



ENERGY AUDITOR-2018 PILOT Field Guide

July 30, 2018

[Standards of Reference: Section 9 of the Energy Auditor - 2018 Pilot Scheme Handbook](#)

Exterior

1. **(GATED ITEM)** Candidate prepared combustible gas and CO measurement instruments for use
2. Candidate displayed ability to accurately measure perimeter of the home
3. Candidate identified the exterior cladding material(s)
4. Candidate identified or discussed possibility of lead-based paint
5. Candidate identified or discussed existing moisture issues
6. Candidate identified roof exposure and orientation
7. Candidate identified roof condition, materials, penetrations, and unusual features
8. Candidate identified condition of roof flashing and gutter system
9. Candidate provided a preliminary identification of the thermal boundary
10. Candidate summarized findings of exterior inspection of the building

Interior - Safety Evaluation

1. **(GATED ITEM)** Candidate tested indoor ambient CO levels and compared results to BPI 1200 Standard
2. Candidate confirmed that combustible gases are below 10% of LEL on each floor
3. Candidate located existing smoke and CO detectors
4. Candidate identified or discussed mold or conditions that could promote the growth of mold
5. Candidate identified or discussed electrical hazards
6. Candidate identified or discussed signs of pest or vermin infestation
7. Candidate accurately assessed clothes dryer vent configuration
8. Candidate identified or discussed other safety concerns

Doors

1. Candidate identified door type and features
2. Candidate evaluated door performance
3. Candidate identified if door repairs needed
4. Candidate identified if weatherization measures needed
5. Candidate discussed specific or general concerns with door replacement

Windows

1. Candidate identified window operation type(s)
2. Candidate identified frame material(s)
3. Candidate identified glazing type(s)
4. Candidate displayed ability to accurately measure a window
5. Candidate assessed the orientation of windows and exterior shading
6. Candidate assessed and discussed window performance, operation, and general condition
7. Candidate identified if repairs needed
8. Candidate identified if weatherization measures needed
9. Candidate discussed specific or general concerns with window replacement

Walls

1. Candidate identified wall type, including structure and interior/exterior finish
2. Candidate identified framing method
3. Candidate determined wall cavity depth
4. Candidate identified or discussed infiltration points that impact the pressure boundary
5. Candidate determined repairs needed and structural integrity of wall(s) to be insulated
6. Candidate identified if weatherization measures needed

Attic

1. Candidate identified and evaluated location of existing thermal boundary
2. Candidate identified or discussed infiltration points that impact the pressure boundary
3. Candidate identified or discussed air sealing sites requiring fire-safe materials and techniques.
4. Candidate discussed minimum attic ventilation requirements
5. Candidate identified and evaluated existing attic ventilation
6. Candidate determined repairs needed and structural integrity of attic to be insulated
7. Candidate determined insulation type and effective R-value

Attic (con't)

8. Candidate determined appropriate insulation R-value to be added
9. Candidate discussed existing and potential health and safety issues in the attic

Foundation

1. Candidate identified the foundation type and material
2. Candidate determined if location of existing thermal and pressure boundaries are appropriate or should be changed
3. Candidate identified or discussed infiltration points that impact the pressure boundary
4. Candidate identified insulation type and determined effective insulation R-value
5. Candidate determined appropriate insulation R-value to be added
6. Candidate identified or discussed sources and signs of moisture
7. Candidate determined appropriate measures to remediate moisture issues

Mechanical Ventilation

1. Candidate identified existing ventilation type(s)
2. Candidate determined the type of fan control
3. Candidate assessed the condition of the ventilation ductwork
4. Candidate measured existing flow rate

Appliances

1. Candidate collected manufacturer's data plate information from one electric appliance
2. Candidate evaluated possible refrigerator replacement
3. Candidate evaluated possible lighting upgrades
4. Candidate identified other sources that contribute to a home's increased electrical consumption
5. Candidate discussed water saving opportunities
6. Candidate measured or discussed how to measure the flow rate of a showerhead or faucet

Heating, Cooling, and DHW Equipment

1. Candidate identified heating / cooling system type(s)
2. Candidate identified basic heating / cooling system operating components
3. Candidate identified safety features related to heating / cooling appliances
4. Candidate identified or discussed existing heating / cooling system health and safety concerns
5. Candidate completed visual inspection of appliance flue system(s) for problems
6. Candidate assessed opportunities for heating / cooling system performance enhancements

Heating, Cooling, and DHW Equipment (con't)

7. Candidate evaluated the distribution system integrity and adequacy
8. Candidate assessed opportunities for distribution system insulation
9. Candidate evaluated available fuel switching opportunities for heating appliance(s)
10. Candidate identified domestic water heating appliance type
11. Candidate identified or discussed water heating appliance health and safety concerns
12. Candidate identified safety features of domestic water heating appliance
13. Candidate determined if current temperature settings pose health & safety and energy concerns
14. Candidate identified or discussed opportunities for water heater insulation
15. Candidate identified or discussed opportunities for domestic hot water pipe insulation

Combustible Gas Leak Testing

1. Candidate conducted combustion gas leak testing according to BPI 1200 Standard for 1-2 minutes and at least 3 fittings
2. Candidate recommended leak detection solution to verify positive reading from detector

CAZ Testing

1. Candidate set up home for CAZ Testing
2. Candidate set up manometer and tubing correctly
3. Candidate correctly measured baseline pressure differential
4. Candidate turned on exhaust appliances and recorded reading
5. Candidate checked air handler impact on CAZ depressurization and recorded reading
6. Candidate opened interior door to CAZ and recorded reading
7. Candidate identified conditions causing greatest CAZ depressurization
8. Candidate checked for spillage in one appliance under greatest CAZ depressurization
9. Candidate determined if the appliance passes the spillage test
10. Candidate made appropriate recommendations according to *ANSI/BPI-1200-S-2017 Standard Practice for Basic Analysis of Buildings*

Combustion Safety and Efficiency Testing

1. Candidate measured CO in the water heater flue gases
2. Candidate applied correct BPI action level based on test results for CO in the flue of the water heater
3. Candidate measured CO in the heating system flue gases
4. Candidate applied correct action level based on test results for CO in the flue of the heating system according to *ANSI/BPI-1200-S-2017 Standard Practice for Basic Analysis of Buildings*

Combustion Safety and Efficiency Testing (con't)

5. Candidate conducted and evaluated Steady State Efficiency test on heating system
6. Candidate measured and evaluated temperature rise in heating system
7. **(GATED ITEM)** Candidate monitored ambient CO levels in the CAZ during entire combustion safety tests

Oven and Stovetop Testing

1. Candidate checked for items, excessive debris inside oven
2. Candidate's sampling location appropriate for the oven test
3. Candidate appropriately applied BPI action levels based on test results for CO in oven
4. Candidate inspected stovetop burners for flame quality.

Blower Door Testing

1. **(GATED ITEM)** Candidate set combustion appliances to pilot or disabled them
2. Candidate verified solid fuel appliances are in the appropriate condition to allow for blower door testing to be performed
3. Candidate set up the blower door frame/shroud/fan correctly
4. Candidate set up house correctly in accordance with one of the approved methods listed in BPI 1200 Standard
5. Candidate set up the manometer correctly
6. Candidate established baseline pressure differential
7. Candidate conducted test to obtain an accurate CFM50 reading
8. Candidate interpreted the blower door reading correctly and discussed recommendations
9. Candidate measured and evaluated zonal pressure differential to one or two zones (using one-point test)
10. Candidate conducted sample room by room inspection with blower door running
11. Candidate correctly used pressure pan to evaluate duct leakage
12. Candidate discussed how and when to perform a pressurization test

Duct Pressurization Testing

1. Candidate demonstrated how to set up duct testing equipment correctly, sealing 1 register as a sample
2. Candidate discussed procedure for conducting full duct pressurization test and applicable standard for interpreting result
3. Candidate discussed how to prioritize repairs