



ENERGY AUDITOR Field Guide

v.5.21.2015

Standards of Reference

[ANSI/BPI-1100-T-2014 Home Energy Auditing Standard](#)

[Technical Standards for the Building Analyst Professional](#)

[Clarifications to Technical Standards for the Building Analyst Professional](#)

[Saturn Energy Auditor Field Guide](#)

[ASHRAE 62.2-2010](#)

Exterior

Candidate tested ambient CO outdoors
Candidate displayed ability to accurately measure the perimeter of the home
Candidate identified the exterior sheathing material(s)
Candidate accurately assessed any possibility of lead based paint
Candidate accurately assessed any existing moisture issues
Candidate accurately determined roof condition, pitch, materials, and penetrations
Candidate correctly identified roof exposure and orientation
Candidate accurately identified condition of any parapet walls, flashing, and drainage
Candidate completed an exterior inspection of the building

Interior

Candidate tested ambient CO indoors (**GATED ITEM**)
Candidate monitored ambient CO levels throughout the building and accurately noted the highest reading
Properly interpreted measurements
Candidate correctly determined if the CO levels exceed any applicable action levels (**GATED ITEM**)
Candidate located existing smoke/CO detectors
Candidate determined if smoke/CO detectors are hard wired or battery operated
Candidate identified conditions that could promote the growth of mold
Candidate identified presence of mold-like substance
Candidate accurately identified other potential safety concerns
Candidate completed an interior inspection of the building

Doors

Candidate displayed ability to accurately measure a door and calculate the surface area
Candidate accurately identified door type
Candidate accurately assessed door performance
Candidate accurately assessed condition of door sweep and weather stripping
Candidate accurately assessed door hardware condition
Candidate accurately assessed replacement concerns
Candidate accurately evaluated repairs needed
Candidate accurately evaluated the structural integrity of the door and frame

Windows

Candidate accurately identified window type
Candidate accurately identified frame material
Candidate accurately identified glazing type
Candidate accurately assessed the orientation of the windows and the exterior shading
Candidate accurately assessed window performance, operation, and general condition
Candidate accurately assessed replacement concerns
Candidate accurately evaluated repairs needed
Candidate accurately evaluated the structural integrity of the window and frame

Walls

Candidate accurately identified the wall type
Candidate accurately identified framing method
Candidate accurately and safely measured cavity depth
Candidate determined repairs needed and structural integrity of wall(s) to be insulated
Candidate determined square footage of area to be insulated
Candidate determined proper insulation levels and identified appropriate insulation to be added
Candidate determined if pressure plane and thermal boundary are aligned
Candidate determined if the location of vapor retarder is appropriate

Attic

Candidate displayed ability to accurately measure existing attic ventilation
Candidate accurately discussed minimum attic ventilation requirements
Candidate determined existing attic ventilation type
Candidate measured attic floor area/roof cavities
Candidate determined repairs needed and structural integrity of attic to be insulated
Candidate determined proper insulation levels and identified appropriate insulation to be added
Candidate determined if pressure plane and pressure boundary are aligned
Candidate discussed the climate-appropriate location of a vapor retarder
Candidate evaluated attic ventilation

Appliances

Candidate correctly located and collected manufacturer's data plate information from 2 different appliances
Candidate determined the need to measure the flow rate on the shower head if not listed
Candidate demonstrated ability to inspect appliance for watt hour meter accessibility
Candidate demonstrated ability to use a watt hour meter
Candidate accurately assessed clothes dryer vent configuration
Candidate demonstrated ability to interpret data from a watt hour meter
Candidate discussed the information used to determine potential lighting upgrades
Candidate discussed methods used to determine the electrical consumption of appliances
Candidate identified other sources which could contribute to the home's electrical consumption
Candidate accurately determined water saving opportunities (low flow devices, etc.)

Mechanical Ventilation

Candidate accurately determined the volume of the affected space
Candidate accurately determined the type of fan control
Candidate accurately assessed the condition of the ventilation ductwork
Candidate accurately compared existing exhaust flow ventilation with rated capacity
Candidate accurately assessed the need for and placement of additional mechanical ventilation

Foundation/Mechanical Equipment

Candidate accurately assessed any electrical hazards (open junction boxes, overloaded circuits, etc.)
Candidate identified sources and signs of moisture
Candidate accurately identified the foundation type, material, thickness and exposure
Candidate identified infiltration points and location of plumbing pipes and penetrations
Candidate determined rim joist/box sill insulation needs
Candidate determined appropriate insulation location and the need for a vapor barrier
Candidate accurately determined water heater insulation opportunities
Candidate accurately determined pipe insulation opportunities
Candidate accurately determined economics of major appliance replacements (cost effective, feasible, etc.)
Candidate evaluated the HVAC systems for health and safety concerns
Candidate correctly identified heating / cooling system types
Candidate correctly identified basic heating / cooling system operating components
Candidate completed visual inspection of flue system for problems
Candidate identified existing heating / cooling system components safety concerns
Candidate evaluated the distribution system
Candidate evaluated any available fuel switching opportunities
Candidate identified duct insulation or hydronic pipe insulation opportunities
Candidate evaluated basic system controls
Candidate assessed the possibility for performance enhancements
Candidate accurately assessed distribution problems
Candidate identified other components related to the HVAC appliance(s)

Candidate identified safety features related to the HVAC and domestic water heating appliance

Prepare for the test(s)

Candidate gathered all necessary equipment to perform the diagnostics

Candidate disabled combustion appliances until needed

Candidate verified solid fuel appliances are in the appropriate condition to allow for blower door testing to be performed

Candidate prepared test equipment for use according to manufacturer's specifications

Combustable Gas Leak Test

Candidate properly conducted combustion gas leakage testing

Candidate properly recommended soapy solution to verify positives

CAZ Test

Candidate set up home for natural conditions

Proper manometer setup

Candidate correctly measured baseline pressure differential

Set up home in worst case condition - **NOT SCOREABLE**

All exhaust appliances running

Correct door closures - measured quantitatively or qualitatively

Air handler operation impact checked

Candidate correctly measured worst-case CAZ depressurization

Candidate calculated minimum draft pressure based on existing weather conditions

Candidate checked for worst case spillage in heating system

Candidate checked for worst case spillage in DHW

Candidate correctly identified time limits for spillage based on BPI Standards

Candidate correctly determined if the appliance passes the spillage test

Candidate identified what steps should be taken if it does not pass (ask candidate)

Candidate performed worst case draft test on heating system

Candidate correctly performed worst case draft test on DHW

Candidate made appropriate recommendations according to BPI standards (using right table)

Candidate compared diagnostic results to appropriate table in the BPI standards

Candidate identified the need for further evaluation when other combustion sources exist

CO Tests

Candidate measured heating system flue gas CO during combustion safety testing

Candidate conducted Steady State Efficiency test on heating plant

Candidate accurately measured heat rise delta T

Candidate measured DHW flue gas CO during combustion safety testing

Candidate appropriately applied BPI action levels based on test results for CO in the flue

Candidate monitored ambient CO levels in the CAZ during entire combustion safety tests **(GATED ITEM)**

Oven Test

Candidate checked for items, excessive debris inside oven

Candidate's sampling location appropriate for the oven test

Candidate appropriately applied BPI action levels based on test results for CO in oven

Duct Pressurization Test

Candidate set up duct pressurization device (total leakage only) **NOT SCOREABLE**

Manometer set-up appropriate

Pressure tap appropriate

Accurate measurement

Candidate made duct sealing recommendations

Demonstrated ability to prioritize repairs

Appropriate materials selected for repairs

Appropriate method selected for repair

Blower Door Test

Candidate set combustion appliances to pilot or disabled them **(GATED ITEM)**

Candidate properly set-up the blower door frame/shroud/fan

Candidate properly set-up the manometer

Candidate properly set-up house for testing

Candidate correctly measured baseline pressure differential

Candidate accurately took CFM50 measurement

Candidate conducted sample room by room inspection with blower door running
Candidate discussed ventilation needs in relation to ASHRAE 62.2 2010
Candidate measured zonal pressure differential to one appropriate zone
Candidate properly interpreted the results