

1 **Revised Proposal**

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3 **P3 – Proposed Guidelines for Home Performance with ENERGY STAR® Comprehensive**
4 **Home Assessment** (with associated data intake form template, homeowner summary
5 report guidance and report template)
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8 **Background**

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10 The National Home Performance with ENERGY STAR (HPwES) Program believes that
11 providing guidelines on both the visual inspections and diagnostic testing performed on behalf of
12 the homeowner to enable the contractor to provide the homeowner an evaluation of their
13 home’s performance is important to ensuring consistent delivery of the program. The most
14 successful local HPwES programs provide their participating contractors with guidance as well
15 as a template for performing comprehensive home assessments. This evaluation, which has
16 been referred to as an energy audit or comprehensive home assessment, will henceforth be
17 referred to as the Home Performance Assessment (HPA). The National HPwES Program is
18 seeking to finalize HPA guidelines and, if necessary, amend the HPwES program participation
19 agreement to require contractors participating in locally sponsored Home Performance with
20 ENERGY STAR to complete an HPA that meets or exceeds the national guidelines.

21
22 Part of the HPA is the HPA summary report which gives the homeowner the information they
23 need to make decisions about improving the performance of their home. The current HPwES
24 Partnership Agreement specifies that *“The homeowner (or tenant) will be provided with a*
25 *summary report including results and recommendations, including expected costs and savings,*
26 *and non-energy benefits of implementing the recommendations.”* Therefore, the national
27 program has developed a template and guidance on the minimum elements to be included in
28 HPA summary reports.
29

30 **Proposed Change or New Policy**

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32 The proposed HPA guidelines (pages 3 - 8 of this document) was developed based on reviews
33 of existing sponsor-based programs, Building Performance Institute (BPI) technical standards,
34 practices of contractors and consultants, and revised based on the industry feedback on Draft
35 Version 01. The intent is to increase consistency in the practice of home performance
36 contracting and to protect the integrity of the HPwES brand without unduly burdening
37 participating contractors and consultants. Program sponsors may, if they wish, choose to
38 adopt local program standards that exceed the national guidelines in order to address local
39 market needs or as a justification for program incentives. The attached elements of the HPA
40 are organized in a manner to facilitate review; however the HPA can be conducted in whatever
41 order the evaluator is most comfortable with, as long as all of the requirements are met. In
42 addition to the HPA guidelines, participating contractors can use the attached HPA Intake
43 Form to collect relevant information as they assess a home. These guidelines are provided to
44 assist program sponsors as they develop their program policies and procedures.
45

46 In addition, guidance on the minimum requirements for HPA summary reports, as well as a
47 recommended Summary Report template, are provided to clearly define required minimum
48 elements for presenting documented recommendations to the homeowner. The Summary
49 Report guidance and template immediately follow the proposed Home Performance

1 Assessment Guidelines. The elements to be included in the HPA summary report can be
2 defined by the local program sponsor within their program policies and procedures, as long as
3 they meet or exceed the national guidelines. Program sponsors may provide participating
4 contractors with additional guidance on developing a homeowner report or direct them to use a
5 specific standard homeowner report template.
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8 Comments Requested

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10 The National HPwES Program is seeking comments on the proposed elements to be included in
11 the HPA Guidelines and Summary Report, specifically:
12

- 13 1. Are the revised HPA Guidelines for delivery of the visual and diagnostic assessment
14 clear and reasonable minimum requirements? If not, how should they be modified?
- 15 2. Are the proposed minimum elements for the HPA summary report clear and a
16 reasonable requirement for participating contractors to provide to homeowners? If not,
17 how should they be modified?
- 18 3. Should any of the proposed minimum elements be deleted or should others be added?
19

20

1 **Home Performance with ENERGY STAR**
2 **Home Performance Assessment (HPA) Guidelines¹**
3

4 **A. Homeowner Interview**

- 5 1) (Recommended) Conduct homeowner telephone interview to collect basic
6 information on the home and the homeowner's concerns and goals, as well as to
7 obtain energy consumption history and start disaggregating bills in order to begin
8 assessing home's performance.
9 2) Conduct homeowner in-person interview to collect information about the home and
10 about the homeowner's concerns, motivations and goals. Typical information to
11 collect includes:
12 a) Year home built, time in the home, remodeling, renovations, bonus
13 rooms, number of occupants, age of roof, heated or unheated basement;
14 level of attic and wall insulation if known; age and condition of windows
15 (drafts, condensation)
16 b) Basic information about heating and cooling systems, type of fuel, age of
17 systems (if known) etc
18 c) Allergies, comfort complaints (cold rooms/hot rooms), drafts, moisture
19 issues, ice damming (if applicable) or other common climate-specific
20 issues, indoor air quality complaints, high utility bills, other questions or
21 complaints
22 d) Number of fireplaces and use of unvented fireplaces and space heaters
23 i) If there are unvented fireplaces or space heaters, educate
24 homeowner on moisture problems and carbon monoxide and fire
25 risks, and inform them that envelope improvements cannot be
26 performed unless they are removed or, in the case of fireplaces,
27 retrofitted with a vent kit.
28 e) Swimming pool, if applicable— typical open and close dates, hrs/day of
29 pump operation, heated or not, heating source(s) and location(s).
30 Ventilation strategy if indoors.
31 3) (Recommended) Conduct walk-through with homeowner to ascertain additional
32 information (important for making sure homeowner has opportunity to bring up any
33 issues or concerns that s/he has with any major items in the assessment)
34

35 **B. Utility Bill Review and Analysis** (Recommended if consumption history is available; the
36 review and analysis will help the home performance contractor/consultant educate the
37 homeowner and complete the sale)

- 38 1) Disaggregate Cooling, Heating, DHW, Base-load fossil and electricity usage
39 a) (Recommended): Receive information and disaggregate the bills before
40 going out to the house in order to save time (note: a utility bill
41 disaggregation tool available from EPA/DOE that can be distributed by
42 program sponsors to their participating contractors)
43 b) Educate homeowner on the benefits of core air sealing, insulation, high-
44 efficiency HVAC and water heating.
45 2) Discuss observations about disaggregated energy usage with homeowner, and
46 identify measures to reduce energy use
47 3) Educate homeowner on base-loads, discuss benefits of high-efficiency appliances
48 and lighting.

¹ Based on industry feedback on Draft Version 01 the Comprehensive Home Assessment (CHA) has been renamed to the Home Performance Assessment (HPA)

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C. Appliance and Lighting Inspection

- 1) Record approximate age, type and condition of major appliances and showerheads. If applicable, determine number, age and condition of room air conditioners (check with homeowner if the assessment is performed outside of the cooling season and they are in storage)
 - a) If homeowner has any older appliances, discuss benefits of replacing them with ENERGY STAR qualified appliances
 - b) Educate homeowner on water and energy savings from low-flow showerheads
- 2) Inspect lighting for any obvious opportunities to upgrade to ENERGY STAR compact fluorescents (CFLs) or fixtures
 - a) Check with homeowner to get estimated daily burn-time for lighting to be recommended for replacement (important for estimating energy savings)

D. Building Envelope Inspection

- 1) Basic home information
 - a) Record house type, age and condition
 - b) Note key features of home typical of house type (porch roof, multiple roof lines, cantilevers, bay windows, dormers, kneewall attics, crawlspaces, attached garage)
 - c) Note configuration of home additions, if any
 - d) (Recommended) Record house orientation and look for opportunities for renewable energy technology (e.g., access to sunlight on south and west sides)
 - e) Draw house floor plan with orientation, exterior measurements, measure volume and calculate air change requirements per ASHRAE 62.2-2007 or later, or other methodologies listed as acceptable in BPI's current Technical Standards for Building Analysts.
- 2) External features affecting envelope of home
 - a) Note condition/durability of siding, trim, fascia, soffit areas
 - i) Looks for signs of moisture or ice dam (if applicable) damage in walls and soffits resulting from a building performance failure
 - ii) Check for roof moisture damage (stains, soft or rotted deck or rafters, wet or moisture-damaged insulation) from roof leaks or inadequate ventilation
 - b) Inspect and count attic vents and determine whether they are adequate, per DOE guidelines in Technology Fact Sheet, "Ceilings and Attics: Install Insulation and Provide Ventilation" (DOE/GO10099-771, February 2000):
 - i) Unless the local code is more stringent, attic vents in attics with no vapor barrier against the conditioned space ceiling are considered "adequate" if the ratio of total net vent opening to total ceiling area is at least 1:150 (1 ft² of net vent opening per 150 ft² of insulated ceiling)
 - ii) Unless the local code is more stringent, the ratio of net vent area to total ceiling area can be relaxed to 1:300 if there is a vapor barrier between the existing insulation and the conditioned space and if there is relatively even distribution between high vents (ridge, gable, cap) and low vents (soffits); even distribution means that high vents constitute between 50% and 80% of total vent space.

- 1 c) Note any issues with shading or exposure to sun (linked to issues with
- 2 hot/cold rooms and can help prioritize window-related measures)
- 3 d) Note any grading features that may direct water to basement, slab or
- 4 crawlspace
- 5 3) Envelope Thermal Characteristics (Insulation, Windows and Doors)
- 6 a) Determine thermal boundary of home and identify thermal bridges that
- 7 compromise the integrity of the boundary
- 8 b) Insulation: Record type(s), amount, and condition of insulation in all
- 9 components of the thermal boundary. For guidance on R-values
- 10 associated with various types of insulation, refer to BPI Building Analyst
- 11 Technical Standard, Section 2.2, “Default Values for Insulation”:
- 12 i) Attic flats, slopes, knee walls and knee wall flats, dropped soffits,
- 13 etc., as appropriate for type of home and per configuration of
- 14 additions
- 15 ii) Exterior Walls (use probe if necessary)
- 16 iii) Basement and crawlspace walls or ceilings
- 17 iv) Rim joists
- 18 v) Attic staircase walls
- 19 c) Window Inspection
- 20 i) Count windows and measure or estimate window area and
- 21 orientation
- 22 ii) Record number of panes/presence of storm windows
- 23 iii) Note condition of windows – age, condition, signs of moisture
- 24 damage and air infiltration around windows.
- 25 d) Door Inspection
- 26 i) Note type and condition of all doors to exterior (including garage)
- 27 – especially note if doors are un-insulated, interior doors or in
- 28 poor condition, or if they are leaky and in need of weather-
- 29 stripping or door sweeps
- 30 4) Envelope Air Leakage Characteristics (Determining the Opportunity for Air
- 31 Sealing)
- 32 a) Blower Door Test (do NOT conduct this test if there is a danger that
- 33 dangerous contaminants (asbestos, lead dust, bio-aerosols or other
- 34 dangerous materials), can become airborne or otherwise introduced into
- 35 the living space by conducting the test
- 36 i) Follow blower door testing procedures per ASHRAE 119
- 37 standard.
- 38 o Using the blower door and a manometer, conduct
- 39 zonal pressure differential tests if needed to
- 40 diagnose particular problem areas within the
- 41 building (e.g., to determine how much an attic or
- 42 garage is communicating with the living space
- 43 compared to the outside)
- 44 ii) Walk through home to determine major leakage areas in living
- 45 area – use smoke pencil at a minimum, but infrared camera is
- 46 recommended, not only for finding the air leaks and weak
- 47 insulation spots, but also for the value of engaging the
- 48 homeowner in the discovery process
- 49 iii) Determine any significant misalignments of the pressure and
- 50 thermal boundaries, and ways to mitigate them

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- iv) Compare CFM50 reading to required ventilation rate using one of the following methodologies:
 - o BPI Building Airflow Standard (BAS) based on ASHRAE 62.2-1989 (see BPI Building Analyst Standard (v2/28/05)
 - o Ventilation exemption for existing homes based on ASHRAE 136, 119 for existing homes, per draft BPI Building Analyst Standard, Section 7.3 (using CFM50 lookup tables provided in Appendix A of the referenced Standard)
 - o Ventilation credit for air leakage as provided by ASHRAE 62.2-2007, Section 4.1.3., which allows the required mechanical ventilation rate to be decreased by half of excess infiltration as measured per ASHRAE 136, 119 for existing homes

b) Visual Inspections

- i) Attic (doesn't have to be during blower door test): openings in wall top plates, electrical and plumbing runs, open areas around flues and chimneys, recessed light housings, open framing cavities, dropped soffits and ceilings
- ii) Basement (doesn't have to be during blower door test): openings around electrical and plumbing runs and around flue pipes and chimneys, accessible sill plate areas, basement windows, exterior doorways
- iii) Living Space (best during blower door test): window trim, baseboards, upper trim, cabinets, dropped soffits, pocket doors, recessed lighting, duct chases/plenums, band joists, transitions between porch roof and exterior wall, fireplaces, cantilevered floors, etc.

Note: It is required that particular attention be given to any walls or ceilings between an attached garage and the living space. Correction of air leaks in such surfaces **must** be addressed in the comprehensive work scope due to the potential for infiltration of carbon monoxide and other fumes from the attached garage.

E. Inspection of HVAC (Heating, Ventilation and Air Conditioning) Systems

1) Thermostats

- a) Determine number of zones
- b) Determine whether thermostats are programmable thermostats or manual thermostats
 - i) If setback, check status of setback periods and, if not being used, educate homeowner on the benefits of scheduled setbacks based on their lifestyle
- c) (Recommended) Ask homeowner about average thermostat settings for both summer and winter (important for energy analysis)

2) Heating System

- a) Verify system information: age, model, heat in/out

- 1 b) Review maintenance record for frequency of tune-ups and record of
- 2 repairs
- 3 c) (Recommended) Record steady state efficiency (SSE) test result (can be
- 4 recorded while conducting combustion safety tests, below)
- 5 d) If furnace, check duct connection
- 6 e) If high-efficiency unit with condensate line, check the line for signs of
- 7 blockage or leaks
- 8 3) Air Conditioning System
- 9 a) Name plate info on central air conditioner condenser unit (tonnage, EER
- 10 or SEER – sometimes determined by model number)
- 11 b) Note any issues around compressor/fan unit in yard, such as open
- 12 exposure to sun or problems with leaves, twigs or other debris
- 13 c) Number of window or wall units and model and EER info if available
- 14 4) Distribution System(s)
- 15 a) Air Handlers and Coils
- 16 i) Determine condition of air handler and coil and need for cleaning
- 17 ii) Inspect air filter(s) and check with homeowner on frequency of
- 18 replacement
- 19 iii) Verify presence of secondary overflow pans when unit is within,
- 20 above or adjacent to finished living space and verify presence of
- 21 condensate drain line or float disconnect switch
- 22 b) Ductwork
- 23 i) (Recommended) If at least 20% of all ducts or an air handler are
- 24 located outside of home's pressure boundary and cannot be
- 25 relocated inside, conduct a test to determine duct leakage, using
- 26 one of the following methods: Duct Blaster[®] or other whole duct
- 27 pressurization test, blower door subtraction method, Delta Q test,
- 28 pressure pans or flow hood
- 29 ii) (Recommended) Conduct a test to determine adequacy of air
- 30 flow, using one of the following methods: Duct Blaster[®] or other
- 31 whole duct pressurization test, flow plate, flow hood, static
- 32 pressure test, and/or temperature rise/drop tests
- 33 iii) Note the presence of any ducts or air handlers in garages (this
- 34 requires a recommendation to re-locate or create air-tight
- 35 enclosures to isolate them from garage and prevent
- 36 transportation of carbon monoxide and other fumes from the
- 37 garage to the living space)
- 38 iv) Record insulation level of ducts in unconditioned spaces
- 39 v) Check for ductwork leaks, disconnects, crimps, signs of moisture
- 40 presence, damage or other atypical conditions (inspection should
- 41 include inaccessible ducts to extent possible)
- 42 c) Boiler System Hot Water Pipes, Baseboard and Radiators
- 43 i) Record insulation levels and note opportunity for pipe insulation
- 44 if practical, especially on long pipe runs if there are comfort
- 45 delivery issues
- 46 ii) If baseboard, check for condition and positioning of covers and
- 47 for presence of dust, webs and other material on the fins
- 48 5) Water Heater
- 49 a) Record approximate age, model, gallons

- 1 b) Note temperature setting on water heater, educate homeowner on
- 2 standby losses and scalding threats if it's high, and turn it down if
- 3 homeowner approves
- 4 c) Check for signs of leakage from water heater or boiler vessel
- 5 d) Conduct visual inspection of water heater and hot water pipes for
- 6 efficiency improvements (presence or lack of insulation, convective loop,
- 7 feasibility of retrofitting insulation on tank and/or pipes)
- 8 6) Mechanical Ventilation
- 9 a) Check whether mechanical exhaust venting systems in bathrooms and
- 10 kitchen, if present are designed, built and terminated properly
- 11 b) If garage is attached, note whether exhaust fan is present and operable
- 12 in garage
- 13 c) Note presence and operability of powered attic or whole-house exhaust
- 14 fans and inform homeowner of correct operation
- 15 d) Educate homeowner on benefits of timer-operated bathroom exhaust fan.
- 16

17 **F. Combustion Appliance, CAZ and Living Space Tests and Inspections**

- 18 1) Living Space – General combustion testing
- 19 a) Prior to installation of measures, perform diagnostic tests in the living
- 20 space, the combustion appliance zone(s) (CAZ), and on combustion
- 21 equipment including vented heating systems and water heaters, and on
- 22 ovens, in accordance with the Building Performance Institute (BPI)
- 23 Technical Standard for Building Analyst or the equivalent, as developed
- 24 by the HPwES program sponsor in accordance with their Partnership
- 25 Agreement and approved by EPA and DOE. Examples of acceptable
- 26 alternative diagnostic testing standards that cover a portion, but not all, of
- 27 the diagnostic testing covered by BPI include:
- 28 i) ASTM Standard E1998-99, “Standard Guide for Assessing
- 29 Depressurization-Induced Backdrafting and Spillage from Vented
- 30 Combustion Appliances”
- 31 ii) Canada General Standards Board 51.71-95, “The Spillage Test
- 32 Method to Determine The Potential for Pressure Induced
- 33 Spillage from Vented, Fuel-fired, Space Heating Appliances,
- 34 Water Heaters and Fireplaces”
- 35 iii) National Fuel Gas Code (ANSI Z223.1/NFPA 54)
- 36 b) Note number, location and operability of CO detectors in living space
- 37 c) Note presence of unvented gas fireplaces and propane or kerosene
- 38 space heaters and discuss with homeowner immediately – explain that
- 39 envelope work cannot be performed unless they are removed or, in case
- 40 of some fireplaces, vented with a retrofit kit
- 41 2) Combustion Appliance Zone Safety Inspection
- 42 a) Make sure that there are no flammable or explosive materials near any
- 43 combustion source – move them to a safer place and educate the
- 44 homeowner about their danger
- 45 3) Water Heater Safety Inspection
- 46 i) Check for evidence of back draft/flame roll-out
- 47 ii) Verify that pressure relief valve is present and not obstructed
- 48 4) Heating System Safety Inspection
- 49 i) Check for evidence of back draft/flame roll-out
- 50 ii) If boiler, verify that pressure relief valve is present and not
- 51 obstructed

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G. Moisture Inspection

- 1) Determine whether there is continuous moisture barrier in the crawlspace
- 2) Check basement and crawlspace for moisture deposition or damage and conditions that promote fungal growth on basement floors, walls, sill plate area, around basement windows and bulkhead doors
- 3) Check attic for moisture deposition or damage and conditions that promote fungal growth on roof deck, rafters, joists, insulation (wet or moisture-compacted insulation)
- 4) Inspect condition of windows and look for signs of condensation or other conditions that could cause damage or affect durability
- 5) If there is evidence of high moisture levels in the living space, check dark walls behind headboards, furniture – corners of closets on exterior walls, and other areas of stagnation and cold temperature for moisture deposition or damage and conditions that promote fungal growth
- 6) Check around exterior of foundation for signs of moisture deposition from such sources as faulty gutters or watering too close to the foundation

H. Review HPA Findings with the Homeowner²

- 1) Discuss overview of inspection findings and present recommended scope of work to homeowner
 - a) It is required that the set of recommendations be reasonably comprehensive in identifying measures that save energy, address combustion safety or moisture concerns or are intended to improve the comfort and durability of the home;
 - b) It is required that the recommendations be accompanied with a rough estimate of energy savings and some indication of the return on investment, such as simple payback;
 - c) When a safer, higher efficiency option exists, it is recommended that the contractor propose replacement of the system; if the replacement is less expensive than the cost to repair existing equipment (including the testing) replacement must be presented as an option

² During the initial HPA visit, the contractor should be prepared to *discuss* findings, recommendations and estimate the associated energy savings. It is acceptable for the written HPA Summary Report to be delivered to the homeowner later and for the homeowner to sign a contract prior to receiving the HPA summary report, as long as the contractor has *discussed* a comprehensive set of recommendations with estimated energy savings. It follows logically that guidelines for this discussion are similar to guidelines for the written Summary report (see next section, below).

Home Performance Assessment



Company

Logo

[Enter Company Name]

Customer Name: _____
 Customer Address: _____
 City, State, Zip: _____
 Inspection Date: _____

Customer Phone Number (h): _____
 Customer Phone Number (w): _____
 Customer Email: _____
 Home Performance Analyst: _____

How Did They Hear? Article Referral Web Search Radio Regional Program Nat'l Program Other: _____

Type of Home: Colonial Dutch Colonial Cape Split Level Duplex Town/Rowhouse: End Unit? Y N Other: _____

Foundation/Basement: Slab on Grade Basement: Conditioned / Unconditioned / Partially Conditioned Crawlspace: Vented / Unvented

Year Built/Age: _____ **Roof Age/Cond:** _____ / _____ **Fireplace/Wood Stove:** Yes No **Pool Open/Close Dts:** _____ / _____

Yrs in Home: _____ **Siding Type/Cond:** _____ / _____ **Confirm no fires for HPA:** Yes No **Pool Pump Hrs/Day:** _____

Occupants: _____ **Heating Fuel:** _____ **DHW Fuel:** _____ **Pool Pump HP/Watts:** _____

Additions: _____ **Back-Up Elect Heat:** Yes No **Pool Htg Fuel:** _____ **Pool Area (L x W):** _____

Top Homeowner Priorities / Concerns / Motivations
 1. _____
 2. _____

Energy Consumption History

Month	Electric		Fossil	
	kWh	\$	Units	\$
Jan				
Feb				
Mar				
Apr				
May				
Jun				
Jul				
Aug				
Sep				
Oct				
Nov				
Dec				
Total				

Customer Needs / Complaints

Interviewee:	Details
1. High Bills	Yes No _____
2. Drafts	Yes No _____
3. Hot/Cold Rooms	Yes No _____
4. Air Quality Problems	Yes No _____
5. Odors	Yes No _____
6. Moisture Issues	Yes No _____
7. Water Leaks	Yes No _____
8. Window Problems	Yes No _____
9. Door Problems	Yes No _____
10. Moisture Issues/Damage	Yes No _____
11. Excessive Dust	Yes No _____
12. _____	Yes No _____
13. _____	Yes No _____

Major Appliances

	Estar	Size	Age	Model Number/ Condition/ Usage
Refrigerator 1				
Refrigerator 2				
Freezer				
Dishwasher				
Washing Machine				
Dehumidifier				
Dryer	NA			
Cooking Range / Oven	NA			

Thermostats: _____ Programmable? Yes No Heating Setpoint: _____ Cooling Setpoint: _____

Bathrooms: _____ # of Bath Fans: _____ Vented Properly? Yes No Low-Flow Showerheads?: Yes No

Lighting # Bulbs % CFL

High Use (>3 hrs/day)		
Other		

Room Air Conditioners
 # of Units: _____ Age: _____
 Estar: Yes No EER (if known): _____

Dryer Fuel: _____ **Vented Properly?** Yes No

CO Detectors: _____ Per Floor: Yes No
 # Smoke Detectors: _____ Per Floor: Yes No

Building Info

Conditioned Sqft: _____ Outside Temp: _____ Knob & Tube Wiring?: Yes No
 Avg Ceiling Hgt: _____ House Orientation: _____ Whole House Fan?: Yes No
 Number Stories: _____ Roof Vent Type(s): _____ Unvented Space Htrs/Fireplaces?: Yes No
 Volume Cond Space: _____ Roof Vents Are: OK Inadequate Balloon Framing?: Yes No
 Moisture/Other Issues: _____

Attic Insulation

Attic Flats and Slopes	R-Val	Insulation Type.	Insulation Amount	Cav Size (e.g. 2x6)	Open or Enclosed	Surface Area (sqft.)	# Rec. Cans	Attic Access	Attic Fan	Notes
				2 x	Open Encl					
				2 x	Open Encl					
				2 x	Open Encl					
				2 x	Open Encl					
				2 x	Open Encl					

Attic Kneewall/Vertical	R-Value	Insulation Type.	Insulation Amount	Cav. Size (e.g. 2x4)	Surface Area (sqft.)	Notes
				2 x		
				2 x		
				2 x		
				2 x		

1 **Home Performance with ENERGY STAR**
2 **Minimum Elements to be included in HPA Summary Reports**

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4 At a minimum, the following elements are required to be included in an HPA Summary Report
5 provided to a homeowner after the HPA has been completed:
6

- 7 - Participating contractor name, contractor contact information, and name of technician
8 completing the home performance assessment;
- 9 - Assessed home's address;
- 10 - Date assessment was performed;
- 11 - Home Performance with ENERGY STAR logo;
- 12 - Pre-improvement home performance assessment findings:
 - 13 o Air leakage test results;
 - 14 o Insulation levels for walls, attic, rim-joists, foundation (crawl, basement, or
15 slab);
 - 16 o Approximate age and condition of HVAC equipment (heating, cooling, and
17 ventilation fans), water heating equipment, and condition of exhaust flues
18 for HVAC or water heating equipment that consumes fossil fuel;
 - 19 o Type and condition of windows and doors;
 - 20 o Duct system visual inspection findings;
 - 21 o Approximate age and condition of appliances;
 - 22 o Any signs of moisture deposition, building performance failures or
23 conditions affecting the durability of the home;
 - 24 o Results of tests related to the use of combustion appliances (draft, spillage,
25 carbon monoxide, combustion appliance zone (CAZ) depressurization and
26 gas leak testing).
- 27 - A set of recommendations that are reasonably comprehensive in identifying measures
28 that save energy, address combustion safety, comfort, moisture deposition or other
29 building performance problems, and/or the durability of the home;
- 30 - When considering HVAC equipment, water heaters or appliances, whenever a safer,
31 higher efficiency option exists, it is recommended that the contractor propose a
32 replacement of the system; if the replacement is less expensive than the cost to repair
33 existing equipment (including diagnostic testing) then replacement is required to be
34 presented as an option; and
- 35 - An estimate of energy savings from recommended improvements and improvement
36 installation cost.
37



Home Performance Assessment Summary Report

Smith Home Performance Contracting

1 Address Street, City, ST 00000 • Phone: 000-000-0000 • Fax: 000-000-0000 • smithhpc@smithhpc.com

Customer Name: _____

Customer Phone Number (h): _____

Customer Address: _____

Customer Phone Number (w): _____

City, State, Zip: _____

Customer Email: _____

Inspection Date: _____

Home Performance Analyst: _____

Your Home Performance Assessment identifies opportunities to improve the performance of your home based on our analysis. This report summarizes the findings, prioritizes recommended improvements, and helps you determine the best improvements for your home.

Findings and Recommendations

	Priority	Findings on Existing Conditions	Recommendations for Improvements																														
Building Envelope Evaluation	Air Sealing	Blower door test: _____ cfm50 Tightness std: _____ cfm50 Leakage pathways observed: <input type="radio"/> Basement/crawl ceiling <input type="radio"/> Interior baseboard/top molding/fireplaces <input type="radio"/> Sill plate <input type="radio"/> Window and door frames <input type="radio"/> Attic floor <input type="radio"/> Attic hatch(es) <input type="radio"/> Band joist between floors <input type="radio"/> Recessed lights <input type="radio"/> Major air leakage bypass(es): _____ <input type="radio"/> Other: _____	<input type="radio"/> Reduce leaks by _____ % <input type="radio"/> No recommendations Air seal the following leakage pathways: <input type="radio"/> Bsmnt/crawl penetrations <input type="radio"/> Exposed sill plate <input type="radio"/> Attic penetrations <input type="radio"/> Top wall plates in attic <input type="radio"/> Flue/chimney penetrations <input type="radio"/> Open attic stairs/walls <input type="radio"/> Attic hatch/pulldown <input type="radio"/> Base and ceiling molding <input type="radio"/> Door and window frames <input type="radio"/> Around fireplace/mantle <input type="radio"/> Weatherstrip: <input type="radio"/> doors <input type="radio"/> windows <input type="radio"/> hatches <input type="radio"/> outlets <input type="radio"/> Recessed lights: <input type="radio"/> covers <input type="radio"/> inserts <input type="radio"/> new housings																														
	Duct Sealing	Duct leakage observed at: <input type="radio"/> No ducts in unconditioned space <input type="radio"/> Main trunk connections <input type="radio"/> Duct disconnects/failures at: _____ <input type="radio"/> Branch line connections _____ <input type="radio"/> Accessible register connections _____ <input type="radio"/> Unable to visually diagnose duct work _____	<input type="radio"/> Duct sealing: _____ hours <input type="radio"/> Air flow balancing <input type="radio"/> Include duct blaster test for leakage to outside <input type="radio"/> Repair or reconnect ducts <input type="radio"/> Add return(s) <input type="radio"/> Replace approx. _____% of duct system <input type="radio"/> Duct cleaning <input type="radio"/> No recommendations																														
	Insulation Levels	<table border="0"> <tr> <td></td> <td style="text-align: center;">R-Value/Inches Insulation</td> <td></td> </tr> <tr> <td><input type="radio"/> Above grade walls</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Attic (flat)</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Attic (slope)</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Kneewall(s)</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Floor over uncond.</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Rimjoists</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Crawl walls</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Basement walls</td> <td>_____</td> <td></td> </tr> <tr> <td><input type="radio"/> Ductwork (uncond. space)</td> <td>_____</td> <td></td> </tr> </table>		R-Value/Inches Insulation		<input type="radio"/> Above grade walls	_____		<input type="radio"/> Attic (flat)	_____		<input type="radio"/> Attic (slope)	_____		<input type="radio"/> Kneewall(s)	_____		<input type="radio"/> Floor over uncond.	_____		<input type="radio"/> Rimjoists	_____		<input type="radio"/> Crawl walls	_____		<input type="radio"/> Basement walls	_____		<input type="radio"/> Ductwork (uncond. space)	_____		Insulate in the following locations: R-Value/Inches Insul. <input type="radio"/> Walls _____ <input type="radio"/> Attic (flat) _____ <input type="radio"/> Attic (slope) _____ <input type="radio"/> Kneewall _____ <input type="radio"/> Floor _____ <input type="radio"/> Rimjoist _____ <input type="radio"/> Foundation walls _____ <input type="radio"/> Ductwork _____ <input type="radio"/> No recommendations _____
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Windows and Doors	<input type="radio"/> Single pane windows Condition: <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor <input type="radio"/> Double pane windows Condition: <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor <input type="radio"/> Double pane low-e Condition: <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor <input type="radio"/> Storm windows Condition: <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor <input type="radio"/> Doors Condition: <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor	<input type="radio"/> Replace windows with a u-value ≤ _____ and solar gain ≤ _____ <input type="radio"/> Replace _____ door(s) w/ _____ <input type="radio"/> Solar screens <input type="radio"/> Other: _____ <input type="radio"/> No recommendations																															
Mechanical Equip. Evaluation	Main heating system is a _____ System efficiency is _____ and age _____ Condition: <input type="radio"/> Good <input type="radio"/> Service <input type="radio"/> Replace Prog. thermostat <input type="radio"/> Yes <input type="radio"/> No # of thermostats: _____ 2nd heating system is a _____ System efficiency is _____ and age _____ Condition: <input type="radio"/> Good <input type="radio"/> Service <input type="radio"/> Replace Prog. thermostat <input type="radio"/> Yes <input type="radio"/> No Filter condition: _____ Filter size: _____ Qty: _____ Condensate line: Blocks: <input type="radio"/> Yes <input type="radio"/> No Leaks: <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Other: _____	<input type="radio"/> Replace main heating system with new _____ with _____ rated efficiency <input type="radio"/> Replace 2nd heating system with new _____ with _____ rated efficiency <input type="radio"/> Fix/replace condensate line <input type="radio"/> Remove 2nd heating system <input type="radio"/> Install prog. thermostat <input type="radio"/> Replace filter(s) <input type="radio"/> Fix/replace condensate line <input type="radio"/> Other: _____ <input type="radio"/> No recommendations																															

Findings and Recommendations (cont.)

Priority	Findings on Existing Conditions	Recommendations for Improvements																																											
Mechanical Equip. Evaluation (cont.)	Space Cooling Main cooling system is: <input type="radio"/> Central <input type="radio"/> Room <input type="radio"/> Heat pump System efficiency is _____ and age _____ Condition: <input type="radio"/> Good <input type="radio"/> Service needed 2nd cooling system is: <input type="radio"/> Central <input type="radio"/> Room <input type="radio"/> Heat pump System efficiency is _____ and age _____ Condition: <input type="radio"/> Good <input type="radio"/> Service needed Air handler location: _____	<input type="radio"/> Replace main cooling system with _____ SEER system <input type="radio"/> Replace 2nd cooling system with _____ SEER system <input type="radio"/> Clean/adjust blower <input type="radio"/> Check and adjust charge <input type="radio"/> Clean coils inside/outside <input type="radio"/> Check and adjust airflow <input type="radio"/> Fix/replace condensate line <input type="radio"/> Clean/adjust blower <input type="radio"/> Check and adjust charge <input type="radio"/> Clean coils <input type="radio"/> Check and adjust airflow <input type="radio"/> No recommendations																																											
	Water Heating Water heating system is a _____ Estimated system efficiency is _____ or age _____ Condition: <input type="radio"/> Good <input type="radio"/> Replace Temperature Setting: _____ Size: _____ Gallons Low flow showerheads <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Replace water heating system with new _____ with _____ rated efficiency <input type="radio"/> Install solar hot water <input type="radio"/> Pipe insulation <input type="radio"/> Install low flow showerhead <input type="radio"/> Insulation jacket <input type="radio"/> Other: _____ <input type="radio"/> No recommendations																																											
Baseload and Renewables	Refrigerator Age: _____ <input type="radio"/> ENERGY STAR Dishwasher Age: _____ <input type="radio"/> ENERGY STAR Clothes washer Age: _____ <input type="radio"/> ENERGY STAR Dryer Age: _____ Other: _____ <input type="radio"/> ENERGY STAR High-use lighting _____% CFL bulbs All lighting _____% CFL bulbs Renewable opportunities: _____	<input type="radio"/> Replace with ENERGY STAR refrigerator <input type="radio"/> Replace with ENERGY STAR dishwasher <input type="radio"/> Replace with ENERGY STAR clothes washer <input type="radio"/> Replace with dryer <input type="radio"/> _____ <input type="radio"/> Install _____ ENERGY STAR CFL bulbs in high-use fixtures <input type="radio"/> Purchase ENERGY STAR CFLs when replacing bulbs <input type="radio"/> Install renewables: _____																																											
	Appliances and Lighting <table border="0"> <tr> <td></td> <td>Heating System</td> <td>Water Heater</td> <td></td> </tr> <tr> <td>CO tests</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td></td> </tr> <tr> <td>Draft tests</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td></td> </tr> <tr> <td>Spillage tests</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td></td> </tr> <tr> <td>Ambient CO in living space</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td></td> <td></td> </tr> <tr> <td>Ambient CO in CAZ</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td></td> <td></td> </tr> <tr> <td>Oven CO test</td> <td><input type="radio"/> Pass <input type="radio"/> Fail</td> <td></td> <td></td> </tr> <tr> <td>Gas or oil leaks detected</td> <td><input type="radio"/> Yes <input type="radio"/> No</td> <td></td> <td>CO Monitor <input type="radio"/> Yes <input type="radio"/> No</td> </tr> <tr> <td>Locations: _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Htg/DHW sys venting issues</td> <td><input type="radio"/> Yes <input type="radio"/> No</td> <td></td> <td>Smoke Detector <input type="radio"/> Yes <input type="radio"/> No</td> </tr> <tr> <td>Description: _____</td> <td></td> <td></td> <td><input type="radio"/> Inoperable</td> </tr> </table>		Heating System	Water Heater		CO tests	<input type="radio"/> Pass <input type="radio"/> Fail	<input type="radio"/> Pass <input type="radio"/> Fail		Draft tests	<input type="radio"/> Pass <input type="radio"/> Fail	<input type="radio"/> Pass <input type="radio"/> Fail		Spillage tests	<input type="radio"/> Pass <input type="radio"/> Fail	<input type="radio"/> Pass <input type="radio"/> Fail		Ambient CO in living space	<input type="radio"/> Pass <input type="radio"/> Fail			Ambient CO in CAZ	<input type="radio"/> Pass <input type="radio"/> Fail			Oven CO test	<input type="radio"/> Pass <input type="radio"/> Fail			Gas or oil leaks detected	<input type="radio"/> Yes <input type="radio"/> No		CO Monitor <input type="radio"/> Yes <input type="radio"/> No	Locations: _____				Htg/DHW sys venting issues	<input type="radio"/> Yes <input type="radio"/> No		Smoke Detector <input type="radio"/> Yes <input type="radio"/> No	Description: _____			<input type="radio"/> Inoperable
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Health, Safety, and Durability	Moisture & Durability Locations with signs of moisture or durability issues: <input type="radio"/> Windows <input type="radio"/> Crawl/Basement <input type="radio"/> Attic <input type="radio"/> Walls <input type="radio"/> Roof <input type="radio"/> Soffits <input type="radio"/> Other: _____ <input type="radio"/> Sill plate <input type="radio"/> Interior: _____ <input type="radio"/> Other: _____	<input type="radio"/> Add attic ventilation <input type="radio"/> Replace/fix roof <input type="radio"/> Re-grade around foundation <input type="radio"/> Add gutters <input type="radio"/> Install sump pump <input type="radio"/> Extend downspouts <input type="radio"/> Other: _____																																											
	Exhaust Vent. Improperly vented, non-operable, or needs ventilation: <input type="radio"/> Master bath <input type="radio"/> 3rd bath <input type="radio"/> Dryer <input type="radio"/> Whole-house <input type="radio"/> 2nd bath <input type="radio"/> Range hood <input type="radio"/> Crawlspace <input type="radio"/> Other: _____	<input type="radio"/> Replace/install exhaust fan <input type="radio"/> Install dehumidifier <input type="radio"/> Add humidistat/timer <input type="radio"/> Other: _____																																											

Recommended Measures Summary

Estimated Annual kWh Savings _____
 Estimated Annual Therm Savings _____
 Estimated Annual Storage Fuel Savings _____
Estimated Total Annual Energy Cost Savings _____
Estimated Package of Improvements Installed Cost _____
Monthly Payment at _____%, _____ Yr. Term _____
Simple Payback (Installed Cost ÷ Annual Savings) _____

Non-Energy Benefits:
 Reduced drafts Reduced maintenance _____
 Improved comfort Improved indoor air _____
 Increased durability Reduced dust _____
 Increased home value Reduced odors _____
 Reduced moisture issues Environmental _____

I understand that the above recommendations do not constitute a binding contract proposal. I am interested in receiving such a proposal as a next step.

Customer Signature: _____ Date: _____