

Audit Event - Energy Audit Diagnostic Tests

- The MN Weatherization Field Guide- *SWS Aligned Edition* can be found in Appendix B.

- **General Tests**

- Blower Door @ 50 Pa – **A pressurized blower test will be performed if a home contains vermiculite** (12.2 MN Weatherization Field Guide)
- Attic Zonal ~~and Crawl Space~~ Pressures (with respect to outside) – Optional if needed to guide air sealing activities
- Test Existing Smoke & CO Detectors – replace units that are non-functional, or over 5 years old (manufacturers date) (1.3 MN Weatherization Field Guide)
- Pressure Pan Test (ducts outside thermal envelope) (8.13 MN Weatherization Field Guide)
- Gas Range CO Tests (burners and oven) (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)

- **Water Heater**

- Test for Fuel Leaks (8.1 MN Weatherization Field Guide)
- Water Heater Combustion Analysis/CO in Flue (8.1 MN Weatherization Field Guide)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
- CAZ Depressurization Test (8.1 MN Weatherization Field Guide)
- Combustion Spillage Test (8.1 MN Weatherization Field Guide)
- Hot Water Temperature (10.4 MN Weatherization Field Guide)

- **Heating Plant**

- Test for Fuel Leaks (8.1 MN Weatherization Field Guide)
- Heating Plant Combustion Analysis/CO in Flue (8.3 MN Weatherization Field Guide)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
 - **When a heating system manufacturer does not allow drilling of a metal flue, use a combustion analyzer to test ambient CO at the front of the heating system cabinet and in the closest supply register.**
- 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 (8.1 MN Weatherization Field Guide)
- 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)

- **Space Heater (including gas fireplaces)**

- Test for Fuel Leaks (8.1 MN Weatherization Field Guide)
- Combustion Analysis/CO in Flue (as feasible) (8.4 MN Weatherization Field Guide)
- CAZ Depressurization Test (8.4 MN Weatherization Field Guide)
- Combustion Spillage Test (as feasible) (8.4 MN Weatherization Field Guide)

Audit Event - QCI Diagnostic Tests

- The MN Weatherization Field Guide- *SWS Aligned Edition* can be found in Appendix B.

- **General Tests**
 - Blower Door @ 50 Pa – **A pressurized blower test will be performed if a home contains vermiculite** (12.2 *MN Weatherization Field Guide*)
 - Attic Zonal ~~and Crawlspace~~ Pressures (with respect to outside)
 - Test Existing Smoke & CO Detectors (1.3 *MN Weatherization Field Guide*)
 - Pressure Pan Test (ducts outside thermal envelope) (8.13 *MN Weatherization Field Guide*)
 - Gas Range CO Tests and Fuel Leak Test (burners and oven, if clean and tune was called for) (1.4 *MN Weatherization Field Guide*)
 - Exhaust Fan Flow Test (on units that have been repaired or replaced) (9.2 *MN Weatherization Field Guide*)
 - Ambient CO Test - Mechanical Room(s) & Living Space (8.1 *MN Weatherization Field Guide*)
 - ASHRAE Fan Room balancing Test (on homes with non-forced air homes) (9.2 *MN Weatherization Field Guide*)
 - Verify dense packed insulation (2.3 *MN Weatherization Field Guide*)
- **Water Heater**
 - Test for Fuel Leaks (8.1 *MN Weatherization Field Guide*)
 - Water Heater Combustion Analysis/CO in Flue (8.1 *MN Weatherization Field Guide*)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
 - CAZ Depressurization Test (8.1 *MN Weatherization Field Guide*)
 - Combustion Spillage Test (8.1 *MN Weatherization Field Guide*)
 - Hot Water Temperature (if replaced or repaired) (10.4 *MN Weatherization Field Guide*)
- **Heating Plant**
 - Test for Fuel Leaks (8.1 *MN Weatherization Field Guide*)
 - Heating Plant Combustion Analysis/CO in Flue (8.3 *MN Weatherization Field Guide*)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
 - **When a heating system manufacturer does not allow drilling of a metal flue, use a combustion analyzer to test ambient CO at the front of the heating system cabinet and in the closest supply register.**
 - CAZ Depressurization Test (8.1 *MN Weatherization Field Guide*)
 - Combustion Spillage Test (8.1 *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*)
 - Ambient CO Test in Mechanical Room and Living Space (8.1 *MN Weatherization Field Guide*)
 - Heat Exchanger Integrity - Oxygen Concentration (8.7 #4 *MN Weatherization Field Guide*)
 - Smoke Test on Oil Furnace/Oil Water Heater (on units that have been repaired or replaced) (8.6 *MN Weatherization Field Guide*)
 - Room Balancing (on forced air heating plant) (9.2 *MN Weatherization Field Guide*)
- **Space Heater (including gas fireplaces)**
 - Test for Fuel Leaks (8.1 *MN Weatherization Field Guide*)
 - Combustion Analysis/CO in Flue (as feasible) (8.4 *MN Weatherization Field Guide*)
 - CAZ Depressurization Test (8.4 *MN Weatherization Field Guide*)
 - Combustion Spillage Test (as feasible) (8.4 *MN Weatherization Field Guide*)

Standalone Event – Quality Control Inspection Tests

- The MN Weatherization Field Guide- *SWS Aligned Edition* can be found in Appendix B.

- **General Tests**
 - Ambient CO test in kitchen and living area (*8.1 MN Weatherization Field Guide*)
- **Water Heater**
 - Test for Fuel Leaks (*8.1 MN Weatherization Field Guide*)
 - Combustion Analysis/CO in Flue (*8.1 MN Weatherization Field Guide*)
 - CAZ Depressurization Test (*8.1 MN Weatherization Field Guide*)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
 - Combustion Spillage Test (*8.1 MN Weatherization Field Guide*)
 - Hot Water Temperature (if replaced or repaired) (*10.4 MN Weatherization Field Guide*)
- **Heating Plant**
 - Test for Fuel Leaks (*8.1 MN Weatherization Field Guide*)
 - Combustion Analysis/CO in Flue (*8.1 MN Weatherization Field Guide*)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
 - **When a heating system manufacturer does not allow drilling of a metal flue, use a combustion analyzer to test ambient CO at the front of the heating system cabinet and in the closest supply register.**
 - CAZ Depressurization Test (*8.1 MN Weatherization Field Guide*)
 - Combustion Spillage Test (*8.1 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*)
 - Ambient CO Test in Mechanical Room(s) and Living Space (*8.1 MN Weatherization Field Guide*)
 - Smoke Test on Oil Furnace/Oil Water Heater (on units that have been repaired or replaced) (*8.6 MN Weatherization Field Guide*)
- **Space Heater (including gas fireplaces)**
 - Test for Fuel Leaks (*8.1 MN Weatherization Field Guide*)
 - Combustion Analysis/CO in Flue (*8.1 MN Weatherization Field Guide*)
 - CAZ Depressurization Test (*8.1 MN Weatherization Field Guide*)
 - Combustion Spillage Test (*8.1 MN Weatherization Field Guide*)

Standalone Event – Site Visit Diagnostic Tests

- The MN Weatherization Field Guide- *SWS Aligned Edition* can be found in Appendix B.

- **General Tests**
 - Ambient CO test in kitchen and living area (*8.1 MN Weatherization Field Guide*)
- **Water Heater**
 - Test for Fuel Leaks (*8.1 MN Weatherization Field Guide*)
 - Water Heater Combustion Analysis/CO in Flue (*8.1 MN Weatherization Field Guide*)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
 - CAZ Depressurization Test (*8.1 MN Weatherization Field Guide*)
 - Combustion Spillage Test (*8.1 MN Weatherization Field Guide*)
 - Hot Water Temperature (*10.4 MN Weatherization Field Guide*)
- **Heating Plant**
 - Test for Fuel Leaks (*8.1 MN Weatherization Field Guide*)
 - Heating Plant Combustion Analysis/CO in Flue (*8.3 MN Weatherization Field Guide*)
 - PVC test holes must be plugged with threaded, gnarled screws to create a tight seal
 - **When a heating system manufacturer does not allow drilling of a metal flue, use a combustion analyzer to test ambient CO at the front of the heating system cabinet and in the closest supply register.**
 - CAZ Depressurization Test (*8.1 MN Weatherization Field Guide*).
 - Combustion Spillage Test (*8.1 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*)
 - Ambient CO Test in Mechanical Room and Living Space (*8.1 MN Weatherization Field Guide*)
 - Heat Exchanger Integrity Test beyond visual (*8.7 MN Weatherization Field Guide*)
- **Space Heater (including gas fireplaces)**
 - Test for Fuel Leaks (*8.1 MN Weatherization Field Guide*)
 - Combustion Analysis/CO in Flue (as feasible) (*8.4 MN Weatherization Field Guide*)
 - CAZ Depressurization Test (*8.4 MN Weatherization Field Guide*)
 - Combustion Spillage Test (as feasible) (*8.4 MN Weatherization Field Guide*)