EMPOWER+

Standards and Quality Assurance Checklist Specifications — March 2023

NEW YORK STATE | NYSERDA

For informational use by: Participating Contractors, as a reference guide to understanding the quality assurance scoring criteria, and specific requirements when installing measures in the EmPower+ Program.

NYSERDA maintains the integrity of the EmPower+ Program through an independent standards and quality assurance team, which manages the quality assurance (QA) system. The QA system includes verifying compliance with program and installation standards using comprehensive field inspections. QA field inspections of installations are conducted by a qualified independent third-party competitively selected by NYSERDA and will use these checklists as their guide. Participating Contractors are required to submit proof of all corrective action taken when a specific installation requirement has not been met. The checklist specifications contained in this document are for reference purposes only.

Field Definitions

Category – Represents a specific workscope category that the inspector is reviewing.

Measure – Represents a specific component that the inspector is reviewing.

Task Description – A detailed description of the task for the inspector to reference in determining if a task should be marked as a non-conformance.

Non-Conformance Category – Each task is assigned a non-conformance rating of either incidental, minor, major or critical. Refer to the Non-Conformance Rating Descriptions below for additional detail.

Reference – The basis for each task requirement is linked to the project workscope, a program guideline, manufacturer instructions, or code.

Non-Conformance Category Description	Energy Impact	Non-Energy Impact
Incidental	May result in a savings shortfall, but the impact will be small and may not be measurable.	Not expected, on its own, to pose a substantial risk of system failure or hazard.
Minor	Will result in a savings shortfall, but the impact will be small and may not be measurable.	Requires modifications to address but not expected to pose a substantial risk of system failure or hazard.
Major	Will result in a measurable shortfall in energy savings.	Presents an increased risk of system failure or hazard but not determined to be in imminent danger of failure or hazard.
Critical	N/A	Presents an imminent hazard

Quality Assurance Scoring Matrix

(Scores are determined by counting the number of non-conformances with the highest severity rating. Applies to the whole project, not each individual measure)

Score	Incidental	Minor	Major	Critical
5	Up to 3	Up to 2	0	0
4	More than 3	Up to 3	0	0
3	N/A	More than 3	0	0
2	N/A	N/A	Up to 1	0
1	N/A	N/A	More than 1	More than 0

Quality Assurance Score Descriptions

5: System Meets All Program Criteria – An inspection receiving a score of 5 is generally well-installed, with no noticeable defects in workmanship or expected energy output. These projects are examples of best practices.

3: System Meets Key Program Requirements – An inspection achieving a score of 3 meets basic Program requirements, but the project may require some modification to be considered fully compliant.

1: System Does Not Meet Program Requirements – An inspection receiving a score of 1 indicates a project that has failed to meet key Program requirements and is not expected to meet the expected energy savings. These projects may require urgent attention to address safety concerns.

Checklist Specifications Table of Contents

Standards and Quality Assurance Checklist

Applicances			
Measure	**Task Description**	**Non-Conformance Category**	**Reference**
Dehumidifier	Contracted unit installed per manufacturer requirements.	Major	Contract/EmCalc, Manufacturer specifications
Fridge and Freezer	Fridge and Freezer - contracted unit installed per manufacturer requirements.	Major	Contract/EmCalc
Assessment Quality			
Data Collection	Customer signatures provided by contractor are authentic, the customer is certain they signed the document.	Major	Program Requirement
	Heating system nameplate efficiency and age of unit matches contractor's documented numbers.	Minor	Program Requirement
	Projects with APwES work scope the customer received the Comprehensive Home Assessment.	Incidental	Program Requirement
	Projects with AHPwES work scope confirm with the customer that the contracted costs for each measure are accurate and do not include work performed for measures not listed. For Assisted and Coordinated projects, verify that the customer incurred out of pocket expenses (unless there was a loan).	Major	Program Requirement
Recommendations	Smoke detector was proposed in homes not equipped with a smoke detector.	Incidental	EmCalc
	CO detector was proposed in homes not equipped with a CO detector.	Critical	EmCalc
	Air sealing has been recommended where measurable infiltration reduction is achievable and there are no unresolved roadblocks.	Incidental	EmCalc
	Insulation has been recommended where it is cost effective and there are no unresolved roadblocks.	Incidental	EmCalc
	Heating system and/or domestic hot water system have been recommended where the existing system(s) are in poor condition or pose a health risk.	Incidental	EmCalc
	Windows and doors have been evaluated for performance and air sealing, resulting in appropriate recommendations.	Incidental	EmCalc
	Major appliances were recommended for replacement with ENERGY STAR® models where the refrigerator or freezer was manufactured prior to 2000 or other major appliances are not ENERGY STAR®.	Incidental	EmCalc
	Viable direct install/energy reduction measures have been recommended including LED bulbs, low flow shower heads, programmable thermostats, domestic hot water heater pipe insulation and domestic hot water temperature setback.	Incidental	EmCalc
	Insulating hydronic and steam heating system pipes in unconditioned spaces was recommended unless this measure could cause water pipes to freeze.	Incidental	EmCalc

Direct Install			
Measure	Task Description	Non-Conformance Category	Reference
Advance Power Strip	Contracted advanced power strip(s) have been installed as contracted.	Major	Contract/EmCalc
CO & Smoke Detector	Contracted, CO, smoke or combination CO/smoke detector(s) have been installed as contracted.	Critical	Contract/EmCalc
	CO, Smoke or combination CO/smoke detector installed per manufacturer specifications.	Incidental	Manufacturer specifications
	CO, Smoke or combination CO/smoke detector powered by battery with 10 year service life.	Incidental	Program requirement
Hot Water Temperature Setback	Hot water temperature is set for 120 degrees F.	Incidental	Program requirement
	Homeowner has been instructed how to set temperature.	Incidental	Program requirement
LEDs	Contracted quantity of LEDs have been installed.	Major	Contract/EmCalc
	Bulbs are Energy Star rated.	Incidental	Program requirement
	Bulbs installed in areas where they are used 2 hours or more per day.	Incidental	Program requirement
Low Flow Showerhead	Contracted quantity of low flow shower heads installed.	Major	Contract/EmCalc
	Showerhead flow rate meets program requirements (2.5 GPM max).	Incidental	Program requirement - EmPower NY ER measure criteria
	Connections are leak free.	Incidental	Program requirement
Pipe Insulation	Contracted quantity of insulation installed on hot water piping.	Major	Contract/EmCalc
	Insulation has required clearance from heat sources.	Minor	Program requirement - EmPower NY ER measure criteria
	Pipe insulation is R-3 neoprene or close cell foam.	Incidental	Program requirement, NYS RC (N1103.5.3(R403.5.3))
	Insulation is neatly mitered, tight fitting around all fittings and fastened securely.	Incidental	Program requirement
Programmable Thermostat	Contracted quantity installed.	Major	Contract/EmCalc
	Thermostat has been programmed.	Incidental	Program requirement
General			
General	Project has been cleaned up and construction debris have been removed.	Incidental	Program requirement
Health and Safety			
Roadblocks	There is no clear evidence the contractor caused significant damage to the property (spray foam insulation blew out a wall, etc.).	Major	Program requirement
	Blower door depressurization tests were not preformed in homes where there is a risk of PACM becoming airborne and being drawn into the dwelling.	Major	BPI Technical Standards for the Envelope Professional
	Insulation has not been installed in areas where live knob and tube wiring exists.	Major	BPI Technical Standards for the Envelope Professional NREL SWS 4.1001.2

Healthy and Safety (continued)			
Measure	**Task Description**	**Non-Conformance Category**	**Reference**
Roadblocks (continued)	Moisture sources have been mitigated through elimination of the source, isolation of the source, or ventilation of the space around the source	Major	BPI Technical Standards for the Envelope Professional
	Clothes dryers, regardless of fuel type, and bathroom exhaust fans must be vented directly outside using appropriate duct materials	Major	BPI Technical Standards for the Envelope Professional
	Areas having MLS greater than 10 square feet have not been depressurized	Minor	Program requirement
	Vapor barrier has been installed on exposed dirt floors using 6 mil polyethylene (minimum) or equivalent. The vapor barrier is sealed along all seams, penetrations and walls. Exceptions made only where access is impossible due to low clearance.	Major	NYS RC (R408.3.1)
Testing Inspection	Gas Leak Testing - Pre-Existing Lines - Indoor ambient air sampled at each floor of the home with a Combustion Gas Detector has a LEL of 0%. When LEL is above 0%, gas leak testing performed on all gas piping and leaks tagged and photo documented.	Minor	Program requirement
	Gas Leak Testing - Contractor Installed Lines - Gas leak testing performed on all gas lines and combustion appliances. All gas leaks shall be tagged and photo documented.	Major	ANSI/BPI-1200 Section 7.5
	Combustion appliances pass spillage assessment under greatest depressurization achievable	Major	ANSI/BPI-1200 Section 7.9
	Combustion appliance CO is below threshold limit under greatest depressurization achievable	Major	ANSI/BPI-1200 Section 7.9.5
	Ambient CO throughout the building, including utility rooms, is below 9 ppm	Major	ANSI/BPI-1200 Section 7.3.3
	Gas piping system has no open fittings or ends and all valves at unused outlets are plugged or capped	Critical	NYS RC (G2417.6.2)
	Oil supply system is leak free	Minor	ANSI/BPI-1200 Section 7.6.1
	CAZ and appliance related safety issues including, detached or corroded flue pipes, problems with flue/vent size or pitch, heat exchanger integrity, unvented heaters are not ANSI Z21.11.2 listed.	Critical	ANSI/BPI-1200 Sections 7.8.1.1, 7.8.1.3, 7.8.1.5, 7.8.2.2, 7.8.4
Heating and Cooling			
Clean and Tune	Heating appliance cleaned and tuned as contracted.	Major	Contract/EmCalc
Ductwork	Duct to duct and duct to equipment connections are mechanically fastened and sealed with appropriate material.	Minor	NYS RC (M1601.4.1)
	Ducts in semi or unconditioned space must be insulated to the minimum R-value.	Minor	NYS RC (N1103.3.1)
	Contracted ductwork has been installed.	Major	Contract/EmCalc
	Ducts are supported at the proper intervals.	Incidental	NYS RC (M1601.4.4)
	Duct return has not been installed in CAZ.	Major	NYS RC (M1602.2.4)
	Contracted amount of insulation was installed and meets or exceeds the specified R-value.	Major	Contract/EmCalc
	Duct sealing in accessible areas was completed as contracted.	Minor	Contract/EmCalc
	None of the contracted duct sealing was completed.	Major	Contract/EmCalc
	Duct sealing materials are UL181B or UL181A listed.	Incidental	NYS RC (M1601.4.1)
	Filter slot cover has been installed as specified.	Incidental	BPI Technical Standards for the Heating Professional

Heating and Cooling (continued)			
Measure	Task Description	Non-Conformance Category	Reference
Exhaust Fan	Contracted exhaust fan(s) installed.	Major	Contract/EmCalc
	Exhaust fan and venting installed to manufacturers specifications. The fan vents to the exterior of the structure.	Major	Manufacturer specifications
HVAC Equipment	Contracted equipment was installed and the efficiency rating matches or exceeds the contract.	Major	Contract/EmCalc
	Air filter is accessible and is not compromised when replaced.	Incidental	NYS RC (M1401.2)
	Maintenance access is accessible.	Minor	NYS RC (M1401.2)
	No electrical safety issues.	Major	NYS RC (E3705, E3702.11, E3905.1, E3905.1.1, E3907.6, E4101.4)
	Electrical shutoff installed within sight of the appliance.	Minor	NYS RC (E4101.5)
	Condensate drain is installed properly and discharges with air gap or other approved place of disposal.	Major	NYS RC (M1411.3)
	Airflow through duct system must meet manufacturer's specifications to provide the design airflow.	Major	Manufacturer specifications
	Replaced equipment has been removed from the home when included in the contract.	Incidental	Contract/EmCalc
	Ancillary equipment related to the installed appliance has been installed as contracted.	Incidental	Contract/EmCalc
	Equipment has been installed with clearances in accordance with their listing, label and manufacturer's instructions.	Major	NYS RC (M1401.1, M1402.2, M2001.2)
	Vent/flue system is properly sized, pitched and has proper clearance to combustibles.	Minor	NYS RC (M1801.3.1, M1801.3.4)
	CSST gas piping is properly bonded/grounded.	Major	NYS RC (G2411.2)
	Gas piping properly sized.	Major	Manufacturer specifications
	Temperature & pressure relief valve installed	Major	NYS RC (M2002.4, P2804.6.1)
	Temperature & pressure relief valve discharge tube installed to proper specifications.	Minor	NYS RC (M2002.4, P2804.6.1)
	Fuel oil piping is leak-free and sized to provide adequate oil supply to all connected appliances.	Major	Manufacturer specifications
	OEM manual left with the installed unit.	Incidental	Program Requirement
	Contractor installed water piping is leak free.	Minor	Program Requirement
	Air filter installed as contracted.	Minor	Contract/EmCalc

Leakage Testing			
Blower Door Testing	Blower door test-in and test-out results were submitted.	Incidental	Program requirement
	Blower door results are within 10% of test out.	Minor	Program requirement
	Test-out results are above 70% of Building Airflow Standard (BAS), or mechanical ventilation has been installed to achieve the BAS.	Major	BPI Technical Standards for the Envelope Professional
Plumbing			
Hot Water Heater	Contracted equipment was installed and the efficiency rating matches or exceeds the contract.	Major	Contract/EmCalc
	Hot water heater installed in location meeting the manufacturer specifications.	Major	Manufacturer specifications
	OEM manual left with the installed unit.	Incidental	Program Requirement
	The old hot water heater has been removed, unless the contract specifies otherwise.	Incidental	Contract/EmCalc
	Temperature and pressure relief valve installed.	Major	NYS RC (P2804)
	Temperature and pressure relief valve discharge tube installed to proper specifications.	Minor	NYS RC (P2804)
	Drain pan has been installed when water heater is located where leaks could cause damage. The pan must have a discharge tube to an appropriate drain.	Minor	NYS RC (P2801.6)
	Vent/flue system is properly sized, pitched and has proper clearance to combustibles.	Minor	NYS RC (M1801.2), BPI-1200, Manufacturer specifications
	No electrical safety issues.	Major	NYS RC (E4101.4, E4101.5)
	Electrical shutoff installed within sight of the appliance.	Incidental	NYS RC (3705.1)
	Contractor installed water piping is leak free.	Minor	Program Requirement
Well Pump Repair	Contracted repairs to well pump completed.	Major	Contract/EmCalc
	Well pump cycles on/off based on demand/pressure, does not run continuously.	Minor	Program Requirement
Shell Measures			
Air Sealing	All items stated in contract have been sealed (top plates, knee wall transition, plumbing and wiring penetrations, drop ceilings, soffits, chases, bath fan housings, windows, doors, recessed fixtures, air register boots, interior sheathing voids repaired, etc.).	Major	Contract/EmCalc
	Bypasses around chimneys, vents and flues have been air sealed using non-combustible materials.	Major	NREL SWS 3.1001.1d
	Non insulation contact fixtures air sealed with rigid enclosure to provide space between fixture and insulation.	Major	NREL SWS 3.1003.5c
	Attic and/or basement access, if contracted, is sealed using permanently mounted weather stripping and the access is secured with metal fastenings.	Minor	NYS RC (R402.2.4)
	IR scans indicate little to no air leakage pathways.	Major	Program Requirement
	Contracted weather stripping installed on exterior doors.	Minor	Contract/EmCalc
	Air leakage paths between attached or tuck-under garages and the living space have been sealed.	Major	BPI Technical Standards for the Envelope Professional, NREL SWS 3.1501.1a, 3.1501.1b, 3.1501.1c, 3.1501.1d
	Contracted weather stripping installed on windows.	Minor	Contract/EmCalc

Shell Measures (continued)			
Measure	Task Description	Non-Conformance Category	Reference
Insulation	Insulation R-value and quantity installed matches contract.	Major	Contract/EmCalc
	Installed insulation type matches the contract or provides equal performance to contracted material(s).	Major	Contract/EmCalc
	Loose fill insulation must be installed according to manufacturer's specifications and installed to a level condition.	Minor	Manufacturer specifications
	Insulation has been dammed to maintain minimum clearances to heat sources such as chimneys, flues, recessed lights or bath fans with heat lamps.	Major	BPI Technical Standards for the Envelope Professional NREL SWS 4.1001.3
	Insulation is dammed to allow maintenance access and manufacturer required clearances. Damming installed to prevent intrusion of insulation into whole house fans, condensate pans, etc.	Major	Program Requirement
	Attic access is insulated to R-14 or greater.	Minor	BPI Technical Standards for the Envelope Professional
	Blocking/baffles have been installed at each soffit vent to ensure appropriate air flow to roof, protect insulation from wind-washing and restrain loose-fill insulation from congesting the soffit vents.	Minor	BPI Technical Standards for the Envelope Professional
	Insulation is contained using a permanent damming around storage areas, hatches and pulldown stairs.	Incidental	Program Requirement
	Sufficient roof ventilation has been provided.	Major	NYS RC (R806)
	Dense packed insulation has been installed to a density of 3.5 lbs./cu. ft. for cellulose and 2.2 lbs./ cu. ft. for blown fiber that is manufactured for dense pack installation.	Minor	NREL SWS 4.1003.2a, 4.1004.1b, 4.1005.5b, 4.1005.6a, 4.1101.1b, 4.1103.1a, 4.1103.2c
	Insulation protected from wind washing (kneewalls, underside of floor framing in vented crawl space, etc.).	Minor	BPI Technical Standards for the Envelope Professional
	Vapor retarder is against the building surface exposed to warmer conditions for the majority of the year.	Incidental	NYS RC (R702.7)
	Seams in rigid board Insulation are sealed when installed against the foundation wall, the insulation is secured to the wall and the insulation and air barrier material used on the rim/band areas must be connected to the insulation and air barrier used on the foundation wall.	Incidental	NREL SWS 4.1402.3h
	Basement walls without ground water leakage have a continuous air barrier on the warm side of the insulation. When absorbent insulation is installed the assembly is vapor permeable into the interior.	Major	NREL SWS 4.1402.2
	Basement walls with ground water leakage have a continuous drainage plane to the drainage fields. Rough walls (e.g. rubble) have a waterproof membrane between wall and insulation, insulation is non-absorbent, such as closed cell foam.	Major	NREL SWS 4.1402.3
	Exposed rigid foam board or spray foam has required thermal and ignition barrier.	Major	NYS RC (R316.4, R316.5.11)
	Densepack insulation drill holes have been plugged, drainage plane repaired and the exterior finish has been securely reinstalled.	Minor	NREL SWS 4.1103.2e
	Pre and post photos of attic insulation have been provided on the portal where temporary access was created and sealed closed.	Minor	Program Requirement

Shell Measures (continued)			
Measure	Task Description	Non-Conformance Category	Reference
Replacement Doors & Windows	Contracted replacement windows and doors have been installed.	Major	Contract/EmCalc
	Replacement doors and windows function smoothly (open/close, tilt in, etc.), the perimeter has bee air sealed, the interior and exterior finishes have been restored.	Minor	Program Requirement