

Quality Work Plan for Energy Auditor – Arkansas Weatherization Assistance Program

Content: A Job Task Analysis for Energy Auditor			Name		
Years of Experience in this Capacity		Education Level		Credentials	
Definition	An Energy Auditor is a building scientist who evaluates the energy efficiency and health & safety of a building and identifies areas for savings by gathering empirical data, conducting tests and using energy modeling software, in order to reduce the energy consumption, improve the safety, and increase the lifespan of a building; while improving the quality of life and comfort for building occupants.				

Maturity Model Levels

Domain 1: Demonstrating Professional Energy Auditor Conduct								
Task	Knowledge (K)	Skills (S)	Abilities (A)	Training Provided			Rating	Recommended Training
				K	S	A		
TASK 1: Establish Client Relations for an Auditor	<ul style="list-style-type: none"> ✓ Building Science ✓ Codes of conduct ✓ Forms ✓ Funding sources/financing ✓ Health & Safety issues ✓ Interviewing techniques ✓ The WAP 	<ul style="list-style-type: none"> ✓ Communication ✓ Listening ✓ Presenting information ✓ Time management 	<ul style="list-style-type: none"> ✓ Conduct client introduction ✓ Conduct client interviews ✓ Complete client questionnaires ✓ Explain the purposes of the visit ✓ Set the client expectations and responsibilities (pre and post audit) ✓ Establish the client plan of action ✓ Engage the client in the actual testing ✓ Sell the client services and/or packages ✓ Obtain client signatures (lead forms, etc.) ✓ Serve as a liaison between client and the contractor ✓ Ability to work independently 				<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 2: Represent the program/agency /organization	<ul style="list-style-type: none"> ✓ Construction processes and techniques ✓ Program reports 	<ul style="list-style-type: none"> ✓ Communication 	<ul style="list-style-type: none"> ✓ Interface with crews and subcontractors ✓ Complete program/agency/organization reports 				<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 3: Maintain professionalism	<ul style="list-style-type: none"> ✓ Appropriate dress for the situation ✓ Certification requirements for energy auditor ✓ Continuing education requirements for energy auditors 		<ul style="list-style-type: none"> ✓ Complete continuing education ✓ Maintain certifications ✓ Acquire new certifications 				<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	

Domain 2: Collecting Information About the Building for an Energy Audit						
Task	Knowledge (K)	Skills (S)	Abilities (A)	Training Provided	Rating	Recommended Training
TASK 1: Document Energy Consumption	<ul style="list-style-type: none"> ✓ How to access utility information ✓ Utility bill components 	<ul style="list-style-type: none"> ✓ Calculating ✓ Basic Math 	<ul style="list-style-type: none"> ✓ Obtain 12 months of utility bills ✓ Obtain annual fuel delivery information (oil, propane, etc.) 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 2: Document the building history	<ul style="list-style-type: none"> ✓ How to access building permit history ✓ How to access tax files 	<ul style="list-style-type: none"> ✓ 	<ul style="list-style-type: none"> ✓ Determine the age of the original structure ✓ Determine the age of any additions or improvements ✓ Determine if the building has any historical significance 			
TASK 3: Conduct a physical/visual inspection	<ul style="list-style-type: none"> ✓ General construction ✓ Local codes and standards ✓ Combustion appliance venting procedures ✓ Hazardous materials ✓ Issues that pose a health and/or safety risk (clutter, bleach, animal feces, etc.) ✓ NFPA 211 ✓ Situations that pose a health & safety risk ✓ Effects of moisture ✓ Sources of moisture ✓ What to look for when conducting a physical/visual inspection ✓ Photograph and documentation 	<ul style="list-style-type: none"> ✓ Attention to detail 	<ul style="list-style-type: none"> ✓ Walk around the exterior of the building ✓ Look for holes, chimneys, gutters, vent pipes, soffits, fascia, peeling paint, foundation integrity, areas of infiltration and exfiltration, exhaust fan penetrations, accesses, crawlspaces, roof vents, land grading, shading, orientation of the building, anomalies ✓ Walk around the interior of the building ✓ Look for pest/vermin infestations, evidence of leaking or water damage, holes, chimneys, vent pipes, peeling paint, foundation integrity, areas of infiltration and exfiltration, exhaust fan penetrations, accesses, crawlspaces, roof vents, structural damages ✓ Identify hidden rooms or spaces ✓ Determine the exterior façade material (siding, brick, etc.) ✓ Identify issues that would interfere with or prevent tests ✓ Identify hazardous material in the building ✓ Detect unusual odors ✓ Identify health and safety issues (clutter, bleach stored next to a furnace, etc.) 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	

			<ul style="list-style-type: none"> ✓ Perform visual inspection of vented combustion appliance venting configuration ✓ Visually inspect adjacent and/or connecting buildings for issues that impact or could be impacted by the audited building 		
TASK 4: Collect appliance information	<ul style="list-style-type: none"> ✓ Appliances ✓ Local codes & standards ✓ Domestic water heater components and operations ✓ Heating/cooling systems ✓ How to read a meter ✓ How to read and interpret appliance tags ✓ Mechanical ventilation equipment ✓ Safety issues associated with domestic water heaters ✓ Shower head operations and flow rates ✓ Various appliance fuel types 	<ul style="list-style-type: none"> ✓ Penmanship ✓ Attention to details 	<ul style="list-style-type: none"> ✓ Collect refrigerator/freezer tag data and documentation ✓ Collecting heating/cooling appliance tag data and documentation ✓ Identify heating/cooling appliance fuel type ✓ Collect domestic water heater tag data and documentation ✓ Collect washer/drying tag data and documentation ✓ Collect dish washer tag data and documentation ✓ Collect mechanical ventilation tag data and documentation ✓ Collect shower head flow rates ✓ Collect dehumidifier tag data and documentation ✓ Collect stove/oven appliance fuel type ✓ Collect unvented space heater tag and tag data and documentation ✓ Identify other components related to HVAC (expansion tanks, fill valves, remote compressors, etc.) ✓ Identify other components related to domestic water heater appliance (storage tanks, mixing valves, etc.) ✓ Identify safety features related to HVAC and domestic water appliances 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 5: Collect electrical base load data	<ul style="list-style-type: none"> ✓ Fuel fired verse electric domestic water heaters ✓ How lifestyle affects energy consumptions ✓ How to analyze a utility bill ✓ How to diagnose high electric/gas usage 	<ul style="list-style-type: none"> ✓ Basic math 	<ul style="list-style-type: none"> ✓ Conduct a lighting audit ✓ Count the number of people in the house ✓ Determine if dishwasher is present ✓ Determine if the domestic water heater is fuel fired or electric ✓ Collect client lifestyle information (TV usage, Xboxes, etc.) ✓ Meter the refrigerator ✓ Collect electrical system information (size, brand, etc.) 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>

	<ul style="list-style-type: none"> ✓ How to read an electric meter ✓ Refrigerator gasket seal conditions 		<ul style="list-style-type: none"> ✓ Look for additional usage sources (hot tubs, pool pumps, pool heaters, fish ponds, etc.) 			
TASK 6: Collect building measurements	<ul style="list-style-type: none"> ✓ How to calculate the area and volume of the building envelope ✓ How to identify the pressure boundary ✓ How to identify the thermal boundary ✓ How to measure building components (doors, etc.) ✓ Various building components 	<ul style="list-style-type: none"> ✓ Measuring ✓ Attention to details ✓ Basic math 	<ul style="list-style-type: none"> ✓ Measure walls ✓ Measure roof ✓ Measure windows ✓ Measure doors ✓ Measure perimeter ✓ Measure radiator ✓ Measure foundation height ✓ Measure attic venting ✓ Measure attic spaces ✓ Measure area and volume of the building envelope 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 7: Collect health and safety data	<ul style="list-style-type: none"> ✓ Proper location of smoke/co detectors ✓ Venting requirements for appliances ✓ Conditions that signify moisture ✓ Domestic water heater safety ✓ Electrical hazards ✓ Hazardous materials ✓ Heating system safety ✓ How to determine if knob and tube wiring is active ✓ Issues and hazards associated with asbestos ✓ Issues and hazards associated with lead based paint ✓ Manufactured home water heater regulations 	✓	<ul style="list-style-type: none"> ✓ Locate existing smoke/co detectors ✓ Determine age of smoke/co detectors ✓ Determine if smoke/co detectors are hardwired or battery ✓ Verify clothes dryer is properly vented to exterior ✓ Verify all exhaust fans are properly vented to exterior ✓ Identify any existence of hazardous materials/conditions ✓ Identify knob and tube wiring ✓ Identify moisture issues (standing water, condensation, plumbing leaks, mold, etc.) ✓ Identify electrical hazards (fraying wiring, open junction boxes, unempt wires, overloaded circuits, etc.) ✓ Identify suspect asbestos ✓ Identify lead based paint hazards ✓ Identify propane fueled appliances ✓ Identify unvented combustion appliances ✓ Identify properly operating back draft damper 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	

	<ul style="list-style-type: none"> ✓ Rules and regulations pertaining to lead and asbestos ✓ Smoke/co detector operations 					
TASK 8: Collect mechanical ventilation data	<ul style="list-style-type: none"> ✓ The different controls and motors ✓ Types of ventilation materials ✓ Ventilation ductwork ✓ Ventilation standards and local codes 	✓	<ul style="list-style-type: none"> ✓ Review manufacturer's specifications for exhaust fans ✓ Determine the volume of the affected area ✓ Determine the type of control ✓ Identify the size of the registers ✓ Determine condition of the ventilation ductwork/piping (pitch, insulation, size, material, elbow, length to run, etc.) ✓ Calculate volume 			<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 9: identify building insulation (attic, walls, and foundation)	<ul style="list-style-type: none"> ✓ Building science ✓ Insulation thickness ✓ Insulation R-values ✓ Insulation placement ✓ OSHA safety requirements 	✓	<ul style="list-style-type: none"> ✓ Identify insulation type ✓ Identify insulation amount (thickness, etc.) ✓ Identify insulation condition ✓ Identify presence and placement of vapor retarder ✓ Identify location of insulation (exposure, aligned with pressure plane and thermal boundary, etc.) ✓ Identify areas of insulation opportunities ✓ Probe ✓ Work in confined spaces 			<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 10: Collect attic data	<ul style="list-style-type: none"> ✓ Attic components ✓ Electrical hazards ✓ General construction terms ✓ How to calculate the area and volume of building spaces ✓ Infiltration points ✓ Safety hazards in an attic (nails, rafters, heat exposure, etc.) ✓ Signs of water damage ✓ Signs of pest/vermin infestations ✓ Thermography 	✓	<ul style="list-style-type: none"> ✓ Identify attic components ✓ Measure attic/roof cavities ✓ Measure attic area ✓ Measure attic framing ✓ Determine existing ventilation (soffit, can, ridge, type, and size, power ventilators, etc.) ✓ Identify sources/signs of water damage ✓ Identify infiltration points ✓ Identify point(s) of access ✓ Identify electrical hazards ✓ Identify pest/vermin infestations ✓ Determine structural integrity ✓ Identify whole house fan ✓ Determine attic uses ✓ Note the existence of a radiant barrier ✓ Identify existing baffles ✓ Use ladders 			<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>

	<ul style="list-style-type: none"> ✓ Types of ladders based on the situation ✓ Ventilation requirements 		<ul style="list-style-type: none"> ✓ Work in confined spaces 			
TASK 11: Collect wall data	<ul style="list-style-type: none"> ✓ General construction ✓ Building science ✓ Compass orientation ✓ Infiltration points ✓ Typical wall framing components ✓ Issues unique to framing methods (upper story band joist, angle bracing in post and beam framing, etc.) 	<ul style="list-style-type: none"> ✓ Basic math ✓ Logical thinking 	<ul style="list-style-type: none"> ✓ Identify wall type(interior, exterior, components) ✓ Identify framing methods ✓ Measure wall areas ✓ Identify wall orientation ✓ Identify cavity depth ✓ Identify source and signs of any water damage ✓ Identify infiltration points ✓ Identify signs of pest/vermin infestation ✓ Identify orientation using online mapping tool ✓ Identify upper stories ✓ Use a compass 			<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 12: Collect window data	<ul style="list-style-type: none"> ✓ Code requirements pertaining to window glazing (walkaways, etc.) ✓ OSHA safety requirements ✓ SHPO requirements ✓ Window construction, components and nomenclature 	<ul style="list-style-type: none"> ✓ Identify door and window type and swing 	<ul style="list-style-type: none"> ✓ Identify window type (Jalousie, awning, single hung, double hung, etc.) ✓ Identify window frame type ✓ Identify window glazing type ✓ Identify exterior shading ✓ Identify window operation/leakiness ✓ Measure window area ✓ Count number of windows ✓ Identify window orientation ✓ Identify general window conditions 			<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 13: Collect door data	<ul style="list-style-type: none"> ✓ Door components, hardware and nomenclature ✓ Door construction ✓ Door operation and adjustments 	<ul style="list-style-type: none"> ✓ Basic math 	<ul style="list-style-type: none"> ✓ Identify door type and swing ✓ Measure door area ✓ Count number of doors ✓ Identify door conditions ✓ Identify condition of door sweep and weatherstripping ✓ Identify door hardware condition 			<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 14: Collect foundation data	<ul style="list-style-type: none"> ✓ General construction ✓ Basic electricity ✓ Basic plumbing ✓ Building science ✓ Local codes and standards ✓ Crawlspace ventilation requirements 	<ul style="list-style-type: none"> ✓ Observation 	<ul style="list-style-type: none"> ✓ Identify foundation types (crawlspace, basement, or slab) ✓ Identify foundation materials ✓ Measure floor areas ✓ Identify infiltration points ✓ Measure exposed walls ✓ Measure thickness of foundations ✓ Identify sources and signs of moisture ✓ Identify points of access 			<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>

	<ul style="list-style-type: none"> ✓ Foundation construction materials and methods ✓ OSHA safety requirements ✓ Potential sources of moisture ✓ Signs of moisture ✓ Signs of pests/vermin ✓ Signs of structural hazards on foundation ✓ Structures typically found in foundations ✓ Types of foundations 		<ul style="list-style-type: none"> ✓ Identify electrical hazards ✓ Identify signs of pest/vermin infestations ✓ Determine structural integrity ✓ Identify special equipment (sump pumps, etc.) ✓ Measure crawlspace ventilation ✓ Record the location of any plumbing pipes ✓ Work in confined spaces ✓ Measure 			
TASK 15: Collect roof data	<ul style="list-style-type: none"> ✓ General construction ✓ Insulation materials and methods ✓ OSHA Safety requirements ✓ Roofing construction methods ✓ Roofing materials 	✓	<ul style="list-style-type: none"> ✓ Identify roof conditions ✓ Identify roof color ✓ Identify roofing materials (90lb paper, rubber, etc.) ✓ Identify condition of parapet walls ✓ Identify roof penetrations ✓ Identify roof debris (garbage, old air conditioners, etc.) ✓ Identify roof ventilation (passive vents) ✓ Identify roof drainage ✓ Identify roof pitch ✓ Measure roof area ✓ Note flashing condition ✓ Identify roof access ✓ Identify roof exposure and orientation ✓ Identify roof insulation (flat roof with no cavity and rigid insulation) ✓ Work at heights ✓ Determine roof pitch ✓ Measure areas 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	

Domain 3: Testing the building for an Energy Audit						
Task	Knowledge (K)	Skills (S)	Abilities (A)	Training Provided	Rating	Recommended Training
TASK 1: Preparing for the test(s)	<ul style="list-style-type: none"> ✓ Building diagnostic testing ✓ Building science ✓ Test equipment ✓ Test protocols 	<ul style="list-style-type: none"> ✓ Attention to detail ✓ communication 	<ul style="list-style-type: none"> ✓ Determine the test(s) to be performed ✓ Inform the client of the test(s) ✓ Gather the tools/equipment ✓ Prepare the building for testing based upon manufacturer's test equipment specification ✓ Comprehend manufacturer's specifications ✓ Use test equipment 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 2: Evaluate the appliances	<ul style="list-style-type: none"> ✓ Electrical appliance metering ✓ Electrical appliance safety 		<ul style="list-style-type: none"> ✓ Inspect appliances for test accessibility ✓ Plug appliances into the watt hour meter ✓ Follow the manufacturer's guidelines for operation of the watt hour meter ✓ Document findings with pictures/forms ✓ Read and interpret a watt hour meter ✓ Verify usage based on AHAM charts 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 3: Conduct Indoor air quality tests	<ul style="list-style-type: none"> ✓ ASHRAE maximum allowable CO exposure for living areas ✓ Carbon monoxide exposure symptoms ✓ Conditions that promote mold growth ✓ Conditions that promote radon infiltration ✓ EPA action levels ✓ How to measure mechanical ventilation ✓ NIOSH recommended limit for occupational CO exposure ✓ OSHA permissible exposure limits 	<ul style="list-style-type: none"> ✓ Remaining dedicated to the cause ✓ Detecting unusual odors 	<ul style="list-style-type: none"> ✓ Monitor the ambient CO tests throughout the building ✓ Record the highest ambient CO reading ✓ Source the CO ✓ Determine if the reading exceeds any applicable action levels ✓ Identify conditions that promote mold growth (high humidity, cold surface condensation, etc.) ✓ Follow odors to find source of mildew ✓ Visually identify presence of mold-like substance ✓ Identify conditions that promote radon infiltration ✓ Measure the flow of mechanical ventilation ✓ Document findings with pictures and forms ✓ Communicate meter results with clients ✓ Remain calm under stressful situations 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	

<p>TASK 4: Perform combustion safety and efficiency tests</p>	<ul style="list-style-type: none"> ✓ Back-draft test protocols ✓ Building science ✓ Local codes and standards ✓ Combustion efficiency tests ✓ Fuel line leak testing techniques ✓ Heating system configurations ✓ How to conduct draft tests ✓ How to inspect fuel supply lines ✓ How to measure CO in appliances ✓ Nationally recognized combustion safety test protocols (BPI, Best Practices, Energy Outwest) ✓ Various venting methods ✓ Understanding what is "worst case" 		<ul style="list-style-type: none"> ✓ Visually inspect the fuel supply lines ✓ Test for leakage in the fuel supply pipes ✓ Verify leaks with bubble solution ✓ Perform combustion spillage tests ✓ Perform draft tests (including worst case depressurization, scenario, etc.) ✓ Measure drafts ✓ Conduct combustion efficiency tests (CO₂, oxygen, stack temperature, etc.) ✓ Measure CO in combustion appliances (undiluted) ✓ Document findings with pictures/forms ✓ Identify various heating systems ✓ Work in confined spaces 		<p><u>Knowledge</u></p> <p><u>Skills</u></p> <p><u>Abilities</u></p>	
<p>TASK 5: Perform blower door test</p>	<ul style="list-style-type: none"> ✓ Advanced blower door diagnostics ✓ Blower door testing procedures ✓ How to assemble and operate a blower door ✓ How to evaluate zone pressures ✓ Thermography ✓ Understanding of air sealing limits (national standards with BTL, DTL, ACH, BAS, MVG, etc.) 	<ul style="list-style-type: none"> ✓ Basic math 	<ul style="list-style-type: none"> ✓ Perform pre-blower door interior thermographic scan ✓ Perform pre-blower door exterior thermographic scan ✓ Follow manufacturer's specifications for conducting blower door tests ✓ Perform thermographic scan during the blower door operation ✓ Perform zone pressure diagnostics (ZPDs) ✓ Locate points of infiltration/exfiltration ✓ Document findings with pictures/forms ✓ Calculate the building tightness limits ✓ Interpret blower door readings ✓ Locate points of infiltration/exfiltration 		<p><u>Knowledge</u></p> <p><u>Skills</u></p> <p><u>Abilities</u></p>	
<p>TASK 6: Perform HVAC</p>	<ul style="list-style-type: none"> ✓ HVAC testing protocols ✓ Air flow 	<ul style="list-style-type: none"> ✓ Communication ✓ Attention to detail 	<ul style="list-style-type: none"> ✓ Perform forced air system distribution leakage test ✓ Verify with building occupants if there is adequate heat in building 		<p><u>Knowledge</u></p> <p><u>Skills</u></p>	

distribution tests	<ul style="list-style-type: none"> ✓ How to measure hydronic distribution ✓ HVAC terminology ✓ Hydronic testing ✓ Manufacturer's specifications for forced air distribution systems ✓ Distribution system design 		<ul style="list-style-type: none"> ✓ Measure room temperatures ✓ Measure the temperature of the hydronic radiators ✓ Perform air flow test at the registers ✓ Measure temperature rise across neat exchangers ✓ Measure pressure drop across the coil ✓ Inspect hydronic distribution (high, low, valves, etc.) ✓ Measure hydronic distribution (radiators, fin tube, etc.) ✓ Perform pressure balancing rooms tests (ducted air systems) ✓ Document findings with pictures/forms ✓ Multi-task ✓ Work in confined spaces 		<p style="text-align: center;">Abilities</p>	
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Domain 4: Evaluating Collected Energy Audit Data								
Task	Knowledge (K)	Skills (S)	Abilities (A)	Received Training			Rating	Recommended Training
				K	S	A		
TASK 1: Evaluate the Health & Safety of the building	<ul style="list-style-type: none"> ✓ How to deal with special circumstances (mold, lead, asbestos, etc.) ✓ Construction repair methods ✓ Costs associated with repairs ✓ Energy funding 	<ul style="list-style-type: none"> ✓ Basic math ✓ Cost estimating 	<ul style="list-style-type: none"> ✓ Review collected data to determine if there is health and safety concern ✓ Determine if health and safety issues can be addressed through an energy efficiency measure and therefore can fall within energy funding ✓ Determine the repairs ✓ Review economics of the repairs to determine whether to repair or to defer 				<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 2: Evaluate the durability/structural integrity of the building	<ul style="list-style-type: none"> ✓ Local codes and standards ✓ Costs associated with structural repairs ✓ Energy funding ✓ Structural repair methods 	<ul style="list-style-type: none"> ✓ Basic math ✓ Cost estimating 	<ul style="list-style-type: none"> ✓ Review collected data to determine if there is a durability/structural integrity issue ✓ Determine if the durability/structural integrity issues can be addressed through an energy efficiency measure and therefore can fall within energy funding ✓ Determine the durability/structural integrity repairs ✓ Review the economics of the repairs to determine whether to repair or to defer 				<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 3: Evaluate the HVAC system	<ul style="list-style-type: none"> ✓ ACCA manuals ✓ BTU content of fuels ✓ Energy funding ✓ Heating/cooling system operations ✓ How to size HVAC systems ✓ HVAC load calculations ✓ HVAC system repair, replacement or upgrade costs ✓ Maximum allowable duct leakage ✓ Safety requirements 	<ul style="list-style-type: none"> ✓ Basic math ✓ Communication ✓ Attention to detail 	<ul style="list-style-type: none"> ✓ Review collected data to determine if there is a HVAC system issue ✓ Evaluate the HVAC system for health & safety concerns ✓ Evaluate HVAC sizing for potential replacement or upgrades (post shell retrofit) ✓ Evaluate the distribution (add trunk lines, radiators, etc. to rooms as needed) ✓ Evaluate fuel switching options ✓ Evaluate the need to clean and tune verses replace ✓ Evaluate the need for and supply of combustion air ✓ Evaluate the HVAC for other issues that lead to replacement or upgrades (condition, age, efficiency, etc.) 				<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	

			<ul style="list-style-type: none"> ✓ Identify duct sealing/insulation and pipe insulation opportunities ✓ Interpret software output ✓ Perform load calculations ✓ Use ACCA software 		
TASK 4: Evaluate the mechanical ventilation	<ul style="list-style-type: none"> ✓ Energy funding ✓ IAQ standards ✓ Mechanical ventilation controls ✓ Types of ventilation ✓ Ventilation flow ✓ Ventilation sizing 	<ul style="list-style-type: none"> ✓ Basic math 	<ul style="list-style-type: none"> ✓ Review collected data to determine mechanical ventilation issues ✓ Compare flow with ventilation specifications ✓ Compare blower door results against IAQ standards ✓ Assess the need for and placement of additional mechanical ventilation ✓ Assess the make-up air source and whether it needs to be filtered ✓ Determine the mechanical ventilation repairs, replacement and/or addition ✓ Review the economics of the repairs, replacements and/or additions to determine to proceed or to defer ✓ Determine the type of controls needed 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 5: Evaluate energy use base loads	<ul style="list-style-type: none"> ✓ Local codes & standards ✓ Components of base loads ✓ Energy funding ✓ How to calculate base loads ✓ Pipe insulation 		<ul style="list-style-type: none"> ✓ Review collected data to determine if replacements or upgrades will reduce energy consumptions ✓ Review energy efficient light bulbs for installation ✓ Review refrigerator/freezer data for economics of replacement ✓ Review domestic water heaters for economics or replacement or repair ✓ Review domestic water heater pipe insulation opportunities ✓ Review domestic water heater insulation opportunities ✓ Review water saving opportunities (water saving shower heads, etc.) ✓ Review domestic water heater thermostat setting 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>
TASK 6: Evaluate the foundation	<ul style="list-style-type: none"> ✓ Building science ✓ Local codes & standards ✓ Energy funding ✓ Foundation construction techniques 		<ul style="list-style-type: none"> ✓ Review collected data to determine foundation issues ✓ Determine repairs needed ✓ Review economics of repairs ✓ Determine proper insulation location (floor or wall) ✓ Evaluate crawlspace venting needs ✓ Evaluate box sills insulation needs 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>

	<ul style="list-style-type: none"> ✓ Foundation crawlspace ventilation ✓ Foundation insulation ✓ Foundation types ✓ Foundation vapor barriers 		<ul style="list-style-type: none"> ✓ Determine if perimeters need to be insulated ✓ Identify type of insulation materials to be added ✓ Calculate if adequate ventilation exists or should be added ✓ Evaluate the need for vapor barrier 		
TASK 7: Evaluate the walls	<ul style="list-style-type: none"> ✓ EPA and DOE lead and asbestos standards ✓ Building science ✓ Local codes & standards ✓ Energy funding ✓ Insulation types and appropriateness ✓ Pressure planes and thermal boundaries ✓ Typical wall structures ✓ Vapor barriers in walls 		<ul style="list-style-type: none"> ✓ Review collected data to determine wall issues ✓ Evaluate repairs needed and structural integrity ✓ Review the economics of repairs to determine whether to repair or defer ✓ Determine proper insulation levels ✓ Identify type of insulation materials to be added ✓ Determine square footage of area to be insulated ✓ Ensure pressure plane and thermal boundary align ✓ Ensure vapor retarder is appropriately placed 		<p><u>Knowledge</u></p> <p><u>Skills</u></p> <p><u>Abilities</u></p>
TASK 8: Evaluate the attic	<ul style="list-style-type: none"> ✓ Attic construction and materials ✓ Attic fire hazards ✓ Attic types ✓ Attic ventilation ✓ Building science ✓ Local codes & standards ✓ Energy funding ✓ Insulation types and appropriateness ✓ Pressure planes and thermal boundaries ✓ Vapor barriers 	✓	<ul style="list-style-type: none"> ✓ Review collected data to determine attic issues ✓ Evaluate repairs needed and structural integrity ✓ Review economic of repairs to determine whether to repair or defer ✓ Review insulation location ✓ Review insulation type ✓ Evaluate whether insulation is appropriate for use ✓ Ensure pressure plane and thermal boundary align (air sealing) ✓ Ensure the vapor retarder is appropriately placed ✓ Evaluate attic ventilation existing and required ✓ Assess fire hazards (lighting cans, electrical, etc.) ✓ Evaluate the need for services 		<p><u>Knowledge</u></p> <p><u>Skills</u></p> <p><u>Abilities</u></p>
TASK 9: Evaluate the doors	<ul style="list-style-type: none"> ✓ Local codes & standards 	✓	<ul style="list-style-type: none"> ✓ Review collected data to determine door issues 		<p><u>Knowledge</u></p> <p><u>Skills</u></p>

	<ul style="list-style-type: none"> ✓ Door framing structures and processes ✓ Door types ✓ Energy funding ✓ Glass types 		<ul style="list-style-type: none"> ✓ Evaluate repairs needed and structural integrity (can frame support door replacement, etc.) ✓ Review economics of repairs to determine whether to repair or defer ✓ Evaluate the condition of storm doors (closers, etc.) 		<u>Abilities</u>	
TASK 10: Evaluate the windows	<ul style="list-style-type: none"> ✓ Building science ✓ Local codes & standards ✓ Energy funding ✓ Window components ✓ Window glazing ✓ Window types 		<ul style="list-style-type: none"> ✓ Review collected data to determine window issues ✓ Evaluate repairs needed and structural integrity ✓ Review economics of repairs to determine whether to repair or replace ✓ Evaluate window components and performance 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 11: Enter data into energy modeling software	<ul style="list-style-type: none"> ✓ Basic computer terms ✓ Building science ✓ Various types of energy modeling software 	✓	<ul style="list-style-type: none"> ✓ Gather all information and data pertaining to the audit ✓ Enter the data into energy modeling software ✓ Analyze the output from the software ✓ Produce a cost and savings report ✓ Use a computer 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	
TASK 12: Determine the work scope	<ul style="list-style-type: none"> ✓ Building science ✓ Local codes & standards ✓ Construction practices and terms ✓ Energy modeling software ✓ Program rules and standards 	✓ Computer usage	<ul style="list-style-type: none"> ✓ Determine the health & safety measures ✓ Determine the building durability measures ✓ Determine the energy measures based on the SIR ✓ Provide analysis reports (work order) ✓ Create reports ✓ Create work specifications 		<u>Knowledge</u> <u>Skills</u> <u>Abilities</u>	

ENERGY AUDITOR JTA	Names if Relevant																					
<p>How to Use This Form: Have workers rate their level of expertise in each of the task areas listed below.</p> <p>Use a scale of 1 – 10 where 10 indicates full proficiency and confidence they could pass a written and field exam on the topic and 1 equals no knowledge whatsoever.</p> <p>Average the self-evaluation scores to tailor trainings to prepare trainees for the HEP EA</p>	Potential Trainee A	Potential Trainee B	Potential Trainee C	Potential Trainee D	Potential Trainee E																AVERAGE	
Domain 1: Demonstrating Professional Energy Auditor Conduct																						
Task 1: Establish client relations for an energy audit																						
Task 2: Represent the program/agency/organization																						
Task 3: Maintain Professionalism																						
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Domain IV: Evaluating Collected Energy Audit Data																						
Task 1: Evaluate the health and safety of the building																						
Task 2: Evaluate the durability/structural integrity of the building																						
Task 3: Evaluate the HVAC system																						
Task 4: Evaluate the mechanical ventilation																						
Task 5: Evaluate energy use base loads																						
Task 6: Evaluate the foundation																						
Task 7: Evaluate the walls																						
Task 8: Evaluate the attic																						
Task 9: Evaluate the doors																						
Task 10: Evaluate the windows																						
Task 11: Enter the data into energy modeling software																						
Task 12: Determine the work scope																						