Comparison of Building Analyst Certification to Updates

The table below notes the legacy BA Testing Knowledge List items that are now covered by one of the following: Building Analyst Technician (BA-T), Building Analyst Professional (BA-P), or Building Science Principles (BSP) Reference Guide. Where an item is no longer covered, it is noted as not applicable (N/A).

Legacy Building Analyst Testing Knowledge List	BSP	BA-T	BA-P	N/A
1.1 Building Science				
1. Energy and Thermodynamics				
1. Knowledge of energy terms: watts, BTU/hr, watt-hours, BTU, therm, etc.	X			
2. Knowledge of thermal resistance/transmittance including conversions: R-values, U-Values	X			
3. Knowledge of latent and sensible heat	X			
4. Knowledge of thermal bridges	X			
5. Knowledge pressure boundaries	X			
6. Knowledge of thermal boundaries	X			
7. Basic knowledge of the 2nd Law of Thermodynamics and associated terms: conduction, convection, radiation	X			
2. Combustion Science				
1. Knowledge of the principles of combustion		X	X	
2. Knowledge of combustion analysis		X	X	
3. Knowledge of carbon monoxide (CO) testing of combustion appliances		X	X	
4. Basic knowledge of combustion appliance venting configurations		X	X	
5. Knowledge of proper vent sizing and vent tables				X
6. Knowledge of combustion appliance draft		X	X	
7. Knowledge of combustion air		X	X	
8. Knowledge of baseline depressurization		X	X	
9. Knowledge of worst case depressurization		X	X	
10. Knowledge of spillage		X	X	
11. Knowledge of backdrafting		X	X	
3. Moisture and Psychrometrics				
1. Knowledge of moisture transport mechanisms: air flow, diffusion, capillary action	X		X	
2. Knowledge of relative humidity and dew point	X	X		
4. Building Airflow				
1. Knowledge of airflow in buildings and associated terms	X		X	
2. Knowledge of ducts and associated terms		X		
3. Knowledge of stack effect	X			
4. Knowledge of exfiltration	X			
5. Knowledge of infiltration	X			
6. Knowledge of building pressurization/depressurization by various forces	X	X		
5. Mechanical Systems				
1. Knowledge of total equivalent length				
2. Knowledge of natural and mechanical ventilation	X		X	
3. Knowledge of input and output capacity	X		X	
4. Knowledge of peak electrical demand	X			

6. Distribution and Controls	BSP	BA-T	BA-P	N/A
1. Knowledge of net free area			X	
2. Knowledge of standby loss	X			
3. Knowledge of basic system controls			X	
4. Knowledge of distribution systems	X		X	
7. Indoor Air Quality (IAQ)				
1. Knowledge of IAQ: moisture, CO, dust, VOCs	X		X	
2. Knowledge of areas containing moisture		X	X	
3. Basic knowledge of radon		X		
4. Basic knowledge of mold-like substances		X	X	
5. Basic knowledge of asbestos-like material		X	X	
1.2 Buildings & Their Systems				
1. Building Components and Construction				
1. Ability to identify basic structural components of residential construction		X		
2. Ability to identify basic bulk water management components (drainage, plumbing, gutters, sumps, etc.)		X		
3. Ability to identify existing vapor barriers/retarders		X		
4. Knowledge of fenestration types and efficiencies	X			
5. Knowledge of thermal deficiencies in basements, crawlspaces, and slabs		X		
6. Knowledge of attic types (hot roof, vented, vaulted, etc.)				
7. Knowledge of thermal and infiltration issues in attached garages		X		
8. Knowledge of interstitial cavities and bypasses	X			
9. Knowledge of the interaction between mechanical systems, envelope systems, and occupant behavior	X			
10. Understand impact of building orientation, landscape drainage, and grading		X		
11. Ability to identify thermal bridges	X			
2. Mechanical Equipment				
1. Ability to identify basic duct components		X		
2. Ability to identify basic hydronic components				
3. Ability to identify basic fuel systems		X		
4. Ability to identify fuel system safety concerns		X		
5. Knowledge of basic heating/cooling equipment components controls and operation		X		
6. Ability to identify common mechanical safety controls		X		
7. Knowledge of basic DHW equipment components controls and operation		X		
8. Ability to identify basic duct configurations	X	X		
3. Building Thermodynamics				
1. Ability to identify existing thermal boundaries		X	X	
2. Ability to identify radiant barriers	X			
3. Ability to identify insulation types and R-values	X	X	X	
4. Ability to calculate heating degree days and cooling degree days				
5. Knowledge of heat gain/loss	X		X	
6. Knowledge of factors that affect insulation performance	X		X	

4. Building Airflow	**BSP**	**BA-T**	**BA-P**	**N/A**
1. Knowledge of ventilation needs			X	
2. Knowledge of issues involved with ventilation equipment		X	X	
3. Knowledge of various mechanical ventilation equipment and strategies	X		X	
4. Knowledge of air leakage control methods and their interaction with other systems		X	X	
5. Indoor Air Quality (IAQ)				
1. Ability to identify conditions that could promote the growth of mold		X		
2. Ability to identify presence of mold-like substance		X		
3. Ability to identify asbestos-like substances		X		
6. Renewables Potential				
1. Knowledge of opportunity for potential renewable energy applications		X		
1.3 Testing & Data Collection				
1. Combustion Safety Testing				
1. Identify proper appliance and combustion appliance venting		X		
2. Knowledge of carbon monoxide (ambient & combustion byproduct)		X	X	
3. Ability to set up home in natural conditions		X		
4. Ability to measure baseline pressure differential		X		
5. Ability to set up home in worst case condition		X		
6. Ability to measure worst case CAZ depressurization		X		
7. Ability to calculate minimum draft pressure based on existing weather conditions				
8. Ability to check for worst case spillage in heating systems		X		
9. Ability to check for worst case spillage in DHW		X		
10. Ability to identify time limits for spillage based on BPI standards		X		
11. Ability to perform testing under natural conditions		X		
12. Ability to apply appropriate combustion safety testing action levels based on BPI Standards		X	X	
13. Ability to identify the combustion appliance zones within the home		X		
2. Indoor/Outdoor CO				
1. Ability to measure indoor carbon monoxide (CO) levels		X		
2. Ability to measure exterior carbon monoxide (CO) levels		X		
3. Ability to measure heating system flue gas CO during combustion safety testing		X		
4. Ability to measure DHW flue gas CO during combustion safety testing		X		
5. Ability to monitor ambient CO levels in the CAZ during entire combustion safety testing		X		
6. Ability to perform a CO test on a gas oven		X		
7. Ability to apply appropriate CO action levels based on BPI Standards or other industry standards		X		

3. Combustible Gas Leak Testing	**BSP**	**BA-T**	**BA-P**	**N/A**
1. Knowledge of methods for identifying / testing fuel leaks		X		
2. Ability to conduct combustible gas leak testing		X		
3. Ability to verify leaks with a soapy solution		X		
4. Blower Door Testing				
1. Ability to set combustion appliances to pilot or disable them		X		
2. Ability to verify solid fuel appliances are not operational		X		
3. Ability to properly set up blower door frame, shroud, and fan		X		
4. Ability to properly set up manometer		X		
5. Ability to appropriately prepare house for blower door testing		X		
6. Ability to measure baseline pressure differential		X		
7. Ability to take an accurate measurement		X		
8. Ability to interpret results			X	
9. Ability to conduct room by room inspection with blower door running		X		
10. Knowledge of blower door guided air sealing techniques		X	X	
5. Mechanical Ventilation				
1. Knowledge of ventilation calculations and strategies			X	
2. Ability to determine volume of affected space			X	
3. Ability to identify the existing type of fan control		X		
4. Ability to identify the condition of the ductwork		X		
5. Ability to measure existing exhaust ventilation flow rate		X		
6. Insulation Levels				
1. Knowledge of appropriate insulation applications and installation based on existing conditions			X	
2. Knowledge of installing insulation at high density				
3. Knowledge of appropriate methods for assessing wall insulation levels		X		
4. Knowledge of area weighted R-value		X		
5. Ability to determine attic insulation levels		X		
6. Knowledge of performance and code issues			X	
7. HVAC Distribution Systems				
1. Ability to conduct pressure pan testing		X		
2. Ability to conduct room to room pressure differential diagnostics		X		
3. Ability to identify duct sealing opportunities and applications		X	X	
4. Ability to determine the distribution system		X		
5. Ability to identify existing duct or hydronic pipe insulation		X		
8. Domestic hot water (DHW)				
1. Ability to determine first hour rating				X
2. Knowledge of domestic hot water (DHW) conservation strategies	X		X	
3. Ability to determine existing water heater insulation		X		
4. Ability to determine existing pipe insulation		X		
9. Appliances				
1. Ability to locate manufacturer's data plate		X		
2. Ability to determine appliance energy usage from manufacturer data		X		

10. Lighting	BSP	BA-T	BA-P	N/A
1. Ability to determine total wattage		X		
11. Fenestrations				
1. Ability to identify door type		X		
2. Ability to identify window type		X		
12. Thermal/Pressure Boundary				
1. Ability to locate an existing vapor retarder	X	X	X	
2. Ability to identify thermal boundary		X	X	
3. Ability to identify pressure boundary		X	X	
13. Mechanical Equipment				
1. Ability to identify basic system controls		X		
2. Ability to identify obvious safety hazards and missing components				
14. Baseload				
1. Knowledge of baseload	X			
2. Knowledge of seasonal energy use	X			
3. Ability to identify sources that contribute to electrical baseload consumption	X			
4. Knowledge of methods used to determine electrical consumption of appliances		X		
15. Water Conservation				
1. Ability to identify low water consuming appliances and faucets	X	X		
16. Building Measurements				
1. Ability to accurately measure the perimeter of the home		X		
2. Ability to accurately measure a door		X		
17. Health and Safety				
1. Ability to locate existing smoke/CO detectors		X		
2. Ability to locate existing moisture issues		X		
3. Ability to locate any electrical hazards		X		
4. Ability to evaluate mechanical systems for health and safety concerns		X		
18. Construction Details				
1. Ability to identify sources and signs of moisture		X		
2. Ability to identify infiltration points and location of plumbing pipes and penetrations		X		
3. Ability to identify the wall type		X		
4. Ability to identify framing method	X			
5. Ability to safely measure cavity depth		X		
6. Ability to identify existing attic ventilation type		X		
7. Ability to measure attic floor area/roof cavity		X		

1.4 Industry Standards	BSP	BA-T	BA-P	N/A
1. Applicability				
1. Knowledge of applicable content and intent of Industry Standards		X	X	
2. Ability to apply appropriate BPI Standards to collected data		X	X	
2. Limitations				
1. Ability to recognize the need for a professional codes evaluation				X
2. Knowledge of fire codes as necessary to apply home performance in a code-approved manner			X	
1.5 Analyzing Collected Data				
1. Combustion Safety Testing				
1. Ability to use combustion analysis and safety testing results to develop appropriate recommendations		X		
2. Ability to determine if the appliance passes the spillage test		X		
3. Ability to determine what steps should be taken if it does not pass		X		
4. Ability to use correct table in the BPI Standards to determine appropriate recommendations		X	X	
5. Ability to identify the need for further evaluation when other combustion sources exist			X	
2. Indoor/Outdoor CO				
1. Ability to determine if ambient CO readings exceed action levels		X		
2. Ability to appropriately determine action levels based on test results for CO in the flue		X	X	
3. Blower Door Testing				
1. Knowledge of blower door use for identifying critical air sealing areas		X		
2. Ability to apply blower door test results in development of improvement strategies			X	
4. Mechanical Ventilation				
1. Ability to assess the condition of the ventilation ductwork		X	X	
2. Ability to assess the need for additional mechanical ventilation based on building needs			X	
5. Insulation Levels				
1. Ability to determine proper insulation levels to be added in the attic			X	
2. Ability to determine proper insulation levels to be added in the walls			X	
3. Ability to determine proper insulation levels to be added to other areas of the building as appropriate			X	
6. HVAC Distribution Systems				
1. Ability to identify duct or hydronic pipe insulation opportunities			X	
7. Domestic hot water (DHW)				
1. Ability to assess opportunities for water heater insulation			X	
2. Ability to assess opportunities for pipe insulation			X	

8. Appliances	**BSP**	**BA-T**	**BA-P**	**N/A**
1. Knowledge of the benefit of ENERGY STAR labeled appliances			X	
2. Ability to assess opportunities for ENERGY STAR appliances			X	
9. Lighting				
1. Knowledge of benefit of ENERGY STAR labeled lighting			X	
2. Knowledge of the impact on load associated with lighting			X	
3. Ability to determine opportunity for ENERGY STAR lighting			X	
4. Ability to determine opportunity for efficient lighting controls			X	
10. Fenestrations				
1. Ability to determine fit and performance		X		
2. Ability to determine appropriate applications for fenestration upgrades including modification or replacement			X	
3. Ability to identify any replacement concerns				X
11. Thermal/Pressure Boundary				
1. Ability to determine appropriate applications for sealed crawlspaces			X	
2. Ability to determine appropriate applications for basement			X	
3. Ability to determine appropriate applications for attics			X	
4. Ability to determine appropriate applications for other conditioned and unconditioned areas			X	
5. Ability to determine appropriate applications for other areas of the building as appropriate			X	
6. Ability to determine thermal boundary/pressure boundary alignment	X		X	
7. Ability to determine if the location of an existing vapor retarder is appropriate			X	
12. Mechanical Equipment				
1. Ability to apply heating and cooling efficiency methods			X	
2. Knowledge of equipment control strategies for maximizing occupant comfort and minimizing energy consumption			X	
3. Ability to evaluate the availability of fuel switching opportunities			X	
4. Ability to assess the possibility for performance enhancements			X	
13. Baseload				
1. Ability to disaggregate baseload energy use			X	
2. Knowledge of baseload reduction strategies			X	
14. Water Conservation				
1. Ability to assess opportunities for water conservation devices and strategies			X	
15. Building Measurements				
1. Ability to calculate square feet		X	X	
2. Ability to calculate cubic feet		X	X	

16. Health and Safety	**BSP**	**BA-T**	**BA-P**	**N/A**
1. Ability to determine if smoke/CO detectors are hard wired or battery operated				X
2. Ability to assess existing moisture issues	X	X	X	
3. Ability to assess basic electrical hazards			X	
4. Ability to assess the possibility of lead-based paint			X	
17. Construction Details				
1. Ability to determine crawlspace ventilation requirements			X	
2. Ability to determine rim joist/box sill insulation requirements			X	
3. Ability to determine appropriate foundation insulation location			X	
4. Ability to determine appropriateness of a vapor barrier			X	
5. Ability to determine repairs needed and structural integrity of wall(s) to be insulated			X	
6. Ability to determine square footage of area to be insulated			X	
7. Ability to determine appropriate amount of insulation to be added			X	
8. Ability to identify appropriate type of insulation to be added			X	
9. Ability to determine feasibility for comfort and cost benefit of added insulation			X	
10. Ability to determine integrity of attic to be insulated			X	
1.6 Energy Modeling and Work Scope				
1. Modeling				
1. Knowledge of modeling software			X	
2. Knowledge of the purpose for modeling			X	
3. Ability to accurately input data			X	
4. Ability to analyze completed model			X	
5. Ability to recognize potential data errors on completed model			X	
2. Proper Use of Modeling to Determine Heating and Cooling Equipment Sizing and Appropriate Energy				
1. Knowledge of utility history analysis in conservation strategies			X	
2. Knowledge of the need for modeling various options for heating, cooling, and DHW applications, as well as other efficiency upgrades			X	
3. Work Scope			X	
1. Knowledge of the purpose of a work scope			X	
2. Knowledge of work scope components			X	
3. Knowledge of how to write up work scope			X	
4. Knowledge of measure recommendations in relation to the needs of the building			X	
5. Ability to prioritize recommended measures			X	
6. Ability to analyze completed work scope in relation to measure recommendations				X
7. Ability to recognize potential data errors on a completed work scope				X
8. Ability to write up a work scope			X	
9. Ability to specify appropriate materials and processes needed for building performance projects			X	
10. Ability to present options for comprehensive conservation strategies that are consistent with sound building science practices			X	