



ENERGY AUDITOR - 2019 Field Guide

March 1, 2019

[Standards of Reference: Section 9 of the Energy Auditor 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 within 10% accuracy, or building section identified by proctor
3. Candidate identified the exterior cladding material(s)
4. Candidate identified or discussed possibility of lead-based paint
5. Candidate identified existing moisture issue(s) or potential moisture problems in general that have a negative impact on a home
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 based on exterior inspection
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 current version of ANSI/BPI-1200
2. **(GATED ITEM)** Candidate tested indoor ambient air and verbally 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

Interior Safety Evaluation (con't)

9. Candidate conducted combustion gas leak testing according to current version of ANSI/BPI-1200 for 1-2 minutes and on at least 3 fittings

10. Candidate recommended leak detection solution to verify positive reading from detector

Doors and Windows

1. Candidate identified door material and features such as approximate R-value, fire rating, and glazing

2. Candidate evaluated door performance

3. Candidate identified if door repairs needed

4. Candidate identified if energy retrofits measures needed for door(s)

5. Candidate discussed specific or general concerns with door replacement

6. Candidate identified window operation type(s)

7. Candidate identified window frame material(s)

8. Candidate identified window glazing type(s)

9. Candidate displayed ability to accurately measure a window

10. Candidate assessed the orientation of windows and exterior shading

11. Candidate assessed and discussed window performance, operation, and general condition

12. Candidate identified if repairs to window(s) needed

13. Candidate identified if weatherization measures needed for window(s)

14. 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, or discussed common framing types if test home is not wood-framed

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 determined appropriate R-value of insulation to be added based on conditions and local program requirements

Attic

1. Candidate identified and evaluated location of existing thermal boundary and alignment with pressure 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 per local code, not specific to test house, including net free area

Attic (con't)

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 overall effective R-value, considering coverage and conditions
8. Candidate determined appropriate insulation R-value to be added based on conditions and local program requirements
9. Candidate discussed existing and potential health and safety issues in the attic

Foundation

1. Candidate identified the foundation type and material
2. Candidate discussed existing and potential health and safety issues in foundation spaces
3. Candidate determined if location of existing thermal and pressure boundaries are appropriate or should be changed
4. Candidate identified or discussed infiltration points that impact the pressure boundary in foundation spaces
5. Candidate identified insulation type, if present, and determined effective insulation R-value; If none present, candidate discussed common foundation insulation types and issues affecting performance
6. Candidate determined appropriate insulation R-value to be added based on conditions and local program requirements
7. Candidate identified or discussed sources and signs of moisture
8. Candidate determined appropriate measures to remediate moisture issues

Mechanical Ventilation and Appliances

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 of ventilation fan
5. Candidate collected manufacturer's data plate information from one electric appliance
6. Candidate evaluated possible refrigerator replacement
7. Candidate evaluated possible lighting upgrades
8. Candidate identified other sources that contribute to a home's increased electrical consumption
9. Candidate discussed water saving opportunities
10. 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

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

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
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 based on name plate data or manufacturer
15. Candidate identified or discussed opportunities for domestic hot water pipe insulation

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 and stated time limits for spillage testing based on current version of ANSI/BPI-1200
9. Candidate determined if the appliance passes the spillage test
10. Candidate made appropriate recommendations for the CAZ according to current version of ANSI/BPI-1200

Combustion Safety and Efficiency Testing, and Oven and Stovetop Testing

1. Candidate measured CO in the water heater flue gases
2. Candidate applied correct action level based on test results for CO in the flue of the water heater, referencing current version of ANSI/BPI-1200
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, referencing current version of ANSI/BPI-1200

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 and stated ambient CO levels measured in the CAZ during entire combustion safety testing
8. Candidate checked for items, excessive debris inside oven
9. Candidate used appropriate sampling location for the oven test
10. Candidate applied correct action levels in current version of ANSI/BPI-1200 based on test results for CO in oven
11. Candidate inspected stovetop burners for flame quality

Blower Door Testing

1. **(GATED ITEM)** Candidate set combustion appliances to pilot or standby
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 current version of ANSI/BPI-1200
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 connect duct tester fan to distribution system correctly (do not turn on fan)
2. Candidate set up manometer, tubing, and probe correctly for duct testing
3. Candidate demonstrated how to seal one duct register
4. Candidate discussed procedure for conducting full duct pressurization test
5. Candidate discussed applicable standard(s) for interpreting duct tester diagnostic results
6. Candidate discussed how to prioritize repairs