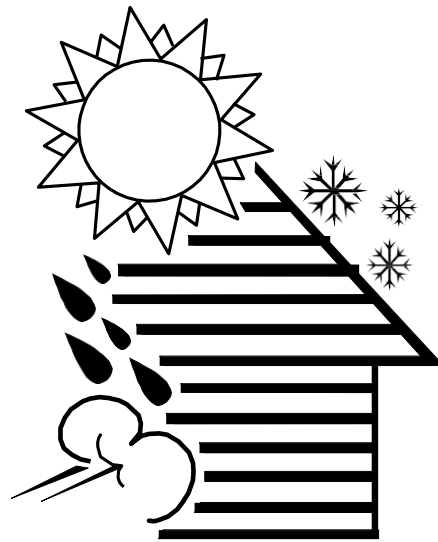


Minnesota Weatherization Assistance Program



*Weatherization
Works*

MULTIFAMILY PROCEDURES Guide

produced with
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Weatherization Assistance Program Funds



Section 1: Multifamily Weatherization Overview

1.1 Introduction

Successful completion of a multifamily weatherization project requires that service providers take a fresh look at each step of the weatherization process. With multiple households; larger buildings with different building systems; a different energy modelling tool; additional parties involved; and larger and more expensive scopes of work each aspect of weatherization takes on an added layer of complexity for multifamily weatherization projects. This document and the documents referenced below are intended to help guide weatherization service providers through this process.

1.2 Multifamily Policy

All Minnesota weatherization policy applies to multifamily projects as it does to single-family weatherization projects. Policies specific to multifamily weatherization are found primarily in Section 3 of the Minnesota Weatherization Assistance Program Policy Manual. Section 4, which covers audit events including site visits, contractor requirements, and quality control inspections and Section 7, which covers procurement are also highly relevant to multifamily projects. Finally, all multifamily projects must meet the requirements of US DOE's WPN 22-12 and Minnesota's US DOE approved EA-QUIP audit tool or Weatherization Assistant in the case of townhomes.

1.3 Essential Multifamily Policies at a Glance

Service providers working on multifamily weatherization projects should refer to Section 3, Section 4, and Section 7 of the Minnesota Weatherization Assistance Program Policy Manual, as well as this document.

- Priority List can be used on low-rise multifamily building projects and 2–4-unit buildings if they meet the minimum requirements.
- Maximum WAP expenditure for multifamily buildings with 5+ Units (3.3.2.2) is based on the statewide unit average (including program support cost) times the number of qualified units.
- The overall package SIR must be above 1.0 for measures paid-for using WAP funds (e.g., a building owner can buy down a heating system replacement SIR when the overall package SIR is above 1.0 including the entire cost of the boiler. The overall package SIR must be based on total costs of measures paid for using WAP funds).
- Property Owner Contributions are required for 5+ unit buildings (3.3.6).
- Multifamily Building Eligibility (3.3.2.1) is determined according to Minnesota weatherization policy. Section 2.1 of this document provides additional guidance.
- All multifamily weatherization projects must be approved by Commerce before work commences.
- All quality control inspections of multifamily weatherization projects must verify SIRs based on actual costs; that all work meets Standard Work Specifications; and that invoiced amounts match authorized costs per policy 4.6.5.3.
- Quality Control Inspectors must successfully complete a USDOE approved Multifamily QCI Gap Training to inspect multifamily weatherization projects.

1.4 Multifamily Guidance and Reference Documents

The following documents contain further information essential to the completion of multifamily weatherization projects and will be referenced throughout this document.

- Minnesota Weatherization Assistance Program Policy Manual
- EA-QUIP User Manual
- Multifamily QCI Course Materials/Manual
- WPN 22-12 (Multifamily Weatherization)
- WPN 22-5 (Expansion of Client Eligibility)
- WPN 22-13 (Weatherization of Rental Units)

1.5 Multifamily Project Management

Simultaneous Processes: In a typical single-family weatherization project each stage of the process happens consecutively one after the other. Determining household eligibility is followed by determining dwelling eligibility, followed by a site visit, energy modelling, work scope development, funding determination, procurement, installation, inspection, and payment. However, multifamily projects require that many of these steps proceed simultaneously throughout the course of a project (e.g., a preliminary assessment of building owner participation, potential scope of work, household and building eligibility, and potential project partners should take place before a full energy audit is performed).

Communicate Early and Often: Multifamily weatherization projects have more stakeholders involved than a typical single-family weatherization project. The weatherization service provider is ultimately responsible for coordination and communication between these groups. Success depends on effective communication that allows stakeholders to work together effectively.

Stakeholder Inclusion: Single-family weatherization projects primarily involve communication between household members and agency staff. In multifamily weatherization projects agencies must coordinate and communicate with multiple stakeholders.

Building Owners: Many multifamily buildings are owned by groups or large organizations. They may be managed by one company and owned by another. The company structure may require project buy-in from several different staff members. Service providers should identify key decision makers as early as possible in the process (e.g., company may have an operations manager in charge of the mechanical systems throughout a portfolio of buildings whose approval is needed for mechanical system improvements).

Building Residents: Service providers must work closely with building management to communicate with building residents at every stage of the weatherization process.

Commerce: Service providers should engage Commerce in multifamily weatherization projects from preliminary assessment; to the energy audit; to project approval, installation, and inspection.

Project Partners: Service providers should engage project partners such as local utilities, nonprofits, and government agencies to increase the amount of leveraged funding and other supports that can

benefit a project. Understanding the desired goals and outcomes of your project partners is key to gaining their support and ensuring the project is a win-win-win for the building owner and its residents; project partners; and the weatherization assistance program.

Contractors: Multifamily weatherization project management often requires the coordination of multiple contractors each performing large scale installations. It is crucial that service providers coordinate contractor work to avoid scheduling conflicts.

Local Government: Codes officials and others within local government can be key allies in a multifamily project. Conversely codes officials who are not included in a process from the beginning may slow down a project until they are brought up to speed.

1.6 Preliminary Assessments of Multifamily Projects

Each aspect of a multifamily weatherization project should be assessed to determine feasibility before deciding to begin moving forward with a project.

Household and Building Eligibility: What is the likelihood that enough households are income eligible to meet building eligibility requirements?

- **eHEAT:** How many of the building residents are currently income eligible? Note that in buildings that are not individually metered this may or may not be a good litmus test (e.g., we are aware of such a building that had less than ten percent eligible in eHEAT but was 100% eligible based on income requirements).
- **Building Income Requirements:** Subsidized housing is based on percentage of Area Median Income. “Low Income,” is 80% of Area Median Income and is typically higher than weatherization income limits. “Very Low Income,” is 50% of Area Median Income and may be higher or lower than weatherization income limits depending on the area. “Extremely Low Income,” is around 30% of Area Median Income and is typically lower than weatherization income limits.
 - Building owners of subsidized housing should be able to tell you relatively easily what percentage of their tenants fall into which subsidized category and what those limits are for a given building. This can be a very effective way to get a sense of whether a building is likely to qualify for weatherization.
 - Commerce and our partners at Minnesota Housing are also available to help. There are databases that can provide some of this information on a building-by-building basis. This can help when looking at several potential buildings to determine which projects to pursue. Ultimately building owners are those most familiar with the exact make-up of income demographics for their buildings.

Potential Scope of Work: While EA-QUIP will provide the final determination of what measures are cost effective, an initial conversation with a building owner/building manager and an initial building walk-through is an invaluable tool to help determine project feasibility. A few examples:

- If attic insulation is at an R-19 it is likely that adding attic insulation will be cost effective. If attic insulation is at R-38 it is very possible it will not be.
- If lighting has recently been replaced with LEDs, this will influence the overall package SIR because lighting very often has large SIRs that help bolster the overall package SIR of a project.
- Understanding the existing heating system efficiency and condition will help you assess the

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- potential cost and savings of heating system replacement.
- Understanding the existing ventilation system and whether a variance on ASHRAE 62.2 will be required based on the building design is an important thing to consider from the beginning of a project.

Building Owner Participation: The building owner is the most essential partner in any multifamily project. Gaining assurance that they are willing to contribute their time and resources to the project is a process that starts at the first point of contact; continues with the signing of the Property Owner Agreement; and does not end until the last measure passes inspection. At every step of the way service providers should under-promise and over-deliver, while at the same time encouraging building owners as to the potential benefits of weatherization to the property and residents.

Utility Bill Analysis and Benchmarking: An initial analysis of the utility bills will provide an indication of the potential cost-effective energy saving opportunities (e.g., if the total heating bills are \$10,000 per year and you anticipate a 20% increase in efficiency, the savings are roughly \$2,000 per year over twenty years or \$40,000. How does this compare to a potential heating system replacement cost in that building? Similar logic can be applied to potential baseload replacements). It is also useful to assess potential energy savings of a potential building by comparing its energy use to other similar multifamily buildings in Minnesota. Average natural gas and electric usage for multifamily buildings in Minnesota can be found in the [Minnesota multifamily rental characterization study | Slipstream \(slipstreaminc.org\)](#), pages 45-46.

Section 2: Multifamily Household and Dwelling Eligibility

2.1 Household and Building Eligibility

Household eligibility requirements for multifamily weatherization projects are the same as those for single-family weatherization projects. There are three methods that can be used to demonstrate household eligibility for multifamily projects.

- The first method is to use the eHEAT software to demonstrate the income eligibility of individual households. This method is the same as for single-family weatherization projects.
- The second method is for the building owners to demonstrate household eligibility through HUD means tested programs, as outlined in WPN 22-5. US DOE in partnership with HUD provides several lists that contain buildings that are or may be eligible. These include:
 - The [Public Housing Buildings Qualified List](#), which contains a list of HUD Public Housing that is categorically eligible (at least 66% occupants qualify);
 - the [Public Housing Further Verification Required List](#), which contains a list of HUD operated multifamily buildings which may be eligible for WAP services but need further verification;
 - the [Assisted Multifamily Properties List](#), which are privately owned multifamily buildings that are likely eligible for WAP services. Eligibility must be verified;
 - the [USDA Buildings Qualified List](#); and
 - the HUD 1 & 2 Family Categorical Eligibility List, which are HUD managed properties that are categorically eligible for weatherization. This list is provided to Service Providers via secure communication.
- The third method is for the Service Provider to determine eligibility through income information supplied by the property owner. This information will be reviewed by Commerce to confirm eligibility.

- A fourth method is for a Subgrantee to determine eligibility through information supplied by property owners. This information will be reviewed by Commerce to confirm eligibility through the Service Provider’s submitted data and data collection process.

2.2 Multifamily Household Eligibility Best Practices

- Become well acquainted with Section 3 of the policy manual which describes multifamily building eligibility determination in detail.
- Use the ideas in section 1.6 of this document to help determine the likelihood a building is eligible before collecting EAP applications.
- Coordinate with the Energy Assistance Program when working to determine building eligibility.
- Consider building size and number of currently eligible tenants when deciding which approach in section 2.1 is the best method to demonstrate household and building eligibility. For example, if a twenty-unit building has ten units currently eligible in eHEAT and the property owner is confident that an additional six residents are eligible, a good course of action would be to enlist the property owner’s help in having residents complete their EAP applications. A thirty-unit building not individually metered in which only four units are eligible in eHEAT and the property owner is confident they meet WAP income requirements may be a good candidate for HUD approval as outlined in WPN 22-5.

Section 3: Multifamily Audit Event

3.1 Multifamily Audit Event Policy

The policies found in “Section 4: Audit Event,” of the Minnesota Weatherization Assistance Program Policy Manual apply generally to multifamily weatherization projects.

- Minnesota uses the EA-QUIP software for centrally heated multifamily buildings to determine the cost effectiveness of energy conservation measures.
- Due to the scope and scale of multifamily weatherization projects, service providers will create a master building file in the place of individual client files.
- All client forms relevant to measures that directly affect the dwelling and common areas will be included in the master building file except in cases where Commerce has approved an alternative method of communication with building residents.
- All building owner forms will be included in the master building file unless Commerce has approved an alternative method of documenting building owner participation and notification that accomplishes the same purposes and policy requirements of the building owner forms.
- A Property Owner Agreement must be signed by the building owner before weatherization work proceeds.

3.2 Adding Multifamily Units to Weatherization Assistant

POLICY: The following procedure must be used to add multifamily units to the Weatherization Assistant (WA) software for clients which do not appear in the FACSPro software. This includes units that are either unoccupied, occupied but ineligible, categorically eligible, or clients whose income eligibility has been verified by information supplied by the property owner.

PROCEDURE:

1. A client ID and all address, dwelling, and occupant information in the client tab must be added for each unit.
2. In the WA client tab, press the copy button.
3. In the Client ID field, create a client ID using the following naming convention.
4. All multifamily building clients in WA should start with the prefix MF. This will keep the client from appearing on the "Invalid Audit Events," report.
5. Add agency's WA agency number.
6. Add two-digit program year.
7. Add the multifamily project number. o If a project or building complex is comprised of multiple buildings, all buildings in the same project or complex will share the same project number.
8. Add the building's identification number or "BIN."
 - o For Non-HUD verified buildings this could either be the street address of the building or the number of the building within the project. For example, "23-01-05" means the fifth building in the agency's first multifamily project of program year 23. Whereas a building at 150 Main Street could be represented by "150".
 - o For a HUD verified building, the "BIN" is the building number found in column 3 of the HUD verification spreadsheet.
9. Add the unit identification number.
10. This will most often be the unit street address or the unit number. For example, 100 would be apartment number 100. Sample Client ID - MF73-23-01-05-100 An explanation of the sample client ID has been provided below:
 - "MF"= Multifamily
 - "73" = Example agency's WA agency number
 - "23" = Program year 23
 - "01" = Multifamily project number
 - "05" = Building identification number or "BIN"
 - "100"= Unit identification number

3.3 Multifamily Site Visit

- Generally multifamily site visits must meet the same standard as single-family audit event site visits.
- Blower door testing is optional on multifamily audit event site visits.
 - o Blower door testing of individual units may provide guidance for compartmentalization efforts.
- Data collection requirements are found in the Minnesota Weatherization Assistance Program Policy Manual Section 4.
- Data Collection Standards: Multifamily audit events must meet the following data collection standards:
 - o **Data Accuracy:** Data gathered by Energy Auditors and Quality Control Inspectors must ensure accurate energy modelling in the EA-QUIP or WA Software and must provide cost and materials estimates that allow contractors and crews to perform their work efficiently and effectively.
 - o **Sufficient Documentation:** Documentation should provide colleagues and monitoring agencies familiar with the WAP program with sufficient information to understand the relevant conditions in a multifamily building and the scope of work. Documentation should

provide crews and contractors with sufficient information to clearly understand the scope of work and the materials required to perform that work.

- **Program Compliance:** Data should be gathered and documented such that each Weatherization Project can be performed according to Minnesota Weatherization Assistance Program Policy.
- **Data Collection Apartment Sampling:**
 - Data collection will be completed on a minimum of 10% of each unit type within the building.
 - ALL units with a combustion appliance present must receive pre- and post-health and safety diagnostics testing or a minimum of 5 units on smaller buildings. (Additional units should be sampled if the results are not consistent).
 - Sample results must be extrapolated to calculate audit data inputs across the total number of residential units in the building.

3.4 Multifamily Diagnostic Testing Requirements: The following tests are required in for multifamily weatherization projects when applicable. The Retrofitting Minnesota, Standard Work Specification – Aligned Field Guide can be found in Appendix B of the Minnesota Weatherization Assistance Program Policy Manual. Additional references can be made using the MN Reference Field Guide (Kriger 2018) found at [Minnesota Weatherization Field Guide \(wxfieldguide.com\)](http://wxfieldguide.com).

General Tests

- Pressure Pan Test (ducts outside thermal envelope) (8.13 MN Weatherization Field Guide)
- Gas Range CO Tests (oven only) (1.4 MN Weatherization Field Guide)
- Gas Range Test for Fuel Leaks (accessible lines) (8.1 MN Weatherization Field Guide)
- Ambient CO test in kitchen and living area (8.1 MN Weatherization Field Guide)
- Exhaust Fan Flow Test (CFM) (9.2 MN Weatherization Field Guide)
- Ambient air temperature in apartments and common spaces

Water Heater (Combustion safety testing requirements apply only to combustion appliances)

- Test for Fuel Leaks (8.1 MN Weatherization Field Guide)
- Water Heater Combustion Analysis/CO in Flue (8.1 MN Weatherization Field Guide)
- CAZ Depressurization Test (Testing protocol will reflect building conditions and location of CAZ)
- Combustion Spillage Test (8.1 MN Weatherization Field Guide)
- Hot Water Temperature (10.4 MN Weatherization Field Guide)

Heating Plant (Combustion safety testing requirements apply only to combustion appliances)

- Test for Fuel Leaks (8.1 MN Weatherization Field Guide)
- Heating Plant Combustion Analysis/CO in Flue (8.3 MN Weatherization Field Guide)
- Test Furnace Shutoff Switch (8.5 MN Weatherization Field Guide)
- Heat Rise Test on Furnace (8.3.1 MN Weatherization Field Guide)
- CAZ Depressurization Test (Testing protocol will reflect building conditions and location of CAZ)
- Combustion Spillage Test (8.1 MN Weatherization Field Guide)

- Ambient CO Test in Mechanical Room and Living Space (8.1 MN Weatherization Field Guide)
- Heat Exchanger Integrity - Visual Inspection (8.7 MN Weatherization Field Guide)
- Heat Exchanger Integrity - Oxygen Concentration Test (8.7 #4 MN Weatherization Field Guide)

3.5 Multifamily Client Education

- Service providers must create a plan to provide client education to building residents based on the scope of work; existing building conditions; and the clients themselves.

3.6 Multifamily Energy Modelling and Measure Consideration

- All weatherization measures must be evaluated for cost-effectiveness, except for measures that eliminate health and safety hazards.
- Minnesota uses the EA-QUIP energy modelling software for centrally heated multifamily buildings.
 - EA-QUIP generates an interactive measure list for Energy Conservation Measures that must be prioritized by SIR in descending order.
 - For savings measures that are denied or “skipped”, refer to WPN 23-6 Attachment 8.
- EA-QUIP will contain a real discount rate of 2 percent and a heating system and water heating system fuel escalation rate of 1.14 percent for natural gas.
- Fuel/Energy costs in EA-QUIP will reflect the billed cost per unit of the energy as provided by the relevant utility companies plus US DOE cost modifiers provided below. These costs will be documented in the master building file.
 - Electric emissions add 1.99 cents/kilowatt hour (kwh) to electric costs (\$0.0199/kwh).
 - Natural Gas (NG) emissions add 28.04 cents/therm to NG costs (\$0.2804/therm).
 - Liquid Propane (LP) emissions add 30.48 cents/gallon to LP costs (\$0.3048/gallon).
 - Heating Oil emissions add 54.01 cents/gallon to Oil costs (\$0.5401/gallon).
- Commerce must approve each EA-QUIP audit before weatherization work can proceed.
- Service providers will use the EA-QUIP User’s Manual in determining EA-QUIP data inputs. All data entry points in the software are expanded on in the Manual.
 - To begin data entry, complete the Fuel Data tab in EA-Quip. Section 2.3.2 of the EA-QUIP User Manual describes this process in detail.
- All data inputs will be reviewed by Commerce for reasonability, with a particular emphasis on those that drive measure SIRs.
- EA-QUIP energy audits will be “trued-up” to the heating utility bills using the EA-QUIP “Building Modelling Report,” according to the following goals: Baseload: within < 10%; Peak Heating Months: within < 10%; Shoulder Months (early Fall and late Spring): within < 25%; Overall Energy Consumption: within < 10%.
 - Estimated Air Changes per Hour (ACH) may be used in lieu of a blower door test. Infiltration is a primary driver for tuning the model. Using estimated ACH is an auditor’s estimate of building tightness that will be adjusted as the model is tuned. For most models, 0.5 ACH is a typical place to start.
- All measure lifetimes in EA-QUIP shall conform to its US DOE approved energy audit tool. Any deviation from these measure lifetimes requires prior approval. Boiler replacement and water heater replacement must be set in the heating systems tab to the proper measure

lifetime. 20 years for boiler type appliances and 13 years for water heater type appliances.

- The cumulative job (package) SIR must be above 1.0 for all measures that utilize US DOE funding.
- Weatherization funds may be used to solicit engineered specifications when deemed necessary for the scale and complexity of a multifamily weatherization project. Larger organizations owning multifamily buildings may have an engineer on staff or on contract.

3.7 Multifamily Work Order Development and Scope

- EA-QUIP does not have the capacity to generate work orders. Work orders, as well as bid sheets, will be generated in Weatherization Assistant.
 - Clients are adding in Weatherization Assistant per the Multifamily Procedures Guide.
 - Measures are created along with measure types (ECM, HSM, IRM) and cost centers are assigned.
- EA-QUIP models and generates a “Scope of Work” report. Prioritized measures will be transferred to a copy audit in Weatherization Assistant for work order development.
 - Notes on EA-QUIP SIRs and measure costs must be included in the note fields in Weatherization Assistant.

3.8 Multifamily Contractor Procurement

- Contractor procurement for multifamily projects will follow all policies found in the Minnesota Weatherization Assistance Program Policy Manual.
- Service providers should be prepared to provide a high level of communication with contractors from bid to installation, to inspection commensurate with the scope and complexity of a given multifamily weatherization project.
- Heating system sizing and design shall be performed by an engineer and/or contractor depending on the scale and complexity of a multifamily weatherization project.

3.9 Multifamily Project Approval

- All multifamily projects utilizing US DOE funding must receive approval by Commerce before work can proceed. Project submissions must include:
 - Project Narrative and building description
 - Site visit data collection and photos
 - Project narrative and proposed scope of work including descriptions of project partners
 - Eligibility and demographic information
 - Explanation of client accrual of benefits per standards in WPN 22-5
 - Engineering Specifications (if applicable)
 - Procured costs
 - Property Owner Agreement

3.10 Multifamily Quality Control Inspection

- All multifamily weatherization projects in Minnesota must be inspected by a BPI HEP Quality Control Inspector who has successfully completed a US DOE approved Multifamily QCI Gap Training.
- All individual units in which weatherization improvements were performed must be visited during final inspection, including all common areas in buildings where weatherization improvements were

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performed.

- Multifamily quality control inspections must meet the standards found in Section 4.6.
 - Actual costs of multifamily projects must meet measure and package SIR standards including any change orders.
 - Change orders must be documented per policy 4.4.3.2.
 - Audit costs, work orders, and invoices must be verified per policy 4.6.5.3 Fiscal Verification to ensure accurate SIRs and costs.
 - Per the *Measure and Cumulative Job SIR Verification guidance*, “If at any point it is discovered that the energy modeling in WA or EA-QUIP is inaccurate...rerun the audit with the accurate information.
and update the Work Orders to reflect any changes in measures SIRs.”