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INTENT OF GUIDELINES

HCR is working to put current and future affordable housing projects on the path to meeting New York State’s Climate Leadership and Community Protection Act (“Climate Act”), which mandates at least a 40% reduction in greenhouse gas emissions by 2030 and at least 85% reduction by 2050, compared to New York State’s 1990 carbon emission levels.

For buildings, this will mean dramatically improving building efficiency by enhancing the building envelope performance and removing or significantly reducing onsite carbon emissions from fossil-fuel burning appliances. HCR developed these Sustainability Guidelines as a step towards meeting the State’s climate goals.

HCR’s Sustainability Guidelines are designed to produce high quality housing across the State of New York to provide low-income tenants with improved health, safety and well-being.

The Guidelines include criteria that advance these goals including energy efficient building shells, systems and equipment, reduction or removal of fossil fuel based sources, increased indoor environmental quality and resiliency measures.

New York State’s goals for Greenhouse Gas Emissions Reductions

40% by 2030
85% by 2050
Reduction or removal of fossil fuel based sources from buildings (i.e., electrification) not only aligns with the carbon-reduction goals of the CLCPA, it also has many benefits to tenants including reduced risk of fire, improved indoor air quality, and elimination of potential carbon monoxide exposure. In conjunction with electrification, it is imperative that buildings reduce their heating and cooling loads by addressing the efficiency of the building shell, which can reduce the energy demands of a building while dramatically improving comfort for tenants. HCR’s priority is delivering building envelopes that are well sealed and insulated, while also addressing the need for delivery of fresh air into spaces. Addressing these priorities can result in reduced operational costs and creation of living environments that are healthier and more comfortable to live in.
APPLICATION OF SUSTAINABILITY GUIDELINES

The **HCR Sustainability Guidelines** are applicable to certain projects applying for financing through HCR. The list of **Applicable Financing Programs** are outlined in this section. Projects shall follow the Sustainability Guideline section(s) that apply to their project based on the financing and construction type outlined in the Application Matrix below.

**APPLICATION MATRIX**

**Applicable Financing Programs:**
- Multifamily Finance 9% LIHTC RFP
- Multifamily Finance 4% HFA Tax-exempt Bond and Subsidy Financing
- Multifamily Finance Open Window CIF Stand-alone Financing

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<td>Residential New Construction</td>
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<td>Residential Moderate Rehabilitation</td>
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<td>Mix of Residential New Construction and Residential Rehabilitation Buildings in Project</td>
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<td>Commercial and/or Community Service Facility</td>
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<td>Projects under regulation with HCR</td>
<td>Rehabilitation and/or Replacement work</td>
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**Footnotes**
- **Note 1:** Utilize Guidelines matching building scope for each building
- **Note 2:** Follow Adaptive Reuse Guidelines
- **Note 3:** Incorporate comparable energy efficiency strategies as those required for residential projects to achieve similar energy savings
CONSTRUCTION TYPES

The following construction types relate solely to the application of these Guidelines and shall not be used to define project requirements or scopes outside of the criteria defined in these Guidelines.

- **New Construction**: Ground-up construction of a new building or buildings. For guidance on use-type, please reference the New Construction Sustainability Guidelines.

- **Adaptive Reuse Rehabilitation**: A substantial renovation that occurs in a building or space that undergoes a change of use to Residential occupancy, as defined by the applicable building code.

- **Substantial Rehabilitation**: A renovation where the majority of the interior walls, finishes, systems and MEP (mechanical, electrical and plumbing) infrastructure are demolished and a new scope of work is constructed within the existing building shell. These projects are also sometimes referred to as “gut” rehabilitations.

- **Moderate Rehabilitation Level 1**: A renovation where the dwelling unit demising walls, most interior walls and MEP infrastructure remain, and the new scope of work is built within the existing dwelling unit compartment. This type of rehabilitation often includes replacement of fixtures, finishes and equipment (FF&E) and roofing. It may include window replacement, siding replacement and additional roofing scopes.

- **Moderate Rehabilitation Level 2**: A renovation where the dwelling unit demising walls and most of the interior walls remain. This type of rehabilitation includes many of the scoping items of a Level 1 Moderate Rehabilitation, but also includes replacement of (MEP) infrastructure and equipment, either in part or in full.

* NOTE: User should look for these color blocks in each section/category for specific project construction-type directions.
APPLICATION Continued

WAIVERS
Minor deviations from these requirements will be allowed via a Design Waiver Request if necessary to avoid costly structural changes in rehabilitation projects or if they result in a superior design solution. Requests to waive a requirement will be reviewed on a case-by-case basis by the Vice President of Sustainability, the Vice President of the Design Construction & Environmental Unit (DC&E) and/or the respective DC&E Unit Director. Other offices of the Agency will be consulted when necessary. Evaluations of waiver requests will include the determinations of the appropriateness of the proposed alternative with emphasis on:

- Alignment with the HCR Sustainability Standards Roadmap
- Impacts on operating costs/efficiency
- Impact to the residents
- Cost-effectiveness
- Functional appropriateness
- Durability and operating appropriateness

All waiver requests must be submitted via the Design Waiver Request Form and must be received 30 calendar days prior to each required submission. The Design Waiver Request Form can be obtained online at http://www.hcr.ny.gov.

Potential applicants and design professionals needing technical assistance on the criteria outlined in these Guidelines should contact the HCR Sustainability Team, the Design, Construction & Environmental Unit, or the program managers of the applicable funding sources.

PROJECTS WITH NYC HPD INVOLVEMENT
All projects located within New York City that involve the City of New York Department of Housing Preservation and Development (HPD) funding, the more restrictive Guideline shall apply. All Sustainability Guideline criteria that is not met due to conflicts with the HPD criteria, must be presented to and approved by HCR as a Design Waiver Request.
APPLICATION Continued

DESIGN COMMITMENT
To ensure that the design is coordinated with other applicable submission criteria and program requirements, project applicants and architects should also refer to publications applicable to the funding sources for the project. HCR publications can be obtained online at http://www.hcr.ny.gov or from applicable program staff.

A project’s design and construction shall comply with and may not vary from what is represented in the application for funding unless a change is specifically directed or recommended by HCR. Constructed projects shall not be diminished in quality, including aesthetics, choice of materials, or systems from that proposed and represented in the application for funding unless specifically altered by HCR at award. The applicant is responsible for ensuring that the project’s scope of work, as represented by the plans, specifications and other pertinent documents are well defined and coordinated with the cost estimate.

The Guidelines do not exclude compliance with other criteria that may be required by the project funding source(s) or required by applicable codes, laws or regulations.
EXISTING BUILDINGS

The HCR Existing Building Sustainability Guidelines are applicable to all Existing Building Projects applying for financing with HCR under the Applicable Financing Programs. A list of Applicable Financing Programs can be found in the Application of Sustainability Guidelines section of this booklet. Existing Building Projects are defined as projects that utilize the shell of an existing building, including adaptive reuse, substantial rehabilitation, and moderate rehabilitation. The definitions for these project types can be found in the Application of Sustainability Guidelines of this booklet.

For projects that include a mix of New Construction and Rehabilitation, please see the Application Matrix included in this booklet.
## STRUCTURE

### SUSTAINABILITY GUIDELINE REQUIREMENTS

This booklet is divided into three sections:

- **Section 1:** Core Sustainability Requirements
- **Section 2:** Building Performance Requirements
- **Section 3:** Additional Sustainability Requirements

Each section addresses a specific set of goals or standards that HCR has established as a baseline for all Existing Building Projects to meet. These are referred to as **Baseline Requirements**. Each section also contains a number of **Stretch Goals** which all development teams are encouraged to meet, as they set the precedent for future baseline standards.

### TERMINOLOGY: BASELINE REQUIREMENTS AND STRETCH GOALS

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<th>BASELINE REQUIREMENTS</th>
<th>STRETCH GOALS</th>
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<td>Baseline Requirements outline mandatory criteria that are required on every project.</td>
<td>Stretch Goals are <strong>not mandatory</strong>, but projects should consider all Stretch Goals outlined in this document unless meeting those goals proves to be cost prohibitive to the project. Stretch standards can be met in whole or in part, meaning a developer can chose to achieve some Stretch Goals in one section but not another. Competitive projects can receive additional points for achieving some or all of the stretch standards as outlined in the applicable RFP.</td>
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COMPLIANCE PATHS FOR EXISTING BUILDINGS SUSTAINABILITY GUIDELINES:
All projects must comply with baseline requirements in all three sections defined below, and where possible projects are encouraged to reach all or some of the stretch goals.

Section 1: Core Sustainability Requirements
Section 2: Building Performance Requirements
Section 3: Additional Sustainability Requirements

All projects must comply with the Baseline Requirements in all sections. Projects may choose to meet Stretch Goals outlined this section.

Each section will contain requirements for each Construction Type applicable in the Existing Buildings Sustainability Guidelines. Construction Types for this booklet include Adaptive Reuse, Substantial Rehab, Moderate Rehabilitations Level II and Moderate Rehabilitations Level I.
Section 1 of the Existing Buildings Sustainability Guidelines outlines core project requirements and eligible third-party certification programs that must be met by all projects. Please follow the “use-type” based on the Construction Type applicable to the project.

At a minimum, all projects must comply with the Baseline Requirements outlined below. Projects are encouraged to meet the criteria of the Stretch Goals, instead of, or in addition to, compliance with the Baseline Requirements.

**GENERAL CONSIDERATIONS**

Code compliance takes precedence for all building systems and design. If a conflict exists between building/energy codes or HCR sustainability requirements, a design waiver should be requested from HCR.

Please be advised that energy code requirements and the corresponding energy efficiency strategy must be considered when planning a Project’s development schedule. Projects will be responsible, without any additional cost to HCR programs, to comply with the applicable energy efficiency standard and all energy code requirements.

Regardless of the type of existing building project and the sustainability standards selected in Section 1, all projects are encouraged to apply for New York State Affordable Multifamily Energy Efficiency Program (AMEEP), administered by a coalition of New York State utilities.

Projects are also encouraged to explore the New York State Clean Heat program if performing electrification upgrades, and utilize solar incentives (NY Sun or other) where applicable.

Nonresidential projects, or nonresidential spaces in a mixed-use project, shall incorporate comparable energy efficiency strategies as those required for residential projects to achieve similar energy savings.
ADAPTIVE REUSE PROJECTS:

Baseline Requirements:

A. All Electric: All projects must utilize high-performance all-electric heating/cooling and domestic hot water equipment and other in-unit or shared appliances such as dryers and cooktops, ovens or ranges, and;

B. Third-party Standard Certification: Select one of the following third-party certification programs to certify the project to:
   1. NYSERDA New Construction - Housing Program (NC-H)*
   2. 2020 Enterprise Green Communities Certification
      a. Projects in NYC should utilize the NYC overlay
   2. LEED v4.1 Residential – Silver or higher
   3. Well of Fitwel Building Certification
   4. ICC/ASHRAE 700 – National Green Building Standard

*All projects applying for Multifamily Finance 4% HFA Tax-exempt Bond and Subsidy Financing are required to achieve this standard to comply with Climate Bond goals.

Stretch Goals:

A. Third-party Standard Certification: Select one of the following third-party certification programs to certify the project in lieu of the programs listed in the Baseline Requirements:
   1. LEED v4.1 BD&C Zero
   2. 2020 Enterprise Green Communities Plus
   3. Passive House PHI/PHIUS or equal

*Note: All projects choosing a Stretch Third-party Standard must still comply with the baseline All-Electric Requirement.

Exceptions to All-Electric Requirement

Projects who can provide evidence to any of the following may, at NYS HCR’s sole discretion, be granted a waiver from the requirement to have all-electric heating/cooling and domestic hot water equipment:
SECTION 1 Continued

- An electric load letter from grid demonstrating there is not enough electrical service to construct a new all-electric building.
- Use of on-site emergency back-up power generation with fossil fuel is acceptable; high-efficiency fossil fuel generators are permitted. Projects should provide a letter stating that onsite generators will only be used in no load test/exercise and for emergency purposes when the electric grid power fails.

SUBSTANTIAL REHABILITATIONS:

Baseline Requirements:
A. Provide an energy model demonstrating at least 20% reduction in energy use across the project (measured from the average whole building energy consumption for the past three years).
B. Third-party Standard Certification – Select one of the following third-party certification programs to certify the project to:
   1. Enterprise Green Communities
   2. LEED v4.1 Residential – Silver or Higher

Stretch Goals:
A. Advanced Envelope Performance: Upgrade the building envelope to achieve as close to a Passive House standard as possible. See Section 2: Envelope Stretch Goal for full details.
B. Existing buildings with the ability to retrofit existing HVAC and Domestic Hot Water (DHW) distribution systems to accommodate the following should pursue:
   1. Electrification of Heating Systems: Upgrade existing fossil fuel (e.g. gas, oil, propane fired) or electric baseboard systems to high-efficiency cold climate heat pumps or ground source heat pumps for space heating and cooling. Projects pursuing this Stretch Goal will be required to address envelope improvements and should follow Section 2.C Stretch Goals 1 when choosing this stretch goal.
   2. Electrification of Domestic Hot Water (DHW): Replace/upgrade the existing fossil fuel domestic hot water system with a high-performance heat pump hot water heater (ASHP or WSHP).
C. All projects, particularly those projects where the existing building conditions include fuel oil or older less efficient natural gas systems, should consider stretching to one of the following certifications:
   1. Enterprise Green Communities Plus
   2. EnerPHit
New York State is a leader in adopting clean heat and energy efficiency measures, committing more than $6.8 billion to reduce the carbon footprint of New York’s building stock.
MODERATE REHABILITATIONS LEVEL 2:

Baseline Requirements:

A. Provide a current Integrated Physical Needs Assessment (IPNA) for the project.
   1. All existing conditions, components and systems shall be evaluated utilizing the Integrated Physical Needs Assessment (IPNA) Standard for New York City and State Low/Moderate Income Multifamily Buildings recognized by HCR/HPD/HDC.
   2. Assessments shall include life expectancy values in accordance with the assessment format and account for local conditions, which may reduce life expectancies due to unique situations and project-specific conditions.
   3. IPNAs shall be completed within two years of the date of the project application.
   4. All projects must replace or repair components, finishes and systems which have less than a 15-year lifespan per the following criteria:
      a. Components, systems and finishes that will have a useful life of 5 years or less at the completion of the rehabilitation work shall be replaced as part of the project scope.
      b. Replacement of components, systems and finishes that will have a useful life of 5-10 years at the completion of the rehabilitation work is strongly recommended.
      c. Other systems may be replaced within the 15-year period if it is documented that there will be sufficient replacement reserves available when these replacements are anticipated.
      d. Exceptions for equipment that is in good working condition and can be verified as such by a third-party inspector may be permitted with approval from the Sustainability Unit.

B. Provide an energy model demonstrating at least 20% reduction in energy use across the project (measured from the average whole building energy consumption for the most recent past three years).

Smith Lofts (Before and After): Syracuse, NY
**Stretch Goals:**

A. Advanced Envelope performance: Upgrade the building envelope to achieve as close to a Passive House standard as possible. See Section 2: Envelope Stretch Goal for full details.

B. Existing buildings with the ability to retrofit existing HVAC and Domestic Hot Water (DHW) distribution systems to accommodate the following should pursue:
   1. Electrification of Heating Systems: Upgrade existing fossil fuel (e.g. gas, oil, propane fired) or electric baseboard systems to high-efficiency heat pumps or ground source heat pumps for space heating and cooling. Projects pursuing this Stretch Goal will be required to address envelope improvements. See Section 2.C Stretch Goals 1 when choosing this stretch goal.
   2. Electrification of Domestic Hot Water (DHW): Replace/upgrade the existing fossil fuel domestic hot water system with a high-performance heat pump hot water heater (air-source heat pump (ASHP) or water-source heat pump (WSHP)).

C. All projects, particularly those projects where the existing building conditions include fuel oil or older less efficient natural gas systems, should consider stretching to one of the following certifications:
   1. Enterprise Green Communities Plus
   2. EnerPHit

**MODERATE REHABILITATIONS LEVEL 1:**

**Baseline Requirements:**

A. Provide a current Integrated Physical Needs Assessment (IPNA) for the project.
   1. All existing conditions, components and systems shall be evaluated utilizing the Integrated Physical Needs Assessment (IPNA) Standard for New York City and State Low/Moderate Income Multifamily Buildings recognized by HCR/HPD/HDC.
   2. Assessments shall include life expectancy values in accordance with the assessment format and account for local conditions, which may reduce life expectancies due to unique situations and project-specific conditions.
   3. IPNAs shall be completed within two years of the date of the project application.
   4. All projects must replace or repair components, finishes and systems which have less than a 15-year lifespan per the following criteria:
      a. Components, systems and finishes that will have a useful life of 5 years or less at the completion of the rehabilitation work shall be replaced as part of the project scope.
      b. Replacement of components, systems and finishes that will have a useful life of 5-10 years at the completion of the rehabilitation work is strongly recommended.
      c. Other systems may be replaced within the 15-year period if it is documented that there will be
sufficient replacement reserves available when these replacements are anticipated.

d. Exceptions for equipment that is in good working condition and can be verified as such by a third-party inspector may be permitted with approval from the Sustainability Unit.

B. Retro-commission all central plant equipment (Space heating, mechanical ventilation, and domestic hot water systems) throughout the project.

C. Replace or retrofit all existing water fixtures (toilets, faucets and aerators) with the low-flow fixtures outlined in Section 2: Water Efficiency.

D. Replace or retrofit all existing lighting throughout the project to meet the requirements outlined in Section 2: Lighting.

E. Insulate all hot water and heat piping throughout the project to meet current NYS energy code.

**Stretch Goals:**

A. Provide an energy model demonstrating at least 20% reduction in energy use across the project (measured from the average whole building energy consumption for the past three years).

B. **Path to Electrification:** Create a “Path to Electrification” for the project, including technology needed, costs and potential timeline of when anticipated technology would be available and implemented. Future electrification costs should be included in the property’s operating budget/reserve sizing or future sources of funding to support electrification.

C. **Electrification ready:** Include upgrades to the building that will allow for future electrification to occur. Scopes of work should be focused on providing adequate space and electrical service for future equipment. Areas of focus should be on ranges/cooking appliances, heating and cooling equipment, water heating, and building electrical systems.
Section 2 shall only apply to the scope of work applicable to the project (i.e., scopes of work already in the project, those required by Section 1, or those required to be included in the scope of work per HCR IPNA requirements).

Although not required, projects should consider all Stretch Goals listed in Section 2 as applicable to the proposed scope of work. The Baseline Requirements should only be used when the Stretch Goals proved to be cost prohibitive to the project.

A. APPLIANCES

Baseline Requirements: Projects must meet all the following requirements:

1. All refrigerators, dishwashers, and clothes washers included in the project or supplied by vendors must meet or exceed Energy Star or CEE Tier 1 certification where available. Commercial third party-owned and operated washing machines may be non-ENERGY STAR rated when no other options are available, provided they meet or exceed the energy efficiency, quality, and reduced operational costs associated with ENERGY STAR rated appliances.

2. **ADAPTIVE REUSE AND SUBSTANTIAL REHAB ONLY:** All ranges, cooktops, ovens and clothes dryers included in the project or supplied by vendors shall be all-electric. This provision extends to commercial kitchens.

Stretch Goals: Projects should consider incorporating the following into the project:

1. **MODERATE REHABS LEVEL 1 AND LEVEL 2:**
   All ranges, cooktops, ovens and clothes dryers included in the project or supplied by vendors shall be all-electric. This provision extends to commercial kitchens.

2. All refrigerators, dishwashers, and clothes washers included in the project or supplied by vendors are Energy Star Most Efficient or CEE Tiers 2,3,4 or Advanced.
B. LIGHTING

This section applies to all interior and exterior lighting fixtures and bulbs included in the project.

**Baseline Requirements:** Projects must meet all the following requirements:

1. All interior and exterior lighting shall be Energy Star Certified LED or provide the equivalent in energy savings and quality.
2. All exterior lighting fixtures shall be DarkSky approved or equal.
3. All exterior lighting shall have either motion sensor controls, photosensors, or astronomic time-clock operation to limit lighting when there is adequate daylight.

**Stretch Goals:** Projects should consider incorporating the following into the project:

1. Living spaces and/or common areas should be designed to optimize natural daylighting, minimize glare and minimize excessive heat gain during cooling months.
2. Interior common area lighting should be controlled by occupancy sensors or automatic bi-level lighting controls. Exemptions are permitted in areas where 24-hour consistent light levels are required by code and in mechanical and utility rooms.
3. Integrated photovoltaic cells on exterior light fixtures.

C. BUILDING ENVELOPE

This section applies to the project’s envelope, or the physical barrier between the conditioned and unconditioned environment of a building.

**Baseline Requirements:** Projects must meet all the following requirements:

1. **SUBSTANTIAL AND MODERATE REHABILITATIONS LEVEL 1/LEVEL 2 ONLY:** If the project scope of work includes:
SECTION 2 Continued

a. Replacement or upgrade to building insulation: Insulation shall meet 2020 Energy Conservation Construction Code of New York State (ECC) for insulation values.

b. Replacement of exterior windows: All windows shall meet the prescriptive requirements for Building Envelope Fenestration Maximum U-Factor and Solar Heat Gain Coefficient (SHGC) Requirements of the 2020 Energy Conservation Construction Code for New York State (ECC) where commercial energy provisions are required and the prescriptive requirements for Fenestration U-factor and Glazed Fenestration SHGC where residential energy provisions apply.

c. Enhancement to building envelope and windows: Achieve a building-wide UA that is at least 15% better than Section R402.1.5 of the 2020 Energy Conservation Construction Code (ECC) of New York State for envelope elements when using the Area Weighted Average calculation method defined in the ECC.

2. ADAPTIVE REUSE ONLY: Provide an energy model that demonstrates a building envelope that is 15% more energy efficient than NY State Energy Conservation Construction Code 2020, as applicable per project type.

Stretch Goals: Projects should consider incorporating the following into the project:

1. SUBSTANTIAL AND MODERATE REHABILITATIONS LEVEL 1/LEVEL 2: Provide an energy model that demonstrates a building envelope that is at least 15% more energy efficient than 2020 Energy Conservation Construction Code of New York State (ECC), as applicable per project type.
HCR is in the final year of the state’s $20 billion, five-year Housing Plan, which is on track to build and preserve more than 100,000 units of affordable housing and 6,000 units of supportive housing.
2. **ADAPTIVE REUSE**: Provide an energy model that demonstrates a building envelope that is 30% more energy efficient than 2020 Energy Conservation Construction Code of New York State (ECC), as applicable per project type.

3. Achieve an envelope performance that is as close to a Passive House standard as possible. Projects should include a detailed description of how they will ensure adequate ventilation of the building as airtightness increases. The installation of balanced ventilation systems like energy recovery ventilation (ERV) and heat recovery ventilation (HRV) systems should be explored. Passive House envelope standards include:
   a. Heating
      i. Heating Demand: \([\text{kWh/(m}^2\text{a})]\) \(\leq 15\)
      ii. Heating Load: \([\text{W/m}^2]\) \(\leq 10\)
   b. Air Tightness: Pressurization test result \(n_50\): \([1/\text{h}]\) \(\leq 0.6\)

D. HVAC

This section applies to the project’s heating, ventilation and air conditioning systems. Please refer to each subsection for baseline requirements and stretch goals.

**Heating and Cooling**

**Baseline Requirements**: Projects must meet all the following requirements:

1. **MODERATE REHABILITATIONS LEVEL 1/ LEVEL 2 AND SUBSTANTIAL REHABILITATIONS ONLY**:
   a. Demonstrate that the existing heating system is a high efficiency Energy Star or equivalent appliance(s) via Steady State Efficiency (SSE) for equipment with an AFU above 85%. SSE test results should exceed 85%. If the system is not able to achieve these standards, proceed to item b below.
   b. If the system does not meet Energy Star standards, the project shall clean and tune the system and re-test via Steady State Efficiency (SSE). If the results, or AFU does not exceed 85%, or still does not meet or exceed Energy Star standards, proceed to item c below.
   c. Repair the existing system to meet or exceed Energy Star standards, or
   d. Replace the system with a high performance all-electric cold climate heat pump(s)* or equal. See Adaptive Reuse section below for a full list of allowable heat pump systems.

*Note: Additional funding may be available for eligible projects through HCR’s Clean Energy Initiatives program or the local utilities Clean Heat Programs
* If the project team can demonstrate a high efficiency, all electric system is cost prohibitive or would result in increased utility costs to tenants, replace the system with an Energy Star rated heating system that can be converted to an electric system at a future date.

2. **ADAPTIVE REUSE ONLY:**
   a. All HVAC equipment must be high-efficiency, all-electric, and carry an ENERGY STAR certification or provide the equivalent in energy savings, quality and operational costs.
   b. Equipment shall be either cold climate heat pumps with a COP of 3.5 or higher OR ground source heat pumps. Acceptable equipment includes equal to or better efficiency than the following (either ducted or ductless distribution):
      i. Cold Climate Air Sourced Heat Pumps (ccASHP) including:
         • Variable Refrigerant Flow (VRF) with Heat Recovery (3-pipe system) when serving any interior habitable rooms (with no exterior wall exposure).
         When heat recovery (3-pipe) is not feasible, provide 2-pipe system with distinct zones for climate variations (e. g. North zone and South zone). Design of zones shall include analysis of unbalanced solar heat gains and internal heat gains considering on exposure and potential occupant load to verify that conditions where simultaneous heating and cooling in a single zone would not be probable.
         • Mini-split units
      ii. Cold Climate Water Source Heat Pumps (WSHP)
      iii. Other solutions or combinations of solutions, at HCR's sole discretion, may be considered if demonstrated to provide adequate performance and not use any fossil fuel in its operation.
   c. HVAC systems shall meet the following requirements as applicable:
3. HVAC systems shall meet the following design considerations as applicable:
   a. Ducted systems should be used to the greatest extent feasible.
   b. Surface mounted units, when used, are to be located in an inconspicuous area, out of primary sightlines in the dwelling unit.
   c. Exterior mounted condensers shall be placed in a suitable inconspicuous location that does not interfere with exiting path used by the residents and is not directly visible through windows of dwelling units. If the condensers are roof mounted, the installation shall be such that it does not damage the roofing system nor detract from the exterior view of the building.

NOTES:

Exceptions: Project can demonstrate any of the “Exceptions to All-Electric Requirement” listed in Section 1 of this booklet may be exempt from this requirement.

Alternate high-performance decarbonized solutions may be acceptable, at the sole discretion of HCR, if a proposer provides a waiver request and substantial justification to
**Stretch Goals:** Projects should consider incorporating the following into the project:

1. **MODERATE REHABILITATIONS LEVEL 1/LEVEL 2 AND SUBSTANTIAL REHABILITATIONS:** Projects should consider the heating and cooling equipment listed in the Adaptive Reuse baseline requirements above.

**Thermostats and Controls**

**Baseline Requirements:** Projects must meet all the following requirements:

1. **MODERATE REHABILITATIONS LEVEL 1/LEVEL 2 ONLY:** Projects without existing thermostats and not replacing HVAC equipment are not required to comply with this section. Projects with existing thermostats that do not include full replacement of HVAC equipment shall:
   a. Commission the existing thermostats (not less than 20% sample size) to ensure they provide the ability to program nighttime setbacks and properly distribute space conditioning in accordance with the system setpoints.
   b. If existing thermostats do not properly condition the indoor air temperature based on settings, or are not programmable, the units should be replaced in accordance with the specifications for Adaptive Reuse and Substantial Rehabilitation projects below.

2. **ADAPTIVE REUSE AND SUBSTANTIAL REHABILITATIONS ONLY:** Thermostats shall meet the following requirements:
   a. All apartments shall be treated as individual heating zones controlled by a wall mounted programmable thermostat in each apartment capable of maintaining different temperature set points at different times of the day.
      i. In buildings with common heating systems, provide either programmable thermostats in each apartment or building system set-back controls, as allowable by the applicable building codes.
   b. In common areas, remote wall thermostats accessible to the public should be in a locked enclosure and controlled by the building operations team.
Stretch Goals: Projects should consider incorporating the following into the project:

1. Provide central control capabilities of heating set points through BACnet infrastructure or other equal.
2. Min. and max. set points. Set all units with a reasonable minimum (cooling) and maximum (heating) set point. For example, 68 as a low for cooling, and 78 for high for heating.

Domestic Hot Water

Baseline Requirements: Projects must meet all the following requirements:

1. **MODERATE REHABILITATIONS LEVEL 1/ LEVEL 2 ONLY**:
   a. For existing fossil fuel domestic hot water systems:
      i. Demonstrate that the existing heating system is a high efficiency Energy Star or equivalent appliance(s) via Steady State Efficiency (SSE) for equipment with an AFU above 85%. SSE test results should exceed 85%. If the system is not able to achieve these standards, proceed to item b below.
      ii. If the system does not meet Energy Star standards, the project shall clean and tune the system and re-test via Steady State Efficiency (SSE). If the results, or AFU does not exceed 85%, or still does not meet or exceed Energy Star standards, proceed to item c below.
      iii. Repair the existing system to meet or exceed Energy Star standards; or
      iv. Replace the system with high performance all-electric heat pump(s) domestic hot water system. See Adaptive Reuse section below for a full list of allowable heat pump systems.
NOTE: Additional funding may be available for eligible projects through HCR’s Clean
Energy Initiatives program.

b. For existing electric resistance domestic hot water systems:
   i. Existing systems not included in the project’s scope for replacement can remain in place
      unless there is 5 years or less left in the system’s useful life.
   ii. If the system has 5 years or less in useful life, replace the system with high performance
       all-electric heat pump(s) domestic hot water system. See Adaptive Reuse section below
       for a full list of allowable heat pump systems.
       NOTE: Additional funding may be available for eligible projects through HCR’s Clean
       Energy Initiatives program.

       NOTE: Where the project team can demonstrate a high performance all-electric system
       is not cost effective or would result in increased utility costs to tenants, replace the
       system with an Energy Star rated domestic hot water systems.

2. ADAPTIVE REUSE AND SUBSTANTIAL REHABILITATION ONLY: Projects must utilize high-
   efficiency electric domestic hot water systems. Acceptable domestic hot water systems include
   the following:
   a. Heat pump water heaters
   b. Sub-central electric water heaters with plants that provide distribution on a floor-by-
      floor basis, where possible
   c. In-unit electric instantaneous water heaters

Exceptions: Project can demonstrate any of the “Exceptions to All-Electric Requirement” listed in
Section 1 of this booklet may be exempt from this requirement.

Stretch Goals: Projects should consider incorporating the following into the project.

1. MODERATE REHABILITATIONS LEVEL 1/ LEVEL 2: Utilize high-efficiency electric domestic hot
   water systems listed in the Adaptive Reuse baseline requirements above.
2. Utilize solar thermal systems designed to pre-heat domestic hot water. When applicable, pair
   with heat pumps or instantaneous hot water heaters to bring water up to temperature.
3. Ground source heat pumps that either operate on their own or in conjunction with heat pumps or
   instantaneous hot water heaters.
Ventilation

**Baseline Requirements:** Projects must meet all the following requirements:

1. **SUBSTANTIAL AND MODERATE REHABILITATIONS LEVEL 1/ LEVEL 2 ONLY:** When the proposed scope of work includes repair or replacement of the ventilation system(s), including natural ventilation via window replacement, projects shall:
   a. For central exhaust systems (single mechanical/whole building system serving more than one unit or common space), clean and seal the ductwork to 5 CFM50/register + 5 CFM50/floor leakage and provide adjustable constant airflow regulator (CAR) to provide code-compliant mechanical exhaust at each terminal.
   b. For unitized exhaust systems (every unit has its own system), provide code-compliant mechanical exhaust of 25 CFM continuous or 100 CFM intermittent ventilation for each kitchen. Provide code-compliant 20 CFM continuous or 50 CFM intermittent ventilation for each bathroom.
   c. For natural ventilation (via windows), ensure the new windows meet the natural ventilation requirements per applicable code.

2. **ADAPTIVE REUSE PROJECTS ONLY:** Meet the ventilation criteria required by the third-party certification program selected in Section 1. Historic projects subject to SHPO review and approval that are not able to fully meet the requirements of the third-party certification shall meet the requirement for the Substantial and Moderate Rehabs listed above.

**Stretch Goals:** Projects should consider incorporating the following into the project.

1. **SUBSTANTIAL AND MODERATE REHABILITATIONS LEVEL 1/ LEVEL 2:** Projects with existing natural ventilation systems should consider providing a unitized through-wall exhaust fan in each kitchen and bathroom and provide code compliant mechanical ventilation.
2. Utilize Energy Recovery Ventilation (ERV) or Heat Recovery Ventilation (HRV) equipment that increases indoor air quality and efficiency in tenant and/or public spaces.

3. Utilize proper passive ventilation. Design the project to account for building mass, pressure differentials, and fresh air/natural ventilation (not just operable windows) to generate sufficient natural ventilation flows to reduce energy consumption and operate in whole or in part even during power outages. Advanced design should consider directing natural air flows through filtration systems.

**E. WATER EFFICIENCY**

**Baseline Requirements:** Projects must meet all the following requirements:

1. All fixtures listed below must be WaterSense certified or equal and no more than the following water flow rates by fixture type:
   a. When replacing toilets – 1.28 GPF, or dual flush (1.28 GPF max, 0.8 GPF min)
   b. Showerheads – 2.0 GPM
   c. Kitchen Faucets – 1.5 GPM, or dual flow (2.2 GPM max, 1.0 GPM min)
   d. Bathroom lavatory faucets and all other fixtures in dwelling units – 1.0 GPM

**Stretch Goals:** Projects should consider incorporating the following into the project

1. Utilize water fixtures that are more efficient than the baseline requirements listed above.
2. Incorporate grey water systems such as on-site filtration, grey water reuse for non-potable uses, and water cisterns, where appropriate.
New Yorkers consume less total energy per capita than the residents in all but two other states, California and Rhode Island.
Section 3 applies to all Existing Building Projects. At a minimum, all projects are required to meet the Baseline Requirements for each category listed in Section 3. Although not required, projects should consider some or all of the Stretch Goals listed in Section 3.

A. INDOOR ENVIRONMENTAL QUALITY PRACTICES

Baseline Requirements: Projects must meet all the following requirements:

1. Low VOC Building Materials - Where applicable to the project’s scope of work, the following must be met:
   a. All interior paints, coatings and primers shall have a VOC content less than or equal to the thresholds provided by the most recent version of SCAQMD 1113 available at time of product specification. VOC emissions shall be verified as compliant with CDPH Standard Method for all wall finish paints. All wallpaper shall be phthalate free.
   b. All interior adhesives and sealants shall have a VOC content less than or equal to the thresholds provided by the most recent version of SCAQMD 1168 available at time of product specification for all interior adhesives and sealants.
   c. All flooring products must comply with CDPH emission requirements, including carpeting and hard surfaces. Flexible PVC with phthalates is prohibited, regardless of whether the phthalates were intentionally added or added via recycled content.
   d. Fiberglass or mineral wool batt insulation must be formaldehyde-free.
   e. Spray foam insulation shall be applied by applicators certified by the manufacturer, the American Chemistry Council, or other recognized industry standards. The application of spray foam shall be in accordance with such certification to limit harmful off-gassing after the application.

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curing period. Scheduling of spray foam applications shall be done in a manner that allows sufficient ventilation to occur to dissipate any residual off-gassing prior to the spray foam insulation becoming enclosed by other materials.

f. Composite Wood in products such as cabinets and doors shall have formaldehyde emissions less than or equal to the thresholds provided by CARB Phase 2 and/or TSCA Title IV for plywood, particleboard and MDF. For any other composite wood products not covered by CARB/TSCA requirements, but used in interior spaces, these must at minimum be NAUF (have no added urea formaldehyde).

2. **Integrated Pest Management:** All projects are to incorporate integrated pest management during construction that includes sealing all openings, cracks and joints to prevent the infestation of insect and animal pests from entering the building or migrating from one apartment or common area to another. After occupancy, the building management shall incorporate environmentally friendly pest management strategies and extermination practices that are safe for the health of the residents and the environment. A service contract with scheduled service or documentation should be provided as part of the project close out binder.

3. **Mechanical Ventilation Requirements – During and Post Construction:** Projects with unitized or central ventilation systems: In all dwelling units, seal all heating, cooling, and ventilation return and supply ducts and returns throughout construction to prevent construction debris from entering. Flush all dwelling units with a MERV 13 filter or better after completion of construction and prior to occupancy for either 48 hours or with at least 14,000 ft³ per ft² of floor area, then replace all air handling equipment filters.

**B. SUSTAINABLE CONSTRUCTION PRACTICES**

**Baseline Requirements:** Projects must meet all the following requirements:

1. Develop and implement a construction waste management plan that reduces non-hazardous
construction and demolition waste through recycling, salvaging, or diversion strategies; maintain documentation on diversion rate for each selected strategy.

**Stretch Goals:** Projects should consider incorporating the following into the project:

1. Projects are encouraged to select one the following advanced construction waste management strategies to pursue:
   a. Provide a construction waste management plan that diverts at least 75% of construction waste away from the landfill.
   b. Implement a construction waste management plan such that the total construction waste sent to landfill or incinerator is less than 2.5 lbs/SF of building.

### C. OPERATIONS

**Baseline Requirements:** Projects must meet all the following requirements:

1. **Energy and Water Benchmarking:** Projects over 25,000 square feet, upload whole building (owner and tenant paid) energy and water performance data into online utility benchmarking platform at least annually and share with HCR. For details on HCR Benchmarking requirements see: [https://hcr.ny.gov/steps-hcr-benchmarking-program](https://hcr.ny.gov/steps-hcr-benchmarking-program)

2. **Building Operations and Maintenance:** Provide HCR with a digital copy of an Operator’s Manual prepared by the project’s Energy Management Consultant that includes the following:
   a. Overview of how mechanical systems are operated, including:
      i. Ideal set points
ii. Summarized warranty information
iii. Retro commissioning reports
iv. Summarized mechanical systems manufacturers information. Please reach out to HCR if you require a sample document.

b. Maintenance schedule/key contact for maintenance

   a. Develop an Emergency Plan for building management and residents, including evacuation plans with specific instructions for a flood event, if applicable.

4. Resident Manual
   a. List of sustainability features in the community spaces and resident units
   b. Provide residents with key equipment manual information
   c. Work order request process
   d. Where applicable, control manuals with key set points

5. Training and Walkthroughs for Building Staff
   a. Building operators should be present for system start up
   b. General contractor should provide at least one mechanical systems on-site training with building management and operators prior to resident occupancy

6. Establishment of maintenance log for key building systems, including but not limited to, when and who services equipment including annual service and emergency repair/work.

D. SITE

This section pertains to requirements for the project site.

Baseline Requirements: Projects must meet the following requirements:

1. ADAPTIVE REUSE AND SUBSTANTIAL REHABILITATION ONLY: Provide at least one Level 2 electric vehicle (EV) charging station for every twenty parking spaces provided in a project. EV charging stations shall be equitably distributed throughout the project to allow residents equal convenience in accessing the EV charging stations.
   a. Projects shall not be required to provide more than five EV charging stations in total.
   b. Projects that do not provide parking in a lot are exempt from this requirement.
2. Projects with individual driveways for dwelling units should provide, when feasible, a dedicated branch circuit that is not less than 40-ampere and 208/240-volt assigned for electric vehicle supply equipment terminating in a receptacle located adjacent to the driveway for EV charging capabilities.
Stretch Goals:

1. **MODERATE REHABILITATIONS LEVEL 1/LEVEL 2 ONLY**: Provide at least one Level 2 electric vehicle (EV) charging station for every twenty parking spaces provided in a project. EV charging stations shall be equitably distributed throughout the project to allow residents equal convenience in accessing the EV charging stations.
   a. Projects shall not be required to provide more than five EV charging stations in total.
   b. Projects that do not provide parking in a lot are exempt from this requirement.

2. Sites should include considerations for raised planter beds to accommodate resident gardens. All resident gardens shall be located on an accessible route and include at least one accessible planting area. Resident gardens shall also be located in close proximity to a spigot for access to water.

3. Sites should include considerations for walking trails or other outdoor fitness areas for adults and adolescents.

**E. SOLAR CONSIDERATIONS**

HCR requires that all projects pursuing solar energy, or any other alternative energy sources must incorporate the design, operating cost and development cost assumptions associated with those measures into the project by the time an application is submitted for funding. Any changes to the energy efficiency strategy or green building practices after application submission will not be allowed.

Baseline Requirements: Projects must meet the following requirement:

1. All NYC projects must evaluate the project for solar feasibility. The solar feasibility study should include proposals for potential locations such as rooftops and other locations throughout the site, identification of preliminary solar components and basic electricity production estimates. The study should also include a cost benefit analysis, including the estimated payback period for the solar installation.

Stretch Goals: Projects should consider incorporating the following into the project:

1. All non-NYC projects should evaluate the project for solar feasibility. The solar feasibility study should include proposals for potential locations such as rooftops and other locations throughout
the site, identification of preliminary solar components and basic electricity production estimates. The study should also include a cost benefit analysis, including the estimated payback period for the solar installation.

2. If solar photovoltaic systems (PV) are not included in the project, projects planning roof replacements should include solar ready design to allow for future installation of solar PV. Design considerations should include:
   a. Panel Location and Orientation:
      i. Space reserved on site or on building roof that is free of shade including trees, buildings and building parapets/penthouses.
      ii. Potential for south-facing exposure for solar PV panel array
   b. Solar Ready Zones:
      i. Solar-ready zones shall be designated on the roofs and comply with the provisions outlined in Section CA103.2-CA103.8 or Section RA103.2-RA103.8 of the 2020 Energy Conservation Construction Code of New York State, as applicable per project type.
      ii. Roofing warranty shall allow for future installation of solar PV panels without voiding warranty

3. Incorporate passive solar design principles by specifically considering the following:
   a. Shade buildings by incorporating landscaping elements.
   b. Incorporate brise soleil or other architectural shading devices into the façade where appropriate.
   c. Reduced Heat Gain in Windows:
      i. If replacing windows, select windows with a Solar Heat Gain Coefficient of less than or
SECTION 3 Continued

equal to 0.40.

ii. If not replacing windows, install solar reduction window film to lower the solar radiation admitted through the windows.

*Projects are encouraged to explore the NY-Sun program for solar incentives:
nyserda.ny.gov/All-Programs/ny-sun

F. RESILIENCY

This section applies to the project’s ability to adapt and provide protection from the adverse effects of climate change.

ADAPTIVE REUSE AND SUBSTANTIAL REHABILITATION ONLY

Baseline Requirements: Projects must meet the following requirements:

1. Conduct a resiliency assessment:
   a. If pursuing Enterprise Green Communities certification, conduct a resiliency assessment equivalent to the assessment listed in criterion 1.6 “Resilient Communities: Multi-Hazard/Vulnerability Assessment.” Projects should demonstrate how the building is being designed to address the risks identified in the resiliency assessment.
   b. If not pursuing Enterprise Green Communities certification, provide a report and supporting narrative describing the applicable hazards to the project as identified on FEMA's National Risk Index map (https://hazards.fema.gov/nri/map), and determine steps the project will take to mitigate the identified risks.

2. All elderly projects (senior housing) providing housing to 50% Persons with Specials Needs as defined by the Capital Programs Manual, must provide the following:
   a. Adequate back up power generation to:
      i. At least one elevator in the building (if applicable) that incorporates resilient design features, and;
      ii. The building’s water pump system to provide residents with potable water in the event of a power outage.
   b. A community room at least 15 square feet per resident in size that could serve as a shelter in place location for residents. The community room must include back up power generation to the following:
i. Electrical outlets,

ii. At least one refrigerator, kitchen sink and microwave or range,

iii. At least one accessible bathroom,

iv. Heating and cooling, and

v. Domestic hot water

Projects should apply for a design waiver if site conditions prohibit compliance. Projects may utilize either a solar energy system with battery storage or an efficient, low-emission generator to provide power. Fossil fuel back up power is exempt from the all-electric building requirement. Projects should document how long the backup power generation will be able to carry the loads selected and at time of CO, include copy of their refueling contract that includes provisions during periods of power outages.

**Stretch Goals:**
Projects should consider incorporating the following into the project:

**MODERATE REHABILITATIONS LEVEL 1/ LEVEL 2 ONLY:** Consider implementing the Baseline Requirements for Adaptive Reuse and Substantial Rehab listed above when feasible.

1. For projects located in Urban Areas (UAs) as designed by the U.S. Department of Commerce, U.S. Census Bureau, should design the project to mitigate the impacts of urban flooding.
   a. **Enhanced Stormwater Management:** Urban flooding is defined as the inundation of stormwater infrastructure due to rainfall that overwhelms the capacity of the stormwater/sewer systems. Projects should include additional stormwater management techniques to reduce the volume of stormwater runoff and to mitigate unintended effects to the building and tenants during extreme weather scenarios. Project should consider utilizing the USEPA Storm Water Management Model (SWMM) or the Green Infrastructure Flexible Model (GIFMod) to help inform enhanced storm water management.

   b. **Building Design:** Buildings should be designed to mitigate the potential for stormwater damage or mitigate the loss of services to the building during extreme weather scenarios by incorporating one or more of the following strategies:
      i. Do not construct dwelling unit spaces below grade level.
      ii. Elevate key mechanical, electrical and control gears above grade or flood proof any equipment that cannot be elevated.
      iii. Install backwater control plugs in floor drains and backwater valves on sewer lines.

2. Install sump pumps in the lowest levels of the basement floor, where applicable.

3. Projects located in the 500-year floodplain or in levee-protected or dam breakage inundation
areas should design the project as follows:

a. Locate key mechanical, electrical and control gears above the 500-year flood level or flood proof any equipment that cannot be elevated.

b. Utilize flood resistant construction for all areas below the 500-year flood level.

c. Locate habitable building space above the 500-year flood level.

d. Install backwater control plugs in floor drains and backwater valves on sewer lines.

e. Install sump pumps in the lowest levels of the basement floor, where applicable.

4. Projects should design buildings to maximize active resiliency by incorporating the following where feasible:

a. Renewable PV with battery storage or efficient fossil fuel backup generator to power critical loads. Project should select three or more of the following critical loads:

i. Heating systems

ii. Operation of water pumps if needed to make potable water available to occupants

iii. Lighting and Electric load

• Plug load in common area spaces or offices

• Adequate lighting for common area spaces for a “shelter in place” scenario

iv. Operation of a fan sufficient to provide emergency cooling if mechanical air conditioning equipment cannot operate

v. Ventilation systems

vi. Sufficient power for operation of critical medical equipment for residents

vii. Operation of cable modem and wireless router or other means of providing online access within the building, if applicable
viii. Operation of one elevator in building, if applicable

b. **Community Shelter or Place of Refuge:** Include a common space designated as an emergency shelter area for building occupants, or formal place of refuge. Consider providing the following in the community shelter or place of refuge with back up power generation to provide power to the following:
   i. Electrical outlets,
   ii. At least one refrigerator, kitchen sink and microwave or range,
   iii. At least one accessible bathroom,
   iv. Heating and cooling, and
   v. Domestic hot water

c. Design the building with a rainscreen and windows that can withstand hurricane force winds and rain in coastal areas or special wind regions as defined in NYS Residential Code.

5. Where active resiliency is not utilized, projects should design buildings to maximize **passive survivability** in the event of an extreme weather event or power loss. Projects should incorporate the following considerations into the building design where feasible:
   a. Passive survivability of indoor spaces via highly-efficient building envelopes by maximizing the number of hours that a building stays within comfortable and survivable temperatures without heating or cooling equipment.
   b. Natural ventilation techniques that allow fresh/filtered air ventilation to occur even in the event of power loss.
   c. Maximize natural lighting so that living, common spaces and stairwells all use natural daylighting to the maximum amount feasible.