



December 15, 2025

Assistant Commissioner Sydnie Lieb
Minnesota Department of Commerce, Division of Energy Resources
85 7th Place East, Suite 500
St. Paul, MN 55101

RE: Center for Energy and Environment's Reply Comments In the Matter of the Minnesota Technical Reference Manual Version 5.0

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

Dear Assistant Commissioner Lieb,

Center for Energy and Environment ("CEE") respectfully submits these reply comments to the Minnesota Department of Commerce, Division of Energy Resources ("Department") in response to the initial comments filed on November 20, 2025, in Docket Number E,G999/CIP-18-694.

CEE continues to find that a 90 percent AFUE furnace baseline is reasonable based on the currently available data sources. To capture the full savings from replacing any non-condensing furnaces remaining in the market, CEE also continues to recommend that utilities propose using the federal minimum standard of 80 percent AFUE when they can verify that the furnace being replaced is non-condensing. Together with CEE's other recommendations, this approach would result in more accurate energy savings calculations while enabling utilities to continue targeting non-condensing furnaces for replacement with efficient heating systems.

In these reply comments, CEE responds to several concerns raised by other parties and provides additional clarification regarding our recommendations.

Home Energy Squad Data

In CEE's initial comments, CEE provides a summary and brief analysis of data collected during Home Energy Squad (HES) visits to help inform the furnace baseline decision.¹ In CenterPoint

¹ 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.

Energy’s initial comments, CenterPoint highlights several limitations of the HES data, such as potential selection bias, that CEE similarly acknowledges in our initial comments.

However, in reference to the HES data, CenterPoint also states:

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... 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.²

CEE examined the “Year Built” variable in the HES dataset to address CenterPoint’s concerns and understand whether the HES data overrepresents households built after 1970 compared to other regions in Minnesota. Of the 21,876 households included in the HES data analysis, 52 percent are recorded as built before 1970, 47 percent are recorded as built in 1970 or after, and 1 percent do not have a year recorded or have an erroneous entry for the “Year Built” variable.

Table 1: Housing Age of Homes Visited by HES, 2020-2025

Year Built	Count	% of Total
Before 1970	11,440	52%
1970 and After	10,217	47%
Blank or Error	219	1%
TOTAL	21,876	100%

According to the 2024 State of the State’s Housing report cited by CenterPoint Energy, the only region with a greater share of pre-1970 houses than 52 percent is the Southwest region.³ Although most of the HES visits occurred in the Twin Cities region, which has a 39 percent share of pre-1970 houses according to the State of the State’s Housing study, the HES dataset itself has a larger share at 52 percent.⁴ There is no clear disparity between the age of houses included in the HES dataset and the age of houses in greater Minnesota. A difference in housing age is therefore not a reason to assume the average furnace efficiency in greater Minnesota is lower than that of the HES dataset.

² Page 5 of CenterPoint Energy’s November 20, 2025 Initial Comments. Docket Number E,G999/CIP-18-694.

³ State of the State’s Housing 2024. Minnesota Housing Partnership. https://mhponline.org/wp-content/uploads/FINAL_SOTS_2024.pdf

⁴ 67 percent of the HES visits occurred specifically in Hennepin and Ramsey counties, which may have a different housing stock than the other five counties included in the Twin Cities Region as defined by the State of the State’s Housing report.

Although older housing stock likely corresponds with higher shares of non-condensing furnaces, housing age is not a perfect proxy for representing the current efficiency of existing furnaces. Some households built before 1970 may have already undergone the process to convert to a condensing furnace, especially if they had access to utility rebates incentivizing higher efficiency furnaces. The State of the State's Housing study also does not exclude households with other types of heating equipment, such as boilers and electric resistance systems. Although more limited in geographic scope, the HES data analysis focuses on homes with forced air furnaces and uses actual recorded AFUEs to calculate the average furnace efficiency, rather than using housing age as a proxy.

Low-Income Customer Impacts

Several utilities raised concerns that an increase to the furnace baseline would limit their ability to offer meaningful furnace rebates due to the resulting decrease in first-year energy savings, which would be especially detrimental to low-income customers. In initial comments, the Joint Commenters explained, "...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."⁵ Similarly, MERC stated:

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.⁶

CEE agrees that low-income customers are more likely to have non-condensing furnaces and may benefit the most from utility rebates for upgrading to higher efficiency equipment. It is essential that utilities continue offering meaningful rebates for these customers.

Since low-income programs generate important benefits for low-income customers but are typically more costly to implement than comparable market rate programs, the ECO framework does not require that low-income programs be cost-effective, and utilities can exclude net benefits from these programs for purposes of calculating their financial incentive.⁷ Therefore, even if a decrease in savings renders a measure non-cost-effective, it could continue to be implemented in low-income programs.

⁵ Page 8 of the Joint Commenter's November 20, 2025 Initial Comments. Docket Number E,G999/CIP-18-694.

⁶ Page 2 of MERC's November 20, 2025 Initial Comments. Docket Number E,G999/CIP-18-694.

⁷ Minn. Stat. § 216B.241 subd. 7i.

However, it is still important to capture the full savings from low-income measures, especially since these customers are more likely to have an existing non-condensing furnace. If utilities can capture the larger savings generated by replacing these furnaces, they will be further incentivized to pursue low-income measures.

In CEE's initial comments, we suggest that, in cases where a utility can verify the furnace being replaced is non-condensing, the utility could propose to use the federal minimum standard of 80 percent AFUE as the measure baseline. Although CEE finds that a 90 percent AFUE baseline is more representative of the current market, it is important to continue targeting any remaining non-condensing furnaces in Minnesota. CEE's suggested approach would capture the larger savings from replacing non-condensing furnaces without overestimating the savings of other measures, allowing utilities to continue aggressively targeting these key customers with meaningful rebates.

CEE also suggested that the Department explore a low-income specific furnace baseline. However, if the Department finds there is not enough available data to define a low-income specific baseline at this time, CEE's recommended approach for non-condensing furnaces would still capture the full savings of any low-income customers with a verifiably non-condensing furnace. Given the limited low-income specific data available at this time, CEE recommends the Department continue exploring a low-income specific baseline for future TRM updates while implementing a 90 percent AFUE baseline for both market rate and low-income customers in Version 5.0 alongside CEE's suggested approach for non-condensing furnaces.

Considerations for Air Source Heat Pumps (ASHPs)

Several utilities raised concerns that, under the Department's proposed decision, not all measures impacted by the furnace baseline would be updated simultaneously, with ASHPs and several other measures not slated for an update until Version 5.1 of the TRM. CEE continues to recommend the Department update ASHP measures alongside other affected measures in Version 5.0 to maintain consistency across ECO portfolios.

In discussing potential impacts to ECO programs, utilities also raised concerns about the decline in savings for furnaces used as backup systems for ASHPs. MERC stated:

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.⁸

⁸ Page 2 of MERC's November 20, 2025 Initial Comments. Docket Number E,G999/CIP-18-694.

Similarly, Xcel Energy explained that:

...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 individual needs.⁹

CEE understands that savings from all furnaces, including those used as backup systems for ASHPs, would decrease in the event of a 90 percent AFUE baseline and appreciates the utilities drawing attention to the potential impacts of a baseline change. However, if evidence and data suggest that the furnace baseline is no longer representative of the current market, it should be updated regardless of impacts to savings.

CEE recommends that, if the 90 percent AFUE baseline is implemented, ongoing ECO stakeholder processes for the 2027-2029 Triennial should explore impacts to ECO portfolios and strategies for offsetting any decrease in first-year savings and net benefits. Utilities should evaluate opportunities to increase savings from multi-family, low-income, insulation and air sealing, and efficient fuel switching measures to offset losses from the baseline adjustment.

According to CEE's estimates, ASHPs will continue to generate significant per-measure savings, even if the updated furnace baseline is applied to ASHP savings calculations in Version 5.0 of the TRM as recommended by CEE. Similarly, insulation and air sealing measures will experience a decrease in savings, but not one as significant as gas furnaces. If CEE's suggested approach for non-condensing furnaces is implemented, measures replacing non-condensing furnaces would continue generating significant savings. CEE encourages continued conversations between utilities and stakeholders to determine how to best adapt portfolios in the event of the adoption of a 90 percent AFUE furnace baseline.

CEE Recommendations

CEE continues to support the recommendations made in CEE's initial comments with some minor modifications. To simplify Recommendation 2, CEE updated the language to refer to non-condensing furnaces rather than those with AFUEs lower than 90 percent. CEE also includes additional clarification for Recommendation 3:

1. Based on CEE's review of the available data sources, CEE believes the Department's proposed 90 percent AFUE furnace baseline for single-family, replacement furnaces is reasonable.

⁹ Page 6 of Xcel Energy's November 20, 2025 Initial Comments. Docket Number E,G999/CIP-18-694.

2. In cases where a utility can verify the existing furnace being replaced is non-condensing, the utility could propose using the federal minimum standard of 80 percent AFUE as the measure baseline. This approach would allow utilities to continue prioritizing and offering larger customer rebates for the replacement of lower efficiency, non-condensing furnaces.
3. The Department could consider implementing a low-income specific furnace baseline, as sources show that low-income households may be more likely to have a furnace efficiency lower than 90 percent AFUE. If the Department does not have sufficient data to establish a low-income specific baseline at this time, the Department should implement a 90 percent AFUE baseline for low-income and market rate customers with the verification option described in Recommendation 2 for Version 5.0 of the TRM, and explore a low-income baseline for future versions.
4. All measures in the Minnesota TRM with the furnace baseline as an input in the savings calculation should be updated at the same time to ensure consistent assumptions are used throughout utility portfolios.
5. If the 90 percent AFUE baseline is implemented, ongoing ECO stakeholder processes for the 2027-2029 Triennial should explore impacts to planned portfolios and strategies for offsetting any decrease in first-year savings and net benefits. Utilities should evaluate opportunities to increase savings from multi-family, low-income, insulation and air sealing, and efficient fuel switching measures to offset losses from the baseline adjustment.
6. If the 90 percent AFUE baseline is implemented, the Department and stakeholders should proactively communicate with contractors and distributors to plan for any market impacts.

Thank you for considering our comments. Please contact me at myatsuhashi@mncee.org with any questions.

Sincerely,

/s/ Mariko Yatsuhashi
Regulatory Policy Advocate
Center for Energy and Environment

AFFIDAVIT OF SERVICE

DOCKET NUMBER E,G999/CIP-18-694

I, Mariko Yatsunami, hereby certify that on this 15th day of December, 2025, I served *Center for Energy and Environment's Reply Comments In the Matter of the Minnesota Technical Reference Manual Version 5.0* in Docket Number E,G999/CIP-18-694 on the following persons on the attached Service Lists by:

 X placing such filing in envelopes, properly addressed, and depositing the same in the Post Office at the City of Minneapolis, for delivery by the United States Post Office as directed by said envelopes.

 X electronic filing

 /s/ Mariko Yatsunami

Mariko Yatsunami

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22	Jason	Grenier	jgrenier@otpc.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@greenergy.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@otpc.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