COMMERCE DEPARTMENT

December 15, 2025

Sydnie Lieb, Ph.D
Assistant Commissioner of Regulatory Analysis
Minnesota Department of Commerce
Division of Energy Resources
85 7th Place East, Suite 200
St. Paul, Minnesota 55101-2198

RE: Reply Comments of the Minnesota Department of Commerce
Docket No. E,G999/CIP-18-694

Dear Dr. Lieb,

Attached are the reply comments of the Staff of the Minnesota Department of Commerce, Division of Energy Resources (Staff) in the following matter:

Minnesota Technical Reference Manual Version 5.0.

These Reply Comments are filed by the Minnesota Department of Commerce Staff on December 15, 2025.

Sincerely,

/s/ LAUREN E. SWEENEY
Energy Planner, Director
Minnesota Department of Commerce
Division of Energy Resources

LS/ad
Attachment

Minnesota Department of Commerce, Division of Energy Resources

Docket No. E,G999/CIP-18-694

I. INTRODUCTION

Minnesota's Energy Conservation and Optimization (ECO) program is an energy efficiency and demand-side management program administered by over 125 investor-owned, municipal, and cooperative electric and natural gas utilities in Minnesota. These electric and natural gas utilities are subject to annual energy savings goals.

The Minnesota Department of Commerce (the Department) has regulatory oversight of ECO and is charged with developing and maintaining standard energy, demand, and load management savings assumptions for utility use.[1] In fulfillment of this responsibility, the Department developed a Technical Reference Manual (TRM) to serve as a standard reference for quantifying these savings values, incremental costs, and measure lifetime estimates. The Minnesota TRM presently includes over 200 electric, gas, and combined fuel measures covering a variety of end uses within the residential, commercial, and industrial sectors.

To ensure that the MN TRM continues to accurately reflect current technologies, markets, and codes and standards, the Department has established the TRM Advisory Committee (TRMAC), consisting of ECO stakeholders to review and update the MN TRM on an annual basis. The MN TRM v5.0 will be used by utilities for calculating the savings impacts of measures installed in 2027.

II. PROCEDURAL BACKGROUND

October 29, 2025	Staff filed the proposed version of the MN TRM v5.0.
November 20, 2025	CenterPoint Energy, Connexus Energy, Dakota Electric Association, Great Plains Natural Gas Company, Great River Energy, Minnesota Energy Resources Corporation, Minnesota Municipal Utilities Association, Minnesota Power (MP), Minnesota Rural Electric Association, Otter Tail Power Company, and Xcel Energy (collectively, "the Utilities") jointly filed comments in response to the proposed version of the MN TRM v5.0. CenterPoint Energy (CPE), Minnesota Energy Resources Corporation (MERC), Otter Tail Power Company (OTP), and Xcel Energy (Xcel) filed independent comments in response to the proposed version of the MN TRM v5.0. Center for Energy and Environment (CEE) and Fresh Energy (FE) filed independent comments in response to the proposed version of the MN TRM v5.0. CEE then filed a corrected version of their comments.

[1] Minn. Stat. §216B.241, subd. 1d (2021).

III. COMMENT RESPONSES

Comments received regarding the proposed version of the MN TRM v5.0 measure updates are listed below. These comments have been included together with Staff's response to those comments. All comments are taken directly from filed stakeholder comments in response to the proposed version of the MN TRM v5.0. In some cases, this includes sub-headings and citations used by the stakeholder.

A. GENERAL COMMENTS

The Utilities Comment

The Utilities either actively participate in the TRMAC process or represent municipal or cooperative utilities who [participate in the TRMAC process].

The Utilities appreciate the Department Staff and Cadmus' use of a deliberate and collaborative process to review and incorporate changes in developing other parts of the Draft TRM v5.0. The Utilities value the opportunity to participate in the TRMAC process and provide comments and feedback on the TRM.

CPE Comment

CenterPoint Energy actively participates (i.e., providing feedback, technical expertise, and data) in the TRMAC process since the TRMAC's formation more than a decade ago. In recent years, The Department and Cadmus have overseen several TRMAC processes and have successfully facilitated discussions and implemented TRM revisions that have satisfied the objective and vision to provide a reference manual for good data practices and guidance regarding how to calculate and report energy savings in utility plans. The Company appreciates the process for the development of numerous TRM revisions and updates that the Department has guided. In recent years, the process has been relatively smooth, data driven, and consensus based.

CPE Comment 2
CenterPoint Energy values the opportunity to participate in the TRMAC process and provide these comments and feedback on the TRM. The Company appreciates Department Staff and Cadmus' use of a deliberate and collaborative process to review and incorporate changes in developing the rest of the *Draft TRM v.5.0.* This year, the TRMAC peer-reviewed several new and changed measures along with overarching modifications to the TRM. Most of these changes were the result of a workpaper rollout that allowed TRMAC members to review and provide feedback. This peer-review process is essential to developing a TRM that can be seen as having a defined standard set of methodologies and inputs.

MERC Comment

MERC has actively participated in the TRM Advisory Committee ("TRMAC") process and thanks the Department and Cadmus for leading that process and for their work in the development of the draft TRM Version 5.0.

OTP Comment

Otter Tail Power Company . . . appreciates the leadership, time, and work on the part of the Minnesota Department of Commerce (Department) and The Cadmus Group LLC (Cadmus) in gathering meaningful feedback from utilities and other stakeholders in drafting the latest Minnesota Technical Reference Manual (TRM) 5.0. The TRM is an encompassing, very detailed, resource that serves Otter Tail Power well in developing energy

efficiency, demand response, and Efficient Fuel Switching (EFS) measures for consideration in the Company's Energy Conservation and Optimization Plan (ECO). Otter Tail Power looks forward to working with TRM 5.0 in the upcoming 2027-2029 Triennial ECO Plan and engaging with the Department, Cadmus, and others in future TRM revisions.

OTP Comment 2

Since its original development in Minnesota, the Department's TRM has proven to be an integral part of past CIP, and now ECO, planning for Otter Tail Power. The Company appreciates the time the Department and Staff have dedicated through past TRM reviews as well as the most recent TRM 5.0 developments.

Xcel Comment

We appreciate the Department's considerable time and effort in updating the Minnesota Technical Reference Manual (TRM) and for the opportunity to participate in the TRM Advisory Committee (TRMAC).

Staff Response

Staff appreciate all stakeholders who engage within both the regulatory and non-regulatory phases of the TRMAC process. This a time consuming and detailed process. Staff specifically thank those who provided informal comments to the Department during and in response to the TRMAC meetings between May and June 2025 and the formal comments included within this docket.

B. PROPOSED UPDATE TO THE RESIDENTIAL FURNACES BASELINE - 80% AFUE TO 90% AFUE

The majority of comments received were in response to the proposed update to the residential furnaces baseline - 80% AFUE to 90% AFUE (proposed residential furnace update). Staff divided this section into seven subsections which combine feedback from multiple Stakeholders. These comments have been included together with Staff's response to those comments.

B.1. Stakeholder Positions

The Utilities Comment

The Utilities have concerns that the justifications for and the implementation of the Department's Furnace Baseline Proposal are not technically sound or well explained in relation to statute, satisfying the stated purpose of the TRM, or historic practice. At a minimum, the Department should provide additional technical justification and a clear explanation for its Proposal, including how it aligns with statute, fulfills the stated purpose of the TRM, and maintains consistency with historic practice and engagement with stakeholders. The Department's Proposal establishes new precedents that could have implications for many other TRM measures and not just as selectively applied to specific measures. If the approach taken to changing furnace baselines were applied in other areas of ECO, it would undercut the effects of ECO programs by disregarding efforts to influence trade practices. This is not in the State's or customers' interest.

Further, the Department's Proposal will negatively impact the triennial planning process and inserts substantial uncertainty into the process. The potential impacts on energy efficiency programs are concerning, especially given the current uncertainty in the market caused by expiring tax credits and rising measure costs due to

inflation. This is not in the best interest of consumers. Also, low-to-moderate income customers, who tend to live in older housing with low efficiency furnaces, are most in need of incentives to upgrade to high-efficiency equipment.

CEE Comment

The Department's Pr

oposed Decision increases the baseline efficiency for single-family residential furnaces from 80 to 90 percent Annual Fuel Utilization Efficiency ("AFUE"). The proposed change would only apply to the Early Replacement and Replace on Failure baselines for furnaces in single-family homes.

The baseline furnace efficiency has wide-reaching impacts on Energy Conservation and Optimization ("ECO") programming, as it determines the amount of energy savings utilities claim for specific measures and, in turn, shapes programming decisions, cost-effectiveness results, and the performance of ECO portfolios. Periodic updates to baseline efficiencies are necessary to ensure the baselines continue to reflect market conditions as accurately as possible.

CEE finds that the sources cited by the Department and additional analysis conducted by CEE suggest a 90 percent AFUE baseline is reasonable. However, CEE recognizes there are exceptions to the baseline and provides several additional recommendations to capture nuances in baseline efficiency. Namely, CEE supports using 80 percent AFUE as the measure baseline when the utility can verify that the existing efficiency is lower than 90 percent AFUE.

CEE Comment 2

After reviewing the data provided by the Wisconsin Focus on Energy study, the 2018 ECO Potential Study, and the [Home Energy Squad] dataset, CEE believes the Department's proposal to increase the TRM furnace baseline from 80 to 90 percent AFUE is reasonable.

However, in cases where the utility can verify the actual efficiency of an existing furnace, and that efficiency is lower than 90 percent, the utility could propose to use the federal minimum standard of 80 percent AFUE as the measure baseline. The replacement of any remaining furnaces with AFUEs less than 90 percent should be a priority for ECO programming moving forward, as they have the highest savings potential. Allowing utilities to use the federal minimum standard of 80 percent for these situations would more accurately capture these savings and enable utilities to continue prioritizing and offering larger customer rebates for the replacement of low efficiency, non-condensing furnaces. Careful consideration should be given to ensure the utility and the Department can accurately verify the reported efficiency of the existing furnace.

Additionally, in 2023, Wisconsin chose to keep the low-income furnace baseline at 80 percent AFUE for income qualified households after the Focus in Energy survey found a slightly lower weighted average AFUE for these households than for market rate customers. The Department could explore a similar approach for Minnesota to more accurately capture the savings of the low-income segment.

Stakeholder Considerations for Mitigating Savings Impacts

CEE recognizes that any increase to the furnace baseline efficiency would result in a reduction in each gas utility's per-unit savings across several areas of programming. To maintain historic savings levels, utilities would have to adapt their portfolios and ECO planning approach.

CEE provides several recommendations for how utilities can seek to offset some of the resulting loss in savings in the event of a 90 percent AFUE furnace baseline.

Multi-Family and Low-Income Furnace Measures

The Department's proposed baseline change does not affect the furnace baseline for multi-family households, which is proposed to remain at 80 percent AFUE for Early Replacement and Replace on Failure measures in TRM Version 5.0. Utilities should pursue additional furnace measures for multi-family properties as they would still yield the same per-unit savings as in the previous triennial.

As suggested by the results of the Wisconsin study and HES data, low-income households may be more likely to have a furnace with an AFUE less than 90 percent. Especially if utilities are allowed to use the 80 percent federal minimum as the baseline when the existing efficiency is less than 90 percent, utilities may wish to pursue furnace replacements for low-income customers more aggressively, as they would result in greater per-unit savings.

ASHP and Insulation and Air Sealing Measures

Although savings from ASHP and insulation and air sealing measures may decrease slightly with a 90 percent AFUE furnace baseline, they do not decrease as dramatically as furnace savings. Both measures would continue to produce significant savings. Utilities could explore methods for increasing participation in their ASHP and insulation and air sealing measures, such as offering larger rebates or additional rebate tiers.

Specifically for ASHPs, utilities could offer rebates that target ASHPs with lower switchover temperatures, namely cold-climate ASHPs. With dual fuel systems, the lower the switchover temperature, the more load is covered by the heat pump rather than the gas furnace back-up. ASHPs with lower switchover temperatures can therefore generate higher energy savings.

CPE Comment

The Company recommends that the proposed residential furnace baseline of 80 percent annual fuel utilization efficiency ("AFUE") remain in TRM v.5.0 and disagrees that an increase to 90 percent AFUE has a sound technical basis. The Company also believes that this proposal has not undergone the same level of technical assessment by the TRMAC as current and past measure updates in the TRM.

CPE Comment 2

Overall, CenterPoint Energy continues to support the solution Department Staff initially proposed: market research on furnaces in Minnesota in the next few years.

CenterPoint Energy recommends the furnace baseline remain at 80 percent in TRM v.5.0 and is supportive of studying this issue in the next few years to inform TRM v6.0. The proposed change to the furnace baseline is weakly supported and not in the best interests of Minnesota or utility customers, many of whom are low-to-moderate income customers that need ECO programs to support upgrading to condensing equipment and justifying purchases of high-efficiency equipment models.

FE Comment

Fresh Energy strongly supports significantly increasing the baseline furnace efficiency from the current assumption of 80% AFUE. The current baseline no longer represents typical market conditions and therefore overstates savings attributed to utility programs.

Fresh Energy has consistently advocated for shifting utility program funding away from rebates for gas furnaces—particularly inefficient models—and toward efficient electric heating technologies. We reiterated this position in our 2023 comments on utilities' 2024-2026 ECO Triennial Plans and in the ECO customer incentive prioritization stakeholder discussions in 2025, including our presentation at the May 20, 2025 meeting.

As detailed in Fresh Energy's June 20, 2025 Comments to the Department Regarding ECO Incentive Prioritization, phasing out incentives for less efficient gas furnaces is a "low-hanging fruit" of the phased transition away from ECO rebates for gas-fired appliances that have cost-effective and more efficient electric alternatives:

Regarding gas furnace incentives for retrofits, the Colorado Commission started by restricting DSM incentives for high efficiency gas-fired space heating equipment to only those customers replacing lower efficiency units for the market rate, retrofit portion of Xcel's DSM activity in Colorado. Fresh Energy recommends that the Department start by adopting a similar requirement for utilities in ECO.

Fresh Energy provides the following recommendations to the Department:

- For gas furnaces:
  - End incentives for gas furnaces in new construction beginning in 2027.
  - Increase the baseline efficiency for furnaces in existing homes from 80% AFUE to 90% AFUE or higher.
  - Limit furnace incentive offerings to high-efficiency furnaces (≥96% AFUE) when replacing furnaces rated below 90% AFUE.
  - Phase out all remaining gas furnace incentives by 2030 at the latest, to ensure that ratepayer funds are directed toward measures—such as electric heat pumps and weatherization—that are better aligned with Minnesota's greenhouse gas reduction and climate goals.

MERC Comment

MERC is also submitting Joint Utility Comments detailing concerns regarding the process and technical issues related to the proposed update to the Residential furnace baseline from 80% AFUE to 90% Annual Fuel Utilization Efficiency ("AFUE") for furnaces, insulation, ECM blower motors, and ground source heat pumps. As detailed in those Joint Utility Comments, the Draft TRM Version 5.0 proposes inconsistent application of the updated baseline across various measures—applied to some but not others—without technical support and based on a Wisconsin survey of efficiency contractors that does not provide a reasonable baseline for what consumers would be expected to install in the absence of efficiency programing in Minnesota. The proposed modifications, if applied to utility triennial ECO plans, have the potential to significantly mischaracterize savings and cost-effectiveness of measures based on selective application of survey results that may not reasonably reflect Minnesota customer baselines, and that have not been fully analyzed, vetted, or researched for application in Minnesota efficiency programs.

OTP Comment

Otter Tail Power, along with other Minnesota Utilities, filed joint comments addressing the TRM 5.0 recommendation to increase the Residential baseline from 80% Annual Fuel Utilization Efficiency (AFUE) to 90% AFUE. Those comments encompass the concerns Otter Tail Power holds not only with the recommended change in TRM 5.0, but also future implications of degradation in transparency, questions around resource standards, and the inclusiveness of the TRM stakeholders' group.

OTP Comment 2

Otter Tail Power recommends the Department retract their proposed change to the Residential Furnace Baseline from 80% AFUE to 90% AFUE as a part of TRM 5.0. Otter Tail Power supports continued discussions and research on this topic in TRM 5.1, but cannot support the currently proposed change with the information and data supplied by the Department.

Xcel Comment

We oppose changing the furnace or boiler baseline efficiency for residential equipment to 90 percent. First, we do not believe this change had the opportunity to be fully vetted and reviewed by the TRMAC as thoroughly as necessary for such a significant change in efficiency values. Second, we believe there are unintended consequences that will ultimately be difficult to rectify in the future – specifically impacting the Minnesota market—that may increase the cost of efficiency for utility customers. Finally, we are concerned that this modification to the furnace technical details appears to be driven by policy preferences rather than technical considerations.

The Company appreciates the opportunity to provide these comments to the Department regarding their proposed TRM v5.0. As discussed in these comments we recommend the following:

- Maintaining the baseline for furnace measures at 80 percent AFUE in TRM v5.0
- Maintaining the baseline for boiler measures at 80 percent AFUE in TRM v5.0

Staff Response

Staff thank commenters for their review of the proposed residential furnace update and for providing Staff with their clear positions on this proposal. Staff note stakeholder concerns regarding the later than usual introduction of this proposed change, the proposed change not being applied consistently across all affected measures within the MN TRM v5.0, the change being based on what some stakeholders believe to be questionable research, and the proposed change affecting topics outside of the measure itself.

Staff also appreciate CEE completing and providing supplementary research on this topic using data collected from the CPE and Xcel Minnesota Home Energy Squad Program. Staff appreciate CPE and Xcel approving the use of this data for this process.
Finally, Staff thank commenters who reviewed the affected measures and provided specific technical concerns for Staff to address.

B.2. MN TRM and the TRMAC Process

The Utilities Comment

Background and Timeline

Throughout the summer and early fall, TRMAC members were given the chance to review and discuss measure workpapers introduced during and in between meetings. As shown below, despite this active participation, the Draft TRM v5.0 includes proposals that were not part of the TRMAC process and did not include the Utilities input or feedback:

- On July 25, 2025, in TRMAC Meeting 3, the Department introduced three potential measure updates for TRM v5.0, including updates to baseline Annual Fuel Utilization Efficiency ("AFUE") for furnaces based on a survey of contractors participating in Wisconsin's statewide energy-efficiency program, Focus on Energy.[2] Department Staff proposed to not pursue the furnace baseline increase because they "don't believe the WI contractor survey is specific enough in Minnesota to justify this change."
- Between TRMAC Meeting 3 and TRMAC Meeting 4, Department Staff sent out a request for feedback on its proposal to not pursue the furnace baseline increase. Submitted comments from TRMAC members agreed with this approach.
- Meetings 4 and 5, the last two scheduled meetings, focused on other topics and the furnace baseline topic was not further discussed. No technical review or discussion occurred and no measure workbook or workpaper with furnace baseline changes was uploaded to the TRMAC Collaboration Site. No further opportunity to discuss the WI Focus on Energy contractor survey occurred.
- On October 9, 2025, after all scheduled meetings had taken place, TRMAC members received a redlined Draft TRM v5.0 which the Department stated it planned to file on October 20, 2025. Participants were asked to provide any informal feedback within 6 business days – by October 17, 2025.
- On October 16, one day prior to the informal feedback deadline, Department Staff notified the TRMAC there would be a delay in filing the Draft TRM v5.0. The feedback response deadline was extended to October 22 and a new TRMAC Meeting 6 was planned.
- Some of the Utilities were informed between October 21 and October 24 that the Department was moving forward on updating the Residential HVAC – Furnaces and Boilers measure baseline.
- On October 22, a Meeting 6 was scheduled for October 27, but no draft measure workpapers or workbooks were uploaded to the MN TRMAC Collaboration Site prior to the meeting.
- On October 27, during Meeting 6, the Department proposed to update the residential furnace baseline from 80% AFUE to 90% AFUE in the Draft TRM v5.0 based on a WI survey results ("Department's Furnace Baseline Proposal").[3] TRMAC members expressed their concern with both the timing and lack of support for the proposed update, and informed the Department that multiple measures use the furnace baseline (e.g., insulation and air source heat pumps ["ASHP"]) and would need to be updated. The Department agreed to look at holistic changes and provide estimates of the impacts on energy savings.
- On October 29, the Department filed Draft TRM v.5.0 with the changes to the furnace baseline for furnaces, insulation, ECM blower motors, and ground source heat pumps, but not ASHPs due to the

[2] Potential updates included removal of Central air conditioners references in the Residential HVAC - Efficient Air Conditioning System measure, increasing the deemed efficiency baseline for gas furnaces in the Residential HVAC - Furnaces and Boilers measure, and changing baselines of certain lighting measures.
[3] Annual fuel utilization efficiency ("AFUE") is a thermal efficiency measure of space-heating.

"significant amount of work required" for the update.[4] In the filing, it was noted that comments from Fresh Energy supporting changes to the furnace baseline were received on October 22.

- The Department emailed estimated changes to energy savings to TRMAC members on October 29.
- Department Staff shared Fresh Energy's comments with CenterPoint Energy at its request on October 31 and posted them on the MN TRMAC Collaboration Site.

Stakeholder Engagement

The Utilities have concerns about the Department's Furnace Baseline Proposal, particularly because it is a major decision that was adopted without technical vetting through the TRMAC. Additionally, the precedent this could set for future TRM updates and ECO regulatory matters. Minnesota statute provides the framework for development of the TRM for the purpose of providing technical assistance to utilities:[5]

> The commissioner shall establish an inventory of the most effective energy conservation programs, techniques, and technologies, and encourage all Minnesota utilities to implement them, where appropriate. The commissioner shall describe these programs in sufficient detail to provide a utility reasonable guidance concerning implementation.

The overarching purpose of the TRM is to define standards for measuring, evaluating, and reporting energy savings and therefore cost effectiveness. The Department established a TRMAC that meets prior to the filing of each updated version of the TRM. The TRMAC mission is to be a forum for stakeholders to provide ongoing technical vetting, feedback, and recommendations for the TRM. A goal behind the creation of the TRMAC is to work collaboratively and transparently through a deliberative process to evaluate potential updates and modifications to technical assumptions. This process is to ensure changes are supported by relevant technical analysis and data and to avoid any sudden changes that adversely impact utility program planning (e.g., budgeting for future triennials).[6] The TRM serves a critical function particularly for cooperative and municipal utilities that may have fewer technical support resources. The TRMAC was also set up with the assumption of not endorsing specific products or vendors.[7]

Under Minn. Stat. § 216B.241, conservation plans must be evaluated based on cost-effectiveness and the reliability of technologies, while ensuring consumers retain free choice among qualified devices, methods, and providers.[8] The TRM is intended to support this statutory framework by providing standardized methodologies for computing energy savings and cost-effectiveness, ensuring consistency and transparency in evaluation. Consistent with statute, the TRM's role is to quantify performance, not to determine market outcomes.

In Meeting 3, Department Staff stated they did not believe the WI contractor survey was applicable enough to MN to justify implementing changes based on that survey without further research. Therefore, the Utilities

[4] Staff acknowledge that the revised proposal to update the baseline for Residential Furnaces in existing applications in the MN Draft TRM v.5.0 introduced in Meeting 6 was issued later in the process than is typical. Staff also acknowledge that this Proposed Decision filing is the first time TRMAC members are able to review the specific changes to measures affected by this proposed update. Measures affected by this update are noted in Table 2.
[5] Minnesota Statute § 216B.241 subd. 1d
[6] TRM Meeting Notes, November 20, 2013.
[7] Department of Commerce. TRM Advisory Committee Meeting Presentation. Slide 4 (June 10, 2014).
[8] Minnesota Statute 216B.241, subd. 2c. Energy conservation plans are required to be evaluated on the basis of cost-effectiveness with a free choice of the device, method, material, or project constituting the energy conservation improvement.

understood that Staff would not be pursing this update. TRMAC members were encouraged to provide feedback. All comments provided in August and September agreed with Department Staff, and thus there was no further TRMAC discussion regarding the topic in meetings. The last-minute change by the Department appears to have been decided sometime after the creation of the redline draft TRM v5.0 on October 9. In the Proposed Decision, Staff acknowledges

> that the revised proposal to update the baseline for Residential Furnaces in existing applications in the MN TRM Version 5.0 introduced in Meeting 6 was issued later in the process than is typical. Staff also acknowledge that this Proposed Decision filing is the first time TRMAC members are able to review the specific changes to measures affected by this proposed update.

The Utilities Comment 2

Members of the TRMAC were unable to participate in the critical vetting of technical assumptions that ensures TRM measure updates remain transparent, accurate, and grounded in sound analysis. The Utilities strongly support a robust peer-review process and discussion of technical merits of any TRM measure change prior to decision-making. Normally, new measures and changes to measures are previewed and discussed as part of the TRMAC process during meetings and through informal feedback and comments. This proposal did not go through the typical TRMAC review and vetting processes and as a result there are notable inconsistencies and inaccuracies in the TRM that will be harmful to ECO programs supporting customers' access to high-efficiency equipment.

Beyond the impacts of the proposal, the Utilities are concerned by the potential precedent being set to bypass the established TRMAC technical review and vetting process and implement major changes without meaningful notice, opportunity to evaluate technical support, or provide feedback in an open and transparent manner.

CEE Comment

CEE recognizes that although addressing furnace baselines has been discussed in the TRM Advisory Committee ("TRMAC") since June 2025, the Department's specific proposal to increase the furnace baseline was brought to the TRMAC on October 27, 2025, two days before the final proposed TRM was filed on October 29. CEE greatly appreciates the historical efforts by the Department to make the TRM update process methodical, inclusive, and transparent to ensure widespread buy-in from stakeholders on the assumptions and methodologies used to calculate savings impacts and cost-effectiveness of ECO measures and programs. CEE encourages continued commitment to that comprehensive approach in future TRM update processes.

CPE Comment

CenterPoint Energy has significant concerns regarding the . . . TRMAC process in 2025 with regards to the proposal to increase furnace baselines of 80 percent AFUE to 90 percent in the Draft TRM v.5.0 filed in E,G999/CIP-18-694. See pg. 1-3 of Joint Comments filed on November 20, 2025, for a complete timeline of TRMAC activity.[9]

[9] See In the Matter of Technical Reference Manual Version 5.0 Docket No. E,G-999/CIP-18-694. Joint Comments. Pg 1-3. (November 20, 2025).

TRMAC members who submitted informal comments shared CenterPoint Energy's concerns, and there was no additional TRMAC discussion on the topic during the regularly scheduled TRMAC meetings. Adding to the uncertainty in the process, a redlined proposal draft was shared with the TRMAC without furnace baseline changes eleven days prior to the initial scheduled filing date. This abrupt change resulted in the postponement of the initial Draft TRM v.5.0 filing and the scheduling of a previously unplanned TRMAC Meeting 6 to inform the TRMAC of the new proposal. The Company's understanding is that only some of the TRMAC members were informed as to the subject of the meeting beforehand. During the meeting, the Company's understanding is that the Staff's recommendation to further study the issue was rejected in favor of the confusing justifications supplied by the Department. The Company believes that this approach misunderstands the purpose of the TRM as well as the mission and goals of the TRMAC as laid out by the Department over a decade ago.

CPE Comment 2

As mentioned in *Joint Comments*, CenterPoint Energy is concerned about such a major decision occurring without technical vetting of the proposal through the TRMAC and the precedent this sets for future ECO regulatory matters. Minnesota statute provides the framework for development of the TRM for the purposes of providing technical assistance to utilities:[10]

> The commissioner shall establish an inventory of the most effective energy conservation programs, techniques, and technologies, and encourage all Minnesota utilities to implement them, where appropriate. The commissioner shall describe these programs in sufficient detail to provide a utility reasonable guidance concerning implementation.

The purpose of the TRM is to provide a standard set of methodologies and inputs that can assist ECO program development. The TRMAC convenes each year to peer-review and vet methods, inputs, and calculations that utilities can use in their programs. The TRM is not an exclusive set of measures for ECO programs:[11]

> "to put forth standard methodologies and inputs for calculating the savings impacts and cost-effectiveness of Energy Conservation and Optimization (ECO) Programs, formerly Conservation Improvement Programs (CIP), in Minnesota."

As mentioned in the Purpose and Use of Manual section of the Draft TRM v.5.0, utilities are encouraged to apply TRM measure designs. Utilities may also propose, with justification, program designs and methods that result in more accurate savings estimations. However, the TRM is particularly important for utilities that lack the resources and technical expertise to develop energy savings algorithms. As stated in existing documentation, the Company believes that TRMAC discussions on revising the TRM should be focused on pre-approving calculation methodologies.

CenterPoint Energy continues to support a dual fuel future and the air source heat pump market. This is showcased by the Company, as the largest gas-only utility in Minnesota, issuing the third highest number of utility ASHP rebates issued in 2024 for the state, with only Xcel Energy and Great River Energy issuing more ASHP rebates.[12] CenterPoint Energy continues to support the fuel- and equipment-neutral standard approach the TRM process has historically valued.

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[10] Minnesota Statute 216B.241 subd. 1d.

[11] Technical Reference Manual for Energy Conservation Improvement Programs. Version 5.0 Proposed. Purpose and Use of Manual. Pg. xi.

[12] 2024 Residential ASHP Market Report. Efficient Technology Accelerator. Pg. 7-8 (November 14, 2025).

CenterPoint Energy is concerned several proposals in the TRMAC meetings and the Draft TRM v.5.0 have the appearance of ECO program policy changes justified mainly by preferences for customers to install air source heat pumps above other sources of heating and cooling, without strongly considering energy savings or cost-effectiveness for customers.[13] This includes:

- The now rescinded Department proposal to end incentives within ECO Programs for above-code central air conditioning units.
- An abrupt shift to propose changes to the residential furnace baseline efficiency without a substantive TRMAC process, contrasted with the pause until MN TRM v5.1 to update the ASHP measure with the same current baseline of 80 percent AFUE as residential furnaces.
- The Draft TRM v.5.0 including an increased furnace baseline from 80 percent AFUE to 90 percent for 5 of the 8 measures this change should pertain to. ASHPs have not been included.

CenterPoint Energy hopes that during regulatory discussion of revisions to the residential furnace baseline in stakeholder comments that there will be significant technical review, vetting, and statistical analysis of materials through the commenting process. Due to the uncertainty in this proposal, CenterPoint Energy seeks clarification from the Department in their reply comments on:

- What does it view the purpose of the TRMAC and the TRM to be? Should existing documents and frameworks be updated?
  - Does the Department now view the TRM as acting as measure eligibility screening for ECO program design rather than a pre-approval process?
- Does the Department feel there is a technical justification for applying baselines inconsistently in the TRM? Does this apply to triennial plan filings as well?
- What are the standards or criteria the Department believes are important for deciding when to by-pass TRMAC engagement for a TRM change?
- Does the Department believe it is setting precedents if it adopts the standard of evidence for a change to the furnace baseline?
  - Do these precedents need to be applied consistently to other measures in future versions of the TRM? Why or why not?
- Given the policy focus of parts of 2025's TRMAC, does the Department have new guidance or policy utilities should consider in their triennial planning process as resulting from decisions on the TRM? It would be important for utilities to know as soon as possible for consideration in triennial planning.

OTP Comment

[T]he Company struggles understanding the Department declaring the Wisconsin Contractor Study not being sufficiently representative of Minnesota at the end of July and then three months later using the same study as a primary resource to support the increase in baseline. The topic that once required future research was then

[13] Please note that CenterPoint Energy could potentially support such a policy preference outside the TRMAC and TRM process if based on consideration of the relative energy savings or cost-effectiveness of the measures. In fact, this approach aligns with the Company's support of the ECO statutory framework
passed in 2021 and revised in 2024

deemed to be complete in October.[14] Otter Tail Power additionally struggles with the lack of detailed information on the impact of the last-minute change. The Department highlighted the change on two PowerPoint slides with zero implications of how the change would impact measures or their associated savings.[15] This information was only provided to utilities after Otter Tail Power made a request to the Department during the October 27th meeting when the Company was first informed of this proposed change.[16] These actions, or lack thereof, by the Department support that the proposal was made in haste and should receive further evaluation.

The evaluation and discussions around changing the baseline as a part of the TRM is critical and should not only be robust but also include all stakeholders.

Xcel Comment

[Xcel] finds the process through which Department Staff engages stakeholders and thoroughly reviews feedback to be an exemplary process as it allows stakeholders to provide feedback and generally reach a consensus decision. For example, the Company provided several informal comments as part of this process and appreciated the full review of analysis by the TRMAC regarding efficient air conditioning equipment leading to the ultimate decision not to adjust the measure as it is technically viable today. In contrast, the addition of last-minute changes to TRM v5.0 deviates from this exemplary process, was not fully vetted by the TRMAC and results in technical deviations and potential errors within the proposed TRM v5.0.

Xcel Comment 2

As noted in the Utility Joint Comments, the TRMAC process has established guidelines and requirements for changes to the TRM – these processes were not followed for the change to 90 percent AFUE for furnaces or boilers and this adjustment was not fully vetted. In fact, during the TRMAC process, we agreed with Department Staff not to include this change until further information was identified and reviewed back in July. The abrupt change in methodology, after parties had agreed with Department Staff, is a significant deviation from the process resulting in, what we believe, to be an incomplete TRM.

Xcel Comment 3

Finally, as indicated by Fresh Energy's informal comments, submitted to the MN TRMAC Collaboration Site on October 31, this change seems to be driven by policy factors rather than technical impact. Fresh Energy's advocacy for this change is "for shifting utility program funding away from rebates for gas furnaces—particularly inefficient models—and towards efficient electric heating technologies."[17] It is unclear what "inefficient models" Fresh Energy refers to, since to the Company's knowledge only high-efficiency furnaces are incentivized through ECO. Nor is Fresh Energy's reference to a determination by the Colorado Commission particularly convincing. Those determinations were based primarily on the Commission's own assumptions and expectations, rather than any empirical assessment of the Colorado HVAC market. The Commission's *Decision* ran contrary to recommendations made by the Southwest Energy Efficiency Project (SWEEP) in the proceeding, who had argued

[14] Minnesota TRM 5.0 TRM Update 7/25/2025 slide fifteen.
[15] Minnesota TRM 5.0 TRM Update 10/27/2025 slides five and six.
[16] The Department ultimately indicated that Ground Source Heat Pumps would experience a decrease of 86% in savings, Furnaces and Boilers would experience 8.49% decrease in savings and in contrast Air Source Heat Pumps, Low E Storm Windows and Cellular Shade Window Coverings would not be impacted by the 5.0 change.
[17] Fresh Energy Comments of October 22, 2025, p. 1.

that "[A] lot of very inefficient furnaces could be installed … without continued support by the Company. … [I]t is too early to end incentives for gas furnaces."[18]

Staff Response

Staff appreciate these comments. Staff agree with commenters that the process at the end of the MN TRM v5.0 non-regulatory portion was a departure from prior TRMAC practices. This departure, however, was well within the broad authority granted to the Department to develop and maintain the TRM as outlined in Minnesota Statutes 216B.241 subdivision 1d. Staff believe that this was an exceptional situation and will endeavor to retain and maintain a more predictable TRMAC process in future years.

Staff are proud of the TRMAC process and appreciate the incredible work of stakeholder representatives who provide valuable time and expertise. Staff know that TRMAC members are expected to review TRM measure updates in detail and in doing so need to be rooted in the performance of over 200 different measures including, in some instances, how the baseline equipment performs differently, or is a different technology entirely, than the efficient equipment. This is not a small responsibility and Staff appreciate the many TRMAC Members who are actively engaged in this detailed engineering review process.

B.3. Inconsistent Application in the MN TRM v5.0

The Utilities Comment

Bypassing the TRMAC stakeholder feedback and technical review processes has resulted in a draft TRM that would yield inconsistent outcomes and other inconsistencies for several other measures. In Meeting 6, after TRMAC members pointed out how a residential furnace baseline change affects several TRM measures, the Department updated other TRM measures including Ground Source Heat Pumps, Insulation and Air Sealing, and ECM Blower Motors. The Department notably did not update ASHP, Low E storm windows, and Cellular Shade Window Coverings measures despite acknowledging updates would be needed for consistency, based the Department's own conclusion that it would require a significant amount of work to update the modeled methodology. The result is inconsistent application of the Department's Furnace Baseline Proposal across various measures—applied to some but not others—without any technical support, with the potential consequence of mischaracterizing savings and cost effectiveness of certain measures.

The Utilities Comment 2

The Utilities are also concerned by the precedent being set in applying updated assumptions inconsistently across measures without technical support, which undermines the important role of the TRM in quantifying performance consistently and transparently—not determining market outcomes.

CEE Comment

The Department also states that the new baseline will apply to Residential HVAC Air Source Heat Pump Systems (ASHP), Residential Envelope Low-E Storm Windows, and Residential Envelope Cellular Shade Window Coverings in the next version of the TRM, Version 5.1.

[18] Hearing Exhibit 1000, Answer Testimony of Justin Brandt, Proceeding No. 22A-0309EG, 39:14-16.

CEE recommends that, if possible, all measures in the Minnesota TRM that use the furnace baseline as an input for savings calculations be updated at the same time to ensure consistent assumptions are used throughout utility portfolios, including the measures above scheduled for an update in Version 5.1.

OTP Comment

Otter Tail Power disagrees with the stance taken by the Department that all measures impacted by the proposed baseline change do not need to be updated at the same time. The TRM should remain a complete, inclusive, and up to date guide for all utilities. Having mixed assumptions between measures is confusing and like in this example, puts gas and electric utilities on an unlevel playing field, by dramatically impacting the gas utilities but not impacting electric utilities efficient fuel switching initiatives. The Company holds the opinion that the increase from 80% to 90% was done prematurely, which is supported by the statement in the Department's Proposed Decision explaining why the 90% AFUE was not also used for Residential Air Source Heat Pump Systems:

> Not updated in the Proposed Decision on the MN TRM v5.0. Department Staff Propose updating this measure with the 90% AFUE Baseline for Residential Furnaces in the MN TRM v5.1 due to the significant amount of work required of update this modeled methodology.

Had the TRM stakeholders been given the opportunity to properly vet, research, and agree on the change, the Department would have had ample time to tackle the significant amount of work to fully implement the ramifications of changing the baseline.

Xcel Comment

It is unclear to the Company as to why certain alterations to technologies would be made in the TRM but not cascade through all other impacted measures. This is not typical to a TRAMC process for which all details are reviewed in the context of others. If timing is an issue for the complete review of the TRM specific to furnace baselines, we believe that none of the alterations should be made so that it can be consistently reviewed and cascade throughout the TRM – this provides consistency and reduces the opportunity for potential errors. Moreover, it is possible that this analysis may show insight into other changes being made. The inconsistent approach to updating heating baselines appears to indicate a desire to adjust baselines for only certain measures, specifically natural gas appliances, but not their electric counterparts which should logically use the same baseline assumptions.

Staff Response

Staff acknowledge that the proposed residential furnace update should be applied consistently throughout the MN TRM v5.0. Staff are in general support of a consistent application of updates within all TRM iterations and agree that it is less than ideal that the proposed version of the MN TRM v5.0 did not include this update within three of the eight affected measures. While not ideal, Staff are less concerned about the Residential Envelope – Low-E Storm Windows and Residential Envelope – Cellular Shade Window Coverings Measures not incorporating this update due to low or no participation in IOU ECO Plans but plan to modify these measures in subsequent TRM versions. Staff do, however, have significant concerns regarding the Residential HVAC – Air Source Heat Pump Systems (ASHP) Measure not including this update and are working towards a solution for incorporation into the final version of the TRM v5.0.

B.4. Feedback on Staff's Proposed Justification

The Utilities Comment

The Utilities also takes issue with basing the decision to update the baseline for Residential Furnaces in some measures in Draft TRM v5.0 on the WI Focus on Energy survey.[19] Staff's initial recommendation was to postpone consideration of an updated baseline until after additional Minnesota specific baseline research was completed was communicated to the TRMAC in Meeting 3.[20] As context, the survey asked contractors participating in Wisconsin's statewide energy efficiency program, Focus on Energy, to report on the lowest efficiency option they had offered to customers.

The Utilities have misgivings about the technical validity of basing Minnesota TRM assumptions on recalled estimates of furnace minimum AFUE offered by Wisconsin contractors participating in the state's energy efficiency program as an accurate representation of current Minnesota markets or the effects of ECO programs.[21]

The Utilities believe that the use of this type of information for TRM assumptions is unprecedented and not a reasonable basis for evaluating ECO program energy savings. Baselines in the TRM should reflect what customers would install in the absence of the ECO program. This ensures that the savings calculated under the TRM methodologies accurately reflects the savings that are attributable to ECO. Consistent with historic practice used for the Minnesota TRM, state energy code and federal equipment codes are generally the most appropriate basis for setting measure baselines and determining the energy savings effects of the ECO Program.[22] The state of the residential furnace market has not been well studied in Minnesota or evaluated in the TRMAC process.

As discussed above, the WI study does not provide a reasonable baseline for what consumers would be expected to install in the absence of efficiency programing because the survey was of contractors participating in Wisconsin's efficiency program. As a result, their product offerings and recommendations reflect the efficiency program's incentives, not what a consumer would be likely to install in the absence of efficiency program offerings. Contractors participating in the efficiency program are more likely to stock and recommend higher efficiency furnaces because of rebates tied to the efficiency program and their responses likely do not reflect the broader market of contractors or what at typical consumer would install. Efficiency programs are often designed to influence contractors to focus on offering high-efficiency products as minimum offerings through incentive programs. Therefore, using contractor behavior as influenced by energy efficiency programs does not reflect a reasonable baseline for purposes of determining savings associated with ECO offerings.

The Utilities believe state energy code and federal equipment codes remain the most appropriate basis for setting measure baselines and determining energy savings effects of ECO Program. This approach reflects

[19] Draft TRM v.5.0 at page 107 ("Analysis of an HVAC contractor survey issued in 2023 by WI Focus On Energy and published in the WI TRM v2024 supported an increased efficiency baseline to 90% for non-income qualified single family residential customers (applicable to all baseline scenarios including early replacement.").
[20] TRMAC Committee 5.0 – Meeting 6. Recording available at https://mn.gov/commerce/energy/conserving-energy/eco/technical-reference-manual/ (October 27, 2025)
[21] Also, this approach is not connected to a customer's replaced furnace and actual energy savings.
[22] The Utilities also acknowledge that another reasonable standard is market availability, i.e., if the low efficiency equipment is available and accessible by customers, but 80% AFUE furnaces are readily available in Minnesota.

historic practice used to build the TRM and a change in standards has not been identified or consistently applied with respect to the proposed residential furnace baseline updates.

The Department also noted as a consideration for its Furnace Baseline Proposal the updated federal standards for residential gas furnaces, requiring all new units manufactured after December 18, 2028, to meet a minimum of 95% AFUE.[23] The Utilities fail to see how forthcoming federal standards—requiring manufacturers to comply with higher minimum efficiencies for products manufactured or imported on or after December 18, 2028—are relevant to the Minnesota market during the 2027-2029 timeframe. 80% AFUE furnaces will remain on the market after those changes in manufacturing requirements are implemented. In the past, when federal standards have been modified, for example lighting and boilers, the Minnesota baselines have been updated following a 1 to 2 year transition period after the federal change went into effect, recognizing the amount of time it takes for existing inventory to be sold and installed before the newly manufactured inventory becomes the new standard.[24] Unless the federal standard timeline changes, this is an issue to be addressed in TRM v.6.0.

The Department also mentioned the ECO new construction furnace baseline being 90% AFUE as a consideration in its decision-making.[25] This supports the Utilities' perspective that codes and standards should be used as the basis for establishing baseline efficiency. Minnesota state residential codes effectively require condensing furnaces to meet venting requirements and therefore an 80% AFUE furnace baseline for new construction would not be appropriate.[26] Due to this code requirement, the TRM furnace baseline was updated to 90% AFUE for new construction, which was reasonably the minimum that could be installed. However, that code requirement is not applicable in the case of retrofits and therefore, the same rationale does not apply in the case of retrofit applications.

Finally, the Department references to Maine and Vermont, two states with very different policy frameworks for energy efficiency programs as compared to Minnesota, in support of the proposed change.[27] Other states such as Illinois and Michigan are both more similar in climate and policy framework and are using or proposing to use 80% AFUE as their residential furnace baselines.[28,29]

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[23] TRMAC Committee 5.0 – Meeting 6. Slide 6 of 9. Presentation and Recording available at https://mn.gov/commerce/energy/conserving-energy/eco/technical-reference-manual/ (October 27, 2025).
[24] See In the Matter of CenterPoint Energy's 2021-2023 Natural Gas Conservation Improvement Program Triennial Plan, Docket No. G-008/CIP-20-478, Request to Modify CenterPoint Energy's Conservation Improvement Programs. (Sep. 1, 2021).
[25] TRMAC 5.0 – Meeting 6. Slide 6 of 9. Presentation and Recording available at https://mn.gov/commerce/energy/conserving-energy/eco/technical-reference-manual/ (October 27,2025).
[26] 2024 Minnesota Energy Code with ANSI/ASHRAE/IES Standard 90.1-2019. Section 6.8.1 Minimum Efficiency Requirement Listed Equipment—Standard Rating and Operating Conditions Effective January 5, 2024. https://codes.iccsafe.org/content/MNEC2024P1/6-heating-ventilating-and-airconditioning#MNEC2024P1_Ch06_Sec6.8
[27] TRMAC 5.0 – Meeting 6. Slide 6 of 9. Recording and Presentation available at https://mn.gov/commerce/energy/conserving-energy/eco/technical-reference-manual/ (October 27, 2025)
[28] 2026 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 14.0 Volume 3: Residential Measures (September 19, 2025) Pg 182 of 575.
[29] The Michigan Energy Measures database (MEMD) https://www.michigan.gov/en/mpsc/consumer/Energy-Optimization/michigan-energy-measures-database (retrieved on November 6, 2025).

CEE Comment

In the proposed TRM Version 5.0, the Department provides the following justification for increasing the baseline furnace efficiency to 90 percent AFUE:

> In 2023, the US DOE issued amended standards with 95% AFUE baseline to take effect December 2028. Analysis of an HVAC contractor survey issued in 2023 by WI Focus On Energy and published in the WI TRM v2024 supported an increased efficiency baseline to 90% for non-income qualified single family residential customers (applicable to all baseline scenarios including early replacement). Based on this research and signals toward upward movement in code baseline in the coming years, the baseline efficiency for furnaces was modified to 90% in v5.0, applicable to all baseline scenarios.

The Wisconsin study cited by the Department was based on 2023 Focus in Energy HVAC contractor surveys exploring the average furnace efficiency offerings in the state.[30] Contractors were asked to estimate the lowest AFUE offered to customers in different types of homes and how often they replace noncondensing furnaces to confirm the reasonableness of their responses.

The results of the 2023 survey are shown in Figure 1 and were used in Wisconsin to establish new furnace baselines. For single-family homes, the survey found that the average of the lowest AFUE contractors reported offering to customers was 90.6 percent for market rate customers and 88.3 percent for low-income customers. In response, Focus on Energy set the market rate furnace baseline at 90.6 percent AFUE and the low-income furnace baseline at 88.3 percent AFUE.[31]

Figure 1: Focus in Energy 2023 Survey Results[32]

Home Type	Total Estimated # Furnaces Installed	Weighted Average Lowest AFUE (Proposed Baseline)
Single Family Low/Limited Income	1,535	88.3%
Single Family Standard Income	11,288	90.6%
Multifamily Low/Limited Income	2,261	80.7%
Multifamily Standard Income	3,316	81.8%

[30] Heating and Cooling Program: Furnace Baseline Findings and Contractor Survey." Presentation by Cadmus and Focus on Energy. November 29, 2023.
[31] Staff updated the values in this paragraph and within Figure 1 to align with the correction to CEE's original comments https://efiling.web.commerce.state.mn.us/documents/%7BB052A89A-0000-C216-B63D-84F32DD26E1E%7D/download?contentSequence=0&rowIndex=4

Although the study focuses on Wisconsin rather than Minnesota, the two states share key characteristics that may make the study more applicable in Minnesota. Namely, both states have cold climates and aggressive, long-running efficiency programs.

CEE Comment 2

Anticipated Changes to the Federal Minimum Furnace Efficiency

[T]he U.S. Court of Appeals recently upheld a DOE rule that will increase the federal minimum efficiency for gas furnaces to 95 percent AFUE, set to go into effect on December 18, 2028.[33] Once the new federal minimum is implemented, new gas furnaces manufactured in or imported to the United States will be required to have an efficiency of at least 95 percent AFUE.

CPE Comment

Furnace Baseline Updates

The Department presented four justifications for the proposal to update the furnace baseline from 80 percent AFUE to 90 percent AFUE in several measures in the Draft TRM v.5.0.

The first justification is the Wisconsin ("WI") Contractor Survey first mentioned to the TRMAC group in Meeting 3 in July 2025. At the time, the Department discussed the findings of the WI Survey with the TRMAC and allowed committee members several weeks to provide feedback on the survey. Department Staff concluded that the WI contractor survey was not relevant enough to Minnesota to justify a change in furnace baseline and stated that a change would not be pursued. The Department also noted that this was a potential area of research that needed to be explored in the next few years. Several commenters, including CenterPoint Energy, reviewed the survey findings and agreed with this recommendation in informal comments. With no TRMAC member supporting a change in furnace baseline, no new proposal regarding furnace baselines was discussed in Meeting 4 or Meeting 5.

Much of the remainder of the TRMAC meeting discussion was spent discussing whether to remove high-efficiency air conditioners ("AC") with the proposal to end incentives for the measure in ECO Programs. This proposal was ultimately not implemented.

WI's statewide energy efficiency program, Focus on Energy, updated furnace baseline efficiencies for market rate single-family homes from 92.8 percent AFUE to 90.6 percent and raised furnace baseline efficiencies from 80 percent to 88.3 percent for income eligible applications. The change was based on a survey of heating, ventilation, and air conditioning ("HVAC") contractors in 2023 where contractors estimated the lowest efficiency option offered to customers.[34] 94 percent of the HVAC contractors surveyed were in Focus on Energy's closed network of contractors participating in energy efficiency programs.[35]

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[33] "Energy Conservation Program: Energy Conservation Standards for Consumer Furnaces; Final rule." Energy Efficiency and Renewable Energy Office. December 18, 2023. https://www.regulations.gov/document/EERE-2014-BT-STD-0031-4107
[34] Wisconsin Focus on Energy 2025 Technical Reference Manual, Cadmus (January 29, 2025). Pg. 734 (Revision History Version Number 16 12/2023 – Updated AFUE base with latest furnace baseline and contractor survey results).
[35] Wisconsin Focus on Energy Calendar Year 2023 Evaluation Report – Volume III (May 17, 2024). Appendix J. Detailed Survey and Interview Findings. Pg. J-2.

CenterPoint Energy has concerns with basing energy savings algorithms in the TRM on the lowest efficiency option offered by trade allies. Specifically, the Company has concerns about the technical validity of basing Minnesota TRM assumptions on "recalled" estimates of furnace minimum AFUE offered by Wisconsin contractors as an accurate representation of current Minnesota markets or the effects of ECO programs.[36] This leads to a bias in survey responses as only active energy efficiency participants are being considered instead of the full WI market. The survey results also disregard that in Minnesota utility energy efficiency programs are a main reason why trade allies may not stock or install lower efficiency furnaces. The survey also does not provide data on the furnaces replaced by customers. Without the replacement information, the survey is also unable to provide a way to calculated actual energy savings for customers.

As stated in Joint Comments, the Company believes that ECO should continue to encourage ECO programs to support customers to install high-efficiency options as the norm or standard in the market.[37]

The Department noted as additional considerations to justify the increase in furnace baseline: [38]

- A planned increase of federal standards to 95 percent AFUE in December 2028.
- The current TRM new construction furnace baseline being 90 percent AFUE.
- Other states like Maine and Vermont removing or not having furnaces as a rebated measure.

As highlighted in Joint Comments:[39]

- New equipment standards do not immediately remove equipment from the market. As Minnesota energy efficiency programs have done in the past when federal standards have changed, a one-year transition period for measures, such as boilers, has been used and approved by the Department, in acknowledgment that the lower efficiency measure is still available for installation.[40]
- Minnesota state residential codes effectively require condensing furnaces to meet venting requirements and therefore an 80 percent AFUE furnace baseline would not be appropriate.[41] The TRM has been developed with codes and standards in mind for baseline efficiency.
- Other states with more similar energy efficiency policy-frameworks, such as Illinois and Michigan, are using or proposing to use 80 percent AFUE as the baseline in their technical reference manuals.[42,43]

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[36] Also, this approach is not connected to customer furnace replacement and actual energy savings.
[37] See In the Matter of Technical Reference Manual Version 5.0 Docket No. E,G-999/CIP-18-694. Joint Comments. (November 20, 2025).
[38] Technical Reference Manual Advisory Committee 5.0 – Meeting 6. Slide 6 of 9. Presentation and Recording available at https://mn.gov/commerce/energy/conserving-energy/eco/technical-referencemanual/ (October 27, 2025).
[39] See In the Matter of Technical Reference Manual Version 5.0 Docket No. E,G-999/CIP-18-694. Joint Comments. Pg. 5-7. (November 20, 2025).
[40] See In the Matter of CenterPoint Energy's 2021-2023 Natural Gas Conservation Improvement Program Triennial Plan, Docket No. G-008/CIP-20-478, Request to Modify CenterPoint Energy's Conservation Improvement Programs. (Sep. 1, 2021).
[41] 2024 Minnesota Energy Code with ANSI/ASHRAE/IES Standard 90.1-2019. Section 6.8.1 Minimum Efficiency Requirement Listed Equipment—Standard Rating and Operating Conditions Effective January 5, 2024. https://codes.iccsafe.org/content/MNEC2024P1/6-heating-ventilating-and-airconditioning# MNEC2024P1_Ch06_Sec6.8.
[42] 2026 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 14.0 Volume 3: Residential Measures (September 19, 2025) Page 182 of 575.
[43] The Michigan Energy Measures database (MEMD) https://www.michigan.gov/en/mpsc/consumer/Energy Optimization/michigan-energy-measures-database (retrieved on November 6, 2025).

These states are not appropriate comparison points for Minnesota. CenterPoint Energy believes it is notable that the Department cited Maine and Vermont's models for Minnesota even though they have very different policy frameworks for energy efficiency programs as compared to Minnesota. The Company also notes that one major concern driving electrification in these states is the desire to reduce the use of delivered fuels. In 2023, about 66.3 percent of homes in Maine were heated with heating oil or propane and about 8.4 percent with natural gas.[44] In 2023, about 56.1 percent of homes in Vermont were heated with fuel oil or propane and 17.2 percent heated with natural gas.[45]

The lack of available furnace rebates in Maine and Vermont was mentioned as a supporting reason to revise the Minnesota TRM. This is an interesting justification in the context of the TRM. The purpose of the TRM is primarily about technical assumptions for claiming energy savings and not directly around program design and policy around utility rebate offerings.[46] The Company notes that Vermont has a Clean Heat Standard focusing on electrification and decarbonization and Maine's requirements for minimum heat pump installations, neither of which are relevant policy frameworks to look to for ECO programs.[47,48]

CenterPoint Energy believes state energy code and federal equipment codes remain the most appropriate basis for setting measure baselines and determining energy savings effects of ECO Programs.[49] This approach reflects historic practice used to build the TRM and a change in standards has not been articulated by the Department and applied consistently to the TRM. The Company does not support arbitrary increases in the baselines of single TRM measures based on market practice as influenced by energy efficiency programs at least when low efficiency products are readily available to customers.

The Minnesota Furnace Market

CenterPoint Energy continues to support a new market study for the whole state of Minnesota. However, CenterPoint Energy does agree that it is important for utilities and other stakeholders to understand the conditions of the HVAC market. Understanding the state of the furnace market, such as the products available and installed by customers, provides valuable information for ECO program design as well as information on current ECO programs. The Company spent time looking for data and information on the Minnesota furnace market to provide in these Comments with limited results.

First, the Center for Energy and the Environment is expected to include in their comments in this docket, data from participants in CenterPoint Energy's and Xcel Energy's Home Energy Squad® program. This is likely the most current information on furnaces installed in homes, but it does not say anything about furnace availability and installation.[50] Also, this data is not a fully randomized survey. It is instead based on active energy efficiency

[44] Heating Fuel Source By State. https://northeastgas.org/event-details/Heating-Fuel-Source-By-State.
[45] Heating Fuel Source By State. https://northeastgas.org/event-details/Heating-Fuel-Source-By-State.
[46] During Meeting 6, TRMAC members had to correct the Department regarding the status of Maine's energy efficiency programs by pointing out that certain Maine gas utilities in fact still offer natural gas furnace rebates. Summit Natural Gas Maine Rebates. https://summitnaturalgasmaine.com/rebates (Retrieved on November 17, 2025).
[47] Clean Heat Standard | Public Utility Commission. https://puc.vermont.gov/clean-heat-standard
[48] https://www.maine.gov/energy/initiatives/energy-efficiency.
[49] CenterPoint Energy also acknowledge that another reasonable standard is if low-efficiency equipment is available and accessible by customers. According to contractors 80% AFUE furnaces are readily available in Minnesota.
[50] As context, CenterPoint Energy's market-rate rebate program rebated over 16,000 furnaces in 2024 as compared to the nearly 22,000 HES visits from 2020-2025.

program participants who requested energy audits and is limited to the service areas of CenterPoint Energy and Xcel Energy. The data set is probably most representative of the Twin Cities metro area based on 67 percent of the visits occurring in the Twin Cities (not the full metro), but the data is likely less representative of greater Minnesota. The State of the State's Housing 2024 report analyzed housing trends across 7 Minnesota regions. Several regions of greater Minnesota include a higher proportion of houses built before 1970 compared to the Twin Cities region. A higher amount of older housing stock would correspond with a higher market share of non-condensing furnaces.

CenterPoint Energy found a few studies and solicited information from its trade ally network that, while limited in various ways, show that the furnace market in MN and WI to be quite different. Nationwide market share data by state and region show WI to be an outlier in terms of gas furnace market share at each AFUE.[51] Based on this summary of shipment data from 2013 through 2020, 80 percent AFUE furnaces have 7 percent market share in WI while they have 19 percent market share in Minnesota. Unfortunately, this data includes all furnaces, including those installed in new construction.[52] This data set does not represent the market for retrofitting furnaces. Unfortunately, his resource is out of date with regards to market shifts related to changes in policy and the expiring tax credits as well as inflation in equipment costs. The Company is not convinced that this resource is an accurate depiction of the current furnace market. For example, in talking to its trade ally network in preparation for these Comments the Company heard anecdotally from contractors that roughly a third of homes they serviced have had 80 percent AFUE furnaces installed.

A Conservation Applied Research and Development ("CARD") report from 2019 that was an outcome of the Statewide DSM Potential study, presented statewide furnace sales data in Minnesota.[53] About 20 percent of furnaces have been found to have an AFUE rating of less than 90 percent. The market share varies by region in the state with the Twin Cities regional market share resulting in the most sales for less than 90 AFUE furnaces.[54] The CARD Potential Study report shows that over 18,000 furnaces with an AFUE rating less than 90 are sold in Minnesota each year. Unfortunately, this data also includes all furnaces, including those used in new construction. Also, this data is not more recent than the resource the Company found. CenterPoint Energy explored a bit further into the reasons for Wisconsin differing from other states regionally. CenterPoint Energy deduced from looking at housing data on housing age that many residential customers in Minnesota may not have the ability to upgrade to a condensing furnace without costly infrastructure upgrades. For example, according to the State of the State's Housing 2024 report, 39 percent of houses in the Twin Cities region were built before 1970 and would have had non-condensing furnaces originally installed.[55] It appears that WI successfully transformed the market for high-efficiency furnaces in the state through utility, contractor, and stakeholder collaboration beginning as far back as the 1980s and through the 90s. This unprecedented long term effort has resulted in a WI furnace market that is unlike other states in the Midwest.25

CenterPoint Energy does not believe that the effects of Minnesota's ECO programs are captured by using market data to set furnace baselines, but it appears that it is well documented that WI's market is not the same as Minnesota's. The Company also notes the limitations of the resources above for understanding the current

[51] See ENERGY STAR Program - Version 5.0 Furnace Specification. American Gas Association Comments. Attachment A (May 16, 2024).
[52] As stated above, in new construction a 90 percent AFUE or higher furnace is needed to meet code requirements.
[53] This study was also noted by Fresh Energy in their informal comments.
[54] Minnesota Energy Efficiency Potential Study: 2020-2029. Appendix M: Minnesota HVAC Sales Data. Pg. 7. March 27, 2019.
[55] State of the State's Housing 2024. Minnesota Housing Partnership. Pg. 28.

furnace market and ECO program design for the 2027-2029 Triennial Plan. Though the Company would agree that the HES data would be the most useful for that purpose as it provides current information on installed furnaces in customers' homes.

Xcel Comment

The TRM should focus on technical details. However, the survey results of contractors participating in Focus on Energy programs in Wisconsin does not provide a sufficient basis for the proposed technical modification.

Staff Response

Staff appreciate commenters reviewing and outlining their concerns with the Department's justification behind the proposed residential furnace update. Staff continue to believe, however, that the totality of information regarding the furnace market provides adequate justification for the proposed baseline increase. While Staff agree that federal equipment standards or state energy code provide the most effective mechanisms from which to determine efficiency baselines, the current federal standard for furnaces was last updated in 2007. When the federal government fails to update equipment standards in a timely manner, it is up to state regulators to determine a baseline reflecting current market conditions. The Wisconsin study, the 2018 Minnesota Potential Study, and the analysis of Home Energy Squad data conducted by CEE all point toward a furnace market that has been transformed, in no small part by the incredible efforts of Minnesota's natural gas utilities.

Staff also note that on November 4, 2025, the DC Circuit ruled in favor[56] of upholding a manufacturing and import based standard of 95% AFUE on non-weatherized gas furnaces and mobile home gas furnaces with an implementation date of December 18, 2028[57].

B.5. Supplementary Research

CEE Comment

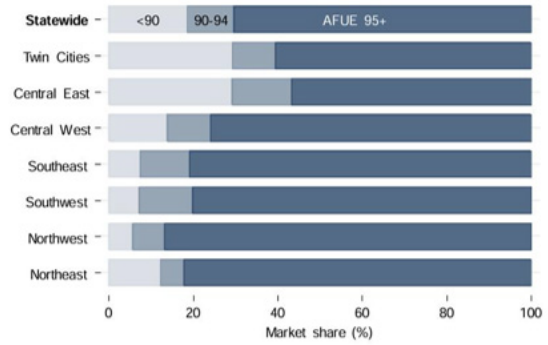
2018 ECO Potential Study

The 2018 ECO Potential Study found that less than 20 percent of furnaces sold in Minnesota between 2013 and 2016 had an AFUE less than 90 percent.

[56] American Gas Association, Et Al., Petitioners v. United States Department Of Energy and Chris Wright, Secretary, U.S. Department Of Energy, No. 22-1030, (District of Columbia Circuit November 4, 2025). Available at https://appliance-standards.org/sites/default/files/2025-11/22-1030-2143684.pdf.

[57] Energy Conservation Program: Energy Conservation Standards for Consumer Furnaces. Federal Register. (2023). Available at https://www.federalregister.gov/documents/2023/12/18/2023-25514/energy-conservation-program-energy-conservation-standards-for-consumer-furnaces.

Figure 2: MN Statewide and Regional Furnace Market Share by AFUE Category (2013-2016)



Source: 2020-2029 Energy Efficiency Potential Study, Appendix M

The Potential Study findings indicate that, roughly ten years ago, the majority of furnaces sold in Minnesota had an AFUE greater than or equal to 95 percent AFUE. Considering the ongoing efforts of ECO programs to increase the adoption of high-efficiency furnaces, it is reasonable to assume that the share of furnaces with AFUEs of at least 90 percent has remained the same or increased since 2016.

The 2018 ECO Potential Study focuses on the market share of each furnace efficiency tier, rather than the existing furnaces currently in customers' homes. This source provides an indication of which levels of efficiency are available to customers when they are seeking a replacement furnace and, therefore, may indicate the level of efficiency they are likely to choose without a utility incentive.

However, data reflecting the efficiency of each customer's current equipment may be more representative of the level of efficiency customers would choose, especially for customers with non-condensing furnaces. The transition from a non-condensing furnace to a condensing furnace can be costly and invasive, meaning, even if condensing furnaces make up a larger share of the market, these customers may be more inclined to choose another non-condensing furnace as their replacement.

Home Energy Squad (HES) Audit Data

With the permission of CenterPoint and Xcel Energy, CEE analyzed data collected during Home Energy Squad (HES) visits between January 2020 and October 2025 to estimate the average efficiency of existing furnaces in visited homes. CEE selected visits where the primary heating system was a forced air gas furnace and excluded data from homes with gravity furnaces and visits with no reported AFUE.[58] A total of 21,876 homes visited by HES between 2020 and 2025 had forced air furnaces and included a recorded AFUE in the HES dataset.

Geographic Limitations

The HES data only includes homes visited by HES and therefore overrepresents certain regions of Minnesota. Using the county recorded for each HES visit, CEE identified the percentage of HES visits that fell within each region of Minnesota. CEE used the same seven regions as defined by the 2018 ECO Potential Study furnace sales

[58] 7,060 of the homes with forced air furnaces did not report an AFUE and were excluded from the analysis.

data, shown in Figure 3, which defines the Twin Cities region as just Hennepin and Ramsey Counties.[59] Appendix A includes a list of each Minnesota county and the corresponding region.

Figure 3: Regions Used in the 2018 ECO Potential Study Sales Data

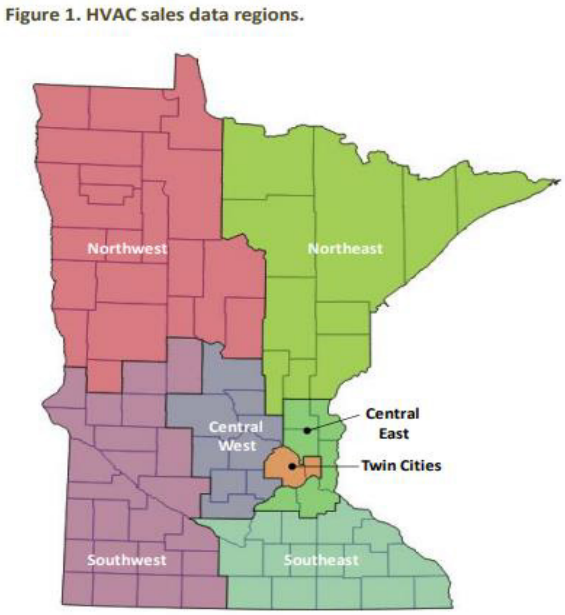


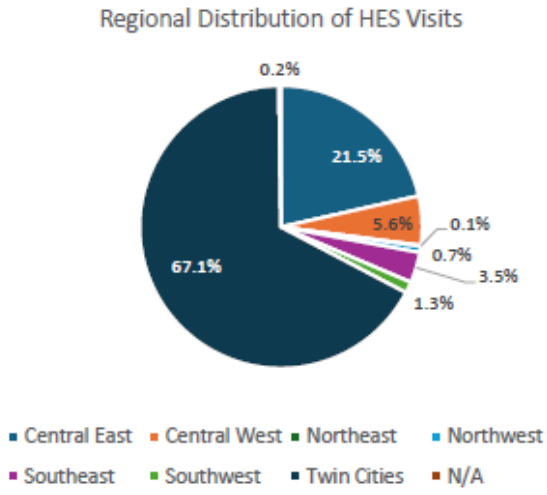
Table 1 and Figure 4 show the regional distribution of the HES visits, with 67.1 percent of visits occurring in Hennepin and Ramsey counties (the Twin Cities region) and 21.5 percent of visits occurring in the Central East region.[60]

Table 1: Regional Distribution of HES Visits

Region	Total	% of Total
Central East	4695	21.50%
Central West	1227	5.60%
Northeast	28	0.10%
Northwest	152	0.70%
Southeast	767	3.50%
Southwest	282	1.30%
Twin Cities	14671	67.10%
N/A	54	0.20%
Total	**21,876**	**100.00%**

[59] 2018 Minnesota ECO Potential Study, Appendix M. Page 5. https://www.mncee.org/sites/default/files/2021-06/Appendix-M_Minnesota-HVAC-Sales-Data_2019-03-27_FINAL.pdf
[60] The Central East region consists of Anoka, Chisago, Dakota, Isanti, Scott, and Washington counties.

Figure 4



Key Findings

The average furnace AFUE in homes visited by HES between 2020-2025 was 89.2 percent. The average was calculated by summing the AFUE reported for each HES visit included in the analysis and dividing by the total count, 21,876. Of the homes with forced air furnaces visited by HES from 2020 to 2025, 7,060 did not have a recorded AFUE and were excluded from this average.

CEE also grouped the furnace efficiencies into broader efficiency ranges, as shown in Table 2 and Figure 5. The percent of furnaces that fell within each range of efficiency are reported in three geographic categories: 1) Statewide, 2) Hennepin and Ramsey Counties, and 3) All Other Counties excluding Hennepin and Ramsey. There were 54 HES visits in the dataset with no recorded county which were included in the Statewide category but excluded from the Hennepin and Ramsey Counties and All Other Counties categories.

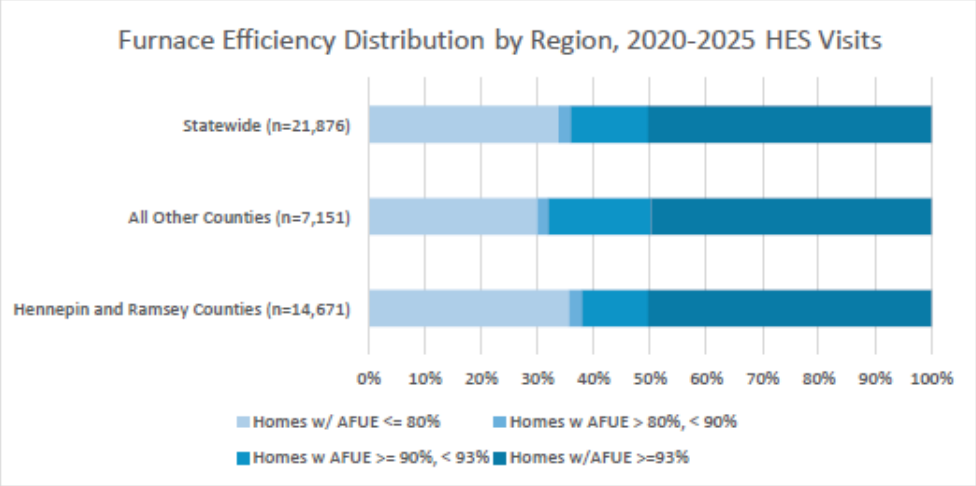
Table 2: Existing Furnace Efficiencies, 2020-2025 HES Visits[61]

	Percent of Homes (n = 21,876)		
	Statewide (n = 21,876)[62]	**Hennepin and Ramsey Counties (n = 14,671)**	**All Other Counties (n = 7,151)**
Homes w/ AFUE <= 80%	34%	36%	30%
Homes w/ AFUE > 80%, < 90%	2%	2%	2%
Homes w/ AFUE >= 90%, < 93%	14%	12%	18%
Homes w/ AFUE >=93%	50%	50%	50%

[61] n = 21,876 includes 54 homes with no recorded county. These homes are excluded from the Hennepin and Ramsey Counties and All Other Counties categories.

[62] Includes 54 homes with no recorded county. These homes are excluded from the Hennepin and Ramsey Counties and All Other Counties categories.

Figure 5



Although the HES data disproportionately represents homes in the Twin Cities and Central East regions, as shown above in Figure 5, the Twin Cities region appears to have a higher proportion of furnaces with AFUEs below 90 percent compared to the rest of the state. The 2018 ECO Potential Study sales data similarly found that the Twin Cities and Central East regions had the highest share of furnaces with AFUEs lower than 90 percent.

Income-Qualified vs Market Rate

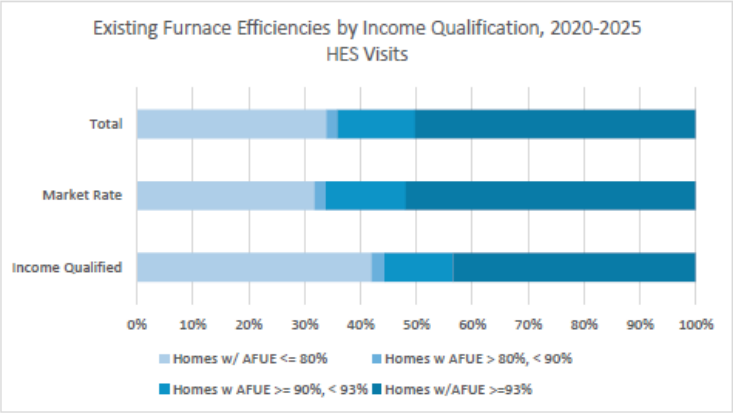
Additionally, approximately 19.6 percent of the HES visits with forced air furnaces were recorded as being for income qualified customers. HES uses self-identification for income-qualified customers, which could result in over- or under-reporting of income qualified customers. The income qualified definition also changed between 2020 and 2025, which could create discontinuity in which customers were included in the income qualified segment.

To explore differences between the income qualified and market rate segments, CEE categorized the AFUEs for each into broader ranges of efficiency, as shown in Table 3 and Figure 6.

Table 3: Existing Furnace Efficiencies by Income Qualification, 2020-2025 HES Visits

	Percent of Homes (n = 21,876)	
	Income Qualified (n = 4,296)	**Market Rate (n = 17,580)**
Homes w/ AFUE <= 80%	42%	32%
Homes w/ AFUE > 80%, < 90%	2%	2%
Homes w/ AFUE >= 90%, < 93%	12%	14%
Homes w/ AFUE >=93%	43%	52%

Figure 6



About 44 percent of the furnace AFUEs recorded for income qualified households were less than 90 percent, compared to 34 percent of the AFUEs recorded for market rate customers. The average AFUE for income qualified households was about 87.9 percent, which was lower than the average AFUE for market rate households, which was about 89.2 percent. This suggests that income qualified households may be more likely to have a low efficiency furnace, which aligns with the Focus in Energy study finding that Wisconsin contractors offered a lower average AFUE to low-income customers than to market rate customers.

Limitations of the HES Data Analysis

CEE highlights the following limitations of the HES data and CEE's analysis:

- Geographic limitations: the HES data disproportionately represents Hennepin and Ramsey Counties.
- Sampling bias: the homes represented in the HES data chose to undergo an HES visit, which could imply that the households are more energy-conscious and willing to install a high efficiency furnace. The sample bias could skew the other direction as well, as homes with lower efficiency furnaces may be more motivated to take initiative to conserve energy.
- Inconsistent income qualification: the HES data relies on self-attestation to identify income-qualified households. The ECO definition for income-qualified households also changed from being based on 60 percent or less of the state median household income to 80 percent or less of the area median household income in 2021.[63]
- Exclusion of data points: the HES dataset excludes 7,060 forced air furnace homes that did not have a reported AFUE, which may influence the results.

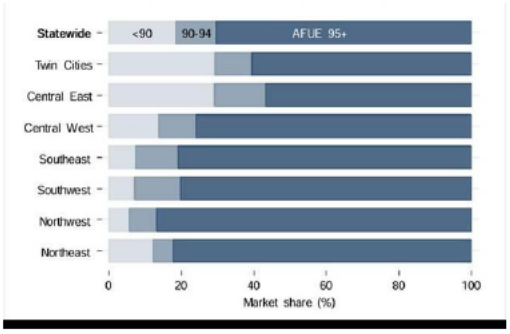
Due to the time available to develop and analyze HES data for these comments, CEE was unable to account for or address these limitations, and we recognize that different interpretations of the data could come to reasonably different conclusions.

[63] Minn. Stat. § 216B.2402, subd.16.

FE Comment

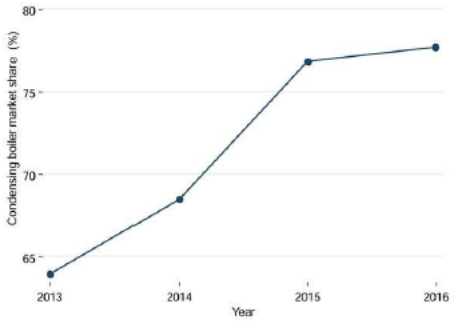
Analysis of state market data from Minnesota's 2020-2029 Energy Efficiency Potential Study also underscores the need for an update to the baseline furnace efficiency. The Potential Study showed that high efficiency (95% AFUE) furnaces and condensing boilers already made up 70-78% of statewide sales throughout the 2013-2016 period.[64] The continued availability of utility incentives for these appliances 10+ years later suggests that today's market share could be even higher, and that there could be a significant degree of free ridership.

Figure 1: MN statewide and regional furnace market share by AFUE category (2013-2016)



Source: 2020-2029 Energy Efficiency Potential Study, Appendix M

Figure 2: MN statewide market share for condensing, residential-size boilers (2013-2016)



Source: 2020-2029 Energy Efficiency Potential Study, Appendix M

This data reinforces the need to update the TRM's baseline assumption for gas furnace replacements, currently set at 80% AFUE. Updating the baseline to more accurately reflect market conditions would result in substantially lower calculated savings and incremental costs for these measures—demonstrating that continued ratepayer funding for gas furnace rebates provides limited additional value. In contrast, efficient heat pumps continue to face higher upfront costs but deliver far greater long-term energy and emissions benefits. These technologies warrant prioritized funding and ongoing market support to accelerate customer adoption and achieve Minnesota's decarbonization goals.

[64] Analysis of state market data from Minnesota's 2020-2029 Energy Efficiency Potential Study also underscores the need for an update to the baseline furnace efficiency. The Potential Study showed that high efficiency (95% AFUE) furnaces and condensing boilers already made up 70-78% of statewide sales throughout the 2013-2016 period.3 The continued availability of utility incentives for these appliances 10+ years later suggests that today's market share could be even higher, and that there could be a significant degree of free ridership.

Staff Response

Staff thank CEE for completing and providing supplementary research on this topic using data collected from the CPE and Xcel Minnesota Home Energy Squad Program. Staff also thank CEE and FE for referencing the Minnesota 2020-2029 Energy Efficiency Potential Study.

B.6. Potential Impact of the Proposed Residential Furnace Update

CPE Comment

CenterPoint Energy believes the most appropriate method for setting measure baselines is through codes and standards, or availability in the market. This method results in an accurate determination of energy savings effects of ECO programs. Minnesota residential energy code currently sets furnace minimum efficiency at 80 percent AFUE, and these low efficiency furnaces are readily available for residential customers. As stated in the Purpose and Use of Manual, the TRM does not represent an exclusive set of measures that may be applied in ECO programs:[65]

> The TRM is not intended to define a single set of approved calculation methods; rather, the TRM is a standard set of methodologies and inputs that ECO administrators may reference when developing, implementing, and reporting on ECO programs. Each measure herein represents a pre-approved calculation method when correctly applied in a program. While Commerce encourages utilities to use the TRM measure designs, utilities may propose, with justification, variations that reflect different program designs or enhanced calculation methods that will result in more accurate savings estimations.

CenterPoint Energy would not recommend using technical assumptions with significant inconsistencies. The update to residential furnace baselines in the Draft TRM v.5.0 resulted in several interactive effects on other measures. With the baseline change, measure updates need to be made for eight TRM measures. The Draft TRM v.5.0 addresses five of these measures with updates including Insulation and Air Sealing, Ground Source Heat Pump, and the Residential HVAC – Furnaces and Boilers measures. Air Source Heat Pump Systems ("ASHP") and two of the residential windows measures were left unchanged. CenterPoint Energy agrees with the Department that updating the ASHP measure would require work. The Company also believes this same level of work and attention to detail should be applied to furnace measures.[66] By not addressing the ASHP measure until MN TRM v5.1, the Department is proposing to pre-approve a calculation method that directly contradicts their new policy for furnace baselines. These selective updates by the Department highlight the haste in which these updates were made to the size of these changes would require a major shift in focus for triennial planning and the ECO program portfolio. The Company would potentially make the following changes:

- Right size rebates for energy savings and the potential for moving the market towards high-efficiency equipment and completing insulation.
- Adjust programs to make up for the loss of at least 180,000 dekatherms (Dth) to at least maintain annual energy savings levels.[67]

[65] Minnesota Technical Reference Manual v5.0. Purpose and Use of Manual. Pg. xi.
[66] See In the Matter of the Minnesota Technical Reference Manual Version 5.0. Docket No. E,G999/CIP-18-694. Department Staff Proposed Decision. Table 2. Pg. 3 (October 29, 2025).
[67] CenterPoint Energy notes that the energy savings loss would likely be larger based on maintaining energy savings performance relative to all of the current triennial plan (including 2025 and 2026).

- Pause long-term innovation projects to focus mostly on short-term and immediate innovation.

Given this, CenterPoint Energy expects that it would need to reprioritize to focus on the most cost effective energy savings which are generally for commercial and industrial customers.[68] The Company would still seek to grow programs for residential customers to make up the energy savings deficit, in particular insulation. However, fundamentally the energy savings loss would require significant tradeoffs in focus for triennial planning and in the short-term the potential for energy savings would be in the commercial and industrial sector.

The HVAC market is already facing uncertainty related to expiring tax credits and increasing measure costs resulting from inflationary trends. Trade allies have noted to the Company that increasing measure costs are contributing to far more customers focusing on furnace repairs rather than replacements to high efficiency models. Low-to-moderate income customers, who tend to live in older housing with low-efficiency non-condensing furnaces, are most in need of incentives to upgrade to high-efficiency equipment.[69] The Company also expects it will be harder for customers with the resources to install an air source pump to be able to afford that choice and some of them will even install 80 percent AFUE furnaces to save on HVAC capital costs. This may result in backsliding, where a low efficiency gas furnace would then be providing heat on the coldest winter days.

CPE Comment 2

Finally, CenterPoint Energy would not typically bring up the ECO shared savings mechanism in comments on the TRM process. However, the Company feels compelled to note how this proposed decision intersects with that process.[70] As described earlier, the potential effects of incorporating the new furnace baseline into the Company's triennial planning is a significant 10 percent cut to energy savings.[71] The Company is in the situation of taking a position on the proposed changes to the financial incentive mechanism that is normalized based on 2024 ECO program performance using current furnace energy savings algorithms or arguing to adjust to match the new furnace baseline proposed.

MERC Comment

Selectively increasing the furnace baseline to 90% AFUE for some measures could significantly undermine MERC's ability to achieve cost-effective savings for Residential furnaces, insulation, and other measures. This modification could result in decreased rebate levels to cover the incremental cost between the new assumed baseline and higher efficiency natural gas furnaces.

This effectively narrows customer choices for high efficiency furnaces and results in higher upfront costs to customers weighing the purchase of a replacement heating system. As a result, MERC customers may delay

[68] The Minnesota test for the residential segment was 2.59 and for C&I customers was 8.99 in 2024.
[69] CenterPoint Energy encourages income-qualifying customers to participate in no or low costs income qualifying programs, but realistically many prefer market rate rebate programs.
[70] See Proposal for Modifications to the Shared Savings DSM Financial Incentive Mechanism for Implementation Beginning in 2027. Docket Number E,G999/CI-08-133. June 26, 2025.
[71] Typically, when CenterPoint Energy anticipates cuts, such as from the new federal standards that would go into effect at the end of 2028, the company undergoes potentially years of planning to innovate and make up for the loss of energy savings.

purchasing decisions, or as an unintended consequence, ultimately purchase a cheaper, lower efficiency furnace. This is especially a concern for low-income customers who rely on MERC ECO programs to cover the cost of reliable high efficiency natural gas equipment. Low-income customers are highly sensitive to energy costs, and less likely to adopt efficiency measures without rebates, which underscores the importance of ECO rebate programs. These customers would miss out on short and long term energy savings and comfort benefits throughout the lifetime of the newer, high-efficient equipment. And while the proposed updates to TRM baselines exclude air source heat pumps ("ASHPs") due to the "significant amount of work required" for the update, the higher upfront equipment and installation costs as well as potentially higher overall utility bills are likely to cause customers to opt for lower efficiency furnaces.

In Minnesota's cold climate, heat pumps are less effective during periods of extreme cold, which can further increase monthly energy bills for customers who depend on reliable and affordable heating. Additionally, because of Minnesota's cold climate, air-source heat pumps often require a natural gas backup system for periods when temperatures drop below the heat pump's effective operating range. The proposed furnace baseline update may ultimately hinder efficient fuel-switching efforts by diminishing the cost-effectiveness of high-efficiency gas furnaces as necessary backup systems for air-source heat pumps. MERC will need to carefully consider these potential implications as it evaluates the practicality of implementing an efficient fuel switching program with ASHPs.

Further, a baseline change not rooted in market reality can disrupt sales practices, create confusion, and decrease contractor engagement. This could potentially undermine MERC's relationships with valuable trade allies who help drive efficiency adoption across the state. Trade allies play a central role in connecting customers to energy efficient equipment and without trade ally engagement and support, rebate programs struggle to reach households effectively.

Without research supporting Minnesota market shifts in Residential furnace baselines, updating the baseline prematurely misrepresents current customer behavior. The baseline should represent the equipment customers would reasonably install in the absence of an efficiency program. Evidence shows customers are still purchasing standard-efficiency furnaces when incentives are removed. Standard efficiency equipment is often widely available and familiar, making it the default choice when incentives are absent. Low-income households are disproportionately affected, as they are more price-sensitive and less able to absorb higher upfront costs.

OTP Comment

In the HVAC sector, opportunities to influence customer decisions are limited. Electric resistance and fuel furnaces, despite their inefficiency, are often seen as reliable, easy to repair, and low maintenance. As a result, many customers only consider upgrades after catastrophic equipment failure, such as a cracked heat exchanger or failed Air Conditioning system. Even then, replacing the furnace is not guaranteed, even when a heat pump is installed. Customers electing to switch from a non-condensing furnace to a higher efficiency condensing furnace must invest in a new venting system due to the lower temperature of the exhaust. These are all issues utilities consider while designing and implementing programs but were never addressed by the Department as a part of its proposal.

Xcel Comment

With the proposed baseline change, the TRM is missing specific changes that should have occurred at the same time (notably for air-source heat pumps, low-e storm windows and cellular shard window coverings) and resulting in inconsistent application of the Department's furnace baseline proposal. These impacts should have

been examined and vetted as part of the TRMAC process and, at minimum, utilized historical reference to how modifications had been made to efficiency levels in the past.

Xcel Comment 2

Moreover, we believe there are unintended consequences that may result. The current federal furnace standard is set at 80 percent AFUE and is generally the cheapest option for customers to install in a retrofit scenario. If the Department approves TRM v5.0 as proposed, several things could occur impacting the furnace market and customers. First, we will need to reduce the incentives offered to customers for retrofit furnaces to maintain the cost effectiveness of these measures. This will effectively reduce the purchasing power of consumers who may be interested in upgrading their furnace not only due to failure, but also in a scenario for which a furnace is ultimately replaced when adding an air-source pump. When making a choice, a customer may ultimately choose to go with a less efficient option since the rebate levels may no longer be sufficient to make higher efficiency affordable. Second, we believe this change will result in a 71.4 percent reduction in natural gas savings from version 4.2.[72] This measure is currently a staple of gas utility energy efficiency programming. A change of this magnitude should be considered carefully and not be made on the basis of one single study of debatable applicability to the Minnesota market. Considering the Department's ongoing potential study due in the early part of 2026, this change seems premature.

Xcel Comment 3

Changing the baseline to a different efficiency level decreases incentives for higher efficiency models and impacts customers first. As described in our informal comments as part of the Department's ECO Incentive Prioritization stakeholder discussions held in June of 2025, customers have different financial situations, different type of homes, etc. Utilities need to plan for a variety of situational factors as not all customers will benefit from being all electric. Indeed, we have heard some customer feedback describing reasons an all-electric system was not viable for them. Many of these customers have instead installed a hybrid system using a gas furnace for back-up heat. Often it is not practical for customers to install electric resistance back up heat for a variety of reasons including:

- Cost to operate even with the Company's updated Electric Space Heating Rate
- Physical limitations based on the size of the air handler required for these systems
- Duct sizing constraints that prevent the system from providing the required airflow to meet the heating needs

But even when the furnace is intended to provide backup to a heat pump, there are more and less-efficient backup furnaces to choose from. It is important to be able to support and influence customer decisions to install the most efficient system that meets their individualized needs.
We oppose the proposed modification for a higher baseline when the cost of minimally code-compliant equipment remains the cheapest option. Abruptly reducing rebates that help reduce the higher cost of efficient equipment may cause customers to choose the cheapest option for their homes, particularly for customers facing unplanned equipment replacement. It will take time for the market to transition to new equipment such

[72] Based on comparison of the examples in the Residential Furnace measure in Version 4.2 (11.9 Dth savings) and v5.0 (3.4 Dth savings, using the same assumptions as the 4.2 example)

as heat pumps. Manufacturers, distributors, and trade partners will also need time to adapt their stocking, sales, and installation practices to shift to

supporting heat pump installations. Despite the expectation of new federal furnace efficiency standards coming into effect (and regardless of the baseline that is ultimately assumed in Minnesota's TRM), it is likely that customers who currently have an 80 percent AFUE furnace will be able to replace it with a similar furnace throughout the 2027-2029 Triennial period.[73]

While the TRM v5.0 is not eliminating furnace rebates, the proposal adjusting the efficiency levels, resulting in a change to our ability to cost-effectively incentivize customers to choose more efficient equipment, may ultimately result in same end – the removal of furnace rebates from the portfolio. A change of this magnitude should be thoroughly vetted.

CEE Comment

Estimated First-Year Savings Impact

The TRM furnace baseline directly affects the amount of savings that can be claimed by a utility for certain ECO measures. The 90 percent AFUE furnace baseline proposed in TRM Version 5.0 would alter the per-unit savings each utility can claim not only for furnace rebates, but also other measures that use the furnace baseline efficiency in savings calculations. In the Department's October 29, 2025 Proposed Decision, the Department clarifies that the change in the furnace baseline would affect the savings claimed for the following measures in Version 5.0:

- Residential HVAC, Furnaces and Boilers
- Residential Envelope, Insulation and Air Sealing
- Residential HVAC, ECM Blower Motors
- Residential HVAC, Furnace Quality Installation/ Maintenance
- Residential HVAC, Ground Source Heat Pumps (GSHP)[74]

CEE Comment 2

CEE understands that the changes to per-unit savings for these measures will affect each utility's ECO portfolio and programming decisions for the 2027-2029 Triennial. To begin exploring the potential impacts of the proposed change, CEE estimated the change in per-unit dekatherm (Dth) savings for furnace and insulation and air sealing measures that would result from an increase to a 90 percent AFUE furnace baseline. CEE also explored the per-unit ASHP savings utilities could expect if the new furnace baseline were implemented for ASHPs.

CEE limited our analysis to furnace, insulation air sealing, and ASHP measures, and therefore did not capture any change in savings for the other potentially affected measures. CEE also used the default TRM Version 4.2 methodology and inputs, meaning the estimates do not capture any utility-specific inputs and methodologies. The actual savings claimed for these measures by each utility likely differ from those estimated below.

[73] Currently, new federal standards are expected to apply to furnaces manufactured (not purchased) after December 2028; dealers are likely to inventory of the older furnaces well after that point. This is the reason that historically, updates to federal standards have been applied to the measures in the TRM with a year of lag.
[74] Docket No. E,G999/CIP-18-694

Furnace Savings

For furnace measures, CEE calculated the per-unit Dth savings for different efficient furnace measures with an 80 percent and 90 percent AFUE baseline efficiency. Table 4, Table 5, and Table 6 show the estimated per-unit savings before and after the furnace baseline change when using the default TRM methodology. CEE included per-unit savings for furnace measures ranging from 92 to 97 percent AFUE and for each of the three climate zones included in the TRM.

Table 4: Per-Furnace Dth Savings, 80% vs 90% AFUE Furnace Baseline

80% AFUE Furnace Baseline				
Measure	**Climate Zone 1**	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
92 % AFUE Furnace (Dth/ Furnace)	8.75	7.63	7.86	8.08
94 % AFUE Furnace (Dth/ Furnace)	10.51	9.19	9.47	9.72
95 % AFUE Furnace (Dth/ Furnace)	11.38	9.97	10.27	10.54
96 % AFUE Furnace (Dth/ Furnace)	12.25	10.75	11.07	11.36
97 % AFUE Furnace (Dth/ Furnace)	13.13	11.53	11.87	12.18
90% AFUE Furnace Baseline				
Measure	**Climate Zone 1**	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
92 % AFUE Furnace (Dth/ Furnace)	1.53	1.36	1.39	1.43
94 % AFUE Furnace (Dth/ Furnace)	3.05	2.72	2.79	2.85
95 % AFUE Furnace (Dth/ Furnace)	3.82	3.4	3.49	3.57
96 % AFUE Furnace (Dth/ Furnace)	4.58	4.08	4.18	4.28
97 % AFUE Furnace (Dth/ Furnace)	5.34	4.76	4.88	4.99

Table 5: Change in Per-Furnace Dth Savings, 80% vs 90% AFUE Furnace Baseline

Measure	**Climate Zone 1**	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
92 % AFUE Furnace (Dth/ Furnace)	-7.23	-6.27	-6.47	-6.66
94 % AFUE Furnace (Dth/ Furnace)	-7.45	-6.47	-6.68	-6.87
95 % AFUE Furnace (Dth/ Furnace)	-7.56	-6.57	-6.78	-6.97
96 % AFUE Furnace (Dth/ Furnace)	-7.67	-6.67	-6.88	-7.08
97 % AFUE Furnace (Dth/ Furnace)	-7.79	-6.77	-6.98	-7.18

Table 6: Change in Per-Furnace Savings (%), 80% vs 90% AFUE Furnace Baseline

Measure	**Climate Zone 1**	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
92 % AFUE Furnace (Dth/ Furnace)	-83%	-82%	-82%	-82%
94 % AFUE Furnace (Dth/ Furnace)	-71%	-70%	-71%	-71%
95 % AFUE Furnace (Dth/ Furnace)	-66%	-66%	-66%	-66%
96 % AFUE Furnace (Dth/ Furnace)	-63%	-62%	-62%	-62%
97 % AFUE Furnace (Dth/ Furnace)	-59%	-59%	-59%	-59%

Table 8 shows the 2024 Dth furnace measure savings calculated with an 80 percent AFUE furnace baseline compared to the savings recalculated using a 90 percent baseline. The total savings estimates were calculated by multiplying the utility's reported 2024 participation for each furnace measure by the corresponding per-unit savings, calculated using the TRM default methodology and the average of the three climate zones. In practice, the utilities may diverge from the default TRM savings calculation methodology, so the total savings calculated with an 80 percent AFUE baseline and shown in Table 8 may vary from the actual reported 2024 savings.

Table 7: 2024 Furnace Rebate Participation, Single Family and Existing Homes

	CenterPoint[75]	Xcel[76]	MERC[77]
92 % AFUE Furnace	909		44
94 % AFUE Furnace	-		1977
95 % AFUE Furnace	-	324	-
96 % AFUE Furnace	8317	3726	1
97 % AFUE Furnace	6119	3037	1305

Table 8: Change in Total 2024 Savings from Furnace Measures (Dth), 80% vs 90% AFUE Baseline[78]

	CenterPoint	Xcel	MERC
80% Furnace Baseline (Dth Savings)	176,322	82,716	35,476
90% Furnace Baseline (Dth Savings)	67,469	32,278	12,228
Change in Savings (Dth)	(108,853)	(50,438)	(23,248)
Change in Savings (%)	-62%	-61%	-66%
Total 2024 ECO Portfolio Savings (Dth)	1,890,592	1,298,040	395,470
Change in Savings (as a % of Total 2024 ECO Portfolio Savings)	-5.76%	-3.89%	-5.88%

According to these estimations, when using the default TRM methodology, utilities could see anywhere from a 59 to 83 percent decline in per-unit Dth savings depending on the efficiency of the rebated furnace and climate zone. When applied to 2024 participation levels for each utility, CEE estimates that the decreases in per-unit savings from furnace measures alone would result in a 5.67 percent reduction in total 2024 Dth savings for CenterPoint, a 3.89 percent reduction for Xcel Energy, and a 5.88 percent reduction for MERC.

Insulation and Air Sealing Savings

For homes that heat primarily with a natural gas furnace, insulation and air sealing measures also include the TRM furnace baseline as an input for savings calculations. Using the TRM default savings calculation for insulation and air sealing measures, CEE estimates a roughly 11 percent decline in per-unit Dth savings for each

[75] Participation in CenterPoint's Home Efficiency, Low-Income Weatherization, LIRE, HERO, and NPAH retrofit furnace measures.
[76] Participation in Xcel Energy's gas Residential HVAC (existing homes) and HESP furnace measures.
[77] Participation in MERC's Low-Income Weatherization and Residential Rebate furnace measures.
[78] The estimations use the default TRM inputs and methodology to calculate per-furnace Dth savings before and after a baseline change.

insulation and air sealing measure. Table 9 shows the change in insulation and air sealing savings before and after an increase to a 90 percent furnace baseline, with the assumption of an 11 percent decline in savings.

Table 9: Change in 2024 Total Insulation and Air Sealing Savings (Dth), 80% vs 90% AFUE Baseline

	CenterPoint	Xcel	MERC
Savings with 80% Furnace Baseline (Actual Reported Dth Savings)16	68,780	29,706	10,634
Change in Savings with a 90% Furnace Baseline (assumed to be an 11% decline)	-11%	-11%	-11%
Change in Savings (Dth)	(7,566)	(3,268)	(1,170)
Total 2024 ECO Portfolio Savings (Dth)	1,890,592	1,298,040	395,470
Change in Savings as a % of Total 2024 ECO Portfolio Savings	-0.40%	-0.25%	-0.30%

Although the per-unit savings for insulation and air sealing measures would see an estimated 11 percent reduction with a 90 percent AFUE furnace baseline, the change is less dramatic than that for furnace measures.

Air-Source Heat Pump (ASHP) Savings

Although the Department's guidance does not propose implementing the furnace baseline change until Version 5.1 of the TRM, CEE recommends applying the new furnace baseline to all affected measures in Version 5.0 to maintain consistency in the technical guidance. CEE calculated the estimated decrease in per-unit net energy savings for dual-fuel ASHP measures that would occur with an increase in the furnace baseline.

CEE used the Department's TRM Version 4.1-2 Appendix G to calculate the per-unit net energy savings from an ASHP with gas furnace backup, first using an 80 percent AFUE furnace baseline and then using a 90 percent AFUE furnace baseline.17 For ASHP measures with gas furnace backup and rebated by a gas utility, the net energy savings represent the Dth gas savings produced by the ASHP net of the kWh electric load it adds to the electric system. The switchover temperature determines the proportion of the home's load served by the ASHP versus the natural gas furnace and therefore impacts the savings generated by the ASHP measure.

Table 10 shows the estimated per-unit savings with both a 15-degree and 30-degree switchover temperature, and Table 11 shows the change in per-unit savings after increasing the furnace baseline from 80 to 90 percent AFUE. In practice, the utilities may diverge from the default TRM savings calculation methodology and calculate different per-unit net energy savings for ASHP measures.

Table 10: Per-Unit Net Energy Savings (Dth) for Dual-Fuel ASHP Measures

80% Furnace Baseline				
	Climate Zone 1	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
ASHP (30-degree F switchover)	23.4	22.7	27.9	24.7
ASHP (15-degree F switchover)	42.6	38.2	46.7	42.5
90% Furnace Baseline				
	Climate Zone 1	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
ASHP (30-degree F switchover)	19.6	19	23.6	20.8
ASHP (15-degree F switchover)	35.1	31.4	39.1	35.2

Table 11: Change in Per-Unit Net Energy Savings (Dth) for Dual-Fuel ASHP Measures, 80% vs 90% AFUE Furnace Baseline

80% Furnace Baseline				
	Climate Zone 1	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
ASHP (30-degree F switchover)	-3.8	-3.7	-4.3	-3.9
ASHP (15-degree F switchover)	-7.4	-6.8	-7.6	-7.3
90% Furnace Baseline				
	Climate Zone 1	**Climate Zone 2**	**Climate Zone 3**	**Average of Climate Zones**
ASHP (30-degree F switchover)	-16%	-16%	-15%	-16%
ASHP (15-degree F switchover)	-17%	-18%	-16%	-17%

The per-unit net energy savings show that, even when accounting for increased electric load, savings are greater with a lower switchover temperature since the ASHP offsets more natural gas. Using the average results of the three TRM climate zones, ASHP savings decrease by about 16 percent under a 30-degree switchover temperature scenario and 17 percent under a 15-degree switchover temperature scenario. Although not insignificant, the impact of the furnace baseline change on ASHP measure savings is much smaller than that on furnace measures. ASHPs continue to provide sizable per-unit net energy savings even after the furnace baseline change.

Since, of the gas utilities, only CenterPoint and Xcel Energy offered ASHP rebates in 2024 and each used unique assumptions in their savings calculations, CEE did not apply the TRM-based per-unit savings shown above to 2024 participation levels and therefore do not provide an estimation of a total decline in ASHP Dth savings for 2024.

Summary of Possible Impacts of the Furnace Baseline Change

ECO Portfolio Impacts

With an increase to the furnace baseline, per-unit savings for measures which use the furnace baseline as an input in savings calculations would decrease, meaning utilities would earn less first-year savings for the same levels of participation. When applied to 2024 participation levels, the decrease in per-unit savings for furnace and insulation and air sealing measures alone results in an estimated 2024 savings decrease of 116,419 Dth for CenterPoint, 53,706 Dth for Xcel Energy, and 24,418 Dth for MERC. This represents roughly 6 percent of CenterPoint's total 2024 ECO savings, 4 percent of Xcel Energy's, and 6 percent of MERC's.[79] As explained above, these estimates do not include estimated lost savings for the other measures noted by the Department as impacted by the furnace baseline change. The estimates also use the TRM default methodology and do not capture any variations in methodology used by utilities.

The change in per-unit Dth savings from each measure also impacts the cost-effectiveness of each measure and therefore the rebate amount a utility can offer. Especially for furnace measures, where per-measure savings are

[79] See CEE's estimates and explanation in the *Estimated First-Year Savings* Impact section of these comments.

expected to decline significantly, utilities may have to reduce the size of their rebates to maintain cost-effectiveness.

The overall change in Dth savings that would result from an increase in the furnace baseline would also directly affect the net benefits generated by each portfolio and the size of the utility's performance-based financial incentive, since the incentive is dependent on first-year savings and net benefits.

ECO Utility Performance Incentive Impacts

CEE notes there is an ongoing regulatory process to establish the utility performance-based financial incentive framework for the 2027-2029 Triennial in Docket No. E,G999/CIP-08-133. CEE, along with the Department and Fresh Energy, proposed a multi-factor incentive mechanism that, for gas utilities, would incorporate performance metrics for insulation and air sealing first-year savings and low-income spending. CEE recognizes that the proposed baseline change in the TRM differs from the assumptions used to develop the proposed financial incentive mechanism, given the anticipated decrease in Dth savings and net benefits. First-year energy savings and net benefits would continue to be important metrics in the proposed 2027-2029 incentive mechanism if it is approved.

Distributor and Contractor Impacts

The furnace baseline change could shape the rebates utilities offer for efficient furnaces, which would have meaningful impacts on HVAC contractors and distributors. If the change to the furnace baseline is approved, the Department and stakeholders should proactively prepare for any impacts to the market and clearly communicate with contractors and distributors.

FE Comment

[The data included within the Minnesota's 2020-2029 Energy Efficiency Potential Study] also indicate that the risk of customers "backsliding," or choosing the least efficient option in the absence of gas furnace rebates going forward, is minimal. There are indications both within and beyond Minnesota that suggest that this risk is minimal, and not a substantial enough threat to justify maintaining gas appliance incentives when ratepayer funding could go to more strategically-aligned measures that still need substantial market support.

Staff Response

Staff value the insight that commenters provided regarding the proposed residential furnace update. These impacts highlight the importance and foundational component of the work completed within the MN TRM affecting ECO program and plan design, MN residents and MN businesses, industries, and MN claimed avoided emissions. Staff in turn have a responsibility to ensure that the methodologies and assumptions used in the MN TRM are defensible and as accurate as possible. Staff have considerable concerns regarding the high likelihood of free-ridership caused by relying on a federal standard baseline that is almost two decades old and that no longer reflects market conditions (as suggested in the key findings of the Home Energy Squad (HES) Audit Data Analysis completed by CEE[80]).

[80] Center for Energy and Environment. *Center for Energy and Environment's Comments In the Matter of the Minnesota Technical Reference Manual Version 5.0.* Docket No. E,G999/CIP-18-694. (eDocket No. 202511-225165-01). At. 7.

Key Findings

B.7. Affected Measures

B.7.1. Residential HVAC – ECM Blower Motors

The Utilities Comment

While the timing of the proposed updates and comment deadlines did not allow for an exhaustive review and vetting of all impacts, other inconsistencies and uncertainties created by the proposed updates include the fact that…it is unclear how energy savings from ECMs can be claimed under the new furnace baseline when condensing furnaces are required by code to have an ECM.

Xcel Comment

Electronically Commutated Motors (ECM) are required in furnaces manufactured after 2019. As such, updating the baseline efficiency does not seem applicable to a retrofit only measure that only affects a subset of furnaces greater than six years old. As such the Company suggests that the baseline efficiency be maintained at 80 percent.

Staff Response

Staff thank commenters for identifying this inconsistency. Staff will update this measure in the final version of the MN TRM v5.0 so that the AFUE of the existing furnace is a required customer input. This does pose a risk if this measure were to be included within an ECO plan as a midstream program. However, Staff note that this measure is not included in the three MN electric IOU 2024-2026 ECO plans. Additional conversation around this measure could occur in the MN TRM v5.1 if MN electric IOU, cooperative or municipal utilities confirm that this measure is included in their plans within a midstream program.

B.7.2. Residential HVAC – Furnaces and Boilers

The Utilities Comment

While the timing of the proposed updates and comment deadlines did not allow for an exhaustive review and vetting of all impacts, other inconsistencies and uncertainties created by the proposed updates include the fact that the proposed incremental costs for furnaces are based on the prior 80% AFUE baseline and therefore not aligned with the proposed updated baseline.

Xcel Comment

The proposed decision indicates that incremental costs for furnaces and boilers are "derived from data in" a report produced by Itron for the California Measure Advisory Committee, and that the costs with various sizing assumptions and "$300 additional installation costs for existing construction due to the installation of venting."[81] It is unclear how this can be the case, since Table 3 of the TRM gives the same costs for both new construction and replace on fail, and the listed incremental cost is below $300 for four of the six furnace

[81] Proposed Decision, p. 107.

efficiency levels listed.[82] Moreover, only three of the fifteen incremental cost values given appear to have been updated since TRM 4.2 – though this is difficult to interpret given that TRM v5.0 uses different incremental cost categories from version 4.2, with no explanation given for the change.[83] Even if the TRM 4.2 incremental costs were correct, the change to a 90 percent AFUE baseline should logically have resulted in a change to most if not all of the incremental costs of replacement and it is unclear why this is not the case.

Moreover, the Company notes that the Itron study used as the basis for the incremental costs was conducted for the California market and published in 2014. While the Company acknowledges that there may not have been a reliable comparable study produced in the decade since the Itron study, it notes that the Itron study gives incremental cost data in real (2014) dollars. It does not appear that the costs listed in the *Proposed Decision* have adjusted the prices given in the Itron study to reflect the considerable inflation that has occurred since that study's publication. It is important for the costs given in the TRM to clearly indicate whether they are given in real or nominal dollars; Minnesota's cost-effectiveness calculations require price inputs in nominal terms and will give distorted results if real prices – especially decade-old real prices – are used instead. Finally, the Company could find no reference to residential condensing boilers in the portion of the Itron study cited by the *Proposed Decision* and requests clarification as to where costs for those measures were sourced.[84]

Staff Response
Staff agree with Xcel that the proposed version of the MN TRM v5.0 did not include the required change to the incremental cost values due to the proposed updated baseline in an accurate way (including the notes on nominal values and the condensing boilers). Staff will address this in the final version of the MN TRM v5.0.

B.7.3. Residential HVAC – Ground Source Heat Pump Systems (GSHP)

Xcel Comment

The Proposed Decision updated the "Eff Base" variable to use a 0.90 AFUE value for furnaces and a 0.80 AFUE value for boilers. This is inconsistent with the rest of the TRM with this most recent update where both furnace and boiler baselines were updated to 0.90 AFUE.

Staff Response

Staff do not agree with Xcel's understanding of the proposed residential furnace update. This proposed update did not include updating the baseline performance requirements for residential boilers and those values should remain unchanged. Staff will reach out to Xcel to gain a better understanding of this concern to ensure that this is properly addressed and there are no open items in the final version of the MN TRM v5.0.

[82] *Proposed Decision*, p. 106, Table 3.
[83] Compare Table 3 on p. 106 of the *Proposed Decision* with Table 3 on p. 89 of TRM 4.2. In 4.2, the table lists "New Construction" and "Existing" as the subcategories of Incremental Cost, while in v5.0 the subcategories are "New Construction, Replace on Fail" and "Early Replacement," but the dollar amounts shown are identical in all cases save three.
[84] Appendix F of the Itron study includes residential boilers with AFUE 85% on page F-10, but residential condensing boilers are not listed and the size of the boiler measure on p. 10 (1.4 MMBTUh) suggests that it may in fact be a commercial boiler that has been mis-classified in the table.

Xcel Comment

There is inconsistency in the savings formulas found on pages 63 and 64. Specifically, the only formula that is labeled as “New Construction” uses an ASHP baseline. We are unclear whether the Proposed Decision is using the baseline for “New Construction” as the only valid GSHP measure.

Staff Response

Thank you for calling out the new construction application of this measure. Yes, in the proposed version of the MN TRM v5.0, the only valid baseline for a “New Construction” application is an ASHP baseline.

B.7.4. Residential Envelope – Insulation and Air Sealing

Xcel Comment

For unknown AFUE, the TRM suggests using 0.9 according to Reference 21. The Company notes the link to the Cadmus study is unavailable in the TRM making it hard to track references and verify the validity of the study for those outside of the TRMAC.

Staff Response

Reference 21 within the Residential Envelope – Insulation and Air Sealing Measure notes that ‘the presentation and notes [of this research] are available from the Department of Commerce upon request.’ This reference is included in the same fashion on all measures which are affected by the proposed residential furnace update.

TRMAC members have all been provided access to this research and Staff have received no requests for this presentation or notes as of the filing of these Reply Comments.

Staff are currently in communication with the funding organization for this research to determine if this report can be published publicly. If this work can be published publicly, Staff will post this work on a Department hosted webpage.

C. RESIDENTIAL HVAC – EMC CIRCULATORS

OTP Comment

On page 93 of TRM 5.0 the Algorithms for Unit kWh Savings per year and Unit Peak kW Savings have been combined to the same line. Otter Tail Power suggests the Unit Peak kW equation be moved down to its own line for better readability and consistency with other measures.

Algorithms

Unit kWh Savings per Year = $(W_{BASE} \times HOU_{BASE} - W_{ECM} \times HOU_{EFF}) / 1{,}000$ Unit Peak kW Savings = $(W_{BASE} - W_{ECM}) / 1{,}000 \times CF$

Staff Response

Staff appreciate OTP's review of the proposed version of the MN TRM v5.0 and value OTP catching this error. Staff will correct this error in the final version of the TRM v5.0.

D. RESIDENTIAL HOT WATER – DESUPERHEATER

OTP Comment

On page 226 of TRM 5.0 the measure life listed for the Desuperheater is 13 years. Otter Tail Power recommends that the measure life be increased to 25 years to match the measure life of the ground source heat pump which is referenced on page 62 of TRM 5.0. For this specific measure it is more appropriate to use the ground source heat pump life rather than a residential water heater.

Staff Response

Staff disagree with OTP in updating the measure lifetime for ground source heat pumps from 13 years to 25 years. Prior to the filing of the proposed version of the MN TRM v5.0, Staff have defined this as a research need and are interested in OTP's reasoning behind this feedback beyond matching the measure lifetime of the ground source heat pump. Staff support using the conservative measures lifetime of 13 years until better research is made available.

OTP Comment

On the following page, the example calculation for a desuperheater appears to have a disconnect between the assumption text citing a gas storage water heater, but the resulting savings being presented as electric savings. It is Otter Tail Power's understanding that this measure was not designed to be considered fuel switching and therefore the example calculation should remain consistent between either gas or electric assumptions.

Staff Response

Staff appreciate OTP catching this error and agree that there is an inconsistency between the assumption text and the resulting savings being presented as electric savings. This error will be corrected in the final version of the TRM v5.0.

E. RESIDENTIAL HVAC – EFFICIENT AIR CONDITIONING SYSTEMS

FE Comment

Fresh Energy continues to support a proposal discussed during the TRMAC to sunset rebates for "Residential HVAC - Efficient Air Conditioning Systems". We strongly support phasing out rebates for central air conditioning (AC) systems beginning in 2027, in favor of incentivizing cold-climate air source heat pumps and other two-way heat pump systems that provide both heating and cooling. This approach aligns with Minnesota's greenhouse gas emissions reduction goals, maximizes the effectiveness of the ECO program, empowers consumers with multiple heating options for price arbitrage and resilience, and helps Minnesotans transition cost-effectively to a low-carbon future.

Heat pumps are a rapidly advancing, cost-effective technology that provides affordable solutions to alleviate summer peak electrical demand while simultaneously meeting Minnesota's winter heating need. Unlike traditional one-way ACs, heat pumps (essentially two-way ACs) provide efficient cooling in summer and significant heating capacity in winter, reducing both customer costs and emissions.[85] Installing an ASHP, cold-climate ASHP, or a ground-source heat pump instead of a traditional AC represents a significant opportunity to increase efficiency of overall heating and make progress towards building electrification. We acknowledge that heat pumps have traditionally had low temperature limitations, however, this is no longer the case as numerous systems operate reliably in Minnesota's low design temperatures at COP efficiencies of 150-160% or higher. Modern models are specifically designed to operate in subzero conditions, maintaining high performance even during the coldest stretches of winter.[86] Furthermore, many heat pumps now reach -20 to -31 degrees Fahrenheit with a COP of greater than 1.5.[87] This efficiency and fuel choice is a net positive benefit for the state of Minnesota. New equipment continues to outpace the performance of its recent predecessors, and these benefits are on track to improve.

The long service life of HVAC equipment further supports sunsetting AC rebates. Across the country, an estimated 16,000 traditional, one-way ACs are replaced every day.[88] Many of these systems have a lifespan of 15-25 years. Continuing to incentivize AC-only systems risks locking customers into technologies that hinder compliance with Minnesota's 2050 emissions targets and could leave customers bearing the cost of premature equipment replacement in order to meet those targets. By contrast, heat pumps provide customers with the dual benefit of heating and cooling, allowing them to operate their buildings in a way that optimizes energy use, cost savings, or emissions reductions. This would effectively shift incentives toward technologies that deliver broader benefits for customers and the grid.

For these reasons, Fresh Energy supports removing central ACs from the Minnesota TRM as an efficient measure beginning in 2027. This proposal aligns with recommendations from our August 2023 comments on utilities' proposed 2024-2026 ECO Triennial plans.[89] We view this as a pragmatic and necessary step toward aligning the ECO program with Minnesota's climate and energy goals while helping customers adopt technologies that lower costs, cut emissions, increase resilience, and provide long-term reliability.

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[85] Fresh Energy's August 2023 Initial Comments on Utility's 2024-2026 ECO Triennial Plans, page 9. Available at https://efiling.web.commerce.state.mn.us/documents/%7BD056008A-0000-C93A-BB39-C6B6FDE29982%7D/download?contentSequence=0&rowIndex=7.

[86] Mitsubishi Electric, Heat Pumps for Extreme Cold Climates (September 2024), available at https://www.mitsubishicomfort.com/articles/mythbusters-heat-pumps-for-extreme-cold-climates; Carrier, Cold Climate Heat Pumps: Advanced Heating for Extreme Weather, available at https://www.carrier.com/residential/en/us/products/heat-pumps/cold-climate-heat-pump/; Washington Post, Heat pumps used to struggle in the cold. Not anymore. (November 2024), available at https://www.washingtonpost.com/climate-solutions/2024/11/14/cold-climate-heat-pump-winter/; Wired, Don't Believe the Biggest Myth About Heat Pumps (May 2024), available at https://www.wired.com/story/myth-heat-pumps-cold-weather-freezing-subzero/.

[87] GE, Submittals, Rev July 2025, available at https://products-salsify.geappliances.com/image/upload/s--r1EcyZJR--/uxc9cr2nwy6kddhges99.pdf.

[88] Stephen Pantano, Matt Malinowski, Alexander Gard-Murray, & Nate Adams, 3H "Hybrid Heat Homes" An Incentive Program to Electrify Space Heating and Reduce Energy Bills in American Homes, CLASP (2021) at 4.

[89] Fresh Energy's August 2023 Initial Comments on Utility's 2024-2026 ECO Triennial Plans, page 9.

FE Comment 2

Fresh Energy provides the following recommendations to the Department:

- For central air conditioning systems: End incentives beginning in 2027.

Staff Response

Staff appreciate FE's comments on the Residential HVAC - Efficient Air Conditioning Systems measure. This was a topic that was introduced and discussed with TRMAC members, including FE, between late July 2025 and October 2025 within the TRMAC Process. Staff received informal comments on this topic from CPE, FE, MP, MRES, OTP, and Xcel.

Minnesota Statutes 216B.241 subdivision 2(c) instructs the Department to "evaluate the [utility's] plan on the basis of cost-effectiveness and the reliability of technologies employed." Fresh Energy's concerns do not appear to question the cost-effectiveness or reliability of central air conditioners. Rather, they are rooted in a preference for one technology over another. Staff continue to see no authority in statute that would allow the Department to eliminate an established technology on the basis of preference. Further, the phasing out of rebates for a particular technology is not within the scope of the TRM revision process.

F. STAKEHOLDER TOPICS OF INTEREST NOT INTRODUCED OR DISCUSSED IN THE TRMAC PROCESS FOR TRM V5.0

F.1. Proposed Updates within the Existing Residential Gas Water Heater, Clothes Dryers, Electronic Ignition Hearth, and Furnaces and Boilers Measures; Proposed Transportation Measures; and Affordability and Equity Considerations

FE Comment - Residential Hot Water – Gas Water Heater

Fresh Energy recommends phasing out incentives for gas water heaters in favor of increased incentives for electric heat pump water heaters (HPWHs) and hot water heat recovery measures. ENERGY STAR certified HPWHs can save a household of four approximately $550 per year on its electric bills compared to a standard electric water heater and more than $5,610 over the HPWH's lifetime.[90]

HPWHs not only deliver highly efficient water heating but also provide 2,500–5,000 BTU of space cooling and modest dehumidification—reducing summer cooling loads.[91] They also enable thermal storage capabilities that pair effectively with air-source heat pumps, achieving high system efficiencies and offering flexible grid benefits.

Fresh Energy provides the following recommendations to the Department:

- For gas water heaters: End incentives beginning in 2027.

[90] ENERGY STAR. Save More with ENERGY STAR Certified Heat Pump Water Heaters. Available at https://www.energystar.gov/products/heat_pump_water_heaters/benefits-savings.
[91] ENERGY STAR. Heat Pump Water Heater Frequently Asked Questions. Available at https://www.energystar.gov/partner-resources/residential_new/educational_resources/sup_program_guidance/heat_pump_water_heater_guide/frequently_asked_questions.

FE Comment - Residential Appliances – Clothes Dryers

Fresh Energy recommends ending incentives for gas clothes dryers in favor of increased incentives for electric heat pump clothes dryers.

Field research conducted by Slipstream under a 2021 Conservation Applied Research and Development (CARD) grant found that heat pump dryers reduce energy use by roughly 20% and are preferred by users for performance and convenience.[92] ENERGY STAR estimates even greater savings from heat-pump dryers—at least 28% compared to standard dryers—demonstrating strong and consistent performance benefits.[93]

In addition to energy use savings, heat pump dryers offer important grid and affordability advantages. Whereas a traditional electric dryer typically requires a 30-amp, 240-volt circuit and breaker, a heat pump dryer only requires a 15-amp, 120-volt circuit and breaker, not requiring additional wiring needed for a gas dryer.[94] This reduces the need for costly panel upgrades and lowers peak load impacts while still delivering substantial energy and emissions reductions.

Continued incentives for traditional ducted gas dryers may also work against weatherization efforts by creating negative pressure that increases the risk of back-drafting from vented gas appliances. Heat pump dryers eliminate this risk, are now widely available at most box stores and appliance supply centers, and represent a mature and proven technology deserving of program support.

FE Comment 2 - Residential Appliances – Clothes Dryers

Fresh Energy provides the following recommendations to the Department:

- For gas clothes dryers: End incentives beginning in 2027.

FE Comment - Residential HVAC – Electronic Ignition Hearth

Fresh Energy recommends ending incentives for gas hearths/fireplaces. While gas hearths have historically served as a supplemental heat source, they now function primarily as decorative appliances rather than essential home heating equipment. Given this shift, ratepayer-funded incentives to accelerate their adoption are no longer justified.

FE Comment 2 - Residential HVAC – Electronic Ignition Hearth

Fresh Energy provides the following recommendations to the Department:

- For gas hearths: End incentives beginning in 2027.

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[92] Center for Energy and Environment, Slipstream, & Evergreen Economics. (2021). *Field and Market Assessment of Heat Pump Clothes Dryers.* Available at https://slipstreaminc.org/sites/default/files/documents/publications/heat-pump-clothes-dryers-2021_0.pdf.

[93] ENERGY STAR. Heat Pump Clothes Dryers. https://www.energystar.gov/products/clothes_dryers/heat-pump-dryer.

[94] GE Profile ENERGY STAR 4.8 cu ft Capacity UltraFast Combo with Ventless Inverter Heat Pump Technology Washer/Dryer, Model PFQ97HSPVDS." GE Appliances, https://www.geappliances.com/appliance/GE-Profile-GE Profile ENERGY STAR 4.8 cu ft Capacity UltraFast Combo with Ventless Inverter Heat Pump Technology Washer/Dryer, Model PFQ97HSPVDS." GE Appliances, https://www.geappliances.com/appliance/GE-Profile-

FE Comment - Residential HVAC – Furnaces and Boilers

Fresh Energy provides the following recommendations to the Department:

- For gas boilers:
  - End incentives for gas boilers in new construction beginning in 2027.
  - Limit gas boiler incentive offerings in existing homes to high-efficiency boilers (≥95% AFUE).

FE Comment - Transportation Measures

Electric vehicles and electric-assisted bicycles are important tools in helping achieve our state decarbonization goals as well as helping households affordably meet their transportation needs. Fresh Energy appreciates that these measures were included within the TRM.

When households first adopt an electric vehicle, it increases the household's average monthly electricity use by roughly 30-50%.[95] With this in mind, energy efficiency measures are important within this space. In future TRMs, Fresh Energy recommends that the Department explore options for increasing the efficiency of electric vehicles, including incentives for more efficient tires and analysis of the energy savings from upgrading from Level 1 charging to Level 2 chargers.

FE Comment 2 - Transportation Measures

Fresh Energy provides the following recommendations to the Department:

- For electric vehicles: In future TRMs, explore options for increasing the efficiency of electric vehicles, including incentives for more efficient tires and analysis of the energy savings from upgrading from Level 1 charging to Level 2 chargers.

FE Comment - Affordability and Equity Considerations

Fresh Energy takes concerns around affordability very seriously and strongly recommends that any rebates provided to emitting appliances on the basis of affordability be limited to low-income or very low-income customers. While rebates can be an important tool, they may not effectively reach many low-income households because these customers often cannot afford the upfront costs even if a rebate is available. Additional design elements (such as point-of-sale discounts, no-cost direct install options, or on-bill credits) are needed to ensure that low-income customers are actually able to use and benefit from these incentives.

In addition, if affordability is the primary intent of the rebate, the charging language should clearly direct utilities to allocate funds and recover costs in ways that ensure equitable distribution across service areas and meaningful access for communities historically underserved by ECO programs.

[95] USA TODAY. (2024, July 12). Fact check: Can an electric car power your house? https://www.usatoday.com/story/news/factcheck/2024/07/12/electric-cars-charging-houses-fact-check/74222238007/.

Finally, we recommend that the Department require ongoing monitoring and public reporting of rebate uptake by income level and geography, with course corrections if low-income, high energy-burden, and environmental justice communities are not proportionately accessing these benefits.

We recognize that the detailed design of these elements, as well as tracking and reporting requirements, are generally addressed in ECO program design and Triennial Plans rather than in the TRM itself. However, we believe it is important for the TRM to signal these affordability and equity considerations so that they are explicitly taken up in the next Triennial planning process.

Staff Response

Staff appreciate FE joining the MN TRMAC this year and want to root FE first in the scope of the MN TRM and then in the TRMAC process that was discussed in detail by stakeholders and Staff earlier in these Reply Comments. As stated above, Staff are proud of this TRMAC process and believe that when implemented well it works towards more accurate values at the population level.

The scope of revising the MN TRM is defined by the assumptions and methodology of existing and proposed measures. These assumptions and methodology specifically include defining the information that is required from the customer or the contractor, algorithms to define the energy used at customers' sites by the efficient and baseline equipment (if applicable), variables and their definitions, deemed values, incremental costs and measure lifetimes. When Staff propose an update of a measure in the MN TRM to the Assistant Commissioner, it is based on changes to the measure assumptions and methodology outlined within the above list. Staff interpret FE's above noted reasoning advocating for the removal of the Residential Hot Water – Gas Water Heater, Residential Appliances – Clothes Dryers (natural gas fueled applications), and Residential HVAC – Electronic Ignition Hearth measures from the MN TRM or ECO Plans to be insufficient, not rooted in the methodology and assumptions of these measures. Staff in turn want to redirect FE's engagement in the TRMAC process to influencing measure assumptions and methodology as opposed to less specific efforts to remove measures from ECO Plans.

Next, Staff want to acknowledge that customer incentives (or rebates) and incentive levels (or rebate levels) are not included, nor have they historically been included, in the MN TRM. This information is included in MN Utilities' ECO Plans. As such, Staff will not engage on Stakeholder comments that suggest that the Department "phase out incentives " or "end incentives," or have a discussion on the "primary intent of the rebate" within the MN TRM v5.0 non-regulatory or regulatory process and direct Stakeholders who want to engage within conversations on those topics to do so within the MN Utilities ECO plan proposal and review process.

Staff are, however, interested in understanding how specifically the MN TRM or individual TRM measures could "signal…affordability and equity considerations" and would appreciate engaging with FE on this topic as Staff prepare for future iterations of the MN TRM.

One of the key components of the MN TRMAC process is the Priority List. Historically, this list is introduced during the kickoff meeting. This year's kick off meeting took place on May 30, 2025, and the Priority List for TRM v5.0 was introduced during that meeting. TRMAC Members, including FE, were invited to provide feedback based on the below three questions on that Priority List for TRM v5.0 by June 27, 2025.

1. What are measures/topics that you would like to see included within the TRM?

2. What are your current pain points or interest areas the TRM can help to flesh out or explore?
3. Do you have questions or concerns regarding the MN TRM v5.0 Priority List?

Receiving this input on the Priority List from TRMAC members in the TRMAC process is invaluable, as it allows the appropriate time to review all requests from TRMAC members and, if prioritized for an update, implement those changes in a defensible way into the MN TRM. FE provided no feedback on the Priority List, nor did they provide insight regarding additional measures or topics that they wanted to have included in the MN TRM v5.0 by the above noted deadline. In fact, the Comment Period Deadline on November 20, 2025, is the first time Staff were made aware of the additional topics FE want to see addressed in the MN TRM.

F.2. Measure Life for Residential Envelope – Insulation and Air Sealing Insulation and Residential Envelope – High-Performance Windows Measures

FE Comment - Measure Life for Insulation, Air Sealing and High Performance Window

Fresh Energy recommends that the Department use a 50-year measure life for insulation and air sealing and a 40-year measure life for high-performance windows in ECO. These lifetimes more accurately reflect the durability and long-term performance of building shell energy efficiency measures and align with prior recommendations from the Center for Energy and Environment (CEE) submitted to the Department in 2023 regarding 2024–2026 ECO cost-effectiveness methodologies.[96]

The Department has proposed updating the measure life for insulation and air sealing to 35 years, and current guidance reflects a 36-year measure life for high-performance windows. However, these values do not fully capture the effective useful life of these measures, which typically endure for the full life of the building and continue to deliver persistent energy savings over many decades. As noted in Order Point 6d of the Deputy Commissioner's 2023 Decision regarding 2024–2026 ECO cost-effectiveness methodologies, Staff were instructed to revisit measure lifetimes in the next TRM cycle to determine whether adjustments beyond the default 20-year cap are appropriate.[97]

CEE's 2023 comments provide extensive documentation supporting longer lifetimes for building shell measures. Insulation materials commonly used in Minnesota—cellulose, fiberglass, and foam—have demonstrated useful lives of 50 years or more, and field experience confirms that insulation installed many decades ago continues to perform effectively in Minnesota homes. Similarly, high-performance windows have documented lifetimes of 35–45 years, and several neighboring jurisdictions already use lifetimes of 40–45 years for comparable window technologies. 16

Given the central role of building shell measures in advancing Minnesota's energy and climate objectives—including energy efficiency, affordability, greenhouse gas emissions reductions, system reliability, and equitable

[96] Center for Energy and Environment. Comments on the Minnesota Department of Commerce Proposed Decision in the Matter of 2024–2026 CIP Cost-Effectiveness Methodologies for Electric and Natural Gas Investor-Owned Utilities. Docket No. E,G999/CIP-23-046. Filed March 6, 2023. Available at https://efiling.web.commerce.state.mn.us/documents/%7B8033B986-0000-C617-BF10-9C3B67C8B6FA%7D/download?contentSequence=0&rowIndex=1.

[97] Minnesota Department of Commerce, Division of Energy Resources. Deputy Commissioner's Decision: In the Matter of 2024–2026 CIP Cost-Effectiveness Methodologies for Electric and Gas Investor-Owned Utilities. Docket No. E,G999/CIP-23-46 (Mar. 31, 2023), at p. 96. Available at https://efiling.web.commerce.state.mn.us/documents/%7B00DF3887-0000-C719-B71B-0523B746A81D%7D/download?contentSequence=0&rowIndex=1.

access to long-lasting energy savings—it is essential that cost-effectiveness tests accurately reflect the full duration over which these measures deliver benefits. Underestimating measure life leads to undervaluation of these measures, potentially hindering utility investment in measures that reduce customer bills, support efficient electrification, and mitigate winter peak impacts as heat pump adoption accelerates.

Fresh Energy provides the following recommendations to the Department:

- For the insulation and air sealing measures: Adopt a 50-year measure life
- For high performance windows: Adopt a 40-year measure life

Staff Response

Staff appreciate FE's interest in the measure lifetime for the Residential Envelope – Insulation and Air Sealing and the Residential Envelope – High-Performance Windows measures. FE's comments reference the Deputy Commissioner's 2023 Decision regarding 2024–2026 ECO Cost-Effectiveness Methodologies for Electric and Natural Gas Investor-Owned Utilities in which Staff were instructed to "revisit measure lifetimes in the next TRM cycle to determine what, if any, adjustments could be made to increase expected lifetime for prescriptive measure assumptions beyond 20 years."[98] In response to that direction, Staff reviewed and addressed the measure lifetime for the Residential Envelope – Insulation and Air Sealing Measure in the MN TRM v4.1, which was the next TRM cycle referenced in the Decision, and introduced the Residential Envelope – High-Performance Windows Measure in the MN TRM v4.2.

FE specifically note documentation collected and shared by CEE advocating for a higher lifetime for envelope measures within their comments to the 2024–2026 ECO Cost-Effectiveness Methodologies for Electric and Natural Gas Investor-Owned Utilities. The TRM work on those measures included that collected documentation and the measure lifetimes for those two measures were reviewed by TRMAC members including technical staff from CEE. Furthermore, technical staff from CEE worked closely with Staff to develop the Residential Envelope – High-Performance Windows Measure.

Below are comments from CEE in response to the Proposed MN TRM v4.1 in which the measure lifetime was updated for the Residential Envelope – Insulation and Air Sealing Measure.[99] CEE recommended that the Deputy Commissioner adopt the 35-year measure lifetime for the Residential Envelope – Insulation and Air Sealing measure. CEE did not file public comments in response to the Proposed MN TRM v4.2.

> We are especially grateful to the Department for proposing to update the measure lifetime for residential insulation and air sealing measures from 20 years to 35 years.1 The proposed 35-year lifetime more accurately reflects the effective useful life of air sealing and insulation measures, as well as the value and benefits those measures provide to customers, the utility system, and society…
>
> We thank the Department for consideration of our input to-date on the TRM. We recommend that the Deputy Commissioner adopt Department Staff's proposed TRM 4.1.

[98] Minnesota Department of Commerce. *Decision In the Matter of 2024-2026 CIP Cost-Effectiveness Methodologies for Electric and Gas Investor-Owned Utilities.* (March 31, 2023). Docket No. E,G999/CIP-23-46. (eDocket No. 20233-194403-01). At. 60.

[99] Center for Energy and Environment. *Center for Energy and Environment's Comments on the Minnesota Department of Commerce Proposed Technical Reference Manual 4.1.* (December 21, 2023). Docket No. E,G999/CIP-18-694. (eDocket No. 202312-201447-01). At 1.

Staff are responsible for tracking research surrounding measure lifetime updates for all measures included in the MN TRM. Staff will continue to do so and will update measure lifetimes either when new research is published or during the typical measure review schedule, whichever comes first.

Staff want to acknowledge that FE had been invited to partake in the TRMAC process for the MN TRM v4.1 and the MN TRM v4.2 which is when those topics were discussed. FE chose not to partake in either the non-regulatory or regulatory MN TRM process for those two iterations and therefor did not comment on these lifetime updates when they were being reviewed through the regulatory and non-regulatory TRMAC process.

IV. CONCLUSION

Staff appreciate the comments that were submitted by stakeholders and the work that has been done in developing this version of the TRM.

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Reply Comments

Docket No. E, G999/CIP-18-694

Dated this **15th** day of **December 2025**

/s/Sharon Ferguson

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9	Mike	Bull	mike.bull@state.mn.us		Public Utilities Commission	121 7th Place East, Suite 350 St. Paul MN, 55101 United States	Electronic Service		Yes	ECO SPECIAL SERVICE LIST
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16	Greg	Ernst	gaernst@q.com	G. A. Ernst & Associates, Inc.		2377 Union Lake Trl Northfield MN, 55057 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
17	Melissa S	Feine	melissa.feine@semcac.org	SEMCAC		PO Box 549 204 S Elm St Rushford MN, 55971 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
18	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
19	Karolanne	Foley	karolanne.foley@dairylandpower.com	Dairyland Power Cooperative		PO Box 817 La Crosse WI, 54602-0817 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
20	Tyler	Glewwe	tyler.glewwe@centerpointenergy.com	CenterPoint Energy		505 Nicollet Mall Minneapolis MN, 55402 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
21	Jenny	Glumack	jenny@mrea.org	Minnesota Rural Electric Association		11640 73rd Ave N Maple Grove MN, 55369 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
22	Jason	Grenier	jgrenier@otpco.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
23	Jeffrey	Haase	jhaase@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
24	Joe	Hoffman	ja.hoffman@smmpa.org	SMMPA		500 First Ave SW Rochester MN, 55902-3303 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
25	Travis	Jacobson	travis.jacobson@mdu.com	Great Plains Natural Gas Company		400 N 4th St Bismarck ND, 58501 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
26	Dave	Johnson	dave.johnson@aeoa.org	Arrowhead Economic Opportunity Agency		702 3rd Ave S Virginia MN, 55792 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
27	Martin	Kapsch	martin.kapsch@centerpointenergy.com	CenterPoint Energy Minnesota Gas		505 Nicollet Mall Minneapolis MN, 55402 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
28	Zach	Klabo	zach.klabo@mdu.com	Great Plains Natural Gas Company			Electronic Service		No	ECO SPECIAL SERVICE LIST
29	Deborah	Knoll	dknoll@mnpower.com	Minnesota Power		30 W Superior St Duluth MN, 55802 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
30	Kathryn	Knudson	kathryn.knudson@centerpointenergy.com	CenterPoint Energy Minnesota Gas		null null, null United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
31	Tina	Koecher	tkoecher@mnpower.com	Minnesota Power		30 W Superior St Duluth MN, 55802-2093 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
32	Martin	Lepak	martin.lepak@aeoa.org	Arrowhead Economic Opportunity		702 S 3rd Ave Virginia MN, 55792 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
33	Corey	Lubovich	coreyl@hpuc.com	Hibbing Public Utilities Commission		1902 6th Ave E Hibbing MN, 55746 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
34	Christine	Marquis	regulatory.records@xcelenergy.com	Xcel Energy		414 Nicollet Mall MN1180-07-MCA Minneapolis MN, 55401 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
35	Josh	Mason	jmason@rpu.org	Rochester Public Utilities		4000 E River Rd NE Rochester MN, 55906	Electronic Service		No	ECO SPECIAL SERVICE LIST

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						United States				
36	Scot	McClure	scotmcclure@alliantenergy.com	Interstate Power And Light Company		4902 N Biltmore Ln PO Box 77007 Madison WI, 53707-1007 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
37	David	Moeller	dmoeller@allete.com	Minnesota Power			Electronic Service		No	ECO SPECIAL SERVICE LIST
38	Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP		33 South Sixth St Ste 4200 Minneapolis MN, 55402 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
39	Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment		212 3rd Ave N Ste 560 Minneapolis MN, 55401 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
40	Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company		200 1st Street SE PO Box 351 Cedar Rapids IA, 52406-0351 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
41	Larry	Oswald	larry.oswald@mdu.com	Great Plains Natural Gas Company		105 W Lincoln Ave PO Box 176 Fergus Falls MN, 56538-9001 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
42	Lisa	Pickard	lseverson@minnkota.com	Minnkota Power Cooperative		5301 32nd Ave S Grand Forks ND, 58201 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
43	Bill	Poppert	info@technologycos.com	Technology North		2433 Highwood Ave St. Paul MN, 55119 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
44	Dave	Reinke	dreinke@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024-9583 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
45	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	ECO SPECIAL SERVICE LIST
46	Jean	Schafer	jeans@bepc.com	Basin Electric Power Cooperative		1717 E Interstate Ave Bismarck ND, 58501	Electronic Service		No	ECO SPECIAL SERVICE LIST

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						United States				
47	Laura	Silver	laura.silver@state.mn.us		Department of Commerce	85 7th Place E, Suite 500 St. Paul MN, 55101 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
48	Rick	Sisk	rsisk@trccompanies.com	Lockheed Martin		1000 Clark Ave. St. Louis MO, 63102 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
49	Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.		76 W Kellogg Blvd St. Paul MN, 55102 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
50	Anna	Sommer	asommer@energyfuturesgroup.com	Energy Futures Group		PO Box 692 Canton NY, 13617 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
51	Russ	Stark	russ.stark@ci.stpaul.mn.us	City of St. Paul		Mayor's Office 15 W. Kellogg Blvd., Suite 390 Saint Paul MN, 55102 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
52	Kodi	Verhalen	kverhalen@taftlaw.com	Taft Stettinius & Hollister LLP		80 S 8th St Ste 2200 Minneapolis MN, 55402 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
53	Michael	Volker	mvolker@eastriver.coop	East River Electric Power Coop		211 S. Harth Ave Madison SD, 57042 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
54	Ethan	Warner	ethan.warner@centerpointenergy.com	CenterPoint Energy		505 Nicollet Mall Minneapolis MN, 55402 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
55	Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company		200 First St SE Cedar Rapids IA, 52401 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST
56	Cristina	Zuniga	czuniga@otpco.com	Otter Tail Power Company		215 South Cascade Street PO Box 496 Fergus Falls MN, 56538 United States	Electronic Service		No	ECO SPECIAL SERVICE LIST