Missouri Department of Natural Resources

Division of Energy

DSM Cost Recovery and Evaluation in Midwestern States

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Introduction: Evaluation approaches to cost recovery

In its "Staff Report on Revenue Requirement Cost of Service" ("Staff report"), John Rogers maintains that DSM program costs cannot be recovered prior to a determination that a program is cost effective and has realized measurable and verifiable energy savings (p. 47). In addition, the Staff report states:

> The determination of whether or not a program is cost-effective and efficiency savings have been achieved cannot be made until after the program has both been implemented and evaluated post-implementation. (p. 47)

This determination, along with Staff's previous position regarding the capitalization of DSM expenses in a regulatory asset account with a ten-year amortization period (see Staff report, 42), has led Missouri Department of Natural Resources (MDNR) Division of Energy[1] staff to conduct a policy review of state DSM cost recovery and evaluation practices in the thirteen states that are members of the Midwestern Energy Efficiency Alliance (MEEA)[2]. This review looked specifically at the targeted savings levels, the approaches to and schedules for recovery of DSM program costs, and the arrangements for program evaluation specified in state statutes and utility regulatory orders. This analysis was conducted in January, 2010 and discusses statutes, dockets and orders proposed between 2007 and 2010.

The analysis places MDNR's recommended energy savings goals, Missouri's current approach to cost recovery (i.e., ten-year amortization of program costs) and Staff's approach to the use of evaluation to determine savings (i.e., post-implementation) into context. After

[1] On February 1, 2010 the Missouri Department of Natural Resources Energy Center was elevated to Division level and renamed the "Division of Energy."

[2] Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin

reviewing the policies for the ten Midwestern states with approaches to cost recovery and evaluation in statute, Commission dockets and Commission orders[3], this section of the MDNR report describes some potential approaches to conducting impact evaluation studies that may document program savings before the full implementation of DSM programs.

MDNR's Recommended Savings Goals

In direct testimony filed by Laura Wolfe in this case (p. 12), as well as in other forums, MDNR has endorsed a one percent and a two percent incremental reduction in electricity energy usage and demand as tangible measures in support of achieving all cost-effective DSM savings, the goal established by SB 376. Table 1 shows information compiled by ACEEE showing the savings and demand reduction goals for the seven Midwestern states with such goals 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.

[3] Nebraska and North Dakota do not have established policies for cost recovery or evaluation. Both states conduct these activities on a case-by-case basis. Missouri is not included in this review because it does not have a process for cost recovery or evaluation in its rules or statutes.

Table 1 Energy Efficiency Goals in Midwestern States

States	Intermediate Goal			Final Goal			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 goal 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[4]
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

[4] 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)

Several states have provisions for a ramp-up of savings during the first ten years of their savings plan. All but one of the states has an ultimate goal for annual savings within the one to two percent range advocated by MDNR. The exception, Kentucky, has a plan to achieve cumulative savings in demand of eighteen percent reduction between 2008 and 2025, which translates to an average reduction of 1.06% per year. Based on this compilation, MDNR's position is consistent with other states in the Midwest.

Approaches to Cost Recovery and Evaluation in Ten Midwestern States

Issues of cost recovery and verification of cost-effectiveness through evaluation are closely related. Based on Staff's position, a complete evaluation and verification of proposed program savings is a prerequisite for allowing a utility to recover program costs in rates. Other states employ a variety of evaluation schedules and structures, beyond and including the post-implementation impact evaluation studies referred to in the Staff report. This section describes the prevailing cost recovery approach in Missouri, put in place for AmerenUE in Case No.ER-2007-0002, as described by Mr. Rogers in the Staff's report (p. 42), and contrasts that with the approaches from the ten Midwestern states with established cost recovery policies and procedures. Following this, the report discusses approaches to DSM evaluation in these states, taking note of the required frequency of evaluation activities, the scope of the evaluation (i.e., whether the evaluation considers the impact of individual measures, individual programs or entire portfolios) and who serves as the sponsor of the evaluation project (a consideration that addresses the independence of the evaluation effort).

Approaches to Cost Recovery

Many discussions of utility-sponsored DSM projects have identified the recovery of costs as a major disincentive to program implementation (NAPEE, 2007a)[5]. Missouri Case No. ER-2007-0002 established a capitalization approach to cost recovery for AmerenUE, where DSM program costs are placed into a regulatory asset account with an amortization period of 10 years. Funds in the regulatory asset account were to earn interest at AmerenUE's prevailing AFUDC rate.

The alternative approach, known as "expensing", places DSM program expenses into rates in the year following the program expenditure. Under this approach, a utility spends program funds in a given year and the next year's rates are adjusted to account for these expenses. This adjustment occurs in an annual "true up" of a rate surcharge (called a "DSM Rider", a "DSM surcharge" or a "Systems Benefit Charge", depending on the state). During the "true up" period DSM program expenditures are verified and apportioned by rate class. This true up period allows regulators to conduct a review of program activities, to reconcile planned expenditures with actual expenditures, and to adjust the rate surcharge to insure a proper level of recovery.

[5] See http://www.epa.gov/cleanenergy/documents/incentives.pdf

Table 2 DSM Cost Recovery Approaches in Midwestern States

States	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 review of ten Midwestern states with cost recovery policies showed that all ten 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 exceptions to this arrangement. 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.

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 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. On the other hand, the effect of Missouri's capitalization approach is to discourage spending except on larger, longer term projects.

Approaches to Evaluation

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.

In considering the evaluation activity, it is important to recognize that all savings are estimated and the detail of the estimate depends on the amount of time available for an evaluator to complete their work. This point is relevant when considering the frequency of evaluation studies required by different states. Many of the states described below provide for annual evaluations of specific programs. Compared to post-implementation evaluations, annual evaluations tend to produce less detailed analyses of the target population. To highlight one example, an annual evaluation may not be able to fully identify free riders and develop a verified estimate of net savings (see NAPEE, 2007b[6] for definitions of "free riders", "gross savings" and "net savings"). In such situations, evaluation planners need to make decisions about sampling, deemed savings estimates, the availability of survey data, and the criteria used to determine

[6] See http://www.epa.gov/cleanenergy/documents/evaluation_guide.pdf

whether an estimate meets a plan's expected impact that are appropriate to the available project time.

The review of evaluation approaches in the ten Midwestern states (see Table 2) highlights three issues: the frequency of evaluation activities, the scope of what is being evaluated (measures, programs, or portfolios), and who is responsible for conducting the evaluation. This last point is relevant for understanding the independence and credibility of any evaluation outcomes.

Frequency of evaluation

Three states require annual evaluations. One of these states (Illinois) has an additional requirement of conducting a full review of programs every three years. Four states allow flexibility in the evaluation schedule. The remaining three states (Minnesota, Ohio and Wisconsin) require regular program evaluations every two and four years.

Scope of evaluation

Seven of the ten states specify the evaluation of defined utility programs. Two states specify the evaluation of individual measures (Illinois and Iowa), and one state focuses on the evaluation of entire utility DSM portfolios (Michigan).

Conduct of evaluations

In seven of the ten states evaluations are conducted by a third party contractor hired by the utility. 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).

Issues of evaluator independence and evaluation adequacy are frequently included in Commission reports for states that allow utilities to conduct their own evaluations. For example, in Michigan Order U-15805 (2009), a docket approving Consumers Energy Company's Energy Optimization plan (EOP), parties objected to Consumers' evaluation plan on the grounds that it "failed to propose a reasonable and prudent method for evaluation and verification of EOP savings.", citing Consumers' reliance on the newly established Michigan Energy Measures Database to derive savings estimates (23). In that same order, other parties requested that the Michigan Commission establish standards for evaluation request for proposals (RFP) to insure that submitted evaluation plans are at least minimally acceptable (8).

The experience in Michigan suggests that while parties may object to the evaluation plans proposed by a utility, there is an opportunity for the state commission to establish requirements for project RFPs that can clarify (and avoid) many issues. Specification of evaluation standards, including detailed specifications for samples, questionnaire development, analysis and reporting standards are a common part of federal evaluation programs in education (for example, see NCES, 2002). This level of specification tends to insure the transparency of final analyses, and help support the objectivity of the evaluation report.

Table 3 DSM Evaluation Approaches in Midwestern States

States	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

With respect to evaluation standards, Schiller (2010) suggests that methodological issues surrounding evaluations are best resolved at the proposal stage. Schiller suggests six issue areas that a comprehensive evaluation plan can address:

1. Codifying decisions about evaluation resource allocation (priority of process, impact, or market effects, estimate measure and or program level savings, and integrated vs. independent process and impact evaluations),
2. Developing consistency in reported program savings,
3. Resolving disagreement over the calculation of net program savings,
4. Ensuring project quality control and sample accuracy,
5. Developing procedures to ensure evaluator independence and objectivity, and
6. Integrating energy efficiency evaluation load impact results in utility planning and forecasting.

In the Michigan case cited above, the evaluation plan was filed in a docket, but evaluation plans could be incorporated into other planning activities. A complete evaluation proposal would specify all of the expected activities to be completed in assessing the impact of a program. This includes specification of the sample, descriptions of data collection procedures, presentation of any respondent questionnaires, specifications of the methodology for calculating program costs and savings, and specification of an output report format. Evaluation plans would be reviewed by the parties and approved before evaluation work began. Such an approach has the advantage of providing a document to which the final evaluation report can be compared to assess the adequacy of the report.

Additionally, an impact evaluation plan could specify the length of the program and provide for periodic, if not annual, estimates of program costs and expected levels of market penetration and energy savings. These initial estimates of program costs and expected savings could provide the best estimates of start up costs and ramp-up savings estimates and could provide baseline data for later assessment of utility performance. This approach to the expected

costs and benefits of a program could generally follow the format of load forecasts, the major difference being that the planning horizon would extend for the length of a particular program, not for an arbitrary twenty year time horizon, as is currently required for load forecasts presented during the IRP process.

Annual versus End-of-Program Evaluations

As mentioned above, one persistent trade off in evaluation practice is between the level of detail in an analysis and the amount of time required to complete an analysis. Collecting samples, cleaning data, and completing analyses are all time intensive activities, and the annual requirements for regular reporting are typically less involved than they are for a single, post-implementation report.

For example, the time needed to fully attribute program savings, i.e., to determine the net savings rate, is substantial. Consider the following example of a rebate program:

- In this program, an evaluator would collect a population of submitted rebate forms. This population of submitted rebate forms would have to be reconciled against sales data in order to establish a submission rate.
- The population would then need to be sampled to capture the desired strata.
- Sampled customers identified by the rebate forms would then be linked to utility meter data through the customer address field. This step is necessary to collect customer energy use data.
- Questionnaires would then be administered, whether by mail, phone or through an online data collection method. These questions would have to include a series of items designed to identify free riders (see for example National Grid, 2003).

- Once the responses were collected, gross savings would be estimated from the energy use data, free riders would be identified from the questionnaire data, and an attribution analysis, such as that described by Kandel (2002) would be completed.
- Finally, any adjustments for response rate and sample bias would be completed before presenting the estimated results.

Even within this general example, it is clear that completing a full analysis of net savings would be impractical to complete on an annual basis.

Nevertheless, annual evaluations can provide important information about program operations. For example, Ohio, a state that requires annual analysis and reports, specifies documentation of annual portfolio performance data, gross energy savings, an accounting of program installations, a narrative of major program benchmarks and a recommendation of program continuance (Ohio Rule 4901:1-39-05(C)).

Conclusion

This analysis has considered ways that Midwestern states have structured DSM cost recovery and evaluation requirements. Missouri is in the unique position of amortizing DSM expenses over a long period of time, and if Staff's position is adopted, a major effort to verify DSM program savings will be required in the future before cost recovery is allowed. While MDNR agrees that the evaluation of programs and the verification of energy savings are important, it is clear that Staff's position, basing cost recovery on the results of a single post-implementation impact evaluation, is unique among Midwestern states, and in MDNR's opinion, would serve as an additional barrier/deterrent to utility investments in DSM.

This review of these statutes and decisions reveals five major points:

- That MDNR's energy savings goals (seeking a one and two percent reduction of energy usage and demand) are consistent with goals established in other Midwestern states,
- That the ten Midwestern states with cost recovery policies support expensing of DSM program costs,
- That these ten Midwestern states support a variety of evaluation schedules, ranging from annual documentation of savings to evaluations and reviews every four years,
- That there are a variety of options for selection of evaluators, including: the utility hires an independent evaluator (7 states), the commission or energy agency hires an independent evaluator (2 states) or the commission itself conducts the evaluation (1 state), and
- That many states have developed standards for the conduct and content of evaluation studies.

In light of these findings, it is clear that Staff's position does not consider many of the available options for determining "measurable and verifiable energy savings". MDNR is reviewing the options for linking cost recovery to evaluation practices, and will present the results of this review in appropriate forums such as Case No. EW-2010-0187.

As stated in Adam Bickford's testimony in this case (p. 4), MDNR believes that Missouri's current policy of capitalizing DSM program expenses over a ten-year period constitutes a disincentive to utility DSM programs. We believe that allowing for annual expensing would remove this disincentive. In this particular rate case, AmerenUE has proposed a "DSM tracker" to recover their program expenses. AmerenUE has not provided sufficient detail about the operation of this tracker for MDNR to endorse its proposal. However, we do

note that AmerenUE's approach is consistent with the expensing arrangements found in all Midwestern states that have policies governing DSM cost recovery.

The current review highlights two important points about evaluation studies. First, the annual schedule of expensing DSM costs encourages some sort of annual evaluation or reconciliation. These evaluations are often governed by commission-mandated reporting standards (such as those specified in Ohio's Rule 4901:1-39-05(C)). Second is the role of evaluators. Ten states in the Midwest have policies governing DSM evaluations. Seven of these states allow utilities to hire third-party contractors to conduct evaluations. Three states have chosen other options for selection of evaluators. In each case, regardless of the arrangement selected, it is clear that these evaluation projects must meet a set of commission-established standards for transparency.

Staff does not appear to have considered any alternatives, such as the approaches used in other states. This review of Midwestern state policies suggests that a schedule of Commission-specified annual reporting is more consistent than Staff's description of a single post-implementation evaluation. Such a schedule of reporting need not preclude a thorough post-implementation evaluation. A combination of short-term reconciliation with a long term study of program effectiveness, one that allows cost recovery based on evidence of short-term effectiveness, may resolve the cost recovery issues presented in the current rate case.

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