DUCTLESS COLD CLIMATE HEAT PUMPS FOR MULTIFAMILY APPLICATIONS

WHY THIS RESEARCH IS NEEDED

The 2018 CARD Minnesota Energy Efficiency Potential Study identified cold climate air source heat pumps (ccASHPs) as the technology expected to provide 25% of total residential electrical savings in the state in the coming decade. This will be an essential component in meeting Minnesota’s 1.5% conservation goal. Within the past year several Minnesota electric utilities have modified their existing heat pump programs or undertaken ccASHP pilots to increase installations. However, installations have been slow to date due to lack of familiarity with this technology on the part of Minnesota contractors and consumers. Most ccASHP research and programs have been designed to characterize and impact the single-family market. This project will focus on the outstanding questions and modifications needed for applications in the multifamily sector.

PROJECT PROCESS AND EXPECTED OUTCOMES

New ccASHP systems have demonstrated potential to provide large energy savings in electrically heated buildings in Minnesota. This project will engage stakeholders and screen multifamily buildings to understand the range of building and heating and cooling system features that will impact heat pump performance. ccASHP system type selection, sizing, configuration, and control guidance will be developed and used alongside existing industry installation and monitoring best practices in up to 20 multifamily test units. Analysis will be conducted to determine typical statewide performance, energy and carbon savings, cost effectiveness, and the overall potential to assist in reaching conservation improvement goals.

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PROJECT SUMMARY

Objectives
This study will measure the performance, energy savings, and customer acceptance of ductless ccASHPs in multifamily applications and establish installation protocols to ensure their potential is realized.

Non-Energy Benefits
Increased affordability of housing for occupants. Increased home comfort. More desirable properties, increasing occupancy and decreasing turnover for property owners.

Scope
Field work at up to 20 total test units in as many as four buildings selected based on previous market characterization. Develop and refine application protocols based on field data.

Timeline
April 2019–September 2020