

HENNEPIN COUNTY RESIDENTIAL WEATHERIZATION AND ELECTRIFICATION ACTION PLAN

Executive Summary

Hennepin County has the climate goal of reaching net-zero emissions by 2050. Hennepin County's 1–4 unit residential homes can reach net-zero emissions by 2050, but doing so depends on rapidly reducing natural gas use in this sector. Residential emissions from electricity are trending downward, yet natural gas emissions from these homes remain effectively flat or increasing, making them critical to the County's climate strategy. The path forward is clear: systematically weatherizing homes and replacing gas equipment with efficient electric technologies.

This study answers two core questions:

1. What are the financial, labor, and emissions implications of weatherizing and electrifying all 300,000 1–4 unit homes in Hennepin County by 2050?
2. What actions can the County take to equitably accelerate this transition?

To address these questions, the project team:

- Built a modeling framework, using multiple high-resolution data sources, to estimate the costs, labor requirements, and emissions outcomes of weatherizing and electrifying every 1–4 unit home under several scenarios.
- Performed spatial analysis to identify where climate investments can deliver the greatest emissions reductions and equity benefits.
- Conducted stakeholder workshops and reviewed existing local and external programs to identify program gaps, barriers, and best practices for scaling weatherization and electrification.

Figure 1. Air source heat pumps are a key technology for decarbonizing homes.



Takeaways

Existing technologies can effectively decarbonize all homes

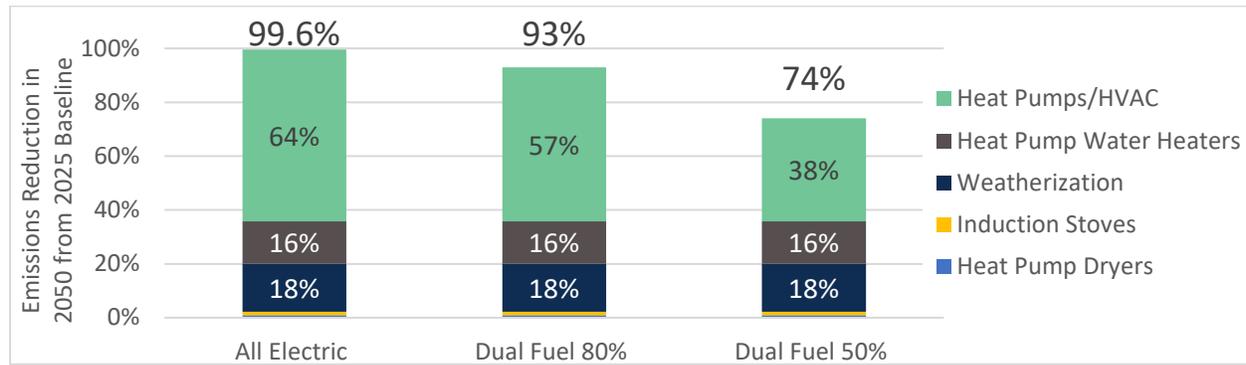
Modeling shows that just three upgrades deliver nearly all the technically achievable greenhouse gas reductions in the 1–4 unit housing stock:

1. Comprehensive weatherization
2. All-electric or dual fuel air source heat pumps
3. Heat pump water heaters

Deploying these measures across all homes is sufficient to reduce residential emissions roughly 74–99% by 2050 in the modeled scenarios, essentially decarbonizing the sector while in many cases improving comfort and quality of life. Weatherization alone allows many homes to substantially reduce energy use and lower energy costs, especially in older, uninsulated housing stock. Other modeled measures to eliminate remaining natural gas use and facilitate

electrification include induction stoves, heat pump dryers, EV charging circuits, and electrical panel upgrades. Figure 2 shows the emissions reduction achieved in the three modeled scenarios, which vary only by heating system: cold climate heat pump with electric resistance backup (All Electric), cold climate heat pump with gas back up (Dual Fuel 80%), and mid-efficiency variable-speed heat pump with gas back up (Dual Fuel 50%).

Figure 2. Emissions reductions achieved in 2050 by measure and model scenario



95% of households can save on energy bills

Most homes in Hennepin County can lower their energy bills through partial or full electrification when paired with special rates and appropriate equipment choices. A key enabler is Xcel Energy’s electric space heating rate, which is available when electricity becomes a home’s primary heating fuel. Nearly all homes (95%) can achieve bill savings under the Dual Fuel 50% modeling scenario. This scenario models a heat pump that meets 50% of the heating load combined with a gas furnace that meets the other 50% and qualifies for the electric heating rate.

In practical terms, installing a dual fuel heat pump allows many households to start saving money while taking a meaningful step toward decarbonization. All-electric scenarios can go further, eliminating fixed gas service charges and delivering greater emissions reductions, while still achieving bill savings for nearly two-thirds of residents when combined with weatherization and Xcel Energy’s electric space heating rate, true even with competitively low natural gas prices. This removes a historical barrier for many households — electrification isn’t necessarily a trade-off between climate benefits and household budgets.

Investing today in energy-smart homes delivers generational returns

Every major piece of gas equipment in the existing building stock will reach end of life at least once before 2050. The key decision point is whether those replacements are gas-to-gas or gas-to-electric. Weatherizing and electrifying every 1–4 unit home in Hennepin County is estimated to cost on the order of \$10 billion in total capital investment. However, about \$5 billion of that spending will occur regardless to replace failed equipment. According to rough estimates, the total upfront cost to weatherize and electrify the homes of county residents below 80% area median income is \$3.3 billion, or approximately 31% of the total. The median upfront cost per dwelling of weatherization and electrification is \$29,000 to \$33,000.

In many scenarios, the incremental cost of choosing high-efficiency electric equipment instead of like-for-like gas replacements is modest, and in some cases can be fully offset by available incentives. When incentives from utilities, municipalities, tax credits, and special financing are layered, households can often reduce or eliminate the incremental cost of electrification while benefiting from lower operating costs and improved comfort, health, and safety. Upfront costs

continue to inhibit adoption for many residents who don't have access to municipal rebates or face other income constraints.

Targeted funding and workforce growth make scaling retrofits achievable

To align the residential sector with the County's net-zero 2050 target, approximately 12,800 homes must be weatherized and electrified each year. Current weatherization and electrification activity in the County is far below this pace, indicating the need to substantially scale retrofits, market engagement, and enabling policy.

Meeting this accelerated pace is ambitious but possible. Aligning the natural replacement events of every furnace/boiler, water heater, and appliance with electrified counterparts and weatherization is the central implementation challenge. Doing so will require an estimated 579 additional workers across weatherization, electrical trades, and general contracting, representing a significant but manageable workforce expansion.

Actions can be targeted to maximize climate and equity impacts

The spatial analysis shows that many disadvantaged residents live in older homes with high potential for energy and bill savings through weatherization and electrification. Directing program resources toward these homes can simultaneously achieve large emissions reductions, energy bill savings, and substantial energy burden relief. At present, however, no low-income retrofit programs operating in Hennepin County consistently include electrification upgrades as a standard offering, leaving significant climate and equity benefits unrealized.

Meanwhile, many newer homes in the western parts of the County are effectively heat pump ready, with building envelopes and electrical infrastructure that can accommodate electrification with minimal additional cost. See more in the full plan and [interactive online mapping tool](#).

Recommended Actions

Based on the data analysis, stakeholder input, and landscape research synthesized in this study, we recommend Hennepin County take the following actions.

Facilitate retrofits with County investment in high-impact programs:

1. Secure a funding source for weatherization and electrification programs.
2. Expand and scale a low-income weatherization and electrification retrofit pilot program.
3. Expand and/or create a deferred forgivable loan for weatherization and electrification.
4. Create and/or support a scalable network of contractors.
5. Create a weatherization and electrification cost-share rebate program.

Support programs and policies to clear barriers and amplify partners:

6. Ensure access to an advisor service for navigating programs and home projects.
7. Create a technical assistance and policy development service to help city governments advance home decarbonization.
8. Advocate to align and increase electrification in utility programs.
9. Create financial incentives for new developments to incorporate electrification.

Raise awareness and motivate action:

10. Conduct education and outreach campaigns to encourage residents and property owners to weatherize and electrify.