



Related Technical Instruction (RTI) Outline for the Energy Auditor Apprenticeship Program

Sponsor Name	
RTI Provider Name	Everblue
RTI Provider Address	8720 Camberly Road, Huntersville, NC 28078
RTI Contact Name	Jon Boggiano
RTI Contact Phone	(800) 460-2575
RTI Contact Email	training@support.goeverblue.com
Total Hours of Instruction	145

Course		Hours	
	BPI Building Science Principles	16	
	<ul style="list-style-type: none">• The “house-as-a-system” approach to home performance• How to identify potential building performance problems in a home• How to improve the safety, comfort, and health of building occupants• Why you should focus on energy efficiency before solar• How to educate clients about potential building performance problems		
	BPI Building Analyst Technician	40	
	<ul style="list-style-type: none">• Principles of Energy• Basics of Heat, Moisture & Airflow• Building Structural Elements• Types of Insulation• Building Mechanical Elements• Blower Door & Pressure Diagnostics• Combustion Safety• Common Problems & Solutions• The Energy Audit Process• Health & Safety		

Course	BPI Building Analyst Professional	Hours	10
<ul style="list-style-type: none"> • Construction Math • Principles of Heat, Moisture & Airflow • Building Structural Elements • Analysis of Data Collection • Energy Modeling • Work Scope Development • Common Problems & Solutions • The Energy Audit Process • Health & Safety 			

Course	BPI Infiltration & Duct Leakage	Hours	14
<ul style="list-style-type: none"> • Construction Math • Airflow • Blower Door & Pressure Diagnostics • Tightness Verification • Duct Testing • Duct Tightness Verification 			

Course	OSHA 10 Construction Safety	Hours	10
<ul style="list-style-type: none"> • Personal Protective Equipment • Health Hazards in Construction • Stairways and Ladders • Fire Protection and Prevention • Materials Handling, Use, and Disposal • Safety and Health Programs • Scaffolds • Tools – Hand and Power • Welding and Cutting • Lead & Asbestos Exposure 			

Course	Green Building Basics	Hours	20
<ul style="list-style-type: none"> • Green Building Certification Programs • How to Get Involved (Certification and/or Support) • The Holistic Approach to Green Building • Impacts of Location & Transportation • Impacts of Water Efficiency • Impacts of Materials & Resources • Impacts of Indoor Air Quality 			

Course	2015 International Energy Conservation Code	Hours	10
<ul style="list-style-type: none"> • I-Codes Overview • Fenestration • Ceilings/Walls/Floors • Slabs/Crawlspaces/Sunrooms • U-Factor Alternatives • Simulated Performance Alternatives • Building Thermal Envelope • Equipment & Systems • Documentation & Inspections 			
Course	HEP Crew Leader Badges	Hours	25
<ul style="list-style-type: none"> • Develop and/or review the work order • Identify materials and staffing needs • Develop plan to execute work order on site • Prepare house to execute work • Execute work order and manage project • Walk through to verify that all components of the work scope have been completed • Complete all final job documentation 			



Office of Apprenticeship
U.S. Department of Labor

Work Process Schedule

Energy Auditor	
Job Description: Establish oneself with the knowledge, skills, and abilities to conduct energy audits of residential buildings.	
RAPIDS Code:	O*NET Code: 47-4011.01
Estimated Program Length: 1 year	
Apprenticeship Type: <input checked="" type="checkbox"/> Competency-Based <input type="checkbox"/> Time-Based <input type="checkbox"/> Hybrid	

Suggested On-the-Job Learning Outline

Collects information about a home using visual, material, dimensional, and appliance data		
Competencies	Date Completed	Initial
A. Documents energy consumption using 12 months of client utility bills and annual fuel delivery information (oil, propane, etc.)		
B. Documents the home's history (age of original structure, age of additions/improvements) using property records		
C. Conducts a physical/visual inspection to identify issues that pose a health and/or safety risk (e.g., clutter, bleach stored next to a furnace, animal feces, asbestos-containing materials, hazardous materials)		
D. Collects appliance and base load information by inspecting household appliances (e.g., refrigerator, dishwasher, dehumidifier, HVAC)		
E. Identifies and defines the conditioned home boundary using pressure and thermal boundary assessments		
F. Collects mechanical ventilation data and determines the volume of the affected space		
G. Identifies building insulation (attic, walls, and foundation/subspace) using building science, OSHA safety requirements, and general thermography principles		
H. Collects attic data		
I. Collects wall data		

J. Collects window and door data		
K. Collects foundation/subspace data		
L. Collects roof data		

Demonstrates ability to perform diagnostic testing on the unit for an energy audit		
Competencies	Date Completed	Initial
A. Prepares the dwelling for the test(s) using building science and testing protocols		
B. Tests the electric appliances		
C. Conducts indoor air quality tests by measuring levels of targeted indoor air pollutants (e.g., carbon monoxide and combustible gases) and determines if the reading exceeds any applicable action levels		
D. Determines the safety and efficiency of combustion appliances by visually inspecting the fuel supply lines, testing for leakage in the fuel supply lines, performing combustion safety tests (e.g., combustion appliance zone depressurization test, carbon monoxide test), and conducting combustion efficiency tests		
E. Determines air leakage of the building envelope by performing blower door and pressure pan tests		
F. Determines the performance of HVAC distribution by performing a forced air system distribution leakage test and measuring room pressure differences		

Demonstrates ability to use collected energy audit data to determine the scope of work		
Competencies	Date Completed	Initial
A. Evaluates the health and safety data to determine if there are potential health and safety concerns and if so, if those issues can be addressed through an energy efficiency measure		
B. Evaluates the durability/structural integrity of the home		
C. Evaluates the HVAC system for health and safety concerns and potential replacement or upgrades		
D. Evaluates the mechanical ventilation to determine the need for repairs, replacements, additions, or make-up air		

E. Evaluates energy use compared to codes and standards adopted by the authority having jurisdiction		
F. Evaluates the foundation/subspace to determine if repairs are needed (e.g., plumbing, floors) or if additional insulation and/or air sealing is needed		
G. Evaluates the walls to determine if repairs are needed		
H. Evaluates the attic to determine if repairs are needed or if additional ventilation is required		
I. Evaluates the doors and windows to determine if repairs are needed and to determine the impact of potential health and safety issues (e.g., lead-based paint, asbestos containing materials, moisture)		
J. Uses energy modeling software to further analyze the data collected and to produce a cost/savings report		
K. Generates the recommended work scope with health and safety measures, building durability measures, and energy conservation measures		

Understands the safety concerns associated with a jobsite.		
Competencies	Date Completed	Initial
A. Demonstrates knowledge of fall hazards		
B. Demonstrates knowledge of DC and AC hazards (e.g. electrical arcing, fire, arc flash)		
C. Demonstrates knowledge of shock hazards		
D. Demonstrates knowledge of environmental and jobsite hazards		
E. Demonstrates knowledge of proper lifting		
F. Demonstrates knowledge of hazardous materials		
G. Maintains an active OSHA 10 Construction Safety card		

Understands the fundamental principles of green building design, construction & operations.		
Competencies	Date Completed	Initial
A. Recognizes and appreciates formal green building certification programs like LEED		
B. Acknowledges that a holistic approach to green building is most effective		

C. Demonstrates knowledge of how water efficiency impacts energy use		
D. Demonstrates knowledge of how materials and resources impact energy use		
E. Demonstrates knowledge related to identifying and resolving indoor air quality issues		

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Suggested Related Instruction Hours: 144	

Course Number	Course Title	Contact Hours
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	BPI Building Analyst Technician	40
	BPI Building Analyst Professional	10
	BPI Infiltration & Duct Leakage	14
	OSHA 10 Construction Safety	10
	Green Building Basics	20
	2015 International Energy Conservation Code	10
	HEP Crew Leader Badges	25