Integrated Physical Needs Assessments: What, Why & How

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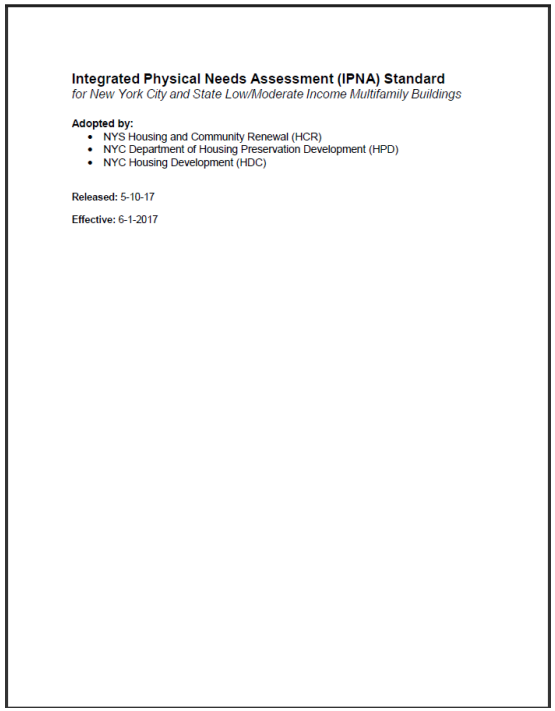
What is an IPNA?

IPNA = Integrated Physical Needs Assessment

- **Physical needs** assessment including **energy**, **water**, and **health assessments**, and identification of deficiencies or defects
- Identifies recommended improvements to enhance **energy efficiency** and **address defects**
- Objective is for building owners to incorporate **cost effective energy efficiency, water conservation** and **health-related improvements** in their **capital planning**
- Conducted **every 15 years** as a lead in to building recapitalization

Technical basis behind the IPNA (JD)

- The IPNA standard and reference standards
  - ASTM E2018-15 *Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process*
  - *ASHRAE Procedures for Commercial Building Energy Audits Level 2*



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: 5-10-17

Effective: 6-1-2017

Designation: E2018 – 15

Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process[1]

This standard is issued under the fixed designation E2018; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 *Purpose*—The purpose of this guide is to define good commercial practice in the United States of America for conducting a baseline *property condition assessment* (PCA) of the improvements located on a parcel of commercial real estate by performing a walk-through survey and conducting research as outlined within this guide.

1.1.1 *Physical Deficiencies*—In defining good commercial and customary practice for conducting a baseline PCA, the goal is to identify and communicate physical deficiencies to a user. The term *physical deficiencies* includes the presence of conspicuous defects and material deferred maintenance of a subject property's material systems, components, or equipment as observed during completion of the PCA. This definition specifically excludes deficiencies that may be remedied with routine maintenance, miscellaneous minor repairs, normal operating maintenance, etc., and excludes de minimis conditions that generally do not present material physical deficiencies of the subject property.

1.1.2 *Walk-Through Survey*—This guide outlines procedures for conducting a walk-through survey to identify the subject property's physical deficiencies, and recommends various systems, components, and equipment that should be observed by the field observer and reported in the *property condition report* (PCR).

1.1.3 *Document Reviews and Interviews*—The scope of this guide includes document reviews, research, and interviews to augment the walk-through survey so as to assist the consultant's understanding of the subject property and identification of physical deficiencies.

1.1.4 *Property Condition Report*—The work product resulting from completing a PCA in accordance with this guide is a Property Condition Report (PCR). The PCR incorporates the information obtained during the Walk-Through Survey, the Document Review and Interviews sections of this guide, and includes Opinions of Costs for suggested remedies of the physical deficiencies identified.

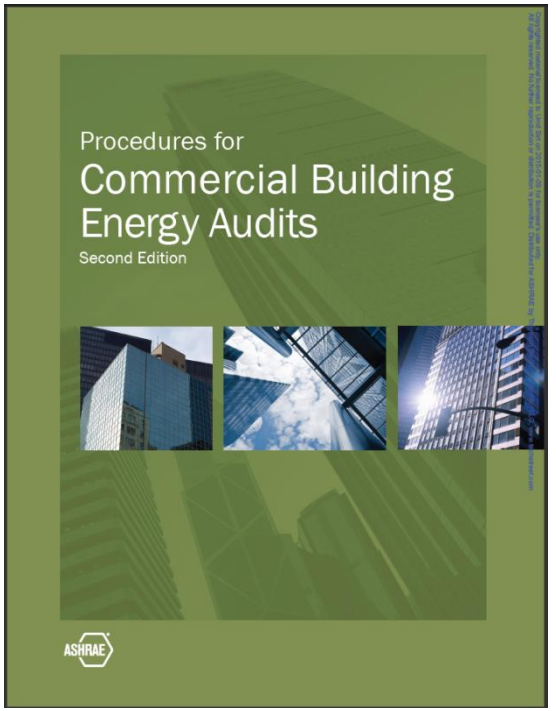
1.2 *Objectives*—Objectives in the development of this guide are to: *(1)* define good commercial and customary practice for the PCA of primary commercial real estate improvements; *(2)* facilitate consistent and pertinent content in PCRs; *(3)* develop pragmatic and reasonable recommendations and expectations for site observations, document reviews and research associated with conducting PCAs and preparing PCRs; *(4)* establish reasonable expectations for PCRs; *(5)* assist in developing an industry baseline standard of care for appropriate observations and research; and *(6)* recommend protocols for consultants for communicating observations, opinions, and recommendations in a manner meaningful to the user.

1.3 *Considerations Beyond Scope*—The use of this guide is strictly limited to the scope set forth in this section. Section 11 and Appendix X1 of this guide identify, for informational purposes, certain physical conditions that may exist on the subject property, and certain activities or procedures (not an all inclusive list) that are beyond the scope of this guide but may warrant consideration by parties to a commercial real estate transaction to enhance the PCA.

1.4 *Organization of This Guide*—This guide consists of several sections, an Annex and two (2) Appendixes. Section 1 is the Scope. Section 2 on Terminology contains definitions of terms both unique to this guide and not unique to this guide, and acronyms. Section 3 sets out the Significance and Use of this guide, and Section 4 describes the User's Responsibilities. Sections 5 through 10 provide guidelines for the main body of the PCR, including the scope of the Walk-Through Survey, preparation of the Opinions of Costs to Remedy Physical Deficiencies, and preparation of the PCR. Section 11 provides additional information regarding out of scope considerations (see 1.3). Annex A1 provides requirements relating to specific asset types, and where applicable, such requirements are to be considered as if integral to this guide. Appendix X1 provides the user with additional PCA scope considerations, whereby a user may increase this guide's scope of due diligence to be exercised by the consultant beyond this guide's baseline level. Appendix X2 and Appendix X3 outline the approach to Accessibility Surveys.

[1] This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.02 on Real Estate Assessment and Management.

Current edition approved Aug. 15, 2015. Published November 2015. Originally approved in 1999. Last previous edition approved in 2008 as E2018–08. DOI: 10.1520/E2018-15.



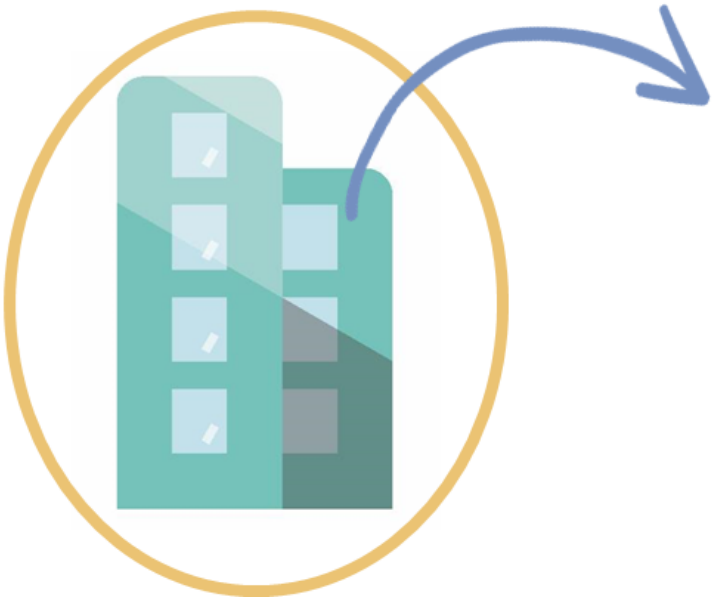
Procedures for
Commercial Building Energy Audits
Second Edition

ASHRAE

Why are there IPNAs?

Why was the IPNA developed? (JL)

All Needs Solved

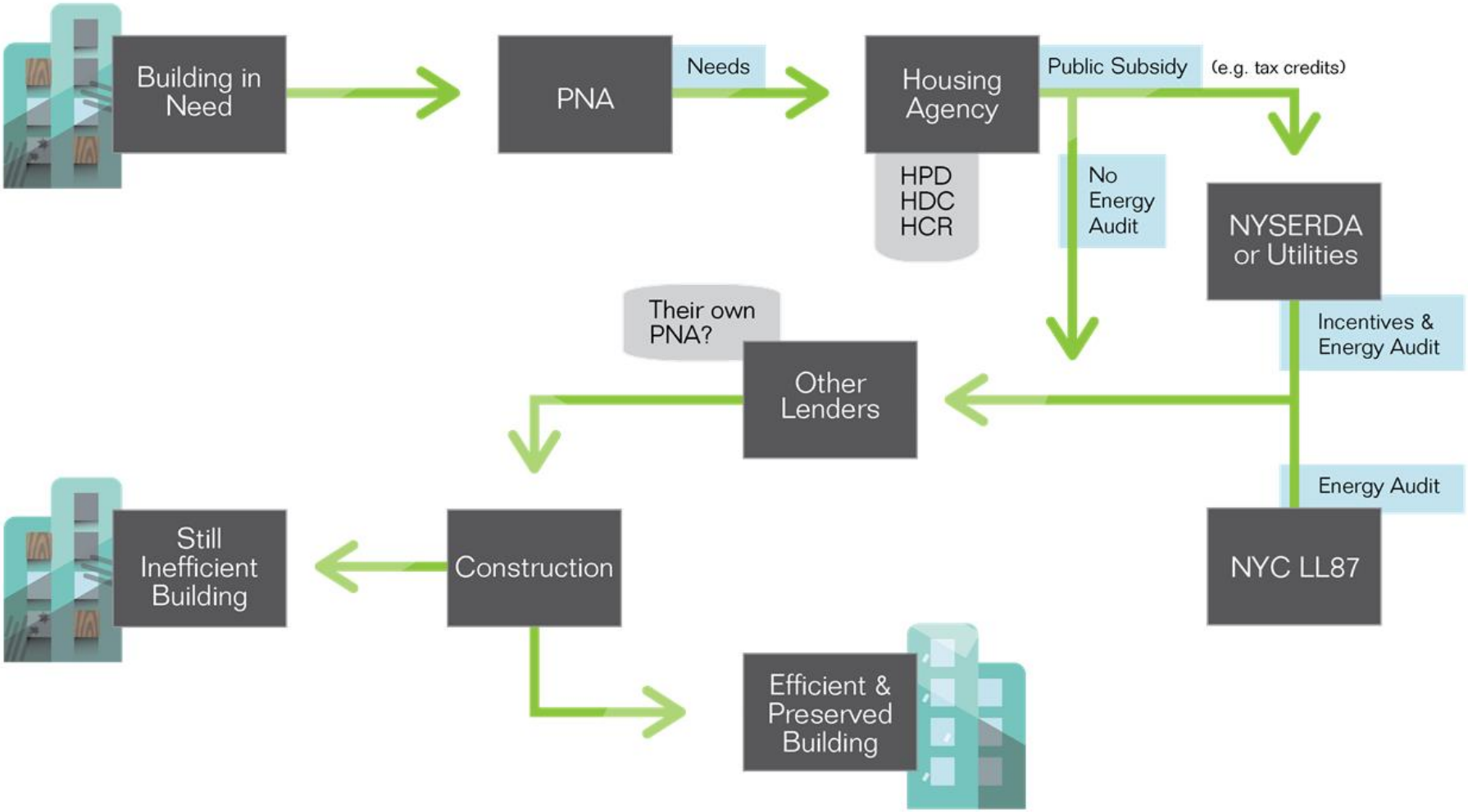


Solving capital and environmental problems is good for the building.

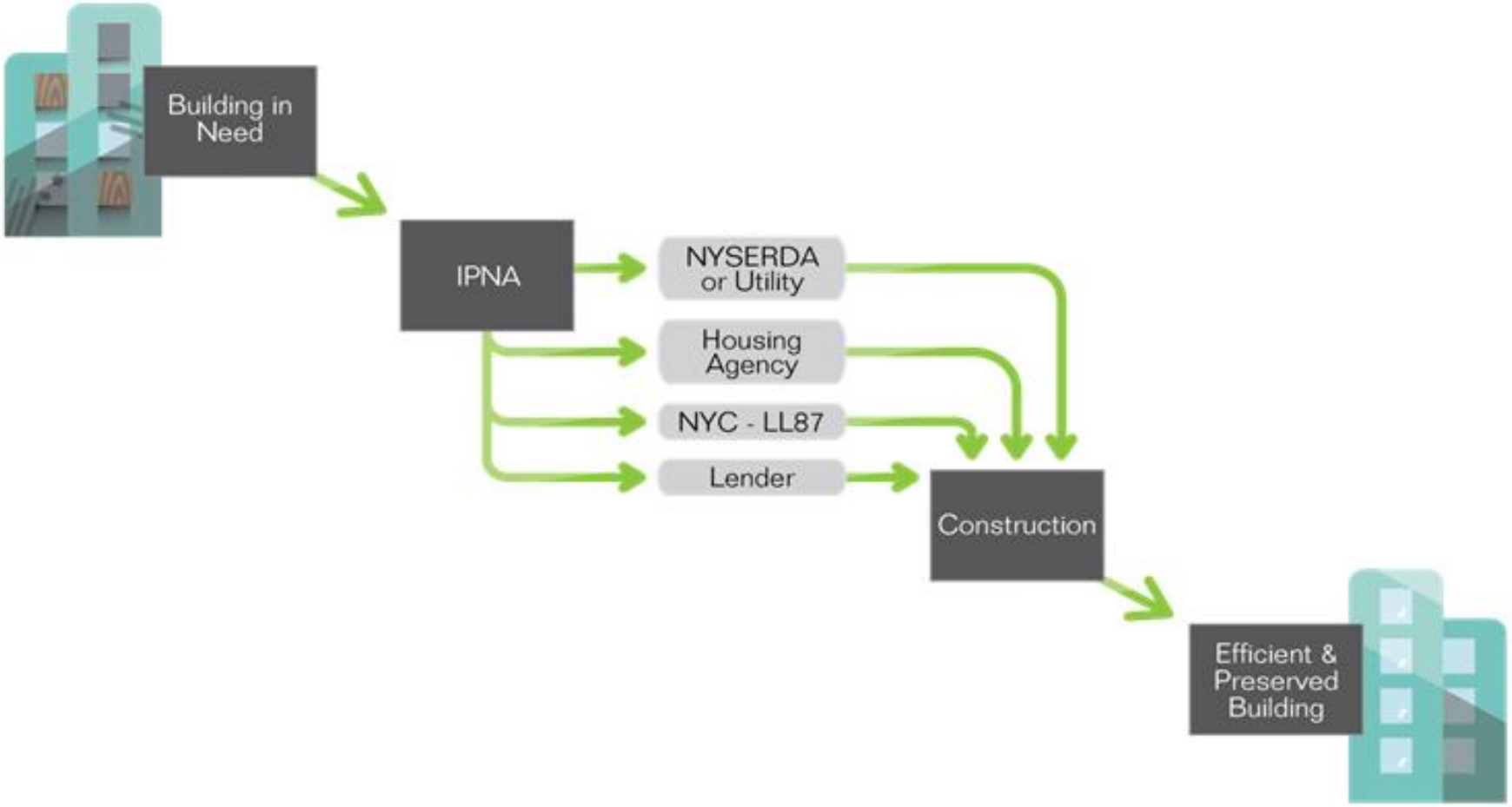
- Improves health
- Reduces costs
- Helps preservation

THE WHOLE IS GREATER THAN THE SUM OF THE PARTS

The "Old Way"


Building in Need
PNA
Needs
Housing Agency
Public Subsidy
(e.g. tax credits)
HPD
HDC
HCR
No Energy Audit
NYSERDA or Utilities
Incentives & Energy Audit
Their own PNA?
Other Lenders
Energy Audit
NYC LL87
Still Inefficient Building
Construction
Efficient & Preserved Building

The IPNA Way


Building in Need
IPNA
NYSERDA or Utility
Housing Agency
NYC - LL87
Lender
Construction
Efficient & Preserved Building

Who requires/ accepts IPNAs?

- NYC Housing Development Corporation (HDC)
- New York City Department of Housing Preservation and Development (HPD)
- New York State Homes and Community Renewal (HCR)
- NYSERDA

Why should affordable housing operators care?

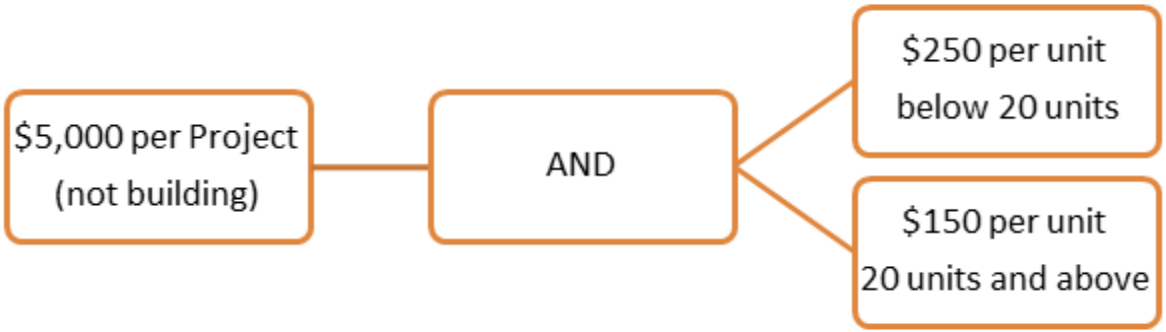
- IPNA is sometimes required by agencies for participation in multifamily affordable housing **financing programs**
- Leverages **energy cost savings** help to fund the project.
- Energy improvements are more **cost effective** when done at the end of useful life, or in conjunction with other work (e.g. roof insulation)
- Promotes an integrated approach that takes advantage of **synergies** between physical, environmental and health benefits
- IPNA **streamline**s access to more preservation **funding** and assistance from energy sources (e.g. NYSERDA, utilities)

How do I get an IPNA?

How do I get an IPNA?

Owner hires one of 14 HPD pre-qualified teams. Costs determined by market.

Financing:



Who is qualified to perform IPNAs?

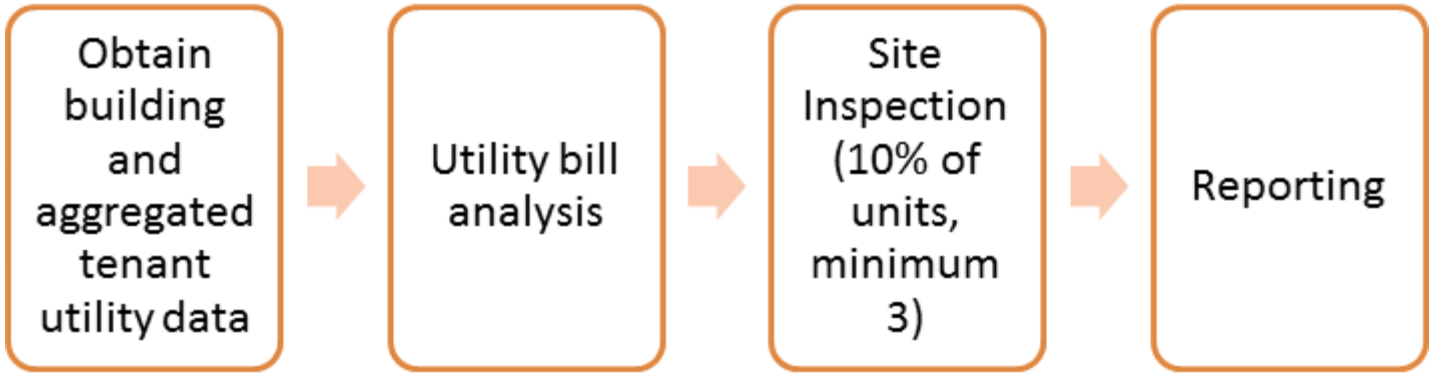
Needs Assessor

- Registered architect (RA)
- Professional engineer (PE)
- Minimum of three years of relevant work experience. At a minimum, this professional shall review and approve the Needs Assessment portion of the report.
- DoHMH Healthy Buildings Trainings for HPD-financed projects.

Energy Assessor

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

What's the process and how can I make my IPNA go smoothly?



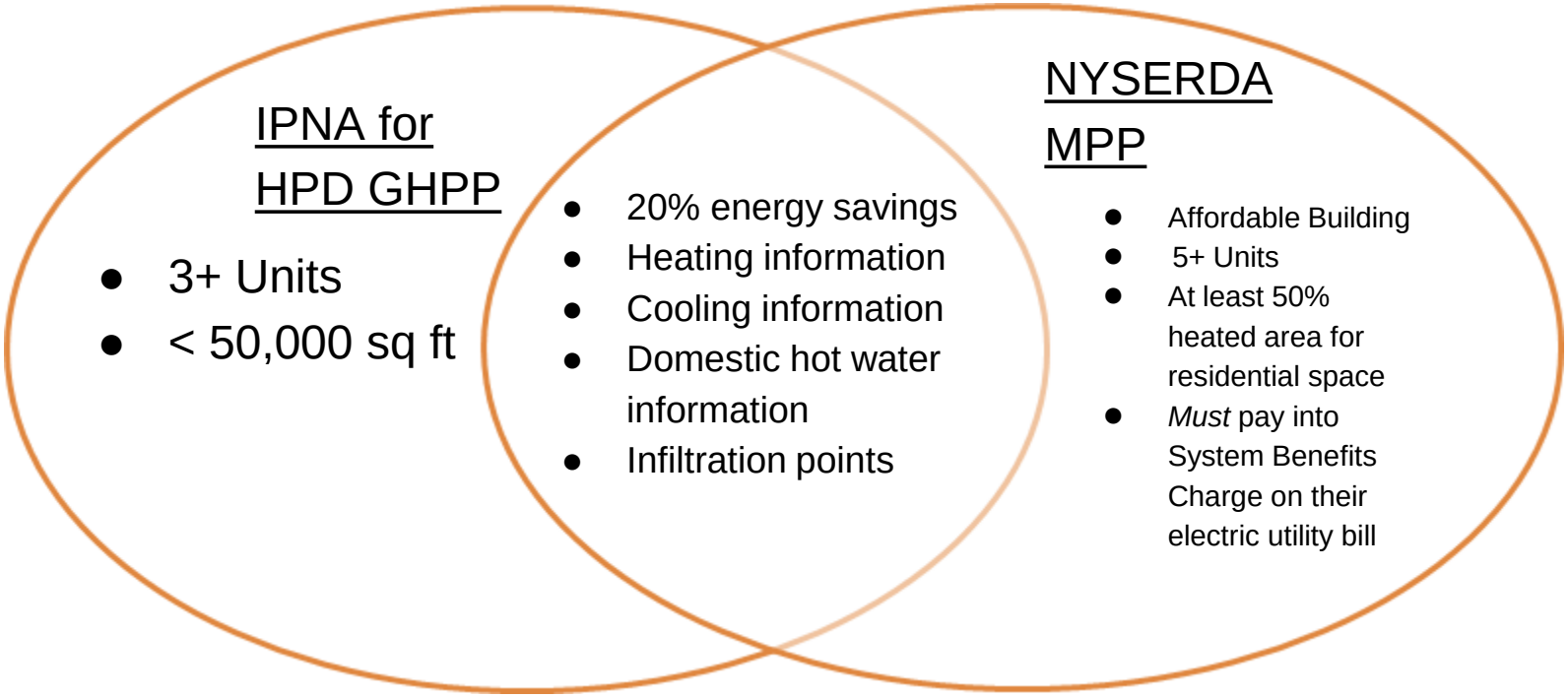
Key items that require building cooperation: utility data; apartment access

Building groups

Sampling can reduce costs for large projects at expense of complete data

- multiple identical buildings
- buildings renovated at same time
- inspect 20% of buildings

Does the IPNA dovetail with any other programs?



What's in my IPNA and how should I interpret the results?

IPNA Report Sections

1. Cover Page
2. **Executive Summary**
3. Executive Summary Continued
4. Objectives & Limitations
5. Building Information
6. **Inspection - Physical Needs**
7. **Inspection - Energy and Water**
8. **Energy and Water Use**
9. Solar Summary
10. **Scope and Preliminary Estimates**
11. **Replacement Cost Schedule**
12. Quality Assurance
13. Operation and Maintenance
14. Photos
15. Raw Utility Bills
16. Healthy Rehab Interventions
17. Environmental Exposure

Executive Summary

Improvement	Estimated Implementation Cost ($)	Estimated Annual Utility Cost Savings ($/yr)	Potential Health Benefit	Urgency
Site				
Area / Yard Drains Replace the Area / Yard Drains	$ 163		None	Long Term (1 to 15 years)
Fire Passage Egress Stair Repour new Concrete Stairs at Fire Passage Egress via Courtyard	$ 1,600		None	Short Term (<12 months)
Landscaping / Vegetation Replace the Landscaping / Vegetation	$ 200		None	Long Term (1 to 15 years)
Sidewalk Bridge Install Sidewalk Bridge and scaffolding at building frontage through duration of work	$ 10,000		None	Long Term (1 to 15 years)
Concrete - Site Concrete around site at pavers & sidewalk where needed.	$ 8,750		None	Long Term (1 to 15 years)
Masonry - Fire Passage Masonry - rebricking for minor repairs	$ 2,500		None	Long Term (1 to 15 years)
Masonry - Fire Passage Masonry - repointing for minor repairs	$ 1,800		None	Long Term (1 to 15 years)
Concrete - Courtyard & Fire Passage Concrete - patching >4" deep - Courtyard & Fire Passage	$ 3,900		None	Long Term (1 to 15 years)

Physical Needs Inspection

INSPECTION - PHYSICAL NEEDS

SITE INSPECTION

	Material	Condition
Sidewalk	Pavers	Average condition.
Curbs	Concrete	Average condition. Minor spalling observed.
Yard / Courtyard Concrete	Concrete	Average condition.
Area / Yard Drains	Metal	Average condition.
Ramps	None	N/A
Stoop and Stairs	Concrete	Average
Areaway / Sidewalk Grates	None	No Gates
Fire Passages	Masonry	Poor condition
Wrought Iron Fence/Gates	Wrought Iron	Good condition.
Chain Link Fences	Chain link	Average condition.
Debris	N/A	N/A
Exterior Stairs	Stone	Average condition.
Trash Enclosures	Timber	Average condition.
Landscaping / Vegetation	Vegetation	Average condition.
Open Space / Playground	Open Space	Average condition.

Site Inspection Narrative / Recommendations

The sidewalk has areas were observed with age and cracking

The fire passages have debris and items inside fire passage preventing clear egress. Also street side exit stair are in poor shape with displaced treads

Energy & Water Inspection

BUILDING SYSTEMS

Heating Generation	Description
Fuel Type	Natural Gas & #2 Oil
Oil Storage Tanks	4000 Gallon
Gas Meter(s) Gas Piping	Steel meters, cast iron piping
Boiler/Furnace Efficiency	Rated: 85% Tested: 76%

	Make / Model	Condition
Boiler	A.L. Eastmond & Sons / FST 125	Average condition. Input (MBtu): 5320.
Burner	Industrial Combustion / DEG-54P	Average condition. Capacity: 54000.
Burner Controls	Industrial Combustion	Average condition.
Burner Control Settings	Type: Modulate	Set to: Auto
Gauges	Unknown	Average condition. Low pressure steam
Pumps	na	na
Air Separator	na	na
Expansion Tank	na	na
Chimney	Metal flue to masonry chimney	Average condition.
Damper and controls	na	na
Other Systems	na	na

Heating Generation Narrative / Recommendations

The boiler was installed in 1985, making it beyond it's expected lifespan and in need of replacement.

Energy & Water Inspection

BUILDING LIGHTING

Common Areas

Space	Lamp Watts	Lamps per Fixture	Qty of Fixtures	Operating Hours per Year	Floor Area (SF)	Lighting Power Density (LPD) (Divide total watts by floor area - w/SF)	Lamp Type
Basment Hallway	32	2	13	8760	1744	4,179	T12 U-Lamp Fluorescent Type 2: Incandescent
Boiler Room	60	2	3	730	1200	219	T12 Linear Fluorescent
Electrical Room	32	2	3	8760	600	2,803	T8 Linear Fluorescent
Floor Hallways	32	2	24	8760	1432	9,396	T8 Linear Fluorescent
Lobby	32	2	14	8760	2000	3,924	T12 Linear Fluorescent Type 2: Other
Vestibule	32	1	2	8760	40	14,016	Other
External	250	1	6	4380	600	10,950	Halogen

Apartments

Space	Lamp Watts	Lamps per Fixture	Qty of Fixtures	Operating Hours per Year	Lamp Type
Entry Ways	19	1.2	8	1460	Screw in CFL
Living/Dining	17.4	2	5	1460	Screw in CFL
Bedrooms	18	2	6	1460	Screw in CFL
Kitchens	18	2	7	1460	Screw in CFL
Bathrooms	20	1	6	1460	Screw in CFL

Energy & Water Inspection

Water Audit

RESULTS

Apartment	Measured Flows (gpm)					Rated Flow (gpf)	Water Temperature in Apartment (°F)
	Kitchen Faucet	Bathroom 1 Showerhead	Bathroom 2 Showerhead	Bathroom 1 Sink	Bathroom 2 Sink	Toilet	
B8	1.5	1.5	na	2.2	na	1.6	126
B6	0.75	2	na	1.6	na	1.6	126
D9	1.5	0.75	na	1.1	na	1.6	124
E11	1.5	1.6	na	1.1	na	1.6	123
E4	2.5	1.6	na	1.1	na	1.6	125
C12	1.4	2	na	0.75	na	1.6	124
F1	1.3	2.5	na	2.7	na	1.6	124
D3	1.4	1.7	na	1.2	na	1.6	127

SUMMARY

Fixture	Number of fixtures	Average Flow (gpf, gpm)*		Estimated Usage (flushes/yr for toilets, hours/yr for showers and faucets)	Savings (gallons/ year)
		Existing	Proposed**		
Toilets	71	1.6	1.28	3804	86,427
Showers	71	1.7	1.5	101	89,125
Kitchen Faucets	71	1.5			0
Bathroom Faucets	71	1.5	0.35	63	310,554
Total Savings per year (gallons)					**486,106**

Water temperature delivered to fixtures: 125 °F

Energy & Water Use

Summary of Utility Data Analysis

	Existing Annual Energy Use									Projected Annual Energy Use									
	Electricity (kwh/yr)	Natural Gas (therms/yr)	Oil #2 (gal/yr)	Oil #4 (gal/yr)	Oil #6 (gal/yr)	District Stream (Mlbs/ yr)	Water (gal/yr)	Other (note units)	Total Site Energy Use (kBtu/yr)	Electricity (kwh/yr)	Natural Gas (therms/yr)	Oil #2 (gal/yr)	Oil #4 (gal/yr)	Oil #6 (gal/yr)	District Stream (Mlbs/ yr)	Water (gal/yr)	Other (note units)	Total Site Energy Use (kBtu/yr)	% Reduction
Owner-Paid Consumption	47,214	4,691		40,000			5,000,380		6,434,194	1,059	49,624		3,837			4,752,454		5,522,762	14%
Aggregated Resident Consumption	170,696								582,415	166,419						0		567,822	3%
Whole Building Consumption	217,910	4,691	0	40,000	0	0	5,000,380	0	7,016,609	167,478	49,624	0	3,837		0	4,752,454	0	6,090,583	13%
Owner-Paid Costs	$ 12,502	$ 6,515		$ 95,049			$ 55,541		$ 114,066	$ 1,887	$ 63,022		$ 9,117			$ 52,813		$74,026	35%
Aggregated Resident Cost	$ 45,200								$ 45,200	$44,217						$ -		$44,217	2%
Whole Building Cost	$ 57,703	$ 6,515		$ 95,049			$ 55,541		$ 159,266	$46,103	$ 63,022		$ 9,117			$ 52,813		$118,243	26%

Bill Start Date	4/24/2018	1/1/2018		2/17/2018			6/8/2016	
Bill End Date	3/26/2019	12/1/2018		6/13/2019			6/30/2017	

Summary of Benchmarking Metrics

Year benchmarked:	N/A	
Site Energy Use Index	106	*kBtu/SF/year*
Source Energy Use Index	131	*kBtu/SF/year*
Heating Index	21	*Btu/SF/HDD*
Total HDD in Benchmarked Year	4511	*HDD*
Energy Cost Index	$2.41	*$/SF/year*
Water Consumption Index	129	*Gal/Bedroom/Day*

Scope and Preliminary Cost Estimates

BUILDING SYSTEMS	Critical / Short Term	Measure Type	Unit Type	Qty	Cost Per Unit	Total Cost	Projected Annual Electricity Savings (kWh/yr)	Project Annual Fuel Savings (mmBtu/yr)	Projected Annual Cost Savings ($/yr)	SIR	Simple Payback	Savings Accrue to Tenants?	Projected Annual Water Savings (gal/yr)	Potential Health Benefit Impact	Incentive #1	Incentive #2	Incentive # 3
Replace boiler	Short Term	Capital	Each	1	$ 411,000	$ 411,000		157	$ 2,539			No	0	None			
Replace master vents	Short Term	Capital	Each	1	$ 200	$ 200						No	0	None			
Install dedicated condensing DHW	Short Term	Capital	Each	1	$ 41,000	$ 41,000		286	$ 4,011	1.7	10.2	No	0	None			
Elevator-NYC door lock monitoring	Short Term	Capital	Each	1	$ 25,000	$ 25,000						No	0	None			
Install recirculation demand DHW control	Short Term	EEWC-Only	Each	1	$ 6,000	$ 6,000		155	$ 2,702	3.8	2.2	No	0	None			
Lighting - Relamp exterior lights with LED	Short Term	EEWC-Only	Each	6	$ 80	$ 480	4,840		$ 1,113	16.3	0.4	No	0	None			
Lighting - Relamp Boiler room with LED	Short Term	EEWC-Only	Each	4	$ 30	$ 120	23		$ 5	0.3	24.0	No	0	None			
Install Solar PV	Short Term	EEWC-Only	Allowance	1	$ 18,038	$ 18,038	34,112		$ 7,829	7.6	2.3	No	0	None	NYC Property Tax Abatement	Residential State Income Tax Credit	Residential State Income Tax Credit
Adjust burner controls to have gas be 90% fuel	Short Term	EEWC-Only	Allowance	1	$ 500	$ 500		0	$ 17,514	418	0.0	No	0	None			
Total - Building Systems	-	-	-	-	-	**$502,338**	**38,975**	**443**	**$ 6,550**	-	**77**	-	**0**	-			

Replacement Cost Schedule

Scope Name	Description of Work	EUL	Age	RUL	Unit Type	Qty.	Cost Per Unit	Critical Costs	Short Term Costs	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Total Long Term
Apartments																									
Refrigerator	Replace the Refrigerators	10	6	4	Each	54	$ 540						$ 31,784										$ 40,532		$ 72,317
Stove/Range	Replace the Stoves/Ranges	15	9	6	Each	54	$ 400								$ 24,840										$ 24,840
Electrical Panel	Replace the Electrical Panel	40	35	5	Each	5	$ 6,124							$ 34,294											$ 34,294
Lighting Fixtures	Relamp with apartments with LED	6	N/A	0	Each	217	$ 4		$ 868						$ 998						$ 1,154				$ 2,153
Intercom Panel	Replace the Intercom Panel	30	18	12	Each	54	$ 220														$ 15,800				$ 15,800
Sink / Faucet	Install low flow faucet aeriators	12	12	0	Each	54	$ 6		$ 324												$ 431				$ 431
Apartment: Ceiling/Walls	Patch repair gypsum at areas of cracking	35	N/A	0	SF	1500	$ 10		$ 15,000																$ -
Apartments: Ceiling/Walls	Paint Walls & Ceilings. Allowance of 12000 Sq. Ft.	3	N/A	0	SF	12000	$ 2		$ 24,000			$ 25,440			$ 27,600			$ 29,760			$ 31,920			$ 34,080	$ 148,800
Apartments - Bathroom	Seal bathtub/sink perimeter	10	N/A	0	LF	297	$ 12		$ 3,564										$ 4,526						$ 4,526
Apartments - Entry Doors	Paint Entry Metal Doors	5	N/A	5	Each	54	$ 500		$ 27,000					$ 30,240					$ 34,290					$ 38,340	$ 102,870
Apartments - Flooring	Refinish wood floors.	30	N/A	0	SF	7000	$ 10		$ 70,000																$ -
Apartments - Cabinets	Refinish wood floors.	10	10	0	FL	8	$ 500		$ 4,000										$ 5,080						$ 5,080
Apartments - sealing	Sealing apartments from rodents	20	Not installed	0	Each	54	$ 100		$ 5,400																$ -

What do I do with my IPNA?

What do I do with my IPNA?

1. Solicit quotes from prequalified IPNA providers, select provider & schedule IPNA
2. IPNA inspection takes place & IPNA provider creates report
3. Project scope of work is developed by Technical Assistant Provider based on IPNA recommendations
4. Scope of work and cost is finalized & bid out to contractors
5. Loan closes and work begins!

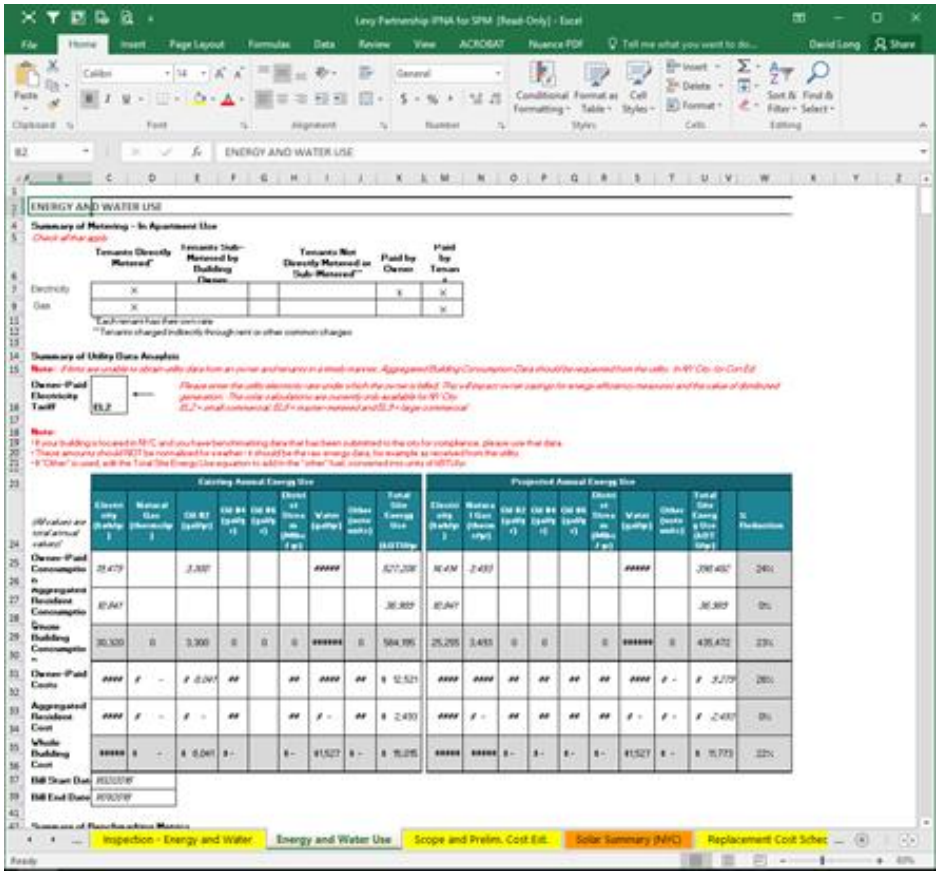
Are the recommendations in the report mandatory for financing?

- GHPP will fund EEWC measures with **payback periods** of up to 10 years.
- Scopes of work must reduce a building's energy consumption by **at least 20%,** as determined by the IPNA
- Items that are **critical to the functioning of the project** are mandatory, but typically all of the recommendations are incorporated into the project scope unless there are budget issues.

IPNA Software Tool

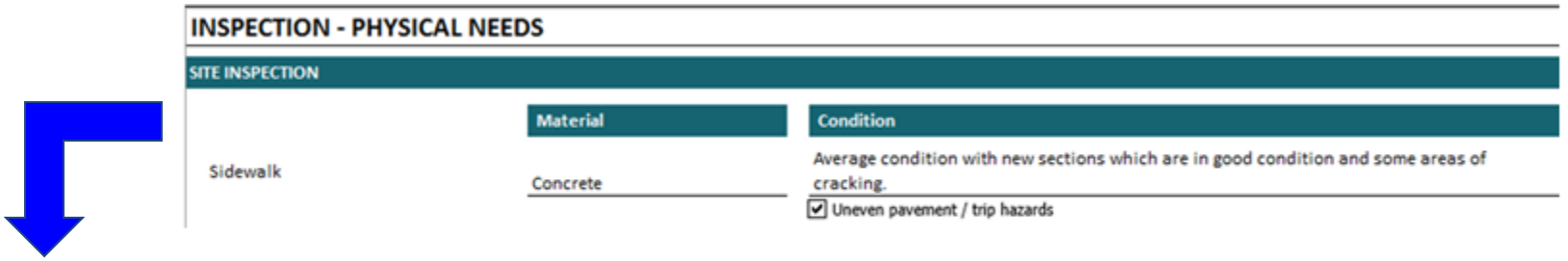
IPNA Reporting Template

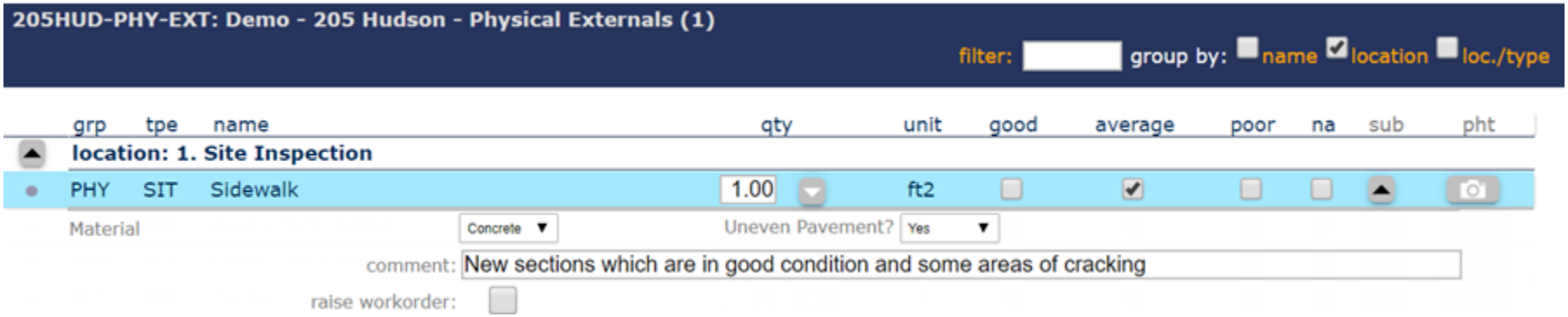
- HPD controlled template
- 18 Excel tabs and 50 pages per building
- 100s of pages for multiple building projects
- Data captured manually and then transposed
- QA and consistency can be challenging



SPM Assets

Web-based data collection and reporting tool





- Reduces report writing time
- Improves consistency
- Ensures comprehensiveness
- Facilitates quality assurance
- Available to all providers
- Builds database accessible by building owners

Thank You

THE LEVY PARTNERSHIP

NYC Department of Housing Preservation & Development

https://www1.nyc.gov/site/hpd/index.page

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