Guiding Principles for Conducting Remote Audits on Single-Family Homes

Notice

Information in this document represents the policies at the date of publication for BPI's *Guiding Principles for Conducting Remote Audits in Single-Family Homes*. Information in this document supersedes information contained in any previously published document under the same title.

Acknowledgements
The Building Performance Institute, Inc. would like to thank all of the dedicated professionals who have participated in the development of this document.

Disclaimer
A Remote Audit assesses and characterizes home-based energy usage, and health and safety hazards by integrating qualitative observations with limited quantitative diagnostics to determine and prioritize recommendations. The information contained in the resulting evaluation report communicates the recommendations to the occupant with the goal of reducing energy usage, environmental health and safety, and quality of life.

It is understood and agreed that this evaluation will be of the readily accessible areas of the subject building and is limited to observations of apparent conditions existing only at the time of the evaluation. Latent and concealed defects and deficiencies are excluded from the evaluation.

Maintenance, repairs, possible fixes, recommendations, and other similar items may be discussed during the evaluation and referenced in the report, but they are not to be considered technically exhaustive or to cover every possible condition. The evaluation and report are not a compliance inspection or certification for past or present governmental codes, regulations, ordinances, statutes, or special utility restrictions of any kind.

The client ("Homeowner") agrees that auditor ("Contractor"), its agents and employees shall not be liable or responsible for the cost of repairing or replacing any reported or unreported energy usage, and/or health and safety hazard, either current or arising in the future; or for any and all claims, losses, expenses, injuries, or damages arising out of or in any way related to the reported or unreported energy usage, and/or health and safety hazard by reason of any act or omission, including breach of contract or negligence. The parties further agree that Contractor shall not be liable to Homeowner for any special or consequential damages, including but not limited to lost profits, loss of use, and costs of replacement, caused by the Contractor's negligence, breach of contract, or any other cause whatsoever.

The parties acknowledge that this evaluation and report is not intended, or to be used, as a guarantee or warranty, expressed or implied, regarding the adequacy, performance or condition of any evaluated structure, item, or system. The parties further acknowledge that Contractor is not an insurer and that the evaluation and report are not insurance against any health and safety hazard condition(s).

Notwithstanding the foregoing, it is understood and agreed that if Contractor is found liable to Homeowner as a result of failure to perform any of its obligations, including but not limited to failure as a result of negligence, breach of agreement, or otherwise, the liability of Contractor, its agents and employees shall be limited to a sum equal to the amount of the fee paid by the Homeowner for the evaluation and report.

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Scope

These guiding principles define the minimum criteria for conducting a remote building science-based residential energy assessment to address energy usage and limited aspects of building durability and occupant health and safety, to provide a comprehensive report with a list of prioritized recommendations to improve the home.

Purpose

The guiding principles were developed to limit exposure time, and therefore limit the COVID-19 risk a contractor may experience in homes by identifying those aspects of an energy audit that can be conducted remotely to the extent possible.

Building Types

Residential building types covered are defined as existing 1-4 family dwellings.

General Information

Energy audits should be based on building science principles and include the use of appropriate technologies for assessing the improvement of energy efficiency and comfort while minimizing health and safety hazards. These principles do not supplant *ANSI/BPI-1200-S-2017 Standard Practice for Basic Analysis of Buildings*, but rather provide an alternative method for completing energy audits and collecting data for establishing a scope of work.

Not all audits will be able to be completed strictly remotely and may require some portion of an on-site visit for verification or data collection/diagnostic testing and the guiding principles are divided into three areas reflecting this; (1) *Remote Aspects* – Audit information that can in most cases be obtained online, through discussion with the homeowner/occupant, images and pictures, or streaming technology, and inferred such as codes in place at time of construction
(2) *On-Site Verification* – Audit information that may need further investigation/verification that couldn't be completely obtained through the remote process such as heating/cooling appliance information, thermal boundaries, air sealing opportunities
(3) *On-Site Inspection Only* – Audit information that can only be obtained on-site such as Combustion Safety testing, whole building air leakage rates.

Health and Safety Related Requirements

The health and safety requirements included in these protocols are intended to ensure that home performance upgrade activities do not negatively affect indoor air quality or otherwise cause or exacerbate an unsafe condition in the home.

Combustion Appliance and Fuel Distribution System Inspection

The energy audit shall include visual inspection of combustion appliances and fuel distribution systems for safety.

Indoor Air Quality and Ventilation

The energy audit should include inspection of air leakage sources and ventilation. Consider the house ventilation as a system, including both whole-building ventilation and local exhaust ventilation.

Moisture Control

The energy audit should include a visual/sensory inspection of each home for moisture issues.

Building Enclosure

The energy audit should include an evaluation of the building enclosure, to include both the pressure and thermal boundaries.

Heating, Cooling, and Domestic Water Heating Systems

The energy audit should include a visual inspection and evaluation of the heating, cooling, and domestic water heating systems in the home.

Baseload Energy Efficiency

The energy audit shall include an estimate of present baseload energy use and a description of the current major appliances and plug loads.

General Information		
	Guiding Principle	**Full Text**
1.0.1	Not all energy audits can be completed strictly remotely and may require some portion of an on-site visit	
1.0.2	Methods	1. Occupant engaged using data collection forms provided to, and completed by the occupant 2. The use of contractor-guided streaming technology conducted by the occupant using smartphones and appropriate software 3. In the absence of streaming technology, at minimum photos of key areas of the building as needed
1.0.3	Contractor/Homeowner Introduction	Greet homeowner remotely and determine ability (physically, technically, etc.) of homeowner to participate in the audit. If homeowner is willing and able to participate in remote audit, schedule remote audit call.
1.0.4	Data Collection	When possible, remote data collection. The option to collect data through online research, homeowner interviews, or pre-audit data collection by homeowner is encouraged.
1.0.5	Building Characteristics	Obtain building characteristics, such as year built, housing type, conditioned floor area, orientation, number of bedrooms, using online research, homeowner interview, or both.
1.0.6	Utility Data	Obtain utility data information through available resources, including account name and number, and usage information for each account and fuel type. Use energy consumption records, when available, to perform a baseline energy use analysis.
1.0.7	Homeowner Interview	Verify information obtained from other resources with homeowner.
1.0.8	Homeowner Disclosure	Homeowner should disclose to contractor any suspected emergency or urgent health and safety hazard or situation that may be suspected/present in the home. Suggest contractor develop pre-audit questionnaire including but not limited to information about pest infestations (rodents, bats, roaches, pigeons, etc.), water or sewage leaks, pet, or other animal waste, suspected mold-like

		substances, lead paint, asbestos, vermiculite, inoperative or malfunctioning heating appliances, damaged or deteriorated interior or exterior stairs, damaged, missing, or deteriorated handrails, electrical hazards, etc.
On-Site Verification		
1.1.1	Verify data that could not be fully determined during remote audit.	
On-Site Inspection Only		
1.1.2	Collect data that could not be obtained during remote audit.	

In-Home Energy Education		
	Guiding Principle	**Full Text**
	Remote Aspects	
2.0.1	Homeowner Energy Education	Use information from utility/state Programs and other reliable sources to provide energy efficiency education and advice on user-controlled energy conservation strategies.
On-Site Inspection Only		
2.0.2	Homeowner Energy Education	Provide on-site energy efficiency education to help the homeowner develop an action plan to reduce their energy use.

Air Tightness Evaluation		
	Guiding Principle	**Full Text**
	Remote Aspects	
3.0.1	Pressure Boundary – Estimate Air Changes	1. Determine if any air sealing work has been completed in the house. If completed, request photos of air sealing work where accessible. 2. Request photos of areas where air leaks are commonly found, such as: under sinks in bathrooms and kitchens, and around plumbing, electrical, and duct penetrations. An option for air change estimation is to reference the USDOE Home Energy Score Infiltration rates calculator found at: http://resdb.lbl.gov/index.html?step=2&sub=2&run_env_model=&dtype1=&dtype2=&is_ca=&floor_area=&house_height=&year_built=&wap=&ee_home=&region=&zone=
3.0.2	Pressure Boundary – Attic Access	Determine if the attic access hatches, doors, or pull-down stairs have weatherstripping, type, and location of the accesses.
3.0.3	Pressure Boundary – Knee Wall Access	Determine if the knee wall access hatch or door has weatherstripping, type, location, and effective R-value.
3.0.4	Pressure Boundary – Ceiling Penetrations	Determine the presence of recessed lights and bath fan ceiling penetrations to document leakage areas to be addressed and estimate the leakage reduction that may be achieved in the home based on sealing those leaks.
3.0.5	Pressure Boundary – Rim Joist Penetrations	Determine the presence of rim joist air leakage locations to document leakage areas to be addressed and estimate the leakage reduction that may be achieved in the home based on sealing those leaks.
On-Site Verification		
3.1.1	Pressure Boundary – Ceiling Penetrations	Visually inspect recessed lights.

3.1.2	Pressure Boundary – Identify Penetrations	Inspect mechanical, electrical, and plumbing pathways to document leakage areas to be addressed and estimate the leakage reduction that may be achieved in the home based on sealing those leaks.
On-Site Inspection Only		
3.2.1	Pressure Boundary – Identify Penetrations	Inspect duct boots, drywall-to-top-plate connections, wood-to-wood seams, drop soffits, overhangs, floor bay connections under knee walls, balloon framing details, and other interstitial framing details to document leakage areas to be addressed and estimate the leakage reduction that may be achieved in the home based on sealing those leaks.
3.2.2	Blower Door Testing – Air Change Measurement and Air	Use a blower door to measure and document the building's air changes and to identify gaps, cracks, and other leakage sites in the building enclosure.
3.2.3	Blower Door Testing – Zone Pressure Differential	Use a blower door to measure and document pressure differential measurements for locations such as the attic, basement, and attached garages.
3.2.4	Best Practices – Blower Door	Although the use of a blower door to determine air leakage is considered a best practice it is not required at the time that the audit is conducted.

Roof Evaluation		
**Due to safety concerns, do not ask the homeowner to go onto the roof. If the homeowner cannot answer questions from memory, please stop and wait until you are on-site to gather any data related to the roof.*		
	Guiding Principle	**Full Text**
Remote Aspects		
4.0.1	Roof Inspection – Age and Durability	Determine and document the history and present condition of the roof assembly. Request photos of all sides/views of the home from the outside, and roof penetrations such as chimneys, plumbing vents, roof vents, exhaust vents, etc.
4.0.2	Roof Inspection – Moisture Management	Determine and document the presence of moisture management systems. Request photos of the gutter system, including the downspout drop, termination, and splash guard, and photos of the home that display the slope of the earth around the foundation.
4.0.3	Roof Inspection – Attic Ventilation	Determine and document attic ventilation that is visible from outside the home such as ridge vent, gable louver, wind turbine, soffit vent, drip edge vent, powered fans, etc.
4.0.4	Roof Inspection – Sloped Ceilings	Determine and document the presence of sloped ceilings such as vaulted, cathedral, knee wall slope, etc.
On-Site Verification		
4.1.1	Roof Inspection – Sloped Ceilings	Measure and document sloped ceilings such as vaulted, cathedral, knee wall slope, etc. Inspect to determine and document the thermal boundary location; and the type, depth, condition, estimated R-value of the insulation present, and the presence or absence of an attic-side air barrier.

Attic Evaluation		
	**Due to safety concerns, do not ask the homeowner to go into the attic. If the homeowner cannot answer questions from memory, please stop and wait until you are on-site to gather any data related to the attic.*	
	Guiding Principle	**Full Text**
Remote Aspects		
5.0.1	Attic Location/s and Construction	Determine and document the location/s and type of attic/s in the home (conditioned, unconditioned, knee wall, etc.).
5.0.2	Attic Access	Determine and document if the access hatches, doors, or pull-down stairs have any insulation and the effective R-value.
5.0.3	Attic Pressure Boundary	Determine and document the type of attic ceiling penetrations that are present such as recessed lighting, exhaust fans, bathtub/shower enclosure/water wall, plumbing under sinks, duct penetrations, etc.
5.0.4	Attic Thermal Boundary	Determine the type of attic insulation present. If there is an insulation ruler, request a photo or image.
5.0.5	Attic Ventilation	Determine and document attic ventilation that is visible from outside the home such as ridge vent, gable louver, wind turbine, soffit vent, drip edge vent, powered fans, etc.
On-Site Verification		
5.1.1	Attic Thermal Boundary	Inspect the attic to determine and document the thermal boundary location, and the type, amount, condition, and estimated R-value of the insulation present. Note potential vermiculite.
5.1.2	Knee Wall Attic Thermal Boundary	Inspect the knee wall attic to determine the thermal boundary location, and the type, amount, condition, estimated R-value of the insulation present and presence or absence of an attic-side air barrier. Note potential vermiculite.
5.1.3	Attic Ventilation	Verify and document attic ventilation system.
On-Site Inspection Only		
5.2.1	Attic Thermal Boundary	Inspect the attic to determine and document the thermal boundary location, and the type, depth, condition, and estimated R-value of the insulation present. Note potential vermiculite.
5.2.2	Attic Pressure Boundary – Chimney Penetrations	Inspect the attic to determine and document any combustion appliance venting to be air sealed with non-combustible materials prior to insulating.
5.2.3	Knee Wall Attic Thermal Boundary	Inspect the knee wall attic to determine the thermal boundary location, and the type, amount, condition, estimated R-value of the insulation present and presence or absence of an attic-side air barrier . Note potential vermiculite.
5.2.4	Evaluation of Minor Repairs	Visual inspection, evaluation, and documentation of minor repairs that are necessary to ensure maximum efficiency from the provision of qualified energy efficiency services.

Foundation and Floor Evaluation		
	Guiding Principle	**Full Text**
Remote Aspects		
6.0.1	Foundation Location/s and Construction Type	Identify and determine the location/s and type of foundation/s (conditioned, unconditioned, basement, crawlspace, etc.).
6.0.2	Foundation Access	Determine and document the foundation access location. If the foundation is conditioned or semi-conditioned, determine and document if the access hatch

		door has weatherstripping, its type, location, and effective R-value of any insulation on the access.
6.0.3	Foundation Pressure Boundary	Determine and document the type of existing pressure boundary penetrations in areas such as floors, rim joist, walls, bathroom water wall, under sinks, plumbing, electrical, duct penetrations, etc.
6.0.4	Foundation Thermal Boundary	Determine and document the type, and effective R-value of foundation insulation present on foundation walls, ceilings, floors, rim joist, overhangs, cantilevers, etc.
6.0.5	Foundation Moisture Management Systems	Determine and document if there are any areas that show evidence of water intrusion. Identify and document water management systems (sump pit, perimeter drain, dehumidifier, mineral bags, etc.). Ask if a sump pump or other systems are present and working properly.
6.0.6	Radon Mitigation System	If a radon mitigation system is present, determine if it is passive or active (has an inline fan). If it is active, ask for photographs of the inline fan, if accessible to homeowner, and of the U-tube pressure gauge to determine if the fan is operating. Ask for results of post mitigation installation radon testing.
On-Site Verification		
6.1.1	Foundation Access	Determine and document if the access hatch or door has weatherstripping, its type, location, and effective R-value.
6.1.2	Foundation Moisture Management Systems	Determine and document any areas that show evidence of water intrusion. Identify and document water management systems (sump pit, perimeter drain, dehumidifier, mineral bags, etc.).
6.1.3	Radon Mitigation System	Determine and document the type (active/passive) of radon mitigation system present and if it is functioning.
On-Site Inspection Only		
6.2.1	Foundation Pressure Boundary Inspection	Inspect the bottom of balloon-framed walls, duct boots, electrical and plumbing penetrations, etc. to document leakage areas to be addressed and estimate the leakage reduction that may be achieved in the home based on sealing those leaks.
6.2.2	Foundation Thermal Boundary Inspection	Inspect the foundation and floors, including overhangs and cantilevers, to determine and document the thermal boundary location. Document the type of wall insulation present, effective R-value of insulation, as well as noting any degradation. Document all insulation under consideration for replacement, including type, effective R-value (noting any degradation), depth, and square footage.
6.2.3	Evaluation of Minor Repairs	Visual inspection, evaluation and documentation of minor repairs that are necessary to ensure maximum efficiency from the provision of qualified energy efficiency services.

Exterior Wall Evaluation		
	Guiding Principle	**Full Text**
Remote Aspects		
7.0.1	Wall Construction Type	Determine and document the condition, materials, and type of exterior wall construction and cladding.
7.0.2	Wall Thermal Boundary	Estimate the type of wall insulation present. If the year of construction is used as a default, note the source referenced.
7.0.3	Knee Wall Thermal Boundary	Determine if the home has any knee walls. Document the insulation type, and effective R-value.
On-Site Verification		

7.1.1	Knee Wall Thermal Boundary	Inspect to determine if the home has any knee walls, their type, and effective R-value of insulation, as well as noting any degradation.
7.1.2	Wall Pressure Boundary Inspection	Inspect for air sealing improvements in balloon framing, plumbing penetrations, duct boots, wood-to-wood seams, floor connections, and other interstitial framing details, etc.
On-Site Inspection Only		
7.2.1	Wall Thermal Boundary	Inspect to determine the wall construction type, and the type of insulation present, effective R-value of insulation, as well as noting any degradation. Document all insulation under consideration for replacement, including type, effective R-value (noting any degradation), depth, and square footage.
7.2.2	Evaluation of Minor Repairs	Visual inspection, evaluation and documentation of minor repairs that are necessary to ensure maximum efficiency from the provision of qualified energy efficiency services.

Window and Skylight Evaluation		
	Guiding Principle	**Full Text**
Remote Aspects		
8.0.1	Window Construction Type	Determine and document the condition, materials, and type of windows present in the home.
8.0.2	Pressure Boundary and Moisture Management	Determine and document the integrity of sealing to control air and moisture intrusion at windows.
On-Site Verification		
8.1.1	Window Construction Type and Condition	Document the window frame material (wood, metal, vinyl, fiberglass, presence of thermal break), glass type (number of panes, low-e coatings, gas fill), and evaluate window condition and operation.
8.1.2	Pressure Boundary and Moisture Management	Determine and document the integrity of sealing to control air and moisture intrusion at windows and window trim.
8.1.3	Evaluation of Minor Repairs	Visual inspection, evaluation and documentation of minor repairs that are necessary to ensure maximum efficiency from the provision of qualified energy efficiency services.

Door Evaluation		
	Guiding Principle	**Full Text**
Remote Aspects		
9.0.1	Door Construction Type	Determine and document the condition, materials, and type of doors present in the home. Ask for photos as needed.
9.0.2	Pressure Boundary and Moisture Management	Determine and document condition of door weatherstripping and threshold.
On-Site Verification		
9.1.1	Door Construction Type and Condition	Document door type (insulated or non-insulated; wood, metal, or fiberglass, etc.), door.
9.1.2	Evaluation of Minor Repairs	Visual inspection, evaluation and documentation of minor repairs that are necessary to ensure maximum efficiency from the provision of qualified energy efficiency services.

Combustion Appliance Zone and Fuel Distribution System		
	Guiding Principle	**Full Text**
10.0.1	Combustion Appliance Zone Inspection – Hazardous Materials	Inspect the immediate area where combustion equipment is operating to determine if gasoline or any flammable products such as oil-based solvents, varnishes or adhesives, rags, paper, or other combustibles exist.
10.0.2	Combustion Appliance Zone Inspection – Venting	Inspect the venting for each combustion appliance for soot, debris, or signs of spillage around flue collar, barometric draft control, or draft hood. Ask homeowner to visually inspect combustion venting systems for damage, leaks, disconnections, inadequate slope, and other safety hazards.
10.0.3	Fuel Distribution System	Ask homeowner if they have noticed unusual odors that may indicate the presence of a natural gas or propane leak. Ask homeowner to contact gas or propane
10.0.4	Oil-Fired Appliance Fuel Supply System	Visually inspect the supply system (tank, supply lines, burner area) for signs of dampness or leakage.
On-Site Verification		
10.1.1	Monitor for Ambient Combustible Gases	Monitor air for ambient combustible gases.
10.1.2	Monitor for Ambient Carbon Monoxide (CO)	Monitor air for ambient CO.
On-Site Inspection Only		
10.2.1	Health and Safety	Identify building-related conditions that may require immediate health and safety remediation.
10.2.2	Operate Combustion Appliances	Operate combustion appliances including ovens, range tops and unvented heaters and monitor ambient air or CO.
10.2.3	Ambient Combustible Gas – Detection Action	When combustible gas is detected in the ambient air, a leak assessment of the fuel piping system should be completed to determine if leaks are present and actions are recommended according to BPI-1200 Section 7.3
10.2.4	Combustion Safety Testing	Perform combustion safety testing at the appliance/s to include greatest CAZ depressurization, CO measurement, combustible gas leaks, and assessment of spillage of flue gases as detailed in in BPI 1200 Section 7. Testing equipment must comply with the specifications detailed in BPI 1200 sections 7.1.1.1 through 7.1.4.2.2
10.2.5	Combustion Safety Action Levels	The contractor shall not proceed with work when CO concentrations in the work environment exceed 35 ppm or if any measured concentrations of combustible fuel gas exceed 10% of the LEL. When either of these conditions occur, the auditor shall inform the homeowner/ occupants of the unsafe condition and advise evacuation of the home. The contractor shall leave the home and the appropriate emergency services and fuel gas providers shall be notified from outside the home. The contractor shall contact the appropriate emergency services only if the homeowner/occupant is unable to do so.

Heating-Cooling System/s		
	Guiding Principle	**Full Text**
All Systems		
11.0.1	System/s Type and Fuel/s	Identify the location and type of system/s and the type of fuel/s. Record the size in BTUh, efficiency rating, BTUh input, BTUh output and refrigerant type. Instruct homeowner to take photos of each heating and cooling appliance including the manufacturer's data plate.
11.0.2	Condensing Units	Check the condition of condensate drain connections, drain line and the condition of the condensate pump.
11.0.3	System Filter	Verify the presence of a system filter and slot cover, and assess the condition of the filter.
On-Site Verification		
11.1.1	Heating – Cooling System Inspection	Visually inspect, evaluate, and document if the heating-cooling system is appropriate for the system type (furnace, boiler, central air conditioning/ heat pump) and distribution type, to include location and condition of the appliance. If manufacturer's data plate is not available, default efficiency may be assumed in accordance with BPI-2400.
On-Site Inspection Only		
11.2.1	Monitor for Ambient CO	Monitor air for ambient CO.
11.2.2	Inspect Heat Exchanger	Visual inspection of heating appliance heat exchanger to ensure unit is not cracked or otherwise compromised.
11.2.3	Combustion Safety Testing	Perform combustion safety testing at the appliance/s to include greatest CAZ depressurization, CO measurement, combustible gas leaks, and assessment of spillage of flue gases as detailed in in BPI 1200 Section 7. The testing equipment must comply with the specifications detailed in BPI 1200 sections 7.1.1.1 through 7.1.4.2.2
11.2.4	Combustion Safety Action Levels	The contractor shall not proceed with work when CO concentrations in the work environment exceed 35 ppm or if any measured concentrations of combustible fuel gas exceed 10% of the LEL. When either of these conditions occur, the contractor shall inform the homeowner/occupants of the unsafe condition and advise evacuation of the home. The contractor shall leave the home and the appropriate emergency services and fuel gas providers shall be notified from outside the home. The contractor shall contact the appropriate emergency services only if the homeowner/occupant is unable to do so.
Heating Systems		
Remote Aspect		
12.0.1	Boilers	Inspect for evidence of leakage, corrosion, and deposits at the appliance and local piping, and the condition of the expansion tank. Verify presence of an automatic feeder valve.
12.0.2	Other Heating Appliances	Identify other heating appliances such as space heaters. Instruct homeowner to provide photos of the heating appliance/s.
12.0.3	Unvented Heaters	Unvented heaters present a health and safety risk for homeowners due to the potential dangers of CO, moisture, oxygen depletion and NO2. Strongly recommend that in every instance where an unvented space heater is found to be operating in a customer's home, the contractor educate the homeowner about the dangers of unvented space heaters and explore all reasonable options for removing the unvented heater and installing a heating system replacement .
Solid Fuel Burning Appliances		

Remote Aspect		
13.0.1	Woodstoves, Wood Boilers, Wood Furnaces, Pellet Stoves, Fireplaces with Insert, etc.	Identify solid fuel burning appliances. Ask homeowner to report any appliances installed on carpets, wood floors or other combustibles.
On-Site Verification		
13.1.1	Solid Fuel Burning Appliance Inspection	Visual inspection, evaluation, and documentation of, but not limited to, the following elements: Determine if the appliance is the primary heating source. Visually inspect and note the type and condition of flooring material where the appliance is installed. Determine when the chimney and vent connector were last cleaned and inspected. If they have not been cleaned and inspected within the past year, recommend servicing by a certified hearth professional. Recommend a certified hearth professional to conduct an inspection of appliance.
On-Site Inspection Only		
13.2.1	Solid Fuel Burning Appliance Inspection	Recommend service or replacement by a qualified professional if any of the following indicators are noted: • Appliances installed on carpets, wood floors or other combustibles • Inadequate clearance to combustible materials. Consult the appliance documentation for required clearances. If no documentation is available, refer to NFPA 211 • Signs of structural failure, such as cracks or broken welds, of any components
Central Air Conditioning/ Heat Pump		
On-Site Verification		
14.1.1	Central Air Conditioning/ Heat Pump Inspection	Visual inspection, evaluation, and documentation of, but not limited to, the following elements: Location and condition of the indoor and outdoor equipment, examine the indoor coil air handler cabinet for damage, dust build-up, and signs of leakage, examine the outdoor coil cabinet, evaluate the clearance on all sides of the outdoor coil cabinet, examine the condition of the outdoor coils, and examine condition of the insulation on the refrigerant piping at the outdoor coil.
Ductless Mini Split		
On-Site Verification		
15.1.1	Ductless Mini Split Inspection	Visual inspection, evaluation, and documentation of, but not limited to, the following elements: Examine the outdoor coil cabinet, the indoor head(s), and the refrigerant piping (lineset) insulation.
15.1.2	Filter and Coil Inspection	Check the filter and the accessible surface of the coil for dirt build-up, obstructions or damage.
15.1.3	Ductless Mini Split Improvement Savings	Provide estimated measure cost and energy savings associated with ductless mini-split improvements.

Ducted Distribution System		
	Guiding Principle	**Full Text**
16.0.1	Evaluate Ducted Distribution System/s	Identify distribution system/s location, and condition. Identify gaps, leaks or disconnected duct work, and condition of return and supply duct connections. Verify presence of duct insulation and R-value of duct insulation.
On-Site Inspection Only		

16.2.1	Evaluate Ducted Distribution System/s	Evaluate condition of return and supply duct connections. Evaluate duct insulation, if present, and document R-value. Inspect for restrictions to duct system airflow. Inspect for gaps, leaks, and disconnected duct work. Provide recommendations for duct balancing, improvements, sealing, repair, and insulation.
16.2.2	Determine Duct System Efficiency	Quantify duct leakage and make recommendations for duct improvements using methods detailed in BPI 1200 Sections 11.6.2 through 11.6.4

Thermostat/Controls		
	Guiding Principle	**Full Text**
17.0.1	Thermostat/Controls	Identify the type and number of thermostat/s and/or other mechanical system controls. Ask the homeowner to provide photos of each thermostat or control device, as needed.
17.0.2	Uneven Room Temperatures	Ask homeowner if there are uneven room temperatures or rooms that are closed off seasonally.

Domestic Hot Water		
	Guiding Principle	**Full Text**
18.0.1	DHW Type/s and Fuel/s	Identify the type of DHW/s and fuel/s. Record information from the manufacturer's data plate. Note the location, and general condition. Inspect for soot, debris, or signs of spillage around flue collar, barometric draft control, or draft hood. Verify the presence and condition of tank insulation wrap, if present. Verify the presence and condition of pipe wrap, if present. Verify the presence and condition of overflow pan. Verify pipe insulation type and location. Verify the presence of the TPR valve and note its rating. Verify the presence of TPR piping. Inspect for leaks at the storage tank. Ask for photos of appliance from all sides, as needed. Ask for photos of venting from all sides, as needed. Ask homeowner to take a photo of the manufacturer's data plate, when possible.
18.0.2	Temperature Control Setting	If control is accessible, ask homeowner to record the setting of the DHW temperature control.
On-Site Verification		
18.1.1	DHW Inspection	Verify proper installation and recommend modification or removal if the tank wrap presents a safety risk or voids the manufacturer's warranty of the water heater. Note: An Orphaned DHW should be tested for spillage.
On-Site Inspection Only		
18.2.1	Monitor for Ambient CO	Monitor air for ambient CO. Note: An Orphaned DHW should be tested for spillage.
18.2.2	Combustion Safety Testing	Perform combustion safety testing at the appliance/s to include greatest CAZ depressurization, CO measurement, combustible gas leaks, and assessment of spillage of flue gases as detailed in in BPI 1200 Section 7. The

		testing equipment must comply with the specifications detailed in BPI 1200 sections 7.1.1.1 through 7.1.4.2.2
18.2.3	Combustion Safety Action Levels	The contractor shall not proceed with work when CO concentrations in the work environment exceed 35 ppm or if any measured concentrations of combustible fuel gas exceed 10% of the LEL. When either of these conditions occur, the contractor shall inform the homeowner/occupants of the unsafe condition and advise evacuation of the home. The contractor shall leave the home and the appropriate emergency services and fuel gas providers shall be notified from outside the home. The contractor shall contact the appropriate emergency services only if the homeowner/occupant is unable to do so.

Indoor Air Quality and Ventilation		
	Guiding Principle	**Full Text**
19.0.1	Attached Garage Safety	Determine and document if there may be air leakage pathways from an attached garage to the conditioned space and/or its attic area.
19.0.2	Clothes Dryer Venting	Determine and document how clothes dryer is vented, and where the vent system terminates.
19.0.3	Spot Ventilation Systems	Determine and document if any exhaust fans are present, how they are ducted, and where the vent system terminates.
19.0.4	Whole House Mechanical Ventilation	Determine and document if there is a mechanical ventilation system.
190.5	Identify Potential Indoor Air Pollutant/s	Determine and document any sources of indoor air pollutants, including but not limited to VOCs, mold, pests, lead paint, asbestos, radon, tobacco smoke, and other irritants, that may be present.
On-Site Verification		
19.1.1	Clothes Dryer Venting	Evaluate and document terminations of all clothes dryer vents.
19.1.2	Spot Ventilation Systems	Evaluate and document terminations of all exhaust fan vents. Evaluate and document existing ventilation systems in the dwelling.
On-Site Inspection Only		
19.2.1	Attached Garage Safety	Identify air leakage pathways from garage to living space and its attic area.
19.2.2	Minimum Air Changes	Determine the ventilation needs for the building.
19.2.3	IAQ Measurements – Relative Humidity	Measure and document the relative humidity.

Moisture Control		
	Guiding Principle	**Full Text**
20.0.1	Interior Water Sources	Inspect for evidence of damage caused by interior water sources, such as plumbing leaks or condensation on piping, ductwork, or interior surfaces.
20.0.2	Exterior Water Intrusion	Inspect for evidence of exterior water intrusion, such as roof leaks, foundation leaks, fenestration assembly leaks and ground-water intrusion.
20.0.3	Structural Water Damage	Inspect for effects of water damage on buildings, such as structural damage, mold, mildew, efflorescence, and stains.
20.0.4	Moisture Control Strategies	Identify existing vapor retarders, flashing, gutters, or other moisture-control strategies.
On-Site Verification		

20.1.1	Exterior Water Intrusion	Inspect for evidence of exterior water intrusion, such as roof leaks, foundation leaks, fenestration assembly leaks and ground-water intrusion.
20.1.2	Structural Water Damage	Inspect for effects of water damage on buildings, such as structural damage, mold, mildew, efflorescence, and stains.
20.1.3	Moisture Control Strategies	Identify existing vapor retarders, flashing, gutters, or other moisture-control strategies.

Major Appliance and Plug Load Information		
	Guiding Principle	**Full Text**
21.0.1	Major Appliances	Ask homeowner to identify each major appliance including refrigerator/s, freezer/s, oven, stove, range, dehumidifier/s, dishwasher, clothes washer, and clothes dryer. Request a photo of the electrical panel. For each appliance, ask the homeowner to record the date of manufacture or approximate age, and condition. Identify and document the fuel source for the cookstove, oven, range, and clothes dryer.
21.0.2	Lighting	Ask homeowner if CFLs or LED lighting is used. Ask the homeowner if exterior lighting is used and for how long. Ask the homeowner if exterior motion sensors are used.
21.0.3	Other Baseload Items	Ask homeowner if any of the following pumps are used: well, sump, or septic. Ask homeowner if hot tub, swim spa or swimming pool are in use, hours per day and months per year used, and pump rated horsepower. Ask homeowner if electric vehicles, heated walkways/driveways, or snow melt systems are used.
21.0.4	Renewable Energy Systems	Ask homeowner if existing renewable energy systems or other on-site electricity generation are present.
On-Site Verification		
21.1.1	Refrigerator	Verify and document the refrigerator's date of manufacture or approximate age, make, model, serial number, size, and condition.
21.1.2	Freezer	Verify and document the freezer's date of manufacture or approximate age, make, model, serial number, size, and condition.
On-Site Inspection Only		
21.2.1	Lighting Efficiency Upgrades	Install approved lighting efficiency upgrades. Make recommendations for lighting efficiency upgrades, including LED light bulbs, and hardwire LED fixtures, where appropriate.

Water Conservation		
	Guiding Principle	**Full Text**
22.0.1	Source	Ask homeowner if supply is from private well and approximate age of the well
22.0.2	Conservation Devices	Ask homeowner if the following are in use: faucet aerators, low flow showerheads, touch control faucets, water saving toilets, or HE clothes washers.
22.0.3	Leaks	Ask homeowner if they are aware of any water leaks from plumbing or fixtures. If leaks exist, ask homeowner to provide photos.
22.0.4	Efficiency and Conservation	Provide advice to the homeowner about the value of water efficiency and conservation.

Health and Safety		
	Guiding Principle	**Full Text**
23.0.1	Smoke Detectors	Identify and document the number and location of existing smoke detectors. Ask if hard wired or battery powered.
23.0.2	CO Detectors	Identify and document the number and location of existing CO detectors. Ask if hard wired or battery powered.
23.0.3	Electrical Hazards	Identify and document potential electrical hazards such as knob and tube wiring, broken outlet covers or switch covers, exposed wiring, or other obvious electrical hazards.
23.0.4	Potentially Hazardous Materials	Identify and document any areas containing known or suspected hazardous materials, including but not limited to, lead, asbestos, or mold.
23.0.5	Evaluation of Minor Repairs	Identify and document minor repairs, including but not limited to disconnected duct work, blocked furnace registers, furnace/boiler cleaning, missing air filter, that are necessary to ensure maximum efficiency from the provision of qualified energy efficiency services.
On-Site Verification		
23.1.1	Smoke Detectors	Visually inspect, evaluate, and document presence of smoke detectors. Determine if the smoke detectors are in working condition (i.e., test button).
23.1.2	CO Detectors	Visually inspect, evaluate, and document presence of CO detectors. Verify the CO detector is in working condition (i.e., test button).
23.1.3	Electrical Hazards	Visually inspect, evaluate, and document observable electrical hazards and the existence of knob and tube wiring.
23.1.4	Potentially Hazardous Materials	Visually inspect, evaluate, and document areas containing known or suspected hazardous materials, including but not limited to, lead (peeling paint), asbestos, or mold.
23.1.5	Evaluation of Minor Repairs	Visually inspect, evaluate, and document minor repairs that are necessary to ensure maximum efficiency from the provision of qualified energy efficiency services.

Home Environmental Evaluation		
	Guiding Principle	**Full Text**
24.0.1	Pests	Ask homeowner if there is any evidence of pests such as mice, rats, bats, ants, cockroaches existing in the home including non-occupied areas (attics, garages, crawlspace, etc.).
24.0.2	Lead-Based Paint in Pre-1978 Homes	If home was constructed pre-1978 and has flaking, or peeling paint, refer homeowner to the New York State and local Lead Poisoning Prevention Programs. Low-income homeowners and property owners renting to low-income tenants may be eligible for funds to repair lead hazards.
24.0.3	Allergens	Ask homeowner if any occupants experience any allergies or respiratory issues like asthma and, if yes, identify potential triggers: indoor pets, carpets and others allergen-holding materials, moisture problems, etc. in the home. If yes, provide information on NYS Healthy Neighborhood Program that can provide home visiting: https://www.health.ny.gov/environmental/indoors/healthy_neighborhoods/
24.0.4	Injury and Fall Risks	Ask homeowner if there are areas with:

		1) Poor lighting (stairwells, hallways, walk-in closets, etc.). 2) Trip and fall hazards in home's interior (insufficient/missing handrails, grab bars in bathrooms, throw or area rugs, etc.) and exterior (porches, entrance etc.). This becomes an even greater concern when the occupants are over 60 years old.
24.0.5	Indoor Air Quality	Ask homeowner if there are any occupants that smoke indoors and if so, do any occupants have experienced respiratory issues.
On-Site Verification		
24.1.1	Pests	On-site verification for pests in common suspect areas, note where action is needed prior to energy work (i.e., remove pests that can harm insulation or wiring).
24.1.2	Allergens	On-site verification for potential allergens or asthma triggers in common suspect areas may need to be completed.