

Integrated Physical Needs Assessment (IPNA) Standard

for New York City and State Low/Moderate Income Multifamily Buildings

Adopted by:

- NYS Housing and Community Renewal (HCR)
- NYC Department of Housing Preservation Development (HPD)
- NYC Housing Development (HDC)

Released: 6-23-2017

Revised Draft: 4-24-2018

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INTRODUCTION

The emergence of concerns about climate change and the associated need to reduce carbon emissions has given a new and significant urgency to energy efficiency work in buildings. As a result, a trend has developed to merge PNAs with energy audits, sometimes referred to as a Green PNA, or GPNA.

Physical needs assessments (PNAs) have long been used to assess deficiencies in a building or group of buildings, to recommend improvements to remediate these deficiencies, to estimate the cost of such work, and to recommend timing for various elements of the work depending on their urgency.

In parallel, energy audits have been developed in recent decades to identify deficiencies in energy systems as well as opportunities to remediate these deficiencies and reduce energy use and costs. In many ways, energy audits are similar to PNAs, although they add the metrics of energy use and projected energy cost and use savings and are limited to energy systems (although frequently water, as well).

The potential benefits of a merged report include reducing duplication of effort; reaching economies of scale in planning capital improvements and energy efficiency work simultaneously; and leveraging and coordinating various financing sources. Traditional PNAs offer many benefits that are not typical of energy audits, including the ability to prioritize tasks, undertake long-term planning, and reduce construction costs by timing energy improvements with the end of the useful life of energy systems. Likewise, energy audits offer benefits to traditional PNAs, including the ability to leverage cost savings to help pay for the work and the potential to increase the amount of financing available through underwriting to efficiency savings.

However, while GPNAs are useful in identifying both the physical and energy deficiencies in buildings, they are typically not comprehensive enough to identify housing-based health issues that have immediate impacts to residents' health and comfort. Therefore, this new Integrated Physical Needs Assessment (IPNA) takes the GPNA a step further to not only merge a traditional PNA with an energy audit, but to also more intentionally identify housing-based health issues that can be addressed during rehabilitation or through operations and maintenance. Incorporating a health lens into the IPNA will make it easier for building owners to make health-promoting improvements in broader rehabilitation projects, such as measures to improve ventilation; the use of low- or no-VOC materials; and the adoption of Integrated Pest Management practices and "green cleaning" regimes.

In addition to incorporating a health lens, the IPNA includes a solar summary that takes basic information about the building and estimates how much it would cost to install a solar photovoltaic (PV) system on the roof and how much electricity such a system might be expected to produce. This information can be easily used by building owners to determine if solar PV is an opportunity that they should investigate further. Note that at this time, the Solar Summary calculations only work for buildings located in NYC.

We expect the IPNA might evolve further over time to incorporate information for building owners on additional topics. For example, a possible resiliency component has been discussed. Resiliency is an important consideration for building owners across the state as weather events become more severe.

While there are many benefits to merging energy audits and health assessments with PNA's, there are also complications and questions. What qualifications are required for the work? Can one consultant do all the work? How can an energy audit report, health assessment and PNA report be effectively integrated? What standards should be used?

This document seeks to address the complications and questions of integrating energy with traditional capital needs assessments. Additionally, it includes resources and tools to assess opportunities to create healthier living environments and to install on-site electricity generation.

GOALS AND OBJECTIVES FOR THE IPNA

Long-Term Goal

Ensure every owner of an affordable multifamily building in New York City and State who accesses federal, state, or municipal financing for rehabilitation work incorporates cost-effective energy efficiency, water conservation, and health-related improvements into their capital planning process to enhance the health, safety, and comfort of residents, reduce maintenance and operating expenses, and reduce energy use and greenhouse gas emissions.

Short-Term Goals

Ensure every owner of an affordable multifamily building in New York City and State who accesses federal, state, or municipal financing for rehabilitation work uses a standardized process for evaluating potential energy efficiency, water conservation, and health-related improvements as part of their capital planning process; ensure that the IPNA evaluation is accepted by all efficiency program administrators and lenders as a valid means of identifying measures and estimating savings; and ensure that the IPNA can be used to comply with New York City and State energy audit regulations.

DEFINITIONS

Physical Needs Assessment (PNA) – An evaluation of a building’s physical condition, including identification of deficiencies, recommended improvements (scope of work), and associated construction costs for those improvements. Also called a **property condition assessment (PCA)**, **capital needs assessment (CNA)**, **condition survey**, or **project capital needs assessment (PCNA)**.

Integrated Physical Needs Assessment (IPNA) – A physical needs assessment that includes energy, water, and health assessments, including identification of deficiencies, recommended improvements (scope of work), and associated construction costs for those improvements.

Energy Assessment – An evaluation of a building’s energy and water consumption patterns, including identification of deficiencies, recommended improvements (scope of work), and associated construction costs for those improvements. An energy assessment also includes projected annual energy use and cost savings for each improvement and billing analysis. Also called an **energy audit**.

Efficiency Assessor – A firm or individual qualified to perform the energy/water assessment portion of an IPNA; also called an **energy auditor**.

Needs Assessor – A firm or individual qualified to perform the physical needs assessment portion of an IPNA.

Scope of Work – A written description of recommended capital, energy, and health improvements needed in a building. Recommendations are classified by their urgency: critical, short-term, or long-term.

Construction cost – the cost to implement a building improvement, including both material and labor costs and related soft costs such as design and permitting. Also called **capital cost**, **first cost**, or **installed cost**.

QUALIFICATIONS

Needs Assessor

At least one member of the Needs Assessor team shall be a registered architect (RA) or professional engineer (PE) and have a minimum of three years of relevant work experience. At a minimum, this professional shall review and approve the Needs Assessment portion of the report. Additionally, for assessments that take place in New York City, at least one member of the Needs Assessor team shall have taken, or plan to take within 6 months of becoming a pre-qualified provider, the DoHMH Healthy Buildings Trainings for HPD-financed projects. The DoHMH Healthy Buildings Training Certificate is valid for three (3) years.

Background: This is consistent with the requirements of the HPD/HDC GPNA, which requires the professional designation. The HUD C.N.A. refers to the ASTM standard, which recommends a professional designation in architecture or engineering, although it is not mandatory. The 3 years is a requirement we added to be consistent with the Efficiency Assessor. The “review and approve” is from the ASTM standard.

Efficiency Assessor

At least one member of the Efficiency Assessor team shall have one of the following certifications, as well as a minimum of three years of relevant work experience. At a minimum, this professional shall review and approve the Energy Assessment portion of the report.

- AEE Certified Energy Manager (CEM)
- AEE Certified Energy Auditor (CEA)
- AEE Certified Measurement and Verification Professional (CMVP)
- BPI Multifamily Building Analyst (MFBA)
- ASHRAE High-Performance Building Design Professional (HPBDP)
- ASHRAE Building Energy Assessment Professional (BEAP)
- RESNET HERS

Background: HPD/HDC’s GPNA, NYSERDA, ASHRAE Level II, and the HUD C.N.A. all have a mix of these certifications. The HUD C.N.A. allows almost all of them (with the exception of CMVP and BEAP, both of which are references in ASHRAE Level II). The only standard included here that is not among those listed as an option for NYC LL87 is AEE’s CMVP. The requirement for 3 years of relevant work experience is from the HUD C.N.A. and seems like a good requirement. The “review and approve” was added to be consistent with the Needs Assessment, and it also seems consistent with NYSERDA which requires that the certified professional “conducted or supervised” the applicable work.

Please see Appendix A for a comparison of the acceptable requirements for the Needs Assessor and the Efficiency Assessor.

Statement of Qualifications and Experience

Respondents to any RFQ for IPNA services in compliance with this standard must provide the following information, and must include information for each subcontractor consultant participating in the team:

- 1. Relevant Experience and Case Studies:** Describe experience of the consultant team and provide case studies of projects that demonstrate experience in the following areas:
 - Performing comprehensive building capital needs assessments and energy/water audits, including recommending scope items for overall building capital needs, energy efficiency/water conservation (EEWC) measures, and health-related

measures when applicable. Please include a sample physical needs assessment and energy audit or green physical needs assessment;

- Conducting energy savings analysis and cost estimates for recommended measures;
- Creating scopes of work, plans, and specifications for rehabilitation projects. Please include a sample scope of work of a building requiring both capital and energy upgrades. Include the resultant reduction in water/energy consumption from the recommended capital and EEWC measures for the building that pursued the recommended scope of work;
- Participating in or overseeing the contractor bid process for construction projects, including analyzing contractor bids and cost proposals;
- Managing construction timelines and coordinating contractors, owners, and lenders, including reviewing and submitting requisitions and working with servicers;
- Making recommendations for operations and maintenance best practices to achieve energy and water efficiency and healthy homes objectives, and training staff, building owners, and residents on energy and water efficiency, as well as healthy homes;
- Performing post construction measurement and verification for implemented EEWC measures;
- Some familiarity with flood plain management standards.

2. **Personnel Qualifications and Resumes:** Provide an organizational chart listing all personnel who will be performing and overseeing each component of the scope of services. In cases of a multidisciplinary team, identify the point of contact who will be responsible for management of the overall team. Also list the accreditations of each participating team member.
3. **List of References:** Include at least three client references for similar projects, for the lead firm(s).

IPNA REQUIREMENTS

Guidance and Standards

The IPNA is to be performed with adherence to generally-accepted industry standards for property condition assessments and energy audits. Additionally, the following standards should be used as guidance:

- **Needs Assessments** should broadly follow ASTM E2018-15 *Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process*
- **Energy Assessments** should broadly follow the *American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Procedures for Commercial Building Energy Audits* (2011 or most recent version, if published) Level II and the IPNA Guidelines. If ASTM E2018-15 or ASHRAE Level II conflicts with the IPNA Guidelines, the IPNA Guidelines should be followed. If ASTM E2018-15 and ASHRAE Level II requirements conflict, ASHRAE Level II should be followed.
- **Healthy Home Assessments** should broadly follow the health inspection guidance in the IPNA.
- **All Projects** should use the Fannie Mae Useful Life tables for Multifamily Properties (www.fanniemae.com/content/guide_form/4099f.pdf) for improvements that are covered by the Fannie Mae tables. For measures that are not covered by those tables, expected life should be taken from another authoritative and independent source.

Capital Needs to Review

The following capital needs shall be considered when preparing the IPNA:

- **Critical Needs:** Health and safety deficiencies; open Building Code or Environmental Control Board (ECB) violations; Housing Maintenance Code (HMC) violations in Hazard Categories 'B' and 'C'; and any Lead-Based Paint conditions that require immediate remediation to meet City, State, or Federal requirements.
- **Short-Term Needs:** An estimate of entire system or component replacement items, and significant deferred and other maintenance items that will need to be addressed within 12 months, including cost effective measures that will reduce energy and water consumption and create healthier living environments.
- **Long-Term Needs:** An estimate of entire system or system replacement items beyond the first year that are required to maintain the development's physical integrity and reduce energy and water consumption over the next 15 years.

Scope of Work to Create an IPNA Report

The report shall identify physical deficiencies, repair/replacement needs, and energy/water inefficiencies, pest activity, moisture and ventilation issues, and any other applicable health hazards determined on the basis of:

1. Visual Survey from basement to roof, including, but not limited to:
 - Site, public elements, and common areas
 - Structural frame and building envelope
 - Insulation and roof/wall cavities
 - Mechanical, electrical, and plumbing systems and utilities

- Life safety/fire protection equipment
- Interior elements

To encourage integration and to avoid a duplication of effort, we propose that the Needs Assessor conduct all aspects of the visual survey inspection other than the following energy-related components, which should be conducted by the Efficiency Assessor: Heating, cooling, ventilation, insulation, infiltration, windows, lighting, appliances, hot and cold water systems and fixtures.

2. Review of Pertinent Documentation, including, but not limited to:

- Violations issued by City and State agencies
- Certificate of Occupancy
- Architectural drawings
- Maintenance logs
- Operations and Maintenance (O&M) plans
- Pest control contracts or policies
- Certificates of training for building maintenance staff

The Needs Assessor should review the pertinent documentation. The Energy Assessor may also review the architectural drawings.

3. Review of Energy and Water Consumption Data

- 24 months of consecutive energy and water billing statements
- Benchmarking Data; note that if automated benchmarking is not already in place, the IPNA provider should work with the building owner and/or staff to set up automated benchmarking using the approved HDC/HPD benchmarking provider list.

The Energy Assessor should complete the review of the energy and water consumption data.

4. Diagnostic Testing and Systems Inspection, including, but not limited to:

- Carbon monoxide (in all areas with combustion equipment, including appliances and heating equipment; for heating equipment, testing shall include in flues and in the mechanical room; for forced air equipment, testing shall include in the supply air)
- Natural gas leaks
- Moisture (relative humidity), in areas of concern, such as where there is visible mold
- Boiler efficiency
- Indoor air temperature: measure a representative set of indoor temperatures, for example including upper floors and lower floors; also record thermostat setpoints and schedules (if programmable).
- Ventilation airflow and fan power: for buildings with ventilation systems that operate 24/7 AND in buildings that are high energy users (site EUI over 150 kBtu/SF/year), these must be measured. In other buildings, results can be estimated.

The Energy Assessor should conduct all the above testing and inspections.

Minimum Sampling Requirements

Apartment Inspections

This survey must include the inspection of at least 3 units or 10% of the total project's dwelling units, whichever is greater. For projects with over 200 units, the inspection is capped at 20 units. The 10% calculation should always be rounded up, so for example, 10% of a building with 31 units is 3.1, which is rounded up to 4 units required for inspection.

The consultant should identify units to include in this sample that contain varying characteristics and conditions that will affect the report, including location (ground floor, top floor, basement, exposed edge and corner units) as well as type, size (number of bedrooms), and history of rehabilitation. When more apartment characteristics exist than can be covered by the 10% sample size, the consultant does not need to increase the minimum sample to cover one apartment of each type. The consultant should aim to cover as many of the various characteristics using the 10% sample as possible.

For example, in a 22-unit building, a minimum of 3 apartments must be inspected.

- If all the units have one bedroom, and some are in the basement, the selected units should include one on the top floor, one on the bottom floor, and one in the basement.
- If the building was previously renovated in two distinct phases, a minimum of 3 units must still be inspected. They should be selected to include at least one from each phase of renovation, and also from various locations throughout the building (e.g. one from the top floor that was renovated in the first phase, one from the bottom floor that was renovated in the second phase, and one from the basement).
- If the building has 21 one-bedroom units and one 2-bedroom unit, a total of 3 units should still be inspected: the 2-bedroom unit and two 1-bedroom units. Ideally between those three units, one should be located on each of the following floors: top floor, bottom floor, and basement; and at least one apartment should have been renovated in each of the two renovation phases.

Note that if the results of the initial minimum sample are inconsistent, additional units should be inspected. For example, if three units are sampled and two of the refrigerators are newer while one is older, additional units should be sampled until the assessor has confidence in the distribution of new and old refrigerators.

Multiple Building Projects (HPD and HCR Projects Only)

For HPD and HCR projects with multiple buildings, clusters of buildings that are similar in design, construction, heating systems, age, and history of rehabilitation may be grouped into Building Types and may not need to have every building inspected. The proposed sampling method must be approved by agency program staff prior to the date of the inspection to confirm whether it is suitable for the project. If approved, the survey must include the following:

1. The inspection of the non-apartment areas of a minimum of 20% of the buildings in each Building Type, and
2. The inspection of a minimum of 10% of the total number of apartments in each Building Type, to a maximum of 20 apartments per Type, following the guidelines laid out in the Apartment Inspections section above. The apartments inspected may be located solely in the buildings in the 20% sample.

Note that sampling applies to boiler room inspections and boiler testing. Sampling does NOT apply to the collection and analysis of owner-paid utility bills for non-apartment areas of the building; these common area bills must be collected and analyzed for 100% of the buildings in the project. A sample of apartment bills may be collected for analysis following the Apartment Inspections guidelines above.

Examples of the sampling of multiple-building projects are provided in Appendix B.

ENERGY ASSESSMENT REQUIREMENTS

This section of the IPNA report should be completed by the Efficiency Assessor. The energy audit should broadly follow the *American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Procedures for Commercial Building Energy Audits* (2011 or most recent version) requirements for a Level II audit, as well as these IPNA Guidelines.

An analysis of the building's pre-retrofit performance shall be completed using 24 months of utility data, initial inspection data, and diagnostic data collected during the on-site visits. The analysis should estimate annual energy and water consumption and the cost savings of potential improvements. Current operating schedules that have been verified on site are to be used for energy and water cost savings estimates.

The energy and water audit shall consist of the following components:

1. The building description (inspection of energy and water systems). The focus of this component is the building's current condition.
2. Energy and water use. The focus of this component is both the preliminary analysis (current energy and water use) and the projected energy and water use after improvements are made. The purpose of the projected use estimates is to show potential overall energy savings and to provide post-retrofit operating costs that can be used in financial pro-formas. Document billing data for twenty-four (24) months of consecutive energy and water utility bills, provide an energy utility use breakdown, and calculate the Energy Use Intensity (EUI) kBtu/sf/year.

Efficiency Assessors are urged to include both low-cost/no-cost improvements and larger energy improvements. Energy assessments shall identify a minimum of 30% energy savings and are urged to identify deeper energy savings beyond 30% savings to meet long-term city and state carbon emissions goals. Buildings with an existing site energy utilization index (EUI) below 50 kBtu/SF/year are exempt from the 30% energy savings goal.

Hourly energy models are not required, but interactive energy calculations must be performed. A basic model of the project's energy use should be created. The historical energy bills (as summarized on the Energy and Water Use tab) should be used to true-up the energy model and to ensure that the consumption of each component of the building is reasonable. For example, billing data for the heating fuel should be disaggregated into heating and hot water consumption. Then the fuel consumption of the boiler system should be estimated and compared to the disaggregated estimates from the bills. The model must show *equal or less* total energy use than the actual bills and should also be within 10% of the actual total billed consumption for all energy types.

In addition to energy, water conservation options shall also be evaluated. At a minimum, evaluate shower heads, bathroom faucets, and toilets to meet the EPA WaterSense standard. Inspect for evidence of leaks, such as in boiler rooms, below kitchen and bath sinks, and in toilets. Inspect bathtub faucets to see if water flows out of the bath spout when the shower is on. Make recommendations to remediate any leaks.

ASSESSMENT OF POTENTIAL HEALTH-FOCUSED IMPROVEMENTS

The IPNA encourages assessors to consider how physical and capital upgrades could improve occupant health. It contains several tools to help assessors make this determination as they complete the IPNA and develop a Scope of Work and preliminary cost estimates, noting the potential of each upgrade to improve occupant health. The relevant health tabs in the spreadsheet are described below.

- **Inspection – Physical Needs Tab** contains two boxes that call out potential health-related concerns, in categories that align with the headings in the “Healthy Rehab Interventions” tab. Inspectors are expected to summarize potential health issues that could be addressed in an upgrade.
- **Scope and Preliminary Cost Estimates Tab** includes a column to allow the assessor to indicate if each item could potentially benefit tenant health outcomes. Inspectors can use the “Healthy Rehab Interventions” tab as guidance to understand the potential health outcomes of various capital interventions when making this determination.
- **Operations and Maintenance Tab** identifies property management practices that can improve occupant health; this information may be useful to share with owners.
- **Healthy Rehab Interventions Tab** identifies building renovation work that can improve occupant health. This information is intended to help assessors in determining if a proposed capital upgrade has the potential to improve occupant health, as requested in the “Scope and Preliminary Cost Estimates” summary tab.
- **Health Questionnaire Tab** identifies building areas to investigate during the building walk through to better understand potential health opportunities. It is presented as guidance to help inform assessor activities and inspections.

NOTE: Other than the “Scope and Preliminary Cost Estimates” Tab, none of the other health-related tabs are required to be filled out by the inspector. They are included to help assessors in considering the potential health concerns and providing useful information to owners and funding agencies.

INTEGRATION

We recognize that an IPNA will typically be performed by two different professionals, a Needs Assessor and an Efficiency Assessor. The IPNA is intended to support these separate efforts by clearly defining the responsibilities of each. However, it is important that duplication of effort be avoided and that the final IPNA present an integrated whole. To do this, the following steps should be taken:

1. The Needs Assessor and Efficiency Assessor are encouraged to conduct the site visit together, on the same date, to share observations.
2. One firm should perform the final review and release of the IPNA. That firm should hold ultimate responsibility for the report.
3. An executive summary shall present the results of both the energy audit and the needs assessment in one table.
4. The building description shall be integrated in one section, although different pieces are assigned to the Needs Assessor and to the Efficiency Assessor.

OTHER

Shelf Life

An IPNA can be used for funding purposes up to two (2) years from its release date.

Compatibility with NYC Local Law 87

The requirements for an IPNA and a Local Law 87 energy audit are similar but not exactly the same. This section reviews the differences between them to make it easier for Providers who are working with buildings that need both reports completed at the same time.

Local Law 87 in New York City requires energy audits and retro-commissioning every 10 years. For more information on LL87, please visit www.nyc.gov/html/gbee/html/plan/ll87.shtml

The general requirement for the level of energy audit (ASHRAE Level II) is the same for the IPNA as for New York City's Local Law 87 (LL87). However, Local Law 87 applies only to buildings over 50,000 square feet while the IPNA can be used for buildings of any size.

Professional qualifications required to perform a LL87 energy audit are the same as those required to perform the energy/water portion of the IPNA, with the exception that the IPNA allows AEE's CMVP certification, whereas LL87 does not.

Important note: Please be aware that a LL87 energy audit will not be sufficient to meet all the requirements for the IPNA. For example, the IPNA requires that 30% energy savings be identified, but there is no minimum savings required by LL87. Conversely, the LL87 energy audit requires some data that is not required by the IPNA. If you are completing an IPNA and a LL87 audit for the same building, make sure that you obtain all the data required for both reports when you do your field visit.

THE IPNA TEMPLATE

Firms must use the Excel-based IPNA template. Energy and water components are integrated in the executive summary, the inspection report, and the energy and water audit. The summary report shall also note opportunities to create healthier living environments. Each of the tabs in the IPNA template are described below.

Cover Page

Insert a photograph of the building and your company logo. This will be the first page of the report when it is printed to pdf or hard copy.

Executive Summary

The information on this tab includes bottom-line information sought by lenders and grant-making agencies.

Identify the project, list for whom the report was prepared, and name the primary personnel who created the IPNA report.

The table on this tab should summarize *all* the recommended physical needs, energy, and health-related improvements, including their estimated implementation costs, annual utility cost savings if applicable, and level of urgency (critical, short term, or long term). This executive summary table is an important part of presenting the IPNA in an integrated form.

Executive Summary Cont'd

Summarize the existing conditions of each major element of the property in the table at the top of this tab. Then give a written description of the maintenance practices at the property, the existing accessibility to the property by people with disabilities, and any open violations.

The Implementation section at the bottom of this tab lists a variety of resources that may be useful to building owners and project developers as they implement the recommendations in this report.

Finally, this tab summarizes the proposed division of work between the Needs Assessor and the Efficiency Assessor. Any changes to those responsibilities should be recorded on the Executive Summary Cont'd tab.

Objective and Limitations

Describe the objective of the IPNA. Outline the procedures used in producing the report, as well as any limitations of the report. Boilerplate objective, procedures, and limitations are provided. The assessor can edit as appropriate.

Building Info

Provide information on the location of the building and any special characteristics, such as landmark buildings or historically contributing buildings in historic districts. Note that several of the entries on this tab (highlighted in green) are used in the solar calculation, and if they are left blank, the potential savings from installing photovoltaic panels on the roof may not be calculated on the Solar Summary (NYC) tab.

Fill out the table of the number of units of each type that are occupied and vacant.

Finally, populate the table of open violations with the requested information. The estimated cost to remediate each violation should be included.

For multiple-building projects, the building information should be shown on a per building basis.

Inspection – Physical Needs

This tab should be completed by the Needs Assessor. Describe the property's exterior and interior physical condition. Use the text boxes to describe any needed upgrades and improvements. The report should identify, in detail, any deficient or deteriorated items that represent an immediate threat to health and safety. Additionally, the report should describe all other physical deficiencies including significant defects, items of deferred maintenance, and material building code violations that would limit the expected useful life of major components or systems.

The inspection report shall contain a description of the inspection of following areas of the building:

- Site
- Structure
- Roof
- Exterior Structures
- Exterior Doors
- Interior Common Area, including the electrical system (except lighting) and any health-related issues
- Apartments, including the electrical system (except lighting) and any health-related issues
- Plumbing System

- Electrical System (except lighting)
- Elevator
- Fire Protection
- Compactor
- Security
- Other Building Systems
- Special Considerations, including:
 - Environmental Issues
 - Asbestos Containing Materials
 - Lead-based Paint
 - Accessibility Issues
 - Historic Preservation Issues
 - Special Flood Hazard Areas

Inspection - Energy and Water

This tab should be completed by the Efficiency Assessor. Describe the property's exterior and interior physical condition. Use the text boxes to describe any needed upgrades or improvements, and also to describe any identified opportunities for reducing energy or water consumption. The report should identify, in detail, any deficient or deteriorated items that represent an immediate threat to health and safety. Additionally, the report should describe all other physical deficiencies including significant defects, items of deferred maintenance, and material building code violations that would limit the expected useful life of major components or systems.

The inspection report shall contain the following sections:

- Building Envelope, including Infiltration
- Apartments
- Building Systems, including:
 - Heating generation
 - Heating distribution
 - Cooling
 - Domestic hot water (DHW)
 - Gas supply
 - Other/Advanced systems
- Diagnostic testing results
- Water Audit

Energy and Water Use

Use this tab to describe the historic energy and water consumption of the building. Enter the type of metering that exists for the apartment electricity and gas consumption. In the Summary of Utility Data Analysis table, summarize the project's annual energy and water consumption and costs; show data for each energy type separately. Also enter the projected consumption and cost.

Calculate the requested benchmarking metrics outside of the template and enter the results in the Summary of Benchmarking Metrics section.

Finally, calculate the allocation of costs for each end use listed in the template and enter the results in the End Use Cost Allocation section.

Scope and Preliminary Cost Estimates

Identify scope items that will correct the detailed physical deficiencies and/or lower the energy or water consumption of the building. The section should include the estimated costs and quantities of entire system or component replacement items, health items, energy efficiency and water conservation (EEWC) only items, and EEWC incremental items. Include all labor costs in the price estimates of scope items, and include costs for permitting, demolition, lead and asbestos abatement, and other relevant costs associated with the scope of work. Below are definitions of Capital Items, EEWC Incremental Items, EEWC-Only Items, and Health Items:

Capital Items are scope items that address the physical needs of the property such as entire system or component replacements, and significant deferred and other maintenance items that are not included solely for EEWC reasons. Examples of entire system or component replacement items are roofs, windows, and masonry.

EEWC Incremental Items are measures that in addition to providing entire system or component replacement also provide energy efficiency benefits. Examples of EEWC incremental items are installing a high-efficiency boiler when the boiler is being replaced and installing roof insulation when the roof is recommended to be replaced.

EEWC-Only Items are the energy and water efficiency scope items that are not associated with items requiring entire system or component replacement. These measures are recommended solely for their contribution towards reducing a property's energy and water usage. Recommendations for all types of EEWC items along with relevant payback periods and projected energy cost savings should be provided, including measures that have high installation costs and/or that yield deeper savings such as steam-to-hydronic heating system conversions and on-site renewables. Note that Efficiency Assessors should not rely solely on renewables, such as solar PV or thermal, to reach the energy savings goal, and priority should be given to durable cost-effective energy and water conservation strategies. Examples of EEWC-Only items include solar panels, boiler controls, low-flow fixtures, pipe insulation, replacing the boiler with a high-efficiency boiler before the end of its useful life, and efficient lighting.

Note that all EEWC Scope Items (EEWC-Only and EEWC Incremental) should include information on projected savings from implementing the recommended EEWC measure (both in dollars and in units of energy or water). Provide the simple payback and Savings-to-Investment Ratio (SIR) for each measure. Use the Notes section to describe how the savings estimates were derived (i.e. utility rates used, etc.) including any risks that might prevent a measure from achieving the estimated savings.

Health Items are the scope items that improve the indoor air quality and other health-related characteristics of a building. In addition to identifying health items to include in the scope of work for a project, each capital and EEWC item should include an assessment of whether it has a potential health benefit. The Healthy Rehab Interventions tab provides guidance on the intersection between health outcomes and targeted interventions. Examples of health items include sealing gaps in and around cabinets and fixing broken ventilation fans.

Solar Summary (NYC)

This tab gives an estimate of the cost, payback period, and Savings to Investment Ratio (SIR) for a solar energy system installed on this property. The Assessors do not need to enter any data on this tab. All required data is entered on other tabs (where cells are highlighted in green). Note that the results presented in this tab are only applicable to projects located in New York City.

Replacement Cost Schedule

List all recommended improvements, including critical, short term, and long term capital needs; energy efficiency and water conservation recommendations; and proposed health and safety measures. Analyze and project the estimated useful life of building components, then estimate the replacement cost per unit, quantities, and annual replacement expenditures for a fifteen (15) year period. The costs outlined in the replacement schedule should be total costs for each scope item, accounting for inflation and inclusive of all incremental costs of EEWC measures.

Operation and Maintenance

Include recommendations for measures that can be addressed through improved maintenance and operations, including janitorial methodologies and products, preventative maintenance best practices, and recycling and waste management. The [Two Shades of Green: Green and Healthy Property Management Guide](#) shall be used as guidance, as should Intervention-O&M table on this this tab, the Healthy Rehab Interventions tab, and the Health Questionnaire tab.

Quality Assurance and Verification

This tab provides two types of Quality Assurance. First, the Energy and Water Saving Check table should be used by the Energy Assessor to self-check that the projected energy and water savings are reasonable. Enter each recommended EEWC measure and the estimated cost savings. Then calculate the percent of the total energy or water cost each measure's savings represents, and calculate the percent of the appropriate end-use (e.g. heating, cooling, lighting, DHW, etc) the measure estimates saving. Verify that these two percentages are reasonable.

Second, the Needs Assessor should write a quality assurance plan to guide owners through implementation and construction. The plan should be specific to the subject property and shall include requirements for inspections, documentation, and performance test-outs. Include information on what inspections and documentation is recommended for each measure.

Photos

This tab is primarily a reminder to include photos. Photos do not necessarily need to be inserted in this tab, and can be handled separately, such as in Adobe acrobat with a final PDF report.

If the photos are initially in a separate document, we strongly recommend creating a single final pdf document that includes the IPNA report and all of the photos.

Document typical conditions present, with a focus on physical deficiencies.

Include front and typical elevations and exteriors, site work, parking areas, roofing, structural systems, plumbing, HVAC and electrical systems, conveyance systems, life safety systems, representative interiors, and any special or unusual conditions present (per ASTM E2018).

REFERENCES

Green Physical Needs Assessment and Technical Assistance Service Provider. 2015 Request for Qualifications for Professional Consultant. NY City Housing Development Corporation. February 26, 2015.

Multifamily Accelerated Processing (MAP) Guide. R 1.1. U.S. HUD. January 29, 2016. (Reference guide for the HUD C.N.A. e-tool.)

Procedures for Commercial Building Energy Audits, Second Edition. ASHRAE. 2011.

Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process. Standard E 2018-15. ASTM International. 2015.

APPENDIX A – CERTIFICATION EXAMPLES (FOR REFERENCE ONLY)

	AEE CEM	AEE CEA	AEE CMVP	BPI MFBA	RES- NET HERS	ASHRAE HPBDP	ASHRAE BEAP	PE	RA	DoHMH Healthy Buildings Training Certificate	NYSERDA Flex Tech	ASTME 2018-08 Appendix XI.1	Minimum Work Experience (years)	Notes
Energy Assessor														
IPNA	x	x	x	x	x	x	x						3	"Review and approve"
HPD/HDC GPNA	x			x										
NYSERDA	x	x		x										"Conducted or supervised"
HUD CNA e-Tool	x	x		x	x	x		x	x				3	
ASHRAE Level II	x	x	x			x	x							Non-mandatory
NYC LL87	x	x		x		x	x		See note		x			Must either be supervised by licensed design professional or registered with DOB and hold one of the certifications; FlexTech only allowed under design professional.
Freddie Mac Multifamily Green Advantage	x			x										
Needs Assessor														
IPNA								x	x	NYC bldgs only			3	
HPD/HDC GPNA								x	x					PE/RA - "At least one member of the team"
HUD CNA e-Tool												x		
ASTM Field Observer														No specific requirement. Earlier in the standard (not in the Appendix) it says "general, well rounded knowledge of pertinent building systems and components"
ASTM Report Reviewer								x	x					Non-mandatory

APPENDIX B – EXAMPLE SAMPLING REQUIREMENTS FOR MULTIPLE-BUILDING PROJECTS (HPD AND HCR PROJECTS ONLY)

Example 1: Identical Buildings

A complex has four 10-story buildings with a total of 600 apartments. All the buildings are identical in design and were built at the same time in the 1960’s. They can therefore be grouped into a single Building Type. The IPNA Standard requires that a minimum of 20% of the buildings be inspected. Therefore, one building needs to be inspected, along with a minimum of 20 apartments. All 20 inspected apartments may be located in the inspected building.

Example 2: Similar Buildings, but One Different in Age

A complex has nine 5-story buildings all similar in design, construction method, and heating system type. However, eight of the buildings were built in the 1960’s, and one was built 15 years later in the late 1970’s. These buildings should be grouped into two Types, as shown in the table below:

Building Type	# of Bldgs	# Floors	Studio	1-BR	2-BR	3-BR	4-BR	Units/Bldg	Total Units	Year Built
Type A	8	5	3	4	10	10	3	30	240	1962
Type B	1	5	3	4	10	10	3	30	30	1977
Totals	9								270	

We require inspecting a minimum of 20% of the buildings in each Type, and a minimum of 10% of the apartments in each type, as shown in the table below:

Building Type	Minimum Sample Size	
	# Buildings	Total # Units
Type A	2	20
Type B	1	3
Totals	3	23

Example 3: Many Similar Buildings, Rehabbed at the Same Time Age

A complex has 20 buildings, all two-story, with a variety of units as shown in the table below:

Building Group	# of Bldgs	# Floors	Studio	1-BR	2-BR	3-BR	4-BR	Units/Bldg	Total Units	Year Built	Year of Gut Rehab
Group A	10	2	4	0	0	0	0	4	40	1950	2003
Group B	4	2	0	3	3	0	0	6	24	1952	2003
Group C	4	2	0			4	4	8	32	1956	2003
Group D	2	2	3	3	3	1	0	10	20	1955	2003
Totals	20								116		

The design, construction, and heating system type are similar for all 20 buildings, but layouts are different. All the buildings were built in the 1950’s over a period of about six years. All units were gut-rehabbed in 2003: identical new interior finishes, appliances, heating and distribution systems, roofs, windows, and more. Because the gut rehab was so extensive and happened at one time, these

buildings can be grouped into one Type for sampling. We require inspecting 20% of the buildings, or five buildings. Ideally, each size building (4 units, 6 units, etc) should be represented in the sample. Additionally, a minimum sample of 20 units should be inspected, distributed as evenly as possible through the buildings sampled.

Example 4: “Scattered Sites”

A developer has 45 buildings, all different, scattered around town. There are a total of 520 apartments. Because all buildings are different, all buildings need to be inspected (45 total). A minimum sample of 10% of the apartments must be inspected in each of the buildings, as described in the apartment sampling section of this Standard.

Example 5: Four Types of Buildings

A complex has 40 buildings, as described in the table below:

Building Type	# of Bldgs	# Floors	1-BR	2-BR	3-BR, one floor	3-BR, duplex	4-BR	Units/Bldg	Total Units
Type A	28	2	0	0	2	2	1	5	140
Type B	8	2	20	20	0	0	0	40	320
Type C	3	5	15	20	10	0	5	50	150
Type D	1	17	68	51	51	0	34	204	204
Totals	40								814

Each of the buildings within each type is identical, but each Type of building is distinct from the other types because they have very different construction and age. In this case, the sampling rules should be applied to each type separately as shown in the table below:

Building Type	Minimum Sample Size	
	# Buildings	Total # Units
Type A	6	14
Type B	2	20
Type C	1	15
Type D	1	20
Totals	9	69

Example 6: Central Boiler Plant Serving Multiple Buildings

A complex has eleven buildings, as described in the table below. A central steam boiler located in the basement of Building B provides heat and hot water to the entire complex.

Building Group	# of Bldgs	# Floors	Studio	1-BR	2-BR	3-BR	4-BR	Units/Bldg	Total Units	Heating System
Group A	4	17	32	115	97	50	0	294	1,176	Steam radiators supplied by the central boiler plant via a main steam valve in each building's mechanical equipment room.
Group B	1	17	32	115	97	50	0	294	294	Steam radiators supplied by the central boiler plant via a main steam valve located in the central plant.
Group C	4	2	0	0	0	3	3	6	24	Hydronic baseboard via steam-to-hot-water heat exchanger located in central boiler plant.
Group D	2	2	0	0	0	2	2	4	8	Hydronic baseboard via steam-to-hot-water heat exchanger located in central boiler plant.
Totals	11								1,502	

The Group A and B buildings are identical except for the mechanical equipment rooms in the Group A buildings and the central boiler plant located in Building B. Because of the difference in mechanical equipment, these two groups should not be combined into one Type. The Group C and D buildings townhouse-style buildings that are identical except for the number of units in each building, so they can be grouped into one Type. The following sampling is required:

Building Type	Minimum Sample Size	
	# Buildings	Total # Units
Type A	1	20
Type B	1	20
Type C/D	1	4
Totals	3	44