, with the understanding that there is not a meeting of the minds among the parties to the workshop whether such an expensing structure, which has the potential of changing customer rates each year of a DSM program, is allowed under Missouri law. Regardless of the outcome of that issue, MDNR has the following recommendations regarding the annual reports required by MEEIA.

393.1075.12 RSMo. requires annual reports for approved DSM programs:

> [D]escribing the demand-side programs implemented by the utility in the previous year. The report shall document program expenditures, including incentive payments, peak demand and

energy savings impacts and the techniques used to estimate those impacts, avoided costs and the techniques used to estimate those costs, the estimated cost-effectiveness of the demand-side programs, and the net economic benefits of the demand-side programs.

MDNR proposes that these reports be used to determine the amounts to be included in any rate adjustments associated with cost recovery and utility performance incentive payments. This report should provide a narrative of program activities and be used to evaluate prudency of the past year's program activities and provide criteria for allowing recovery of costs for associated program activities. The energy savings impacts could be used to determine the level of performance incentive awarded to the utility.

Allow expensing of DSM program costs to provide "timely cost recovery" for utilities as directed in Sec. 393.1075.3 RSMo.

One of the ongoing debates surrounding MEEIA is the interpretation of 393.1075.1(3) RSMo., which states:

> Provide timely earnings opportunities associated with cost-effective measurable and verifiable efficiency savings.

Additionally, 393.1075.4 RSMo. contains this passage:

> Recovery for such programs shall not be permitted unless the programs are approved by the commission, result in energy or demand savings and are beneficial to all customers in the customer class in which the programs are proposed, regardless of whether the programs are utilized by all customers.

In ER-2010-0036, Staff interpreted these provisions to require post-implementation verification of savings attributed to DSM programs before allowing recovery of program costs ("*Staff Report on Revenue Requirement Cost of Service", Staff*, 2009). Staff has incorporated this position into their draft rules by capitalizing program expenses until the completion of a post-program evaluation and then by amortizing the resulting regulatory asset account balance over three years (see Staff, 2010 Section 10.A.ii). Utility company representatives have indicated that staff's position may result in reduced levels of DSM program spending in Missouri[4].

[4] See *Rebuttal Testimony of Steven M. Kidwell before the Missouri Public Service Commission, Case No. ER-2010-0036*, 2010 and *Rebuttal Testimony of Tim Rush before the Missouri Public Service Commission, Case No. ER-2010-0036*, 2010

MDNR recommends that the commission establish rules that authorize annual recovery of DSM programs costs and performance incentives.

MDNR looks forward to the workshop discussion of how the recovery of DSM program costs and the provision of a performance incentive will work. We are in favor of annual expensing of program costs and annual award of a performance incentive. Whether such an expensing structure, which has the potential of changing customer rates each year of a DSM program, is allowed under Missouri law is one question MDNR hopes will be addressed in the upcoming workshop sessions.

"Expensing" of DSM program costs involves the direct recovery of costs through a straightforward transfer of approved costs into rates (*Aligning Utility Incentives with Investment in Energy Efficiency* NAPEE 2007: 4-1). This is in contrast to Missouri's current policy of capitalizing DSM program expenses through a regulatory asset account. Staff's draft rule proposes continued capitalization of DSM program costs for the period between a program's inception and the completion of evaluation studies that verify program savings, and then amortizes the resulting regulatory asset account balance for 3 years. This significant delay before consideration of DSM costs for inclusion of rates clearly does not permit "timely cost recovery" under MEEIA.

Capitalization and amortization of DSM program costs provides an obvious, significant disincentive to DSM investment, and its continuation contravenes MEEIA. This method of cost recovery effectively separates DSM program activity from its rate impacts. It reduces the transparency of utility DSM actions and provides confusing price signals, when customers today are paying for DSM investment from 3 years ago. MDNR endorses annual expensing to resolve this cost recovery disincentive against investment in DSM programs.

The review of ten Midwestern states with cost recovery policies showed that all ten states allow annual expensing of DSM program costs in either statute or commission orders (see Table 2). This is accomplished through an "Automatic Adjustment Clause tariff" (Illinois), a balancing account (Indiana), or other annual administrative adjustment. Two states are slightly different: South Dakota employs a system of individual DSM cost riders that are authorized in individual rate cases. Michigan provides for both expensing and capitalization. Utilities have the option of expensing DSM expenditures or capitalizing program expenses that have an effective life greater than one year.

Table 2 DSM Cost Recovery Approaches in Midwestern States

State	Method of Cost Recovery	Source
Illinois	Annual Expensing through an "Automatic Adjustment Clause" tariff.	Illinois Public Act 095-0481 Section 12-103.
Indiana	Expensing through balancing account.	Indiana Administrative Code 170, Section 4-8.
Iowa	Annual Expensing through Automatic Adjustment Mechanism	Iowa Code Chapter 35 199—35.12(476)
Kansas	Expensing: Docket 07-GIMX-247-GIV describes Kansas as having the authority to consider cost recovery through an energy efficiency rider	Docket 07-GIMX-247-GIV
Kentucky	Expensing through DSM surcharge.	Kentucky Revised Statues 275.285(C)
Michigan	Expensing, but also allowing amortization for measures with an effective life longer than one year (see MPSC Order U-15890, 4)	MCL 460.1089(4) and MPSC Temporary Order U-15800 (33-34).
Minnesota	Annual Expensing	Minnesota Statutes 2007 216C.05(2)(2)(C)
Ohio	Annual cost recovery.	Ohio Administrative Code 4901-1-39-07
South Dakota	Individual cost recovery riders decided for each utility	
Wisconsin	Annual Expensing.	Wisconsin 2005 Senate Bill 459 196.374(5)

The Michigan approach to capitalization allows more flexibility in the construction of programs than does Missouri's. The Michigan legislation (MCL 460.1089(4)) allows the capitalization of any DSM program expenses with a program life greater than one year, while the Missouri capitalization approach places all DSM expenses into a regulatory asset account for as long as ten years. The additional flexibility allowed by Michigan provides incentives for utilities to propose multiple DSM projects, with a variety of sizes and with a variety of effective lives.

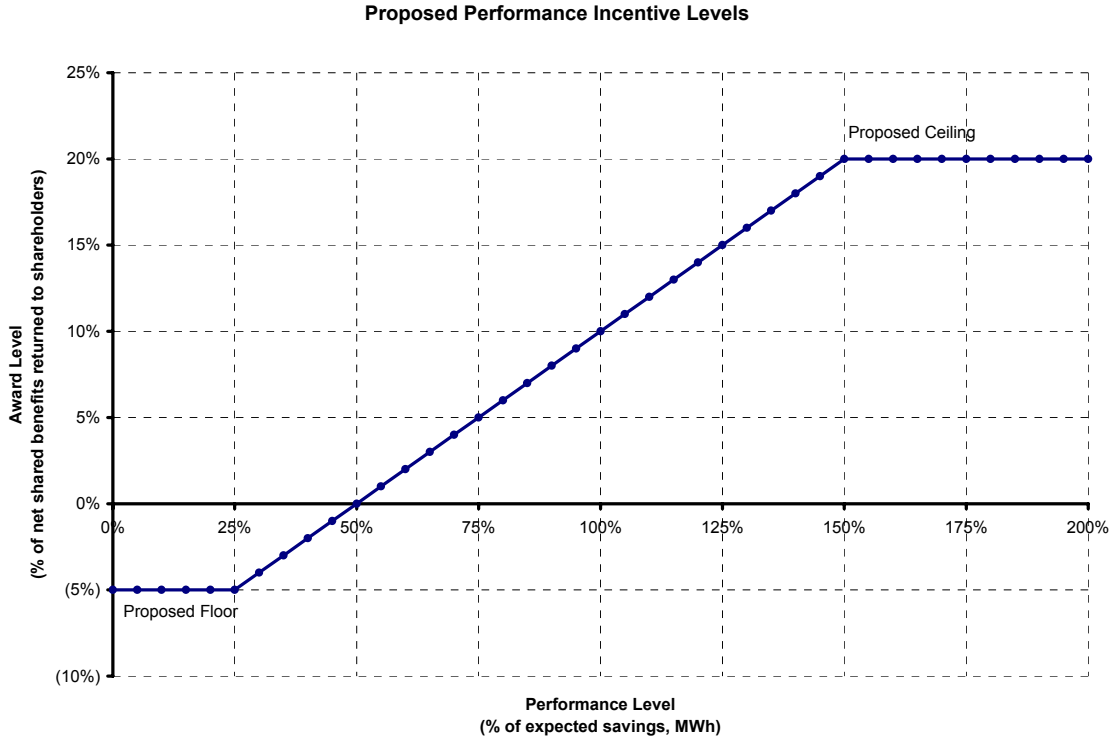
Specification of a performance incentive

393.1075.5 RSMo. describes utility performance incentives as "…allowing the utility to retain a portion of the net benefits of a demand-side program for its shareholders." The term "net benefits" is not defined in the current Chapter 22 rules, but *DSM Shareholder Incent*ives: Current designs and Economic Theory **(**Stoft, Eto and Kito ,1995: 12) discusses some of the different ways utilities and regulators have defined these savings.

The proposed performance incentive portion would reward utilities for meaningful energy savings, using the net benefits approach specified in 393.1075.5 RSMo. Individual states structure performance incentives

differently, some using a “step function” that provides discrete levels of incentives/awards for discrete levels of performance. MDNR recommends a continuous incentive function that links performance award levels to a performance level in a linear fashion, but with established floors set at a threshold level of poor performance and ceilings set at a threshold level for high performance. In testimony filed in ER-2010-0036, MDNR described such a performance incentive system. That example would award a utility 5 percent of shared net benefits when it achieved 75 percent of a savings target. The award level would increase in a linear fashion, increasing 1 percent of award for every 5 percent of increased performance, up to a ceiling of 20 percent of award for performance at 150 percent of the savings target. The rationale for setting the proposed savings ceiling at 150 percent of savings target is discussed in the next section. This incentive includes a percentage penalty for performance below 50 percent of the savings target. This penalty would increase, again by 1 percent for each 5 percent decrease in performance, to a floor of 5 percent of expected net benefits for savings at 25 percent (or less) of the stated target. This incentive system is consistent with the recommendations made by Stoft, Eto and Kito (1995: xviii). See Figure 1 for a graphic representation of this incentive plan.

Figure 1 Performance incentive structure



For example, consider a utility that proposed to save 100,000 MWh through its DSM portfolio in a given year. Additionally, assume $200 of net benefits for each megawatt-hour saved. If the utility saved 55,000 MWh that would equate to $11,000,000 in net benefits and the utility would receive an award of $110,000, or 1% of these benefits. If the utility saved 56,000 MWh, for $11,200,000 in net benefits, an incentive of $134,400 would be awarded. If the same utility saved only 20,000 MWh (or 5% of its target) in that year, $4,000,000 in net benefits, the utility would be liable for a 5% penalty, or $200,000.

The linear nature of MDNR's proposed incentive structure differentiates it from performance incentives offered by other states. Many states' incentive systems are structured as a step-function, i.e., they award utility performance at specified thresholds but do not increase the percentage of net benefits awarded to utilities within a threshold range (see, for example, the description of California's performance incentive plan in *State Energy Efficiency Regulatory Frameworks,* EEI, 2009 and *Interim Opinion on Phase 1 Issues: Shareholder Risk/Reward Incentive Mechanism for Energy Efficiency Programs,* CPUC 2007: 218). This has the impact of awarding preset levels of performance without providing an incentive for improvement that occurs between the "steps". For example, under the California incentive system, utilities receive 9 percent of shared net

benefits for performance between 85 percent and 100 percent of their energy savings target. This incentive does not increase until a utility achieves more than 100 percent of its target (see EEI, 2009 and CPUC, 2007: 218[5]). In other words, utilities do not realize an increase in percentage award until their performance increases by 15 percent. In this system, the dollar amount of the incentive increases with increased savings, but a utility would not realize a change in its rate of return until it improved its performance substantially.

In contrast, MDNR's proposed incentive changes both the percentage of award and the dollar value of the award the same amount for each unit of improved performance towards a savings target. The incentive curve is continuous and award levels increase by 0.2 percent for each 1 percent increase in performance, or 1 percent increase in the award for each 5 percent increase in performance, up to the ceiling of performance at 150 percent of the savings target.

Context for the performance incentive

As mentioned above, multiple states have implemented performance incentive systems similar to the one proposed by MDNR. MDNR has identified 12 states with comparable systems[6] with discrete levels of performance and award[7]. As seen in Table 3, the average energy savings target to qualify for a performance incentive is 77.83 percent of the stated program target. On average the percentage of the award ranges between roughly 6 and 12 percent. The maximum level for the performance incentive is 150 percent of the savings target. This particular state, Colorado, awards utilities 12 percent of net economic benefits for reaching 150 percent of DSM savings targets. The minimum and maximum values of these incentive programs are plotted in Figures 2 and 3, along with the proposed incentive structure for Missouri discussed above.

[5] But also see CPUC 2009 for a discussion of the difficulties California has experienced implementing this incentive.
[6] California, Colorado, Connecticut, Georgia, Hawaii, Indiana, Minnesota, New Hampshire, North Carolina, Ohio, Rhode Island, and Texas
[7] Other states, for example, Michigan, have performance incentives with different structures, and are not considered here.

Table 3: Summary Statistics for State Performance Incentives

	Minimum Incentive		Maximum Incentive	
	Performance Level	Award Level	Performance Level	Award Level
Average	77.83%	5.62%	100.83%	12.03%
Minimum	50.00%	1.00%	50.00%	4.40%
Maximum	100.00%	15.00%	150.00%	20.00%
Number of States	12			

Figure 2: Minimum Value of State Performance Incentives

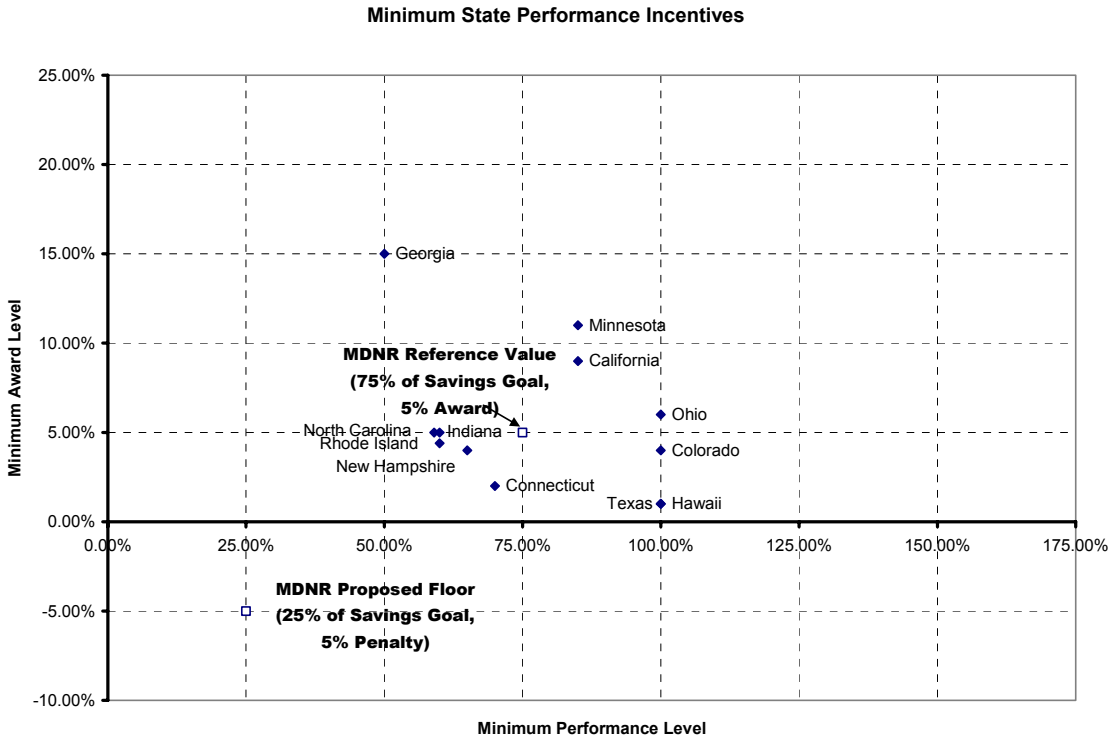
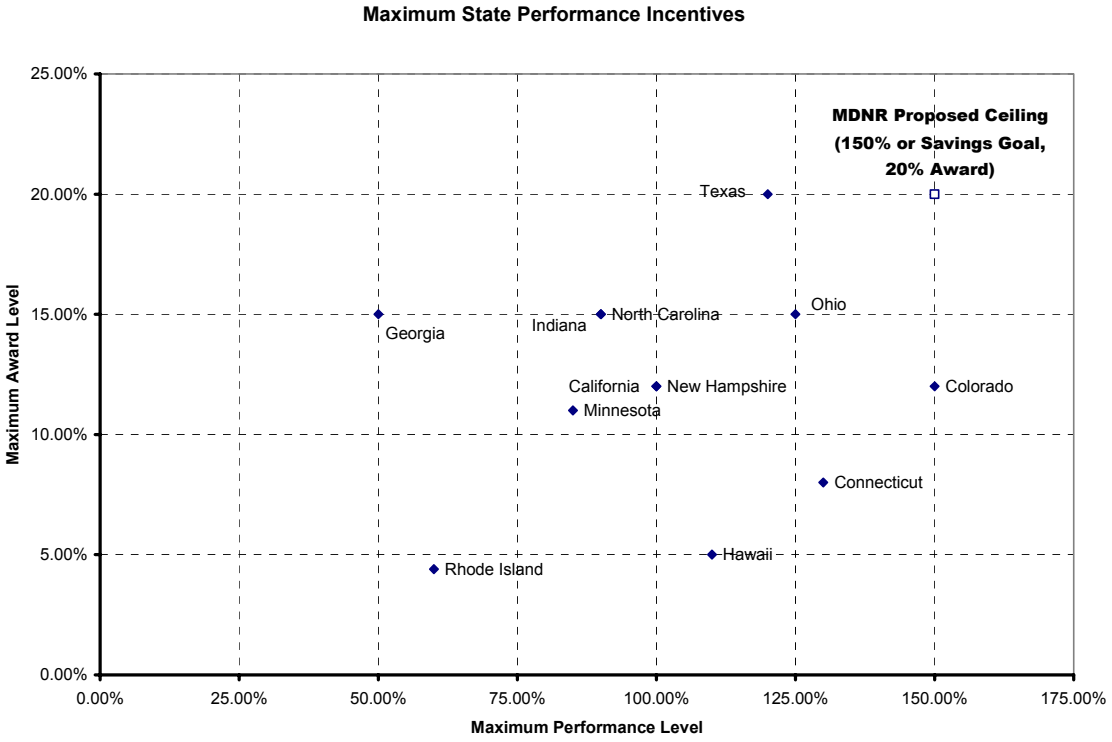


Figure 3: Maximum Value of State Performance Incentives



As seen in these figures, three states have a minimum performance level of 100 percent of the specified savings or benefits target. The minimum award percentage is also relatively low; ten of the twelve states allow utilities to recover less than 10 percent of their net savings when they meet the minimum performance level. Three of these states have maximum performance levels between 125 percent and 150 percent of their specified target. Eight of these states have maximum award levels between 10 percent and 20 percent of their savings.

Figures 2 and 3 also locate the minimum and maximum savings levels and awards proposed by MDNR. The incentive proposed by MDNR has a penalty for all performance below 50% of program targets. Other states, such as California (see NAPEE 2007: 6-7 – 6-9) have penalties for performance below an overall savings target established by the state Public Utilities Commission. In the system proposed by MDNR, penalties accrue for any performance less than 50% of the established savings target. Modest payments for incremental performance between 50 and 100 percent of the savings target would be designed to help compensate for lost revenue resulting from achievement of energy savings. The proposed value of the ceiling (150 percent of the agreed upon savings target and 20 percent of net benefits) is higher than eleven of these states.

It provides a higher incentive, but to get the higher incentive a higher level of performance is required.[8]

Using a deemed savings database to document savings

As mentioned by facilitator Dan York at the April 12 workshop, a full analysis and verification of savings each year is impractical. Rather than conducting such an analysis, which would include specification of net savings levels (identifying the savings attributable to free-riders and spillover, etc.), MDNR proposes allowing utilities to verify the gross savings associated with a program in annual reporting.

A system of deemed savings established by a Missouri-specific deemed savings database, also know as a "technical resource manual" (TRM) is one tool MDNR recommends. The database will provide a standard for assessing the level of gross savings on an annual basis.
Several states have developed TRMs to document and standardize reporting of energy savings. According to MDNR's research, there are18 states, including 5 of the 13 Midwest states, plus 2 regional energy associations that use either statewide, utility-specific or association-specific deemed savings databases in their determination of DSM program savings (see Table 4; see also *Survey of Current Energy Efficiency Program Evaluation Practices and Emerging Issues Survey of Current Energy Efficiency Program Evaluation Practices and Emerging Issues*, Goldman, et al, 2010 and *Deemed Savings:* What are they? Why do we use them? How are they created? Hemmi, 2009).

Many states' TRM materials are available online. For example, database source files for Minnesota and Michigan are available on their respective web sites (see the Reference list for the URLs). The availability of these materials suggest that Missouri need not develop a deemed measures database entirely on its own, although TRM materials from another state would need to be customized to reflect the weather conditions of Missouri. The creation and/or endorsement of such a database by the commission will help to standardize the reporting of annual electricity savings.

The U.S. Department of Energy defines "deemed savings" as:

> An estimate of an energy savings or energy-demand savings outcome (gross savings) for a single unit of an installed energy-efficiency or renewable-energy measure that (1) has been developed from data sources and analytical methods that are widely considered acceptable for the measure and purpose, and (2) will be applied to situations other than that for which it was developed. That is, the unit savings estimate is "deemed" to be

[8]MDNR's expectation is that the DSM program review process would produce realistic savings goals to protect against "low balling" savings goals in order to receive the higher incentive.

acceptable for other applications. (*EERE Program Evaluation Glossary*, DOE, 2010).

Under a deemed savings approach, the utility would need to document the number of each type of DSM measures installed in a year and multiply that number by the per-measure savings to derive an estimate of gross savings. Creation of such a database would help to simplify the measurement of gross savings by standardizing the savings attributable to individual efficiency measures.

Once established, these measures can be revised using evaluation-based estimates of savings derived from the post-program evaluations, and updated to reflect new technologies and other factors. The Commission should establish a schedule for periodically reviewing evaluation and verification results to revise the entries and savings values in the database.

Table 4: States/Entities with Deemed Savings Technical Resource Manuals

State	**Source**		
	Goldman, et al, 2010	Hemmi, 2009	MDNR Review, 2010
Arkansas		Statewide	
Bonneville Power Administration		Association Specific	
California	Statewide	Statewide	
Connecticut	Statewide		
Idaho			Statewide
Illinois		*Utility Specific*	
Maine	Statewide		
Massachusetts	Statewide		
Michigan			*Statewide*
Minnesota	*Statewide*	*Statewide*	
New Mexico		Utility Specific	
New York	Statewide	Statewide	
Northwest Energy Efficiency Alliance		Association Specific	
Ohio			*Statewide*
Oklahoma		Utility Specific	
Oregon	Statewide		
Pennsylvania	Statewide	Statewide	
Texas	Statewide		
Utah			Statewide
Wisconsin		*Statewide*	

Note: *Italic* entries indicate Midwest states belonging to the Midwest Energy Efficiency Alliance (MEEA)

Accounting for "Lost Revenues"

Staff's draft rules for MEEIA refer to "lost margin revenues" and "lost revenues" in two places, in the definition of "Demand-side investment mechanism" in Section 2, and in Section 11. Section 11 generally addresses conditions where a utility is allowed "a means to eliminate its incentive to increase sales between rate cases and ensure that the success of its demand-side program does not cause it financial harm." It appears that Section 11 is referring to a general policy known as "revenue decoupling" (see *Rate Impacts and Key Design Elements of Gas and Electric Utility Decoupling*: A Comprehensive Review, Lesh, 2009). However, "lost revenues" and other terms that generally refer to financial impacts due to the reduced energy sales attributable to energy efficiency improvements are not defined in the Staff's draft. Recovery of lost revenues due to reduced consumption of electricity is a major policy issue for utility DSM programs (see NAPEE, 2007); however, MEEIA does not address lost revenues.

The terms "lost revenues" and "lost margins" are distinct concepts that should be kept separate. The National Action Plan for Energy Efficiency (2007: 2-4) defines these terms as:

> *Lost Revenue*: The reduction in revenue that occurs when energy-efficiency programs cause a drop in sales below the level used to set the electricity or gas price. There generally also is a reduction in costs as sales decline, although this reduction is often less than revenue loss.
>
> *Lost Margin*: The reduction in revenue to cover fixed costs, including earnings or profits in the case of investor-owned utilities. Similar to lost revenue, but concerned only with fixed-cost recovery, or with the opportunity costs of lost margins that would have been added to the net income or created cash buffer in excess of that reflected in the last rate case. The amount of margin that might be lost is a function of both the change in revenue and any change in costs resulting from the change in sales.

The focus on "lost revenues" is generic, i.e., concerning virtually any reduction in sales that accompanies implementation of DSM programs. On the other hand, consideration of "lost margins" requires documenting the impact of DSM programs on a utility's fixed costs. Proper analysis of these impacts requires extensive documentation of sales reduction and the attribution of these reductions to particular programs.

Recovering lost margins, i.e., capturing the impacts of reduced sales of electricity due to DSM programs on a utility's fixed costs, has proven to be a difficult task for regulators (see *Decoupling vs. Lost Revenues: Regulatory Considerations***,** Moskovitz, Harrington, and Austin, 1992). Several states in the Midwest have attempted to construct a regulatory framework to address these losses. In 1994, eight of the 13 Midwest states used a lost margin recovery mechanism to support DSM programs (*Assessment of Net Lost Revenue Adjustment Mechanisms for Utility DSM Programs*, Baxter, 1995: 20)[9]. By 2009, six of these states rejected this mechanism and began piloting revenue decoupling mechanisms to provide utilities with a stable revenue base (Lesh, 2009)[10]. In Minnesota, the lost margin recovery mechanism allowed utilities to over-recover their DSM expenses by as much as 40 million dollars per year (see *The Minnesota Approach*, Reha, 2005).

Policies for addressing lost margin disincentives are not addressed by MEEIA. The basic difficulty of attributing reductions in electricity sales to DSM programs, and then accurately applying these reductions to recover losses in fixed costs is one reason not to address this disincentive in the current rules. Other states' experiences with over-recovery of lost margins, along with the general movement of states towards adopting decoupling schemes, lead MDNR to recommend that lost margin recovery should not be addressed at this time. Rather, MDNR's proposed performance incentive should provide a better recovery mechanism than the more generic "lost revenues" methods.

Evaluation and verification

One of the ongoing debates surrounding MEEIA is the interpretation of 393.1075.1(3) RSMo, which states:

> Provide timely earnings opportunities associated with cost-effective measurable and verifiable efficiency savings.

Additionally, 393.1075.4 RSMo contains this passage:

> Recovery for such programs shall not be permitted unless the programs are approved by the commission, result in energy or demand savings and are beneficial to all customers in the customer class in which the programs are proposed, regardless of whether the programs are utilized by all customers.

In ER-2010-0036, Staff interpreted these statements to require post-implementation verification of savings attributed to DSM programs before allowing recovery of program costs ("*Staff Report on Revenue Requirement Cost of Service", Staff*, 2009). Staff has incorporated this

[9] Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota and Ohio
[10] Only Ohio and Kentucky maintain lost revenue adjustment mechanisms for at least one utility.

position into their draft rules by capitalizing program expenses until the completion of a post-program evaluation and then by amortizing the resulting regulatory asset account balance over three years (see Staff, 2010 Section 10.A.ii). Utility company representatives have indicated that staff's position may result in reduced levels of DSM program spending in Missouri[11].

Staff's draft rule proposes that a "commission approved EM&V independent evaluator" design and conduct verification studies (see Section 8). The evaluation goals described Section 8.E.i.a appear to be focused on a limited range of programs and only consider impact evaluation (called "process evaluations" in the rule). MEDA's draft rule does not address issues of evaluation design or timing, leaving this to the discretion of the utilities (see Paragraph 3.A.iii.2).

MDNR's review of evaluation activities in the Midwestern states suggests that a middle ground is appropriate. Based on MDNR's review of evaluation policies in the Midwestern states, an appropriate approach would be that utilities contract for third-party evaluators, but that the Commission develop a set of evaluation standards appropriate to a wide range of program designs and monitor for compliance with the standards.

The general approach to evaluation in the Midwestern states emphasizes impact evaluations, i.e., evaluation studies designed to demonstrate the effectiveness of particular measures, programs or portfolios. While no state prohibits "process" or "market penetration" evaluations, the emphasis is on developing estimates of the savings impacts of different interventions. Once established, these estimates can be used to calculate cost effectiveness and verify that expected savings (such as those derived from engineering estimates) have been realized.

A third party contractor hired by the utility performs evaluations in seven of the ten states (see Table 5). In two states a third party contractor is hired by the state energy agency or commission (Illinois and Kansas). In one state, the evaluation is conducted by the commission itself (Wisconsin). Table 5 indicates that the most common approach to managing evaluation studies is to allow utilities to hire evaluators and conduct evaluations independently.

This arrangement does raise the question of evaluator independence. One way to resolve this question is to develop a comprehensive set of standards that evaluation projects must meet. Specification of evaluation standards, including detailed specifications for samples, questionnaire

[11] See *Rebuttal Testimony of Steven M. Kidwell before the Missouri Public Service Commission, Case No. ER-2010-0036*, 2010 and *Rebuttal Testimony of Tim Rush before the Missouri Public Service Commission, Case No. ER-2010-0036*, 2010

development, analysis and reporting standards are a common part of federal evaluation programs in education (for example, see *NCES Statistical Standards* NCES, 2002). This level of specification tends to insure the transparency of final analyses, and help support the objectivity of the evaluation report.

Additionally, allowing utilities to hire a third party evaluator will support early evaluator involvement in DSM programs. This involvement will help insure that necessary steps are taken to collect appropriate data and define comparison groups, etc.

Table 5 DSM Evaluation Approaches in Midwestern States

State	Frequency	Scope	Who Completes	Source
Illinois	Annual of portfolio measures with full review each three years	Measures in a utility portfolio	Independent evaluator selected by the Illinois Power Authority	Public Act 481 12-103
Indiana	Annual Evaluation	Programs	Third Party contractor selected by the utility	Indiana Administrative Code 170 IAC 4-8-4
Iowa	Periodic evaluation of individual programs.	Individual measures	Utility	Multiple citations in the Iowa State Code: IAC 7/2/08 Ch. 35.8F
Kansas	"The Commission believes there is value in maintaining some flexibility in how it evaluates energy efficiency programs." 08-GIMX-442-GIV, paragraph 26	Programs	Independent evaluator hired by Kansas Corporation Commission.	Kansas Corporation Council Dockets 07-GIMX-247-GIV, 08-GIMX-441-GIV and 08-GIMX-442-GIV
Kentucky	Annual Evaluation of programs as part of utilities' cost recovery filing	Programs	Third Party contractor selected by the utility	2007 Energy Act, section 50
Michigan	Biannual, tied to Energy Optimization revision schedule.	Portfolio	Third Party contractor selected by the utility	Public Act 295, 2008 MPSC Temporary Order U-15800
Minnesota	At least once every three years	Programs	Utilities and Municipalities implementing conservation programs	Minnesota Statutes 2007 216C.05
Ohio	SB 221 Rule 4901:1-39-05 states that plan must be resubmitted every three years.	Programs	Third Party contractor selected by the utility	Ohio SB221 PUCO Opinion and Order: Case No. 08-888-EL-ORD
South Dakota	Dependent on Utility plan	Programs	Utility, decided according to individual dockets.	

Wisconsin	At least once every 4 years	Programs	Commission	Wisconsin 2005 Senate Bill 459 196.374(3).b

The development of evaluation standards will help resolve many of the transparency issues that currently plague the DSM stakeholder process. Ideally such standards would specify

- the appropriate comparison groups for a particular program design,
- the approach to evaluation participant selection (i.e., how program participants are selected from the larger population of customers),
- the sampling methodology (including the acceptable confidence level and sample error),
- the diagnostic analyses necessary to identify and resolve sampling and response biases, and
- the reporting requirements, including report appendices and table layouts.

MDNR maintains that many of the objections to existing DSM programs are due to not having an accepted baseline for reporting results. Developing a set of comprehensive standards to govern utility evaluations will help to make program details more transparent.

The materials in Appendix B discuss several issues of evaluation design and sampling.

CONCLUSION

In summary, MDNR recommends the Commission:

- Establish aggressive but attainable energy savings targets for utility DSM program plans.
- Establish a process of approving DSM plans that allows program review by interested parties, stakeholders and the public.
- Provide a basis for determining cost recovery and performance incentive amounts by linking annual review of program activities, annual cost estimates and annual savings estimates to the annual reports specified in Section 393.1075.12 RSMo.
- Allow expensing of DSM program costs to provide "timely cost recovery".
- Develop a shared net-benefits performance incentive to encourage high levels of DSM program savings.
- Develop a Technical Resource Manual (TRM) and deemed savings database to establish standards for calculating gross savings and provide for periodic review and revision of the TRM.
- Adopt performance incentives in lieu of a recovery mechanism for "lost sales" or "lost margins".

- Establish standards for the conduct and reporting of evaluations.

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