Integrating "Efficient Fuel-Switching" into an Energy Efficiency Resource Standard – A Regulator's Perspective

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ABSTRACT

Minnesota's energy efficiency resource standard (EERS) was formalized in 1991. In the three decades since, Minnesota's EERS has been a model of common-sense and stakeholder-driven policy development, consistently ranked among the top 10 in ACEEE's state scorecard rankings. The 2021 Energy Conservation and Optimization (ECO) Act set Minnesota on a new path, in which "efficient fuel-switching" (EFS) and load management measures would also be integrated into utility portfolios alongside traditional efficiency programs.[1] EFS programs developed as part of ECO are generally limited to electric end uses, with utilities required to demonstrate energy and GHG savings and cost-effectiveness. Notably, Minnesota's natural gas IOUs are also allowed and are, in fact, encouraged to implement electric EFS programs. Natural gas IOUs receive savings credit for EFS achievements and can count these achievements towards their performance (shared savings) incentives. These new opportunities required the development of a new regulatory framework and associated technical guidance. This paper will detail:

1. Technical guidance that was developed with active stakeholder involvement to help ensure EFS energy and GHG savings are calculated accurately;
2. A savings attribution approach developed for when an electric utility and natural gas utility with overlapping service territories rebate the same measure;
3. Treatment of EFS achievements for investor-owned utility shared savings incentives;
4. Incorporation of EFS measures into Minnesota's TRM, and
5. The need to navigate the constant tension between regulatory rigor and practical program implementation.

INTRODUCTION

The Minnesota Energy Conservation and Optimization (ECO) program is a utility-administered energy efficiency program with regulatory oversight provided by the Minnesota Department of Commerce (DOC). Utility ECO programs promote energy-efficient technologies and practices by providing rebates, marketing, and technical assistance to utility customers. ECO programs help Minnesota households and businesses lower their energy costs by using electricity and natural gas more efficiently. DOC reviews and approves utility ECO regulatory filings to ensure that energy savings are calculated accurately, statutory requirements are met, and programs meet cost-effectiveness standards.

[1] Minnesota uses the term *fuel switching* to describe what some jurisdictions term fuel substitution, or beneficial electrification.

As summarized in Figure 1, demand-side management programs began in Minnesota in the early 1980s with the primary intention of motivating utility spending on energy efficiency and promoting a focus on demand-side alternatives to traditional supply-side investments. The passage of the 2007 Next Generation Energy Act established Minnesota's Energy Efficiency Resource Standard (EERS), which required utilities, beginning in 2010, to develop plans to achieve energy savings equal to 1.5% of average annual retail sales each year, unless adjusted by the DOC Commissioner to no less than 1.0%.

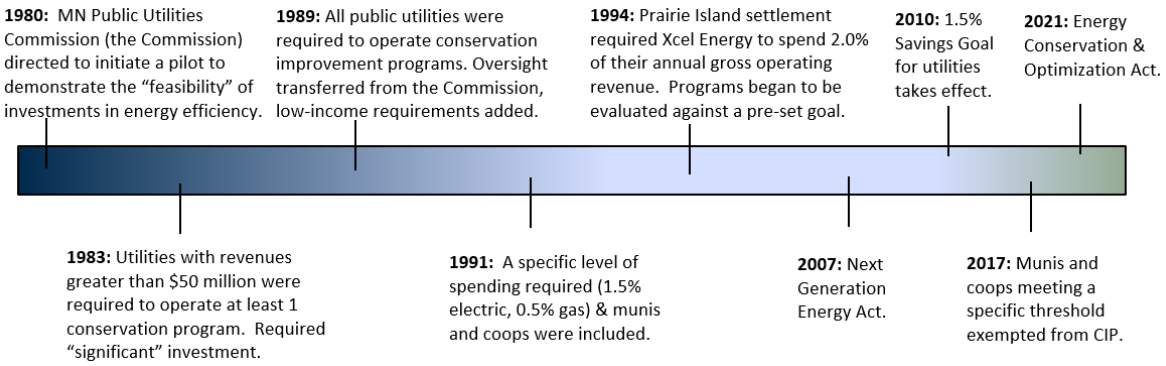

Figure 1. Key developments in the evolution of Minnesota's utility driven energy efficiency framework. *Source*: Minnesota Department of Commerce (2026).

On May 25, 2021, Governor Tim Walz signed the Energy Conservation and Optimization Act (ECO Act) into law (ECO Act 2021). The ECO Act primarily served to modernize what was the Conservation Improvement Program (CIP) to provide a more holistic approach to energy efficiency programming. Most notably, the ECO Act provided participating electric and natural gas utilities the opportunity to optimize energy use and delivery through the inclusion of load management[2] and efficient fuel-switching (EFS) programs in their ECO portfolios.[3] Certain provisions within the ECO Act were further modified in 2024. Currently, ECO has approximately 120 participating electric and natural gas utilities.

The focus of this paper concerns the EFS regulatory framework developed by DOC and the steps taken to provide a platform from which utilities could design and implement Minnesota's first EFS programs.

EFFICIENT FUEL-SWITCHING TECHNICAL GUIDANCE DEVELOPMENT

Efficient Fuel-Switching Criteria

Prior to the passage of the ECO Act, fuel-switching within the (then) Conservation Improvement Program was prohibited in long-standing policy (Garvey 2007). But with growing interest in electrification in Minnesota as a preferred energy efficiency approach, DOC began working with stakeholders to explore the possibility of allowing some type of fuel switching in the CIP

[2] See Minn. Stat. § 216B.241, subd. 13
[3] See Minn. Stat. § 216B.2403, subd. 8

program (Samuelson 2018). Ultimately, this came to fruition with the ECO Act, which established a framework that allowed Minnesota utilities to include "efficient fuel-switching" in their program portfolios. Codified in Minnesota Statutes section 216B.241 subdivision 11, the ECO Act allowed electric investor-owned utilities (IOUs) to include EFS improvements in ECO portfolios provided the improvements satisfied the following criteria:

- Results in a net reduction in the amount of source energy consumed for a particular use, measured on a fuel-neutral basis;
- Results in a net reduction of statewide greenhouse gas emissions . . . . For an EFS improvement installed by an electric utility, the reduction in emissions must be measured based on the hourly emission profile of the electric utility, using the hourly emissions profile in the most recent resource plan . . . . ;
- Is cost-effective, considering the costs and benefits from the perspective of the utility, participants, and society; and
- Is installed and operated in a manner that improves the utility's system load factor.

Similar criteria were also established for EFS programs implemented by natural gas IOUs (Minn. Stat. § 216B.241 subd. 12) and municipal and cooperative utilities (Minn. Stat. § 216B.2403 subd. 8).

Stakeholder Engagement and Technical Guidance Finalization Process

Due to the new programming approach set forth in the EFS criteria, the ECO Act required that DOC work with stakeholders to develop technical guidance by March 15, 2022, for utilities to follow to meet the EFS criteria and calculate energy saved from an EFS improvement (216B.241 Public Utilities Energy Conservation and Optimization).

On November 2, 2021, DOC convened a stakeholder meeting to outline its stakeholder engagement plan and detail next steps in developing the ECO Act-related technical guidance. On November 10, 2021, DOC convened a Coordinating Committee consisting of stakeholders interested in assisting DOC in developing technical guidance. The committee met several times and held a series of informal comment periods to discuss relevant technical guidance issues and possible recommendations for DOC staff to consider in developing their proposal.[4] Ultimately, DOC staff filed proposed technical guidance on February 18, 2022, with the final technical guidance being issued on March 15, 2022, following a two-week stakeholder comment period.

Key Elements of the Efficient Fuel-Switching Technical Guidance

The final technical guidance included a six-step process for utilities to follow in order to satisfy the EFS statutory requirements (Arnold 2022).

A summary of the six-step process follows:

[4] As part of the overall ECO construct, formal comment periods result in a proposed decision issued by DOC staff, followed by a final decision issued by the DOC Assistant Commissioner.

Step 1 – Confirm Starting Fuel to Ending Fuel Type and Utility Eligibility

Eligible starting source fuels included electricity, propane, natural gas, heating oil, gasoline, diesel fuel, or steam. Programs involving additional fuel types were to be considered on a custom basis if a utility proposed such a scenario. EFS programs could be implemented by electric IOUs, natural gas IOUs, and municipal and cooperative utilities, and must have an electric ending fuel type. Utilities wishing to propose EFS programs with a natural gas ending fuel type could do so on a custom basis but would be required to demonstrate that the measure or project was statutorily permissible and met the necessary requirements of the technical guidance.[5]

Step 2 – Determine Efficient Fuel-switching Improvement, Baseline Technology, and Baseline Comparison.

Initially, utilities could provide explanations of proposed EFS improvements in sufficient detail for DOC to assess the appropriateness of selected measures, baselines, and baseline comparisons (comparable technologies based on reasonable replacements). These measures would eventually be formalized as part of Minnesota's Technical Reference Manual (TRM).

Step 3 – Energy Change Analysis, Source Energy Consumption, and GHG (CO2) Emissions

Determining the methodology to calculate source energy consumption and GHG emissions reductions proved to be the most challenging element of the technical guidance development in that DOC had to work with stakeholders to develop methodologies that met statutory requirements, but in a manner that would also be practical and implementable by all utilities wishing to implement EFS programs.[6] This step was broken down into two sub-steps.

Step 3.1 – Site and Source Energy Change Analysis

This step established whether an EFS improvement resulted in a net increase in electricity or natural gas use and whether there was an overall net decrease in energy consumption when incorporating sources that produced the energy consumed on site.

To determine whether an EFS improvement resulted in a net increase in the use of electricity or natural gas, utilities were instructed to use these steps:

- Identify the EFS technology, along with any ancillary components (such as back up heating for an air source heat pump) that enable it to meet the comparable technology requirement discussed in Step 2 (designate the EFS technology as either electric or natural gas based on the predominant fuel of the EFS project).

[5] The ECO Act did not explicitly authorize or prohibit fuel-switching programs ending with a natural gas measure. At the time of writing, however, no such EFS programs have been proposed or approved.
[6] The ECO program has approximately 120 participating utilities. This includes Minnesota's natural gas and electric IOUs, cooperative utilities with more than 5,000 members and municipal utilities with more than 1,000 customers. Because several cooperative and municipal utilities have member/customer totals very close to the required participation threshold levels, total utility participation can vary slightly year-to-year.

- Estimate the energy use (electricity, natural gas, or some combination) of the baseline technology in kWh, therms.
- Estimate the energy use (electricity, natural gas, or some combination) of the post-condition using the EFS technology.
- Compare the change in electricity, natural gas, or a combination of the baseline technology and the post condition incorporating the EFS technology.
- For electric EFS technologies, determine if the project results in a net increase in the use of electricity relative to the baseline technology. For natural gas EFS technologies, determine if the project results in a net increase in the use of natural gas relative to the baseline technology.

To then determine if an EFS measure achieved a source energy reduction, utilities followed these steps:[7]

- Use hourly EFS improvement load shape data. If this is not available, the utility should use another reasonably accurate estimate of the EFS improvement's time-based source energy use. It was assumed that the baseline technology would have the same load shape as the EFS improvement.
- In calculating source energy impacts, utilities would use hourly forecasted electricity generation data (or another reasonably accurate estimate of forecasted electricity generation) over the measure's lifetime.
- The source energy impacts would be based on hourly heat rate values using the electricity generation mix that corresponded to the expansion plan, with a sufficient amount of electrification load to generate a new expansion plan.

Step 3.2 – Calculate Greenhouse Gas (GHG) Emissions Savings

This step assessed whether an EFS improvement resulted in a net reduction in statewide GHG emissions, based on the utility's hourly emissions profile. Utilities were provided with a four-stage approach for calculating downstream GHG impacts from increased electricity use resulting from an EFS improvement.

- Stage 1 - Increased load from EFS measures (MWh). Using a capacity expansion model (CEM), the utility added a new load using an appropriate annual electrification load shape for each year of the planning horizon and rerun the CEM to obtain the new expansion plan and hourly (8760) outcomes that characterize the new scenario. This added load was used to reevaluate the generation needed in the CEM and rerun the CEM to obtain a new expansion plan with new hourly GHG emissions values.

[7] Alternative options were provided for utilities not having access to integrated resource planning (IRP) capacity expansion models (CEMs) that calculate emissions.

- Stage 2 - Utility-Specific Marginal GHG Emissions Factors (lbs./MWh). The hourly CO2e emissions associated with Stage 1 were then compared to the hourly CO2e emissions for the most recently approved (baseline) expansion plan (adjusted for imports and exports). The resulting change in hourly emissions (lbs.) would then be divided by the hourly additional load (MWh) to derive an hourly emissions factor (lbs./MWh) for each year of the expansion plan's time horizon.
- Stage 3 – Including Upstream Emissions. The hourly marginal emissions factor calculated in Stage 2 included information on the marginal fuel source serving the load for each hour. In general, the highest marginal emission factors occur when coal plants operate, natural gas plants have intermediate marginal emission factors, and renewables have the lowest marginal emission factors. Keeping this observation in mind, the lifecycle multiplier for coal would be applied for the hourly marginal emission factor from Step 2 (from combustion) above a certain threshold. Similarly, if the hourly marginal emission factor was within an intermediate range, the lifecycle multiplier for natural gas would be applied. And if the hourly marginal emission factor is within the lowest range, a lifecycle multiplier of 1 will be applied. Lifecycle multipliers for each fuel source would be calculated as the ratio of the lifecycle emission factor for that resource (obtained from GREET®)[8] to the combustion emission factor for that resource (obtained from eGRID[9] or EIA).
- Stage 4 – The utility would then multiply the hourly lifecycle CO2e lbs./MWh factor from Stage 3 with the hourly EFS improvement's load shape over the measure's lifetime and subtract the baseline measure fuel's hourly CO2e factor. A positive number indicates that the EFS reduces GHGs, while a negative number indicates that the EFS increases GHGs. A negative result means the measure would not pass Step 3.2.

Several alternative options were offered for utilities unable to produce hourly emissions (i.e., no IRP or CEM).

Step 4 and Step 5 - The underlying statutory requirements that necessitated Step 4 (improving the utility system load factor) and Step 5 (integrating renewable energy into the electric system) were subsequently removed by legislation passed in 2024 and are therefore not discussed here. (ECO Act Revisions 2024)

Step 6 – Cost-Effectiveness Calculations

This step required that electric and gas utilities perform cost-effectiveness evaluations of EFS improvements and determine whether the measure is cost-effective based on a number of

[8] U.S. Department of Energy's Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model.
[9] U.S. Environmental Protection Agency's Emissions & Generation Resource Integrated Database (eGRID).

traditional energy efficiency cost-effectiveness tests (utility, societal, and participant). The following guidance was provided to utilities:

- EFS cost-effectiveness would be reviewed and approved at the program level.
- The primary cost-effectiveness determinant regarding whether an EFS measure was deemed "efficient" would be whether it passes the Societal Test, unless or until the DOC updates the primary test Minnesota utilities will use to evaluate demand-side programs.[10]
- For natural gas utilities that did not have access to relevant electric information or an electric cost-effectiveness model, DOC would provide the requisite information and tools to enable the utility to conduct EFS cost-effectiveness testing for switches to electricity measures.
- Utilities were encouraged to strive to use up-to-date measure load shapes for EFS improvements to help improve the accuracy of cost-effectiveness and other program-related estimates.

Other Notable Components of the Efficient Fuel-Switching Technical Guidance

1. Ability to Customize

The overriding priority when developing and finalizing the initial EFS technical guidance was to develop a framework that met the various statutory requirements, but that could be implemented in a manner that provided flexibility for utilities and would avoid scenarios of denying EFS program proposals on a technicality. Recognizing that the six-step process for satisfying the EFS criteria was new and (for less well-resourced utilities) would be challenging to implement, DOC provided utilities with the opportunity to propose alternative methods or pathways to satisfy the criteria (Arnold 2022).

2. EFS Programs and Natural Gas

The ECO Act provided natural gas utilities the opportunity to incentivize electric end uses and claim savings towards their minimum savings goal (216B.241 Public Utilities; Energy Conservation and Optimization). It also allowed natural gas utilities to count net benefits achieved through electric EFS programs toward their shared savings financial incentive (216B.241 Public Utilities; Energy Conservation and Optimization). What was less clear was whether natural gas utilities could implement EFS programs resulting in a natural gas end use. The statutory definition of an "efficient fuel-switching improvement" outlined in Minnesota Statutes 216B.2402 subdivision 4 is a project that "requires the installation of equipment that utilizes electricity or natural gas, resulting in a reduction or elimination of the previous fuel used." This definition is the only part of the ECO Act that seems to consider the possibility of natural gas EFS programs. Whereas electric EFS programs and their requirements were broken down in detail by utility type (216B.241 Public Utilities; Energy Conservation and Optimization).

[10] Later, in 2023, the ECO program adopted the "Minnesota Cost Test" (MCT) as its primary cost-effectiveness test. The MCT was developed by DOC in collaboration with ECO stakeholders using the National Standard Practice Manual 5-step cost-effectiveness test development process.

Given the lack of clarity provided by the ECO Act, in the technical guidance, DOC stated that "utilities wishing to propose EFS programs with a natural gas ending fuel type may do so on a custom basis and must demonstrate that the measure or project is statutorily permissible and meets the necessary requirements of these guidelines" (Arnold 2022). No natural gas utilities have made such a proposal, resulting in EFS programs ostensibly being a vehicle for electrification in Minnesota. Moreover, when considering the overwhelming statutory detail involving EFS programs resulting in an electric end-use and the incentives provided to natural gas IOUs to implement electric EFS programs, the legislature appeared to structure ECO in a manner that would heavily favor electric EFS program development and implementation without explicitly ruling out EFS programs resulting in a natural gas end use.

3. 2024 legislative changes

In 2024, Minnesota passed legislation that made several changes and corrections to the 2021 ECO Act (ECO Act Revisions 2024). Most notably, the legislation modified the criteria for implementing EFS programs. Changes to the source energy and GHG emissions reduction requirements were as follows:

> (1) results in a net reduction in the amount of source energy consumed for a particular use, measured on a fuel-neutral basis, using (i) the utility's annual system average efficiency, or (ii) if the utility elects, a seasonal, monthly, or more granular level of analysis for the electric utility system over the measure's life;
>
> (2) results in a net reduction of statewide greenhouse gas emissions as defined in section 216H.01, subdivision 2, over the lifetime of the improvement. For an efficient fuel-switching improvement installed by an electric utility, the reduction in emissions must be measured ~~based on the hourly emission profile of the electric utility, using the hourly emissions profile in the most recent resource plan approved by the commission under section 216B.2422~~ using (i) the utility's annual average emissions factor, or (ii) if the utility elects, the seasonal, monthly or more granular level of analysis, for the electric utility system over the measure's life;

These changes were intended to provide more flexibility in the way utilities could satisfy these criteria. The 2024 legislation also eliminated the requirement that utilities demonstrate how the EFS improvement would be installed and operated in a manner that improves the utility's system load factor. All of the EFS changes included in the 2024 legislation were subsequently acknowledged in a revised version of the EFS technical guidance (Lieb 2025).

EFS SAVINGS ATTRIBUTION WHEN AN ELECTRIC AND NATURAL GAS UTILITY INCENTIVIZE THE SAME MEASURE

As stated above, under the ECO Act, both Minnesota electric and natural gas utilities can implement EFS programs resulting in an electric end use. As a result, several instances of double incentives for a particular electric measure (usually air-source heat pumps) have occurred where participating electric and natural gas utility service territories overlap. Given the large number of utilities participating in the ECO program, these types of occurrences will become more frequent as more utilities develop EFS programs. Raising the question, how should energy savings be attributed where double incentives exist?

Neither the ECO Act nor the subsequent 2024 legislation spoke to how these savings should be attributed. In the original EFS technical guidance, DOC stated that "[t]o reduce customer confusion and "incentive competition", electric and natural gas utilities offering the same or similar EFS measures in overlapping service territories should coordinate offerings and aim for consistency in terms of incentive levels and other features" (Arnold 2022). Along similar lines, further guidance was provided in the DOC decisions approving IOU ECO plans for 2024-2026, where utilities were instructed "to coordinate with one another to make sure there is no double counting of energy conservation savings from the EFS measure's total savings claim." (Gransee 2023, 273)

As more utilities became interested in implementing EFS programs, the prospect of having to coordinate these programs with multiple other utilities had the potential to create an administrative process burdensome enough to dissuade utilities from developing EFS programs at all. This approach was particularly concerning for natural gas IOUs, some of which overlap with a large number of electric utilities (IOUs, cooperatives, and municipals). To address this, in the revised EFS technical guidance released in 2025, DOC stated:

> Consistent with the spirit of the ECO Act to encourage measures and projects that reduce greenhouse gases and, in the interest of administrative simplicity, the Department authorizes electric and gas utilities in overlapping service territories to both claim full project savings . . . , provided the measures qualify based on the criteria established in this Revised Technical Guidance (Lieb 2025, 19).

The justification for allowing both utility types to claim full savings for an EFS program was that the savings are categorized differently depending on the utility fuel type. For electric utilities, Minnesota Statutes section 216B.241 subdivision 1c provides that EFS savings cannot be counted toward the minimum energy savings goal. Instead, these savings can be applied to the utility's achievement above and beyond the minimum savings requirement. For natural gas utilities, Minnesota Statutes section 216B.241 subdivision 12 allows EFS savings to be applied to the minimum savings goal. While not a perfect solution, this approach does provide utilities with greater freedom to pursue electrification through EFS programs.

In response to this approach being proposed, CenterPoint Energy, Minnesota's largest natural gas utility, said "[t]his approach seems aligned with allowing and encouraging gas utilities to pursue

EFS measures as energy conservation in their programs while avoiding a potentially complex and burdensome administrative process for customers, trade[allies], and the utility in order to track and coordinate reporting with multiple electric utility programs" (Glewwe 2025, 2). This approach will provide the platform from which Minnesota utilities deliver EFS programs in the 2027-2029 triennial plan implementation period.

INTEGRATION OF EFFICIENT FUEL-SWITCHING ACHIEVEMENTS INTO INVESTOR-OWNED UTILITY FINANCIAL INCENTIVE MECHANISM

The ECO shared savings financial incentive provides IOUs with the opportunity to earn a financial reward based on energy savings achieved for a particular program year. This award is calculated as a percentage of the net benefits achieved by the utility. While DOC is the ECO regulatory authority for ECO program plans, implementation, and results, the Minnesota Public Utilities Commission (MPUC) oversees ECO-related recovery matters and matters involving the ECO financial incentive.

Initially, as part of the ECO Act, only natural gas IOUs were eligible to include EFS program achievements as part of their financial incentive request (ECO Act 2021).[11] In the 2024 ECO legislation, this was expanded to include electric IOUs until December 31, 2032 (ECO Act Revisions 2024). Detailed treatment of EFS program achievements was approved by MPUC on March 12, 2026, for the 2027-2029 triennial implementation period.

One outstanding issue from the EFS savings attribution approach detailed above, however, is the treatment of EFS energy savings at the MPUC. At this time, the mechanism by which the financial incentive award is calculated does not account for the potential double counting of net benefits where utility EFS program overlap exists. To this end, DOC is planning to work with IOUs to develop a proposal to MPUC that would acknowledge and account for the potential double counting but, for now, this issue remains unresolved.

EFFICIENT FUEL-SWITCHING MEASURES IN MINNESOTA'S TRM

Since the passage of the 2021 ECO Act, DOC has worked with the Minnesota Technical Reference Manual Advisory Committee (TRMAC) to discuss and develop EFS measures for inclusion in the Minnesota TRM.[12] This provides approved, turn-key methodologies for utilities to develop and implement EFS measures. The most recent version of the Minnesota TRM (version 5.0) includes 13 EFS measures. This includes air source heat pumps, air-to-water heat pumps, geothermal heat pumps, heat pump water heaters, and electric vehicles. This list is

[11] Anecdotally, the general consensus when developing the ECO framework was that electric IOUs would already benefit from EFS programs due to the potential for load/customer growth.
[12] The TRMAC is made up of ECO stakeholders who meet to propose new or revised measures for inclusion Minnesota's TRM. Minnesota's TRM is updated on an annual basis.

expected to grow as more EFS approaches are identified and implemented by utilities.

NAVIGATING CONSTANT TENSION BETWEEN REGULATORY RIGOR AND PRACTICAL PROGRAM IMPLEMENTATION

Trying to strike a balance between EFS regulatory rigor and practical program implementation has been and continues to be a constant challenge. At the core of EFS regulatory rigor is the need for verifiable savings and, as it applies to electric utilities, assurances that the EFS approach would not simply be a vehicle for electric utility load growth. This concern was reflected in the original ECO Act legislation, which included requirements for demonstrable energy and carbon savings, cost-effectiveness, and utility load factor improvements (ECO Act 2021). For electric utility EFS programming, these requirements were further supported in the legislation by the initial inclusion of an EFS spending cap, not allowing EFS savings to be counted toward the ECO minimum energy savings requirement (to preserve DSM programming efforts), and not allowing net benefits achieved through EFS measures to be counted toward the electric utilities' shared savings financial incentive (ECO Act 2021).

The EFS Technical Guidance then provided detailed steps for the utilities to follow in order to meet the EFS statutory requirements. On reflection, this initial approach by the legislature and DOC may have been overly cautious and may have delayed the creation and implementation of EFS programs. However, there was a desire to protect what the legislature and DOC considered to be a very successful program—with the primary concern being that EFS programs would be developed rapidly and haphazardly, in favor of long-standing DSM program approaches. There was also an acknowledgement from many, including DOC (Arnold 2022, 5), that a more rigorous approach at the outset could be modified later when there was a more informed understanding of what EFS approaches utilities would take.

Such modifications came by way of the 2024 legislation modifying certain EFS requirements (ECO Act Revisions 2024). More flexibility was provided to utilities in how they calculated energy and GHG emissions, load factor improvements were no longer required, the EFS spending cap was removed, and language was included permitting the MPUC to consider a financial incentive for electric utility EFS achievements. These changes were then reflected in the modified EFS Technical Guidance developed by DOC in consultation with interested parties (Lieb 2025).

When considering the amount of current EFS program activity, DOC's balance between regulatory rigor and practical program implementation has been at least somewhat successful. In filed 2027-2029 ECO Plans, all seven of Minnesota's IOUs (two electric, four natural gas, and one dual fuel) have proposed EFS programs as part of their portfolio. And as of 2025, 27 municipal and cooperative utilities have implemented EFS programs.

CONCLUSIONS

The addition of EFS to Minnesota's ECO program has been a very positive development. It has provided utilities with an additional tool by which to engage customers, while statutory safeguards have continued to preserve traditional DSM approaches. The focus of EFS programs on electric measures assists in Minnesota's desired shift away from fossil fuel end uses. While

the initial technical guidance provided to utilities was particularly complex and thorough, it provided enough rigor to garner confidence that implemented EFS measures would result in cost-effective energy savings and emissions reductions and, importantly, encourage utility uptake of EFS programs.

Challenges persist despite this initial progress. Most notably, savings attribution where multiple utilities incentivize a single measure needs further development to ensure that net benefits counting toward the utility's financial incentive are not double counted. Ultimately, however, the upcoming 2027-2029 ECO triennial implementation period, six years on from the passage of the 2021 ECO Act, will provide the most significant opportunity for widespread EFS program implementation by Minnesota's utilities and will represent the next phase of EFS program development and evolution.

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