

IV. Design Guidance, Considerations and Best Practices

Through the PACT program, NYCHA is committed to respond to deferred maintenance at NYCHA developments and to fully address conditions identified in the PNA and RAD CNA by meaningfully upgrading buildings, providing necessary amenities to NYCHA residents, and pursuing achievable electrification at all developments.

Each item in the design guidance outlined below is considered critical to ensuring resident comfort, health, and safety as well as development longevity and resilience. In responding to this guidance, PACT Partners can propose to amend any individual prescriptive item so long as the functional intent of the guidance is not compromised.

Guidance is organized by the categories that NYCHA uses to describe the Project in RFEI documents and in project description summaries associated with Environmental Review deliverables.

PACT Partners are expected to refer to the below NYCHA guidance documents and resources as they develop their project scope and design.

- PACT “What We’ve Heard” Summaries (as applicable)
- PACT Property Assessments (as applicable)
- PACT Design Workshop Summaries (as applicable)
- [NYCHA Design Guidelines for the Rehabilitation of Residential Buildings \(2017\)](#)
- [NYCHA Sustainability Agenda](#)
- [NYCHA Climate Mitigation Roadmap](#)
- [NYCHA Climate Risks & Adaptation Explorer - GIS Map](#)
- [NYCHA Connected Communities Guidebook](#)
- [NYC Climate Resilience Design Guidelines](#)
- [NYC Stormwater Resilience Plan](#)
- [NYC DEP Unified Stormwater Rule \(USWR\)](#)

NYCHA may update or circulate additional design guidance at any time during pre-development.

15. Sites & Grounds

PACT Partners are expected to refer to the Connected Communities Guidebook for general principles during the proposal stage as they develop their approach to landscape and open space design. Property Assessments, Design Workshop Summaries, and “What We’ve Heard” documents as available should be reviewed closely, as they contain site-specific priorities and recommendations from NYCHA, its architectural services consultants, and resident groups. NYCHA assumes that landscape and open space design will also respond to resilience goals, and that open space design development will be guided by ongoing resident engagement including design charettes and other participatory workshops throughout Pre-Development.

PACT Partners should not include lump sums in their cost estimates during Pre-Development. If it is necessary to provide a lump sum estimate for landscape scope and community facility fit-outs

in early design package submissions, PACT Partners should provide detailed narrative descriptions for those scope items.

A. Site Security & Site Lighting

PACT Partners should evaluate opportunities to improve site access and introduce additional site lighting, in an effort to improve overall site security and safety.

B. DEP Green Infrastructure

Where DEP Green Infrastructure (“GI”) features, or “practices,” exist or are planned, PACT Partners should coordinate their site design with these features. The PACT Partner will be required to meet certain requirements for non-interference with any pre-existing green infrastructure installed by the NYC Department of Environmental Protection. The PACT Partner will also be required to provide access and otherwise cooperate with any green infrastructure projects that are planned, designed, or in construction at the time of construction closing. NYCHA will provide the location of existing and planned green infrastructure projects along with design documents as they are available.

16. Apartments

Rehabilitation Scopes of Work will include improvements to the areas and components that make up a resident’s private living space, including bathrooms, kitchens, lighting, and ceilings.

A. Floor Finishes

The use of vinyl finishes (including LVT and VCT) is prohibited by the NYCHA Design Guidelines (published 2016). “Vinyl” includes both PVC (polyvinyl chloride) and any other petrochemical (petroleum-derived) vinyl. ERT, or enhanced resilient tile, is also vinyl-based. Alternatives to vinyl-based tile include bio-based tile (“**BBT**”), engineered wood and wood laminates, linoleum tile, ceramic and porcelain tile, and rubber tile products. Teams are welcome to propose other alternatives as well.

For developments that have existing hardwood floors, teams should evaluate preserving and refinishing existing floors wherever possible. For developments with hardwood flooring that has been covered with vinyl tile, evaluate removing vinyl tile and refinishing hardwood floors.

Wet rooms including bathrooms and enclosed or partially enclosed kitchens should be tiled with porcelain or ceramic.

Tip! Recently Approved Products:

Ecco Floor: Ecco 720 Digital Print HDF; AquaProof; Nu Solutions NuWud Classic Collection; Essence Oak Premium Hardwood Flooring

B. Wall Bases

An alternative to rubber or vinyl wall bases should be identified for use in apartments. Rubber wall bases can be specified for common areas and community facilities. Preferred alternatives

to rubber include formaldehyde-free MDF and solid wood. Extruded plastic cove bases that resemble MDF or wood bases are not acceptable.

C. Lighting

Where feasible, PACT Partners should identify opportunities to introduce new overhead lighting fixtures, wall sconces, and/or ceiling fans in developments that do not have them. All existing lighting fixtures should receive LED bulbs. Per Enterprise Green Communities, efficient lighting is mandatory for all permanently installed interior and exterior fixtures.

D. Plumbing Fixtures

All new plumbing fixtures should be low-flow, and must comply with efficiency rates as set by LL57 and Enterprise Green Communities.

C. Kitchens

PACT Partners should strongly consider modifications to existing kitchen layouts, along with the following material and equipment guidance.

i. Countertops

Solid-surface countertops and cabinets rather than laminate products should be used. Solid-surface countertop options include quartz and other engineered stone products.

ii. Backsplashes

Backsplashes in kitchens should be full height (to underside of cabinets). Tile backsplashes are preferred.

iii. Cabinets

Cabinets should be solid wood (hardwood/plywood). Cabinets with HDF or MDF panels, even if they have a solid hardwood frame, will not be accepted.

Tip! Recently Approved Products:

CNC Cabinetry: Concord Collection; Armstrong Cabinet Products: Extreme Series; Master Woodcraft: Ravello, Romanello Product Lines

iv. Appliances

Assume all electric ranges in units, if feasible to convert from natural gas. If dryers are provided in units they should also be electric.

17. Building Structure and Envelope

Rehabilitation Scopes of Work will include improvements to the parts of the buildings that keep the building standing and sealed from the weather, including roof, exterior walls, and windows.

A. Exterior Walls / Façades

Assume that full envelope upgrades (all enclosure walls) are necessary to improve building performance, reduce energy usage, and ensure resident comfort.

For consolidated developments with diverse typologies and existing conditions, varying approaches to building envelope upgrades will be appropriate and acceptable for different typologies within the consolidated or scattered site group.

PACT Partners should conduct façade inspections to evaluate existing building envelope conditions including moisture analysis, air-tightness/leakage testing, and inspection of masonry, concrete, and mortar conditions. These inspections should inform scoping building envelope improvements. All inspection reports should be submitted to NYCHA.

B. Opaque Enclosure Walls

At minimum, PACT Partners should repair all existing building envelope components, including exterior masonry and concrete as needed. Assume a breathable penetrating masonry sealant at any façade with exposed masonry. Tuck pointing at the exterior and air-sealing all façade penetrations is also required to improve air-tightness.

Additional improvements may include:

i. Interior Insulation:

Where feasible and appropriate for adequate mechanical system sizing, thermal comfort, and air-tightness, assume full envelope upgrades (all enclosure walls) with interior insulation.

- System options include but are not limited to rigid, blown-in, loose-fill, batt, wall board, or an integrated sheathing system.
- Installation approaches include but are not limited to loose-fill or blown-in insulation in existing cavities, if assumed; Wall board or sheathing at the interior face of existing interior envelope walls; New, furred out walls at interior with insulation between studs; Existing cavity walls can be removed and rebuilt, or can remain.
- PACT Partners should consider how their lead removal strategy may impact building envelope improvement scoping.
- Interior envelope upgrade solutions do not have to assume thermal performance to code minimum. Project teams should identify a strategy for evaluating existing envelope condition, air-tightness, and R-value, and identify target performance metrics that will allow adequate mechanical systems sizing and support a selected ventilation strategy.
- When selecting an insulation product non-combustible insulation should be used, and PACT Partners should prioritize overall fire resistance as well as thermal and moisture performance.

ii. Exterior Insulation and Cladding (“Over-cladding”):

Where feasible, assume full envelope upgrades (all enclosure walls) with an exterior continuous insulation and cladding system for all buildings not under consideration for historic tax credits or already National Register listed or eligible.

- System options include pre-fabricated and/or pre-fenestrated panelized systems (Dextall D-Wall or similar), insulated metal panel systems, rainscreen systems with continuous insulation, exterior insulation and finish systems (“EIFS”).
- When selecting a cladding system, non-combustible insulation should be used, and PACT Partners should prioritize overall fire resistance, durability, and thermal and moisture performance.
- PACT Partners can propose an adhesive-applied EIFS product if they choose, but should select a product that uses non-combustible insulation.
- If an EIFS product is proposed, PACT Partners should also include an alternate system and product, prioritizing rainscreen or pre-fabricated panelized cladding systems with continuous insulation.
- Options for rainscreen finish panels include but are not limited to fiber cement, composite, and metal panel.
- If EIFS or any other face-sealed (adhesive-applied) system is specified, describe moisture management components, and summarize on-site installation quality control protocols for any product that relies on adhesive lines for back-draining.
- If EIFS or any other face-sealed (adhesive-applied) system is specified, PACT Partners will be required to submit a preliminary lifecycle cost analysis and describe inspection, maintenance, replacement, and removal protocols in detail.
- Re-point and repair existing brick before installing any over-cladding system to ensure the existing façade is in sound condition.
- Assume thermal performance to code minimum.

C. Roofs

Replace all building roofs with new Energy Star “cool” roof buildups with above-deck insulation. Assume thermal performance to code minimum (R-33/38). Where feasible and indicated by energy modeling, replace all building roofs with new Energy Star “cool” roof buildups with better than code-minimum thermal performance (R-50).

D. Windows

Replace all windows with high-performance, thermally-broken, double-pane, double-hung windows with an insulated glazing units (IGU).

Additional improvements may include:

- Replace all windows with high-performance, thermally-broken casement windows with Low-E insulated glazing units (IGU).
- Install an exterior or window-integrated shading system. Options include but are not limited to: fins, louvers, brise soleil, external-frame sunshades, shutters, screens, or other façade treatment, or between-the-glass shades.
- Note: Exterior shading systems that are mechanically fastened to the building façade are preferred for buildings that are not candidates for Historic Tax Credits or already National Register eligible or listed. If a project team proposes an interior shading strategy (window blinds or similar), identify a strategy and budget for maintenance and replacement, and include assumptions for solar heat gain mitigation as compared to an exterior system.

18. Common Spaces

Rehabilitation Scopes of Work will include improvements to the indoor spaces that all residents use, including community rooms, laundry rooms, lobbies, hallways, and stairs.

A. Community Facilities (Existing & Proposed)

Any community center or other community facility space included in the PACT Project must be renovated, maintained, and operated, as applicable, by the PACT Partner. The PACT Partner will be responsible for the upfront capital repairs on community centers and community facility spaces and should anticipate bringing all community facility spaces into code compliance and ensuring such spaces are accurately reflected on existing certificates of occupancy.

PACT Partners should anticipate developing scopes of work for community facility renovation, fit-out, and expansion or new construction in partnership with NYCHA and residents.

B. Retail and Commercial Spaces

Any retail or other commercial tenant space included in the Project must be renovated, maintained, and operated, as applicable, as part of the Project. The PACT Partner will be responsible for the upfront capital repairs on the retail and/or commercial spaces, which must be included in the rehabilitation Scope of Work.

C. Laundry Facilities

Assume that all developments should have access to on-site laundry. NYCHA prefers community laundry facilities but will also consider in-unit laundry. For community laundry facilities, identify locations and ensure that all buildings have convenient laundry access where per-building laundry facilities are infeasible.

Where in-unit laundry is proposed, if dryers are provided, they must be ventless.

19. Building Systems

For all sites and building types, it is a NYCHA priority to invest in systems that contribute to the energy-efficiency, performance, and resilience of developments and to pursue options beyond repairs-in-kind to existing under-performing, obsolete, or costly and difficult-to-maintain systems. Converting systems from fuel-fired to electric heat pumps is essential to meet NYCHA's decarbonization goals, and NYCHA is committed to maximizing achievable electrification at each development.

For each of the below systems scope areas, PACT Partners should identify an approach that includes functional upgrades essential to bringing developments in line with expectations for systems performance, development resilience, and resident comfort. PACT Partners are welcome to propose using a hierarchical approach to electrification where appropriate. For scattered site developments with various building typologies, PACT Partners can propose systems and products appropriate to each building typology.

Where appropriate, PACT Partners may also evaluate repairing and optimizing existing heating systems. If this option is pursued, PACT Partners should identify a long-term path to electrification. All costs associated with repairs-in-kind as well as costs associated with

electrification-ready-infrastructure anticipating future electrification should be identified and cross-walked against the PNA and CNA for each site.

A. Space Heating and Cooling

All new high-efficiency gas-fired condensing steam boilers, decentralized (per building) where feasible*. Repair and replacement as needed for all other components of the heating system.

**Note an exception for Properties that have recent or ongoing boiler replacement work, in which case repairs should be made to other components of the existing heating system. If this option is pursued, teams should identify a path to electrification including a timeline.*

Assume one programmable thermostat in each unit.

Provide or upgrade current cooling systems for all residential units and community facilities.

Additional improvements may include:

Evaluate options for heating system upgrades including hydronic conversion from steam with gas-fired or electric boilers where applicable.

Preferred option is to assume electric heat pump systems for space heating and cooling for all buildings.

- Systems can be centralized or unitized, as appropriate to building typology and other project conditions.
- Systems options include but are not limited to unitized heat pumps (PTHP, HPAC 2.0, CH4A window-integrated heat pump), centralized systems (VRF/VRV), geothermal or ground-source heat pumps.
- PACT Partners can propose multi-function (space heating & domestic hot water) or integrated (HVAC) systems as well.
- PACT Partners should anticipate presenting assumptions for lifecycle maintenance, service, & replacement for any proposed system.

B. Ventilation

Ventilation is critical to the health of residents and control of excessive moisture in buildings. Improvements to ventilation should be included in all rehabilitation Scopes of Work.

i. Air-Sealing and Compartmentalization

- Comprehensive sealing, cleaning, and repair to existing mechanical ventilation systems.
- Comprehensive air-sealing to building envelope and in-unit air-sealing and compartmentalization.
- Assume building air-tightness should be tested before and after rehabilitation referring to allowable rates in the 2020 NYC Energy Conservation Code.

ii. Existing Mechanical Ventilation Improvements

- Repairs to existing exhaust-only mechanical ventilation system as indicated by the PNA and on-site inspections.
- Assume exhaust-system upgrades where units are not code compliant.

- Replace all existing exhaust registers.
- Replace all rooftop fans with high-efficiency fans.
- Incorporate passive supply ventilation via trickle vents in all windows.
- Provide 100% outdoor air supply (DOAS) in corridors and common areas (lobbies, etc.) in residential buildings.

Additional improvements may include:

iii. New Balanced Mechanical Ventilation

- Assume balanced mechanical ventilation (supply & exhaust) for all residential units, corridors, common areas, and in all community facilities.
- System(s) can be centralized or unitized (per unit or per floor), or any combination as appropriate, in residential buildings.
- Assume in-unit supply registers in all bedrooms and living spaces.

C. Domestic Hot Water

Assume high-efficiency gas-fired heaters and pressure boosters as necessary to improve water pressure throughout buildings at each development. Evaluate decoupling domestic hot water and space heating systems where they are currently coupled and centralized.

Additional improvements may include:

Assume electric heat pump heaters for all buildings. Prioritize decentralized and/or distributed domestic hot water systems (per building or per unit, as appropriate).

D. On-Site Generation, Storage, and Back-up Generators

Include solar photovoltaic (“PV”) technology if feasible, only on buildings that will maximize investment. Provide back-up power generators for all community facilities.

Additional improvements may include:

Include solar PV on all buildings. Assume battery storage or community microgrid where possible.

E. Electrical System

Assume electrical upgrades if necessary to support required rehabilitation scope, including electric ranges and cooling in all residential units. Include electrification-ready infrastructure where a development is not electrifying mechanical systems at the time of construction.

F. Plumbing

Existing plumbing systems should be thoroughly investigated through on-site inspections and testing. PACT Partners should provide a summary of assumptions related to plumbing repair and replacement early on in project scoping, including costs and benefits of full replacement over repair and replacement based on Remaining Useful Life estimates from the PNA. This summary should include a percentage of total to be repaired or replaced (e.g. 100% for full replacement) cross-walked against PNA estimates.

PACT Partners should identify in their proposed building systems scopes where a proposed approach to heating and cooling and domestic hot water repair, replacement, or conversion may allow for abandoning certain plumbing infrastructure in place.

G. Broadband

PACT Partners are required to provide high-quality internet service and install the necessary underlying infrastructure, in line with the NYC Internet Master Plan (January 2020).

iv. Infrastructure:

The broadband infrastructure should consist of a wired connection point in each dwelling unit through which each resident can have secured access through a unique profile, with a preferred system capacity of at least 200 Megabits per second (Mbps) upload and download speed, per unit. Service should be provided in common areas and shared spaces, providing mobile use throughout the buildings and campus. The network infrastructure must be robust and designed with flexibility to meet current and future demands on the system.

v. Control:

The PACT Partner must retain ownership of network infrastructure within the building and consider a managed system, wherein a third-party internet service provider (ISP) provides customer service, network diagnostics, billing, and other services to the end user.

vi. Level of Service:

A level of service of at least 100 Mbps per unit should be fully subsidized for residents at each unit electing to participate through the property operating budget. Residents should be given the option to enhance their individual level of service at their own cost up to and beyond 200 Mbps.

If an existing provider is in place, PACT Partners will at NYCHA's election either maintain the existing contract or improve the service available. Residents should be given the opportunity to opt out of the updated Broadband service at their election. Any such election should be documented by the PACT Partner.

vii. Proposed Budget:

PACT Partners should assume upfront costs to build out broadband infrastructure of \$1,000 per unit, if required, and \$240 per unit in annual costs to fund broadband on an ongoing basis.

20. Health & Safety

Please see guidance provided on environmental review and environmental hazards in the Program Requirements section and attachments to this document.

PACT Partners should evaluate existing fire protection systems and identify opportunities to improve them, including but not limited to improving egress, installing fire alarm systems, sprinklers (especially in trash chutes), and emergency call systems. Evaluations of existing fire protection systems including fire escapes as applicable should be provided during Schematic Design and cross-walked against PNA and CNA inspections.

21. Energy and Sustainability

All PACT Projects are required to be Enterprise Green Communities certified, and to align with NYCHA's Sustainability Agenda, as previously described in this document.

22. Accessibility

All PACT Projects must comply with the accessibility requirements of all applicable laws including, without limitation, to the New York City Building Code, the Fair Housing Act, the Americans with Disabilities Act, Section 504 of the Rehabilitation Act of 1973 ("**Section 504**"), and the 2021 FHEO Assurances Agreement, as previously described in this document.

Additional guidance on accessibility submission requirements is included as an attachment to this document (see [Attachment E - PACT Accessibility Design Checklist](#)).

23. Additional General Design and Construction Guidance

The following is intended as additional general design and construction guidance for PACT Projects.

A. Minimum Scope Requirements

PACT Partners will be required to show that their Rehabilitation Scope of Work meets development capital repair needs indicated by the PNA and CNA, including the 20-year needs of major building systems for all development(s).

NYCHA will provide the Physical Needs Assessment, Capital Needs Assessment, and Obsolescence Report to PACT Partners to inform project scoping. The PACT Partner will be responsible for inspecting every unit in the Project as is possible prior to financial closing to inform revisions to the proposed Rehabilitation Scope of Work.

B. Tenant-In-Place Rehabilitation

PACT Partners should assume that the Rehabilitation Scope of Work will be completed with tenants-in-place to the extent safe and feasible to minimize disruption to residents' lives. PACT Partner teams must note in the Rehabilitation Proposal any scope or approaches to scope that might necessitate temporary resident moves.

To the extent in-place rehabilitation cannot be accomplished, temporary resident relocation will be the responsibility of the PACT Partner, including, without limitation, obtaining any necessary service providers to facilitate temporary relocation and covering all associated costs. Any temporary relocation will be within a reasonable proximity to the resident's Property and will be subject to NYCHA's approval and be in accordance with all applicable legal requirements. The PACT Partner will be required to submit a tenant protection plan and construction logistics plan that details any temporary resident relocations to address pertinent health issues, especially those of senior residents, that may arise during construction.

C. HQS Inspections and Pre-Closing Work

Under current HUD guidance applicable to NYCHA, units converting through Section 18, whether in Properties converting through the RAD/Section 18 Blend pursuant to the Section

18 Notice, or in Section 18-only Properties, cannot be added to a Housing Assistance Payments (“HAP”) Contract until they pass an HQS inspection.

As such, the PACT Partner Teams will, in collaboration and cooperation with NYCHA, complete the following pre-closing work related to HQS for these units:

1. Inspect units for HQS compliance.
2. Notify NYCHA of any urgent repair needs or apartment conditions.
3. Perform needed repair work in units that are out of HQS compliance in accordance with Davis-Bacon and HUD prevailing wage requirements.*
4. Request HQS inspections, which will be coordinated by NYCHA and conducted by HPD.

**Note an exception for any units on an existing HAP contract within an LLC I property.*

NYCHA will confer with the PACT Partner about start date for repairs and HQS inspections in order to stay within the required 180-day window of conversion. PACT Partner teams should assume that the cost of this HQS repair work will be between approximately \$3,000-\$5,000 per dwelling unit.

HQS Inspection guidance is provided as an attachment to this document, [PACT Program Guidance HQS Inspections and Repairs \(Attachment M\)](#).

D. Violations

PACT Partners will work with NYCHA to clear all existing health and safety violations as found on City records or municipal searches prior to construction closing. Violations that do not relate to health and safety and which cannot be cleared prior to construction closing must be addressed in the rehabilitation Scope of Work.

E. Reducing Construction and Demolition Waste

In line with OneNYC’s goal of sending zero waste to landfills by 2030, NYCHA aims to reduce the amount of construction and demolition (“C&D”) waste that is disposed in landfills and incineration facilities through material recovery, reuse, and recycling. Building on mandatory requirements for Enterprise Green Communities Criteria item 6.10 Construction Waste Management, the PACT Partner will be required to select Option 1 and submit a C&D Waste Management Plan for new construction and rehabilitation work at the Properties that establishes project-specific waste estimates, waste diversion goals, waste prevention measures, reuse inventory, communication plan, contamination prevention measures, and a recycling facility list. [See Attachment D - Construction Waste Management Plan Template](#).