



Low-rise Residential New Construction Program PON 2309 - **Low-rise Performance Supplement**

To participate and access incentives offered through NYSERDA's Low-rise Residential New Construction Program (Program), the dwelling units and residential-associated common areas, where applicable, must meet the eligibility and technical requirements detailed in this Low-rise Performance Supplement and throughout PON 2309. All dwelling units must at minimum meet the relevant version of the U.S. EPA ENERGY STAR Certified Homes program requirements except where specific relief is allowed for gut rehabilitation projects, as detailed within Sections VI and VII of this document.

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I. Minimum Performance Requirements Associated with Each Tier

	Tier 1	Tier 2	Tier 3 ¹
Minimum Performance Requirements	EPA ENERGY STAR Certified Homes Version 3.0 plus additional requirements detailed throughout this Low-rise Performance Supplement	EPA ENERGY STAR Certified Homes Version 3.1 plus additional requirements detailed throughout this Low-rise Performance Supplement	EPA ENERGY STAR Certified Homes Version 3.1 plus additional requirements detailed throughout this document, including the following:
			The as-built dwelling unit must achieve a HERS Index ≤10, inclusive of installed solar PV.
			Dwelling units with a conditioned floor area >1,500 S.F. must achieve a HERS Index ≤ 40 prior to inclusion of Solar PV.
			Dwelling units with a conditioned floor area ≤1,500 S.F. must achieve a HERS Index ≤ 50 prior to inclusion of Solar PV.

¹ Projects which otherwise meet the Tier 3 requirements intending to seek NYSERDA's commitment for and payment of those Tier 3 incentives will typically be required to locate the solar electric array(s) on-site, co-located with the project's buildings. Project applicants may seek a waiver from NYSERDA to allow for a properly sized solar electric array to be located on a remote site and in a manner which allows a remote net metering arrangement to achieve the required offset of the project's predicted energy use. To receive NYSERDA's approval of the waiver request, the applicant must demonstrate the solar electric array's ownership is structured in a manner which assures its output will be dedicated to the project for a minimum term of twenty years. Additionally, the remote net metering arrangement and interconnection must be approved by the distribution utility.

II. Envelope Air Leakage Minimum Performance Requirements

Envelope Air Leakage in detached one- and two-family dwellings and townhomes may not exceed air changes at a pressure difference of 50 Pascals with respect to the outdoors, as listed below:

REQUIREMENT	Minimum Performance Requirements
Envelope Air leakage ²	CZ 4: Maximum 5 ACH ₅₀
	CZ 5,6: Maximum 4 ACH ₅₀

III. Mechanical Systems Minimum Performance Requirements and Minimum Equipment Efficiencies ^{3,4}

EQUIPMENT ^{5,6}	Minimum Performance Requirements
Gas/Propane-fired Furnaces or Boilers (including indirect domestic hot water boilers)	90 AFUE or ENERGY STAR certified
Oil Furnace or Boilers	86 AFUE or ENERGY STAR certified
Air-source Heat Pumps ⁷ & Ductless Mini-splits	CZ 4: 8.5 HSPF / 14.5 SEER / 12 EER & ENERGY STAR certified ⁸
	CZ 5: 9.25 HSPF / 14.5 SEER / 12 EER & ENERGY STAR certified
	CZ 6: 9.5 HSPF / 14.5 SEER / 12 EER & ENERGY STAR certified
Variable Refrigerant Flow (VRF) or Variable Refrigerant Volume (VRV) Systems	Must have AHRI rating according to AHRI Standard 1230 with matched indoor and outdoor units
Geothermal Heat Pumps	ENERGY STAR certified
Combination Space Heating and Domestic Water Heating Systems	Must have an AFUE or CAFUE 90; be specifically approved by the manufacturer for combination use; and provide priority domestic hot water controls.
Conventional Split-Systems or Packaged A/C ⁹	CZ 4 only: SEER 14.5 / 12 EER
Small-duct, High Velocity Split-System A/C	SEER 13
Space-Constrained A/C Condenser	Air Conditioners: SEER 12 Heat Pumps: SEER 12; HSPF 7.4
Packaged Terminal Air Conditioner (PTAC)	13.8-(0.300 X Cap/1000) EER
Packaged Terminal Heat Pump (PTHP) ¹⁰	Cooling: 14.0-(0.3 X Cap/1000) EER; Heating: 3.7-(0.052 X Cap/1000) COP
Room Air Conditioners	ENERGY STAR certified
On-Demand Gas-Fired Tankless Water Heater	ENERGY STAR certified
Heat Pump Water Heaters	ENERGY STAR certified
Solar Thermal DHW Systems	Must comply with NYSERDA's Solar Thermal Program, if available.
Light-duty EPACT-covered Gas Water Heaters	ENERGY STAR certified
Air-cooled chillers, with or without condensers	Pre-Approval required. Contact the Senior Technical Support Analysts at NYSERDA's Implementation Contractor to discuss minimum performance requirements.

² Use of guarded blower door or whole-building testing to establish compliance with this standard is prohibited.

³ Minimum performance requirements for central mechanical systems not listed in section III are listed in Section IV.

⁴ Buildings intending to certify as PHIUS+ or PHI may request waiver exemption from section III requirements.

⁵ Any sealed combustion appliance which is configured for combustion air to be piped directly from outside the building's thermal envelope must be installed in that manner.

⁶ Equipment specified for multi-family buildings that are not listed in this table must meet the efficiencies listed in ASHRAE 189.1-2011. Consideration should be given to the possibility of installing multiple units that meet the minimum efficiency ratings of Table IV.

⁷ Air-cooled heat pumps sized between 65 and 240 KBtu/h must meet the following minimum efficiencies: Cooling: 11.1 EER/11.6 IEER; Heating: 3.3 COP (@ 47 degrees Fahrenheit Dry-Bulb).

⁸ Non-ENERGY STAR certified mini-split air-source heat pumps and equipment are allowed if the equipment meets stated minimum efficiencies and has compressor inverter technology.

⁹ Air conditioners, air cooled sized between 65 and 240 KBtu/h must meet the following minimum efficiencies: 11.5 EER/12.0 IEER.

¹⁰ "Cap" means rated capacity of the product in Btu/h. If < 7,000 Btu/h, use 7,000; if > 15,000, use 15,000 in the calculation.

Mechanical Systems Minimum Performance Requirements and Minimum Equipment Efficiencies (Continued)	
Domestic Hot Water (DHW)	Boilers (inclusive of space heating boilers and boilers creating domestic hot water) with an input >300,000 Btu/h shall have a minimum thermal efficiency of 87%; Re-circulating hydronic or DHW system piping carrying liquid at temperatures greater than 105°F must have minimum 1" of insulation with $K \geq 0.27$ Btu/in./hr·ft ² ·°F; Indirect Water Heaters or Storage Tanks shall have a tank standby loss of 1.5°F/hr or less.

IV. Multifamily Building Minimum Performance Requirements^{11, 12}

ITEM	Multifamily Building Minimum Performance Requirements
Performance testing and the HERS Rating	Dwelling units in multifamily buildings must be individually performance tested and individually HERS Rated.
Residential-associated Common Space	Residential-associated space within multifamily buildings shall not be included as part of the dwelling unit's HERS Rating. The ENERGY STAR Certified Homes Program's Thermal Enclosure Checklist and Water Management Requirements must be inspected for and completed, with all requirements met. Wall penetrations including mechanical, fire suppression, fire extinguisher cabinets or trash chutes must be sealed to prevent air flow into or through vertical chases. Building entry and exit doors shall have weather-stripping installed.
Envelope Air Leakage & Testing	Dwelling units within buildings defined as R-2, R-3, or R-4 per section 310 of the Building Code of New York State shall be tested to verify an envelope air leakage rate not exceeding <i>0.30 CFM₅₀ per square foot of enclosure surface area</i>
Central Distribution Hydronic Heating Systems	For hydronic distribution systems without automatic balancing valves, all supply/return headers must be designed in a "reverse return" configuration (i.e. first riser supplied is the last returned, etc.) and/or sized based on a water velocity of less than 4 ft/s. Total pressure drop of terminal unit branch piping and fittings between a supply and return riser must be significantly greater than the total pressure drop from the top to the bottom of these risers. Calculations and assumptions for sizing circulating pumps must meet Chapter 43 of the ASHRAE Handbook, HVAC Systems and Equipment or equivalent industry accepted standard.
Commercial Indirect Storage Tanks	Must meet R-12.5 minimum thermal insulation requirements of the US Department of Energy and current edition of ASHRAE/IESNA 90.1.
Central DHW Systems	Temperature setting of storage water heaters must not exceed 120 F and temperatures measured at faucets and showerheads shall not exceed 110 F.
	Self-contained or electronic mixing valves shall be used to control hot water temperature for central systems.
Common Area Lighting	Fixtures in residential-associated common space, including hallways, stairwells, lobbies, elevators, and decorative fixtures, shall be high efficacy ¹³ . Alternatively, T-5 or T-8 lamps with electronic ballasts or ENERGY STAR Certified screw-in lamps may be used.
Occupancy Controls	All residential-associated common space, except those spaces intended for 24-hour occupation or where automatic shutoff would endanger the safety of occupants, must have occupancy sensors or automatic bi-level controls.
Exit Signs and Emergency Lighting	All exit signs shall be specified as LED (not to exceed 5W per face) or photo-luminescent and shall conform to local building code; fixtures located above stairwell doors and other forms of egress shall contain a battery back-up feature.

¹¹ Buildings intending to certify as PHIUS+ or PHI may request waiver exemption from section IV requirements.

¹² Multifamily buildings must meet the minimum performance requirements detailed in Sections I & III of this document. Dwelling units in eligible multifamily buildings are allowed the relevant minimum performance requirements as detailed in Section IV. Common areas must meet the minimum performance requirements as detailed in Section IV.

Multifamily Building Minimum Performance Requirements (continued)	
Outdoor Security and Decorative Lighting	80% of outdoor lighting fixtures shall be ENERGY STAR certified and have ENERGY STAR certified lamps installed. Alternatively, 100% of outdoor lighting fixtures must have high-efficacy lamps installed ¹³ . All lighting shall have an efficacy ≥ 45 lumens/watt as per ECCCNY-2010. Fixtures shall include automatic switching or photocell controls for lighting not intended for 24-hour operation, per code. Total specified exterior lighting power cannot exceed ASHRAE allowances. Tradeoffs are allowed as specified in ASHRAE 90.1-2010, Tables 9.4.3A and 9.4.3B.
Lighting Power Densities	Residential-associated common space lighting power densities allowance shall be determined by ASHRAE 90.1-2010, Tables 9.5.1 or 9.6.1. Total specified lighting power for the combined residential associated common space should not exceed allowances for those combined spaces by more than 20%.
Elevator Shafts	Elevator shaft(s) must be insulated in relation to unconditioned space and elevator doors must be gasketed properly if exposed to unconditioned space.
Parking Garages	Attached garages shall be fully compartmentalized from the rest of the building.
	Enclosed garages must be depressurized relative to occupied or inhabited spaces.
	Heated garages (including plenums in garage ceilings) are not allowed for comfort purposes or to prevent pipe freezing. Piping location shall be within the conditioned space or grouped properly and insulated to prevent freezing if outside conditioned space.
	Ice Prevention – Installation of Radiant Heat, either wall or ceiling mounted, or within the garage floor (or sidewalks) on the ground is only allowed as a safety feature, and written authorization from NYSERDA is required. This measure must comply with ASHRAE 90.1-2010 Section 6.4.3.8
Motors	Three-phase motors 1 HP or larger shall be NEMA premium efficiency or greater. VFD motors may be utilized if documentation confirms performance is equal to or better than a comparable NEMA Premium motor.
Ventilation	Residential associated common space ventilation systems shall be designed and tested to satisfy minimum requirements of ASHRAE 62.1-2010, without exceeding minimum rates by more than 50%. Natural ventilation strategies for residential associated common spaces are allowed.
Residential-associated Common Area HVAC Systems	Use of electric resistance heating equipment is generally discouraged in common areas. However, electric resistance heating is allowed in limited load areas (stairwells and mechanical closets, etc.), if the system output will be less than 2,000 watts, total. ¹⁴ If electric resistant heat will be used, high-limit thermostatic control of $< 50^{\circ}$ F must be specified and installed.
	All Common Area HVAC systems must comply with the minimum efficiencies listed in this document. Visual inspection of duct sealing details shall include the following at a minimum: Mastic or other UL-181 compliant material has been applied within temperature range and according to all other manufacturer's requirements at ALL transverse joints and take offs. All duct transitional junctions have been sealed with mastic or other UL-181 compliant material. Gap between take-off boot and gypsum board has been effectively sealed.

¹³ High efficacy: ENERGY STAR certified CFLs, T-8 or smaller or lamps with 60 lumens/W for lamps over 40W; 50 lumens/W for lamps over 15W to 40W; 40 lumens/W for lamps 15W or less.

¹⁴ Requests for alternative use of electric resistance heating equipment in any common area may be considered by NYSERDA or NYSERDA'S Implementation Contractor but requests will only be considered under very limited circumstances, and only when solutions which are allowed would not be economically feasible. It is the proposer's sole responsibility to justify the value of this consideration. In all instances, high-limit thermostatic control of < 50 degrees F must be specified.

V. Home Energy Rating Sampling

Use of RESNET's Home Energy Rating Sampling Protocols requires prior Program approval, and must be submitted to NYBuilderApplication@clearesult.com as the initial step in seeking that approval. Sampling Plans must meet RESNET Sampling Protocols as detailed at http://www.resnet.us/blog/wp-content/uploads/2015/11/RESNET_Mortgage_Industry_National_HERS_Standards.pdf. The RESNET Sampling Protocols reflect use of threshold values but modeling based on threshold values may result in a reduction of the calculated energy savings, in comparison to actual performance tested results. To obtain the most accurate level of performance-based energy savings, specific methodologies relating to establishing or adjusting pre-construction threshold values is required by NYSERDA, in addition to the submission of detailed performance testing results. After performance testing is completed for the sampled units, the originally estimated threshold values in the Projected Ratings must be updated to reflect the worst tested values for that specific unit type, to determine the final HERS Index for that unit type. More detailed guidance regarding application of this Sampling Protocol is available, and questions should be directed to the Senior Technical Support Analysts with [NYSERDA's Implementation Contractor](#).

VI. Gut-Rehabilitation Projects – General Requirements

1. A Project Application must be submitted for every gut rehabilitation project, allowing NYSERDA's consideration of the project's eligibility to participate and seek incentives offered by the Program;
2. The pre-existing condition of the building(s) must be confirmed through a site visit or detailed photographic report, as directed to the Senior Technical Support Analysts with [NYSERDA's Implementation Contractor](#). This verification process will occur following submission of the Project Application but prior to removals or the installation of any improvements to the dwelling units or buildings.
3. All dwelling units and common area spaces included in the gut rehabilitation project must meet the Program requirements. The most desirable path is that all requirements associated with designation as a New York ENERGY STAR Certified Home are met, inclusive of the [U.S. EPA's requirements for gut rehabilitation projects](#).
4. When New York ENERGY STAR Certified Homes requirements are not deemed economically justified, the Energy \$mart designation and incentives associated with the project's performance may be available as an alternative path. Permission to use this alternative must be sought through a waiver request which identifies those specific requirements in question. NYSERDA or the Implementation Contractor will review waiver requests to consider acceptance and confirm project eligibility. For additional guidance, please review the [technical waiver templates and previously approved waivers](#), available by selecting that hyperlink.
5. For the technical waiver request to be considered for acceptance, the applicant must demonstrate the specific New York ENERGY STAR Certified Homes standard(s) or requirement(s), as detailed within this document and U.S.EPA publications, would not be technically feasible or economically justified. The waiver request must propose alternative methods to accomplish the intent of those standards or requirements which would not be met.
6. If the proposed alternative methods negatively impact the energy savings projected to be achieved in the dwelling unit(s), an economic analysis must be submitted that includes the cost, savings and return on investment for compliance with the requirement, and the proposed alternative.
7. The project must meet the minimum ENERGY STAR Reference Design HERS Index Target assigned to the project, calculated through use of RESNET-approved Rating software.

VII. Gut-Rehabilitation of Historic Buildings

Historic buildings, as defined in by the relevant energy code, need not comply with other sections of that code. To the greatest extent possible under the restrictions that may have been imposed by the historic governing authority, while considering what is technically feasible or economically justified, the projects must strive to maximize the energy savings which will be achieved. To that end, the Program requires the project to meet the ENERGY STAR v3.0 Reference Design HERS Index Target, which is calculated through use of RESNET-approved Rating software. Relief from this requirement can be requested through a waiver request as outlined in Section VI.4.

As a result of the statement above, the building's existing conditions will provide the baseline or reference used by NYSERDA to calculate energy savings. Therefore, historic gut rehabilitation projects are subject to additional modeling and submission requirements. For each unique dwelling unit type, the Home Energy Rater shall define a base building within the RESNET-approved Rating software which relies on ECCC NYS minimum efficiencies to establish the software inputs for Mechanical Equipment, Duct Systems, Infiltration/Ventilation and Lights and Appliances. The Rater shall use existing conditions to establish the required inputs for Foundation Walls, Slab Floors, Frame Floors, Above Grade Walls, Rim/Band Joist, Windows and Glass Doors, Doors, Ceilings and Skylights. The Rater must include an electronic copy of the software file as part of the project's Incentive Application package submission.