BUILDINGENERGY NYC

Fast Track to Equitable Electrification in NYC

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Northeast Sustainable Energy Association (NESEA)
September 15, 2022

HPD AND NYSERDA

RETROFIT ELECTRIFICATION PILOT

WHAT WE'LL COVER

- Introduction to the Electrification Pilot Program
- Purpose of the Pilot
- Process
- Tools & Resources
- Issues & Challenges
- Case Studies

THE TEAM

NYC Housing Preservation & Development

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

NYS Energy Research & Development Authority

Taitem Engineering

Steven Winter Associates

WHY PILOT ELECTRIFICATON FOR AFFORDABLE HOUSING?

- Provide clean heat (and cooling) to the most vulnerable people in the most polluted neighborhoods
- Embed electrification in holistic retrofit projects where makes the most sense
- Work through the challenges, like cost and billing issues (owner-paid heating and tenant-paid cooling is the norm in NYC affordable housing)

We can’t decarbonize NYC without figuring out how to do it for affordable housing!

HPD RETROFIT ELECTRIFICATION PILOT

Governor Hochul Announces Agreement with New York City Department of Housing Preservation and Development Establishing a $24 Million Pilot to Decarbonize Affordable Housing

August 30, 2021

Media Contact: **hpdmedia@hpd.nyc.gov**

Pilot Program Investments Expected to Support Upgrades in Approximately 1,200 Living Units of Affordable Housing and Benefit 3,000 Low-to-moderate Income Residents

PILOT GOALS & STRUCTURE

HOLISTIC ELECTRIFICATION SCOPES THAT LAYER INTO HPD SCOPES

- Electrification of DHW and/or Space Heating + compatible measures
- On buildings where existing technologies make the most sense

BRIDGE THE COST GAP & STREAMLINE INCENTIVES

- Remove hurdle of typical incentive programs, (too low/too late)
- Incentives fill cost gap and are delivered directly into project during construction

ENSURE QUALITY CONTROL THROUGH OVERSIGHT

- Provide technical support to ensure best practices & outcomes for early adopters

BUILD CAPACITY AROUND ELECTRIFICATION

- Educate designers, contractors & agency staff
- Create case studies & best practices that can be incorporated into future projects

Retrofit Electrification Pilot Structure

HOLISTIC PRE-DEFINED SCOPES

Electrify Hot Water + Solar and/or Electrify Space Heating + Efficiency

DIRECT GRANTS TO OWNER

Grants disbursed alongside construction financing money

TECHNICAL SUPPORT

From design through construction and occupancy

CAPACITY BUILDING, EDUCATION

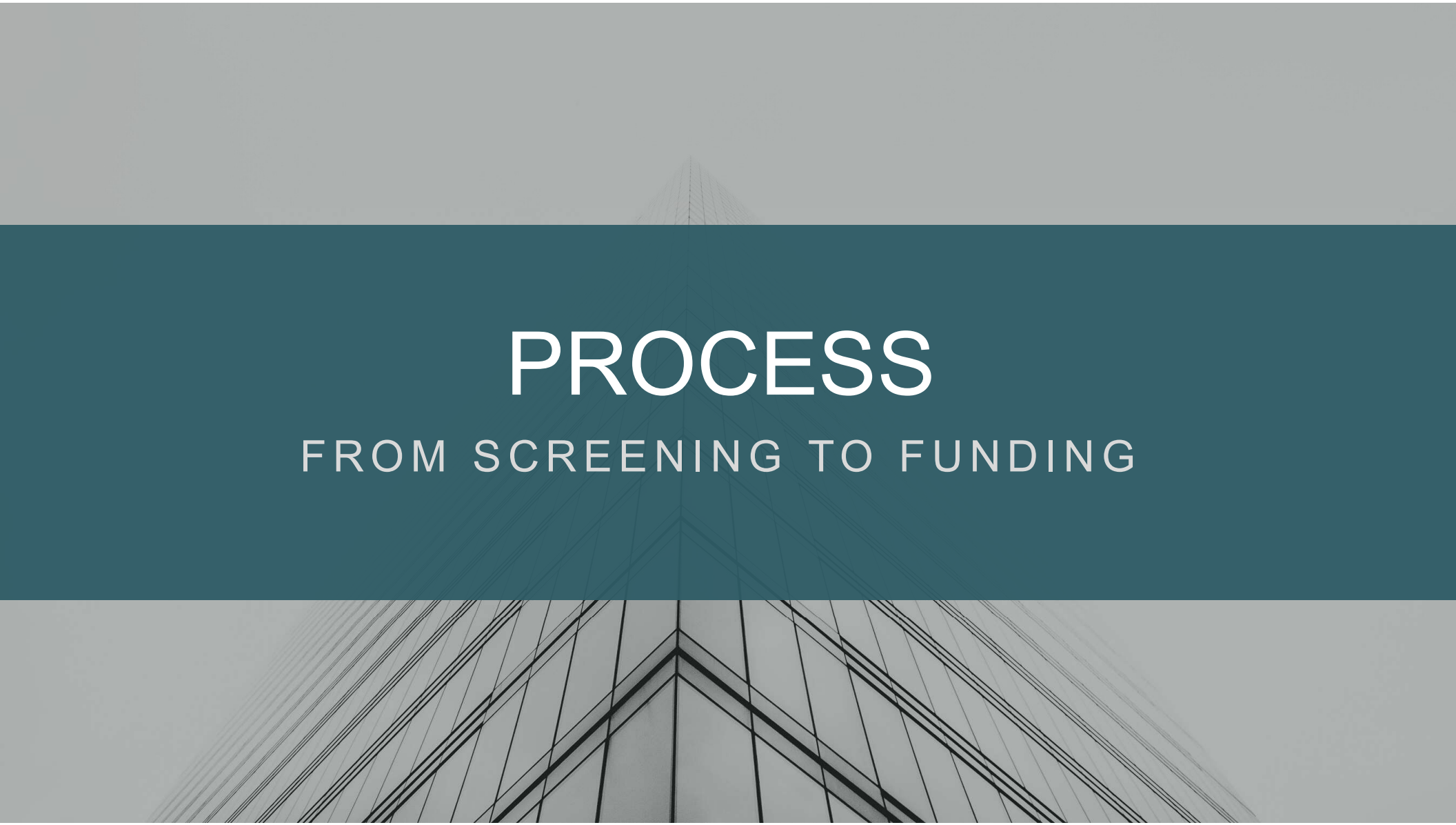
Training design teams, HPD staff & residents and publishing best practices

PREDEFINED SCOPES

SCOPE	REQUIRED SCOPE ITEMS	TARGETED BUILDINGS	PILOT GAP FUNDING*
Electrify Domestic Hot Water (DHW) Heating	**Heat pumps for DHW** + low-flow fixtures, pipe insulation, lighting upgrades, and solar	**Required:** Buildings needing DHW system replacement, ≤ 7-stories + roof space for equipment. **Preferred:** Substantial rehabs, buildings that can support solar, with 10-50 units.	**Up to $2,300/DU**
Electrify Space Heating	**Heat pumps for space heating** + envelope upgrades, lighting upgrades, solar, and electric stoves where feasible.	**Required:** Substantial rehabs replacing heating system, ≤ 7-stories + roof space for equipment. **Preferred:** Buildings with oil or electric heating, in current/future flood zone, with 10-50 units.	**Up to $24,000/DU**

NOTE: Scopes can be combined

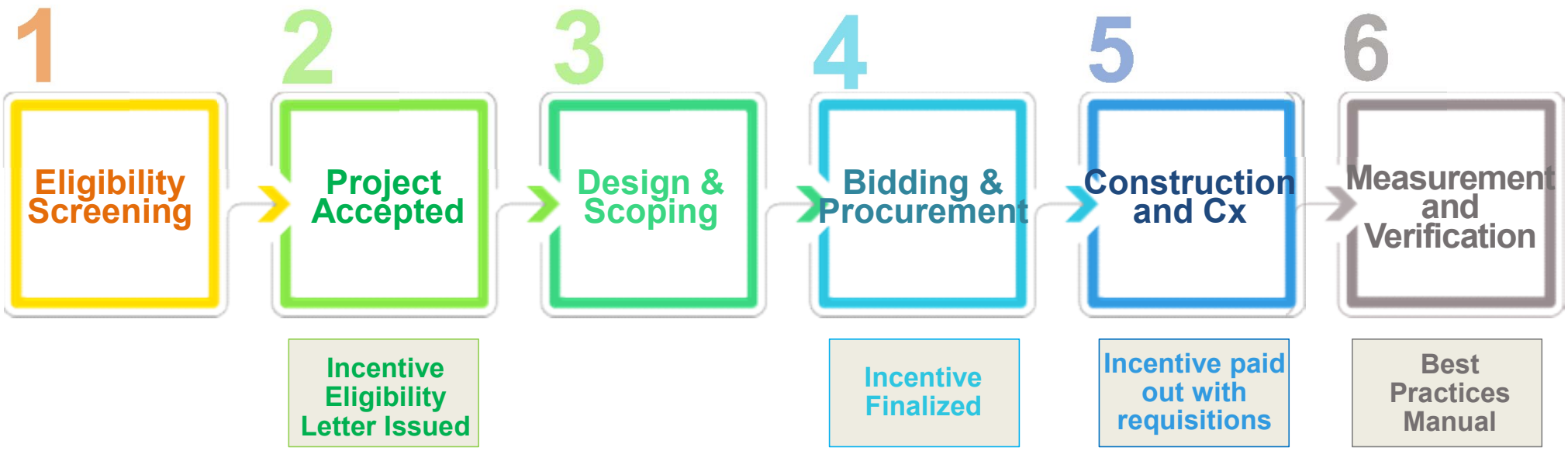
***Pilot has a $1 million per-project cap**



PROCESS

FROM SCREENING TO FUNDING

PILOT: PROCESS OVERVIEW



PILOT SCREENING AND APPROVAL

- **Owner applies by filling in Screening Tool**
- **Technical Assistance Provider (TAP) assesses project** for electrification
- **NYSERDA estimates the project incentive**
- **HPD determines if project is approved**

RETROFIT ELECTRIFICATION PILOT		
Project Information		
	Project Name	123 Main Street
	HPD Project ID (if known)	12345
	HPD Program	GHPP
	Architect	Green Design Corp
	Mechanical Engineer	Green Engineering
	Will Project be Sub or Mod Rehab?	Mod & Sub Rehab
	Number of buildings in project	5
	Estimated Closing Date	2023
	Rental/coop	Rental
	Owner willing to pay for heating? Cooling?	Yes/ No
	Annual heating/ DHW system maintenance cost	$15,000
	Is the project in Con Ed territory?	Yes
Building Information		**Building 1**
Property Location		
	Street Address	123 Main Street
	Borough	Manhattan
	BBL	1021280055
	Is project in Current/ Future Flood Zone	No
	Is project in Landmark Zone	No
Property Details		
	Year Built	1910
	Building GSF	12665
	Is building subject to LL97?	Yes/ No
	If yes, are emissions below 2030 limits?	No
	# Stories above grade	5
	Total # Residential Units	**15**
	# Studios	0
	# 1BR apartments	2
	# 2BR apartments	1
	# 3BR apartments	4
	# 4+ BR apartments	8
	# Commercial Units (if any)	0
	Description of commercial units	N/a
	How is space heated/ who pays for heating?	Owner
	# Community Spaces/ Common Areas (if any)	No
	Description of community/ common areas	None
	How is space heated/ who pays for heating?	N/a

HPD/NYSERDA Retrofit Electrification Pilot: Eligibility Summary

PROJECT INFORMATION:		
Date:	1/2/2022	
Project Name:	123 Main Street	
Owner/ Archtiect/ Engineer:	ABC Architects	
HPD Program	TBD	
Rental or Coop:	Rental	
# Buildings in Project (total)	1	
# Buildings being proposed for Pilot	1	
# Dwelling Units proposed for Pilot	25	
Commercial or Community Space?	0	
Current Heating Fuel Source:	Oil	
Comments or Questions	Use field for anything unusual about project	
SCOPE (Proposed for acceptance into Pilot):		
Pilot Scope being Requested	Scope 1 + 2	
Baseline Scope	Oil to gas/ steam to hot water conversion, decouple DHW, add flue for gas service. New roof, windows, air-sealing	
Proposed Electrification Scope	Mini-split heating, central DHW heat pumps. Induction cooktops. Dunnage, electrical upgrades and patching.	
Proposed Metering for Heating *HPD approval req'd for tenant-paid heat*	Owner will pay for heating and cooling	
Scope Comments:	M&O will need to be higher to support owner-paid cooling	
HARD COST IMPACTS (Estimated based on proposed BAU and proposed Electrifiction Scope)		
Estimated Incremental Cost	$420,000	*based on schematic estimate*
Estimated Clean Heat Incentive(s)	-$112,500	*estimate only*
Estimated Pilot Incentive	**-$307,500**	*based on current incremental costs*
Maximum Available Incentive	**-$657,500**	*based on per/DU cap*
Estimated Net Cost After Incentives:	**$0**	*based on assumptions above, may change*
Estimated Net Cost per DU:	**$0**	*based on assumptions above, may change*
Cost Comments:	Project costs may change as design evolves.	
M&O IMPACTS (Estimated based on proposed BAU and proposed Electrifiction Scope)		
Current Heating/Hot Water Costs	$31,034	*adjusted to current utility rates*
Est. Heating/ Hot Water Costs	$25,300	*based on schematic estimate*
Estimated Annual Savings	18%	
Est. Avg. Annual Cooling Costs/ DU	$170.00	*will need to be added to M&O*
Est. Maintenance Costs:	TBD	*not enough info available*
M&O Comments:	These are estimates only. As project evolves, more accurate projections can be determined and used for underwriting.	

PROJECT WORKSHEET

Construction Costs

change scope items

PILOT INCENTIVE ESTIMATOR					
Scope Item	**Proposed BAU Scope**	**Baseline Estimate**	**Proposed Elec Scope**	**Electrification Estimate**	**Incremental Cost**
Heating & Hot Water System					
Proposed Heating System	*Oil-Gas/Steam Upgrades*	$140,625	*VRF*	468,750	$328,125
Hot Water (if part of pilot)	*Separate Gas DHW*	$59,063		$93,750	$34,688
Related Costs					
Electrical Upgrades	*No Electric Service Upgrade*	$0		175,000	$175,000
Dunnage & Supports	*No Dunnage Req'd*	$0		$5,625	$5,625
Patching & Blocking	*No Blocking & Patching*	$0		$12,188	$12,188
Demo Oil Tank	*Demolition - Oil Tank*	$9,375		$9,375	$0
Demolition Heating System	*No Demo in Scope*	$0		$18,750	$18,750
SUB-TOTAL BEFORE INCENTIVES		**$209,063**		**783,438**	**$574,375**
Clean Heat				*$93,750*	*-$93,750*
INCREMENTAL COST AFTER CLEAN HEAT		**$209,063**		**689,688**	**$480,625**
Max Pilot Incentive/ DU				*$657,500*	*-$657,500*
Adjusted Incentive Amount (may not exceed incremental cost/ maximum per/DU or per/Proj					**-$480,625**
Incremental cost after Pilot Incentive					*$0*

Oil-Gas/Steam-Hydronic
Oil-Gas/Steam Upgrades
Gas Boiler + Steam Upgrades
Gas Boiler + Hydro Upgrades
BAU Heating Upgrades
No Heating Upgrades
Mini/multi-splits
VRF

PROJECT WORKSHEET

Operating Costs

ESTIMATED ANNUAL UTILITY COSTS					
Item	Existing (Normalized)	Conversion Method	Uitility Allowance Method	CPC OIL	CPC GAS
Space Heating	$18,900	$9,600	$12,000	incl below	incl below
DHW	$8,100	$4,800	$8,100	incl below	incl below
Heating + DHW Cost	**$27,000**	**$14,400**	**$20,100**	**$24,750**	**$21,000**
Heating + DHW Cost/ DU	*$1,080*	*$576*	*$804*	*$990*	*$840*
Air Conditioning:	$0	$2,493	$4,500	$0	$0

HEAT PUMP SPACE HEATING COST ESTIMATOR	
Gallons/year oil used for Space Heating	6,300
Conversion: kbtu/gallon	145
KBtu/year space heating	913,500
Overall space heating efficiency	48%
Reduced envelope losses	50.0%
Load (kbtu/year)	219,240
Assumed COP	2.5
	16,833
	$0.21
	$3,500

add wall insulation

ESTIMATOR	
	2,700
	145
KBtu/year DHW	391,500
Overall DHW efficiency	50%
DHW improvements (e.g. low flow)	50%
Load (kbtu/year)	97,875
Assumed COP	2.5
kwh/year	11,474
Cost/ kwh (master or direct)	$0.21
Estimated Cost per year	**$2,400**
Total Combined Heat + DHW	**$5,900**

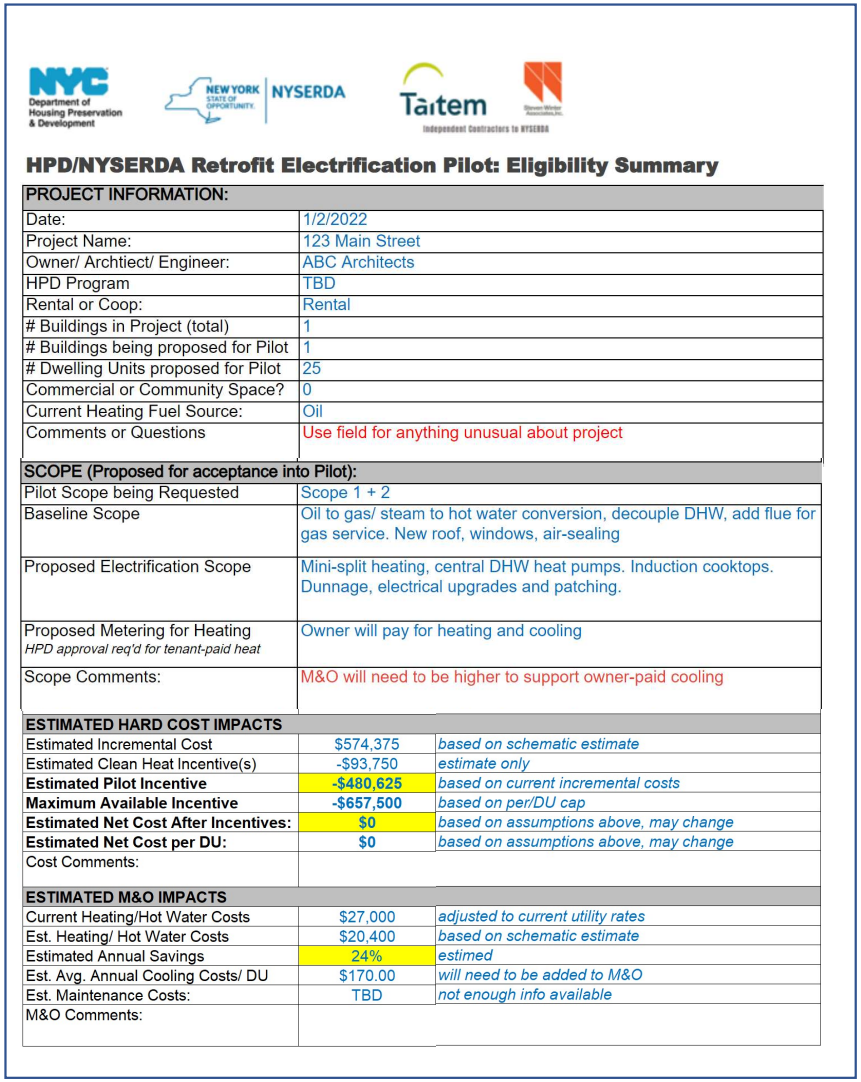
add pipe insulation

PROJECT WORKSHEET

Pro Forma

The worksheet spits out a summary of the project that is used to:

- **Summarize incremental and operational costs**
- **Calculate the potential incentive**
- **Assess if the project should be approved**



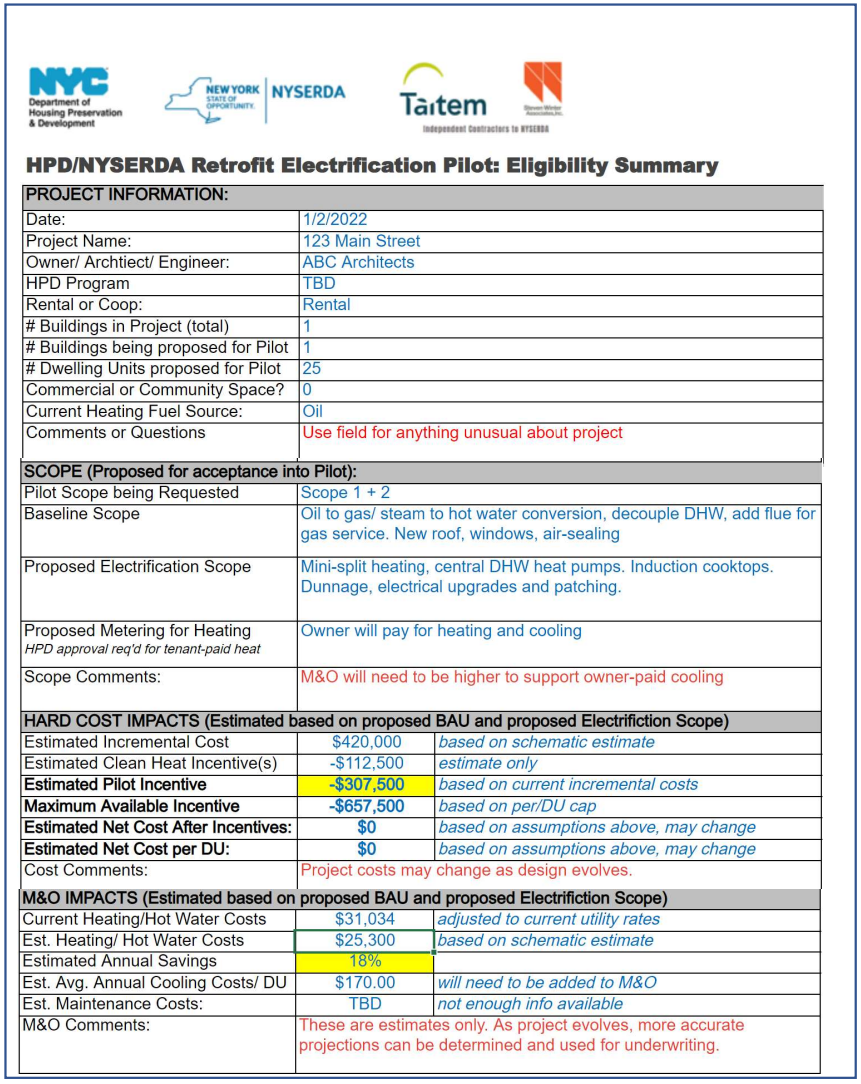
HPD/NYSERDA Retrofit Electrification Pilot: Eligibility Summary

PROJECT INFORMATION:		
Date:	1/2/2022	
Project Name:	123 Main Street	
Owner/ Archtiect/ Engineer:	ABC Architects	
HPD Program	TBD	
Rental or Coop:	Rental	
# Buildings in Project (total)	1	
# Buildings being proposed for Pilot	1	
# Dwelling Units proposed for Pilot	25	
Commercial or Community Space?	0	
Current Heating Fuel Source:	Oil	
Comments or Questions	Use field for anything unusual about project	
SCOPE (Proposed for acceptance into Pilot):		
Pilot Scope being Requested	Scope 1 + 2	
Baseline Scope	Oil to gas/ steam to hot water conversion, decouple DHW, add flue for gas service. New roof, windows, air-sealing	
Proposed Electrification Scope	Mini-split heating, central DHW heat pumps. Induction cooktops. Dunnage, electrical upgrades and patching.	
Proposed Metering for Heating *HPD approval req'd for tenant-paid heat*	Owner will pay for heating and cooling	
Scope Comments:	M&O will need to be higher to support owner-paid cooling	
ESTIMATED HARD COST IMPACTS		
Estimated Incremental Cost	$574,375	*based on schematic estimate*
Estimated Clean Heat Incentive(s)	-$93,750	*estimate only*
Estimated Pilot Incentive	**-$480,625**	*based on current incremental costs*
Maximum Available Incentive	**-$657,500**	*based on per/DU cap*
Estimated Net Cost After Incentives:	**$0**	*based on assumptions above, may change*
Estimated Net Cost per DU:	**$0**	*based on assumptions above, may change*
Cost Comments:		
ESTIMATED M&O IMPACTS		
Current Heating/Hot Water Costs	$27,000	*adjusted to current utility rates*
Est. Heating/ Hot Water Costs	$20,400	*based on schematic estimate*
Estimated Annual Savings	24%	*estimed*
Est. Avg. Annual Cooling Costs/ DU	$170.00	*will need to be added to M&O*
Est. Maintenance Costs:	TBD	*not enough info available*
M&O Comments:		

PROJECT WORKSHEET

The worksheet spits out a summary of the project that is used to:

- **Calculate the incentive**
- **Provide information about the assumptions used in the estimate**
- **Assess if the project should be accepted into the pilot**



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Proposed Electrification Scope	Mini-split heating, central DHW heat pumps. Induction cooktops. Dunnage, electrical upgrades and patching.	
Proposed Metering for Heating *HPD approval req'd for tenant-paid heat*	Owner will pay for heating and cooling	
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Estimated Net Cost per DU:	**$0**	*based on assumptions above, may change*
Cost Comments:	Project costs may change as design evolves.	
M&O IMPACTS (Estimated based on proposed BAU and proposed Electrifiction Scope)		
Current Heating/Hot Water Costs	$31,034	*adjusted to current utility rates*
Est. Heating/ Hot Water Costs	$25,300	*based on schematic estimate*
Estimated Annual Savings	18%	
Est. Avg. Annual Cooling Costs/ DU	$170.00	*will need to be added to M&O*
Est. Maintenance Costs:	TBD	*not enough info available*
M&O Comments:	These are estimates only. As project evolves, more accurate projections can be determined and used for underwriting.	

PROJECT WORKSHEET

EXISTING PROJECT INFO - FROM IPNA:		
Item	**Info**	**Notes**
Project Name & Address:	**511 W 171 Street Cluster**	
Building Square Footage	69080	
Estimated SF common areas	10,362	*assumes 15% of G*
Number of Dwelling Units	78	
Number of commercial units	2	
If Oil, Oil Type	#4	
Oil Use (Gal)	38113	WS - re:511 W171
Cost	$76,226	
Oil Cost/Gal (per IPNA)	$2.00	*automatically calc*
Billing Period		*e.g. 10/1/2020 - 1*
Boiler Efficiency	80%	75% old, 80% typi
Distribution System	1-pipe	
Distribution Efficiency	60%	60% for steam, 80
% for Space Heating	70%	*split based on rou*
Oil Usage (gal) for Space Heating	26,679	
% for DHW	30%	*split based on rou*
Oil Usage (gal) for DHW	11,434	
Normalized Oil Cost	$3.00	see chart below, c
Normalized Oil Use	100%	*adjust if outlier ye*
Normalized Cost for Space Heating	**$80,038**	
Normal		
Norma		
Heatin		

UTILITY COST ESTIMATOR - TAITEM METHOD	
Instructions: Fill in all blue cells, confirm all orange cells	
SPACE HEATING UTILITY COST ESTIMATOR	
Gallons/year oil used for Space Heating	26,679
Conversion: kbtu/gallon	145
KBtu/year space heating	3,868,480
Overall space heating efficiency	48%
Reduced envelope losses	2.5%
Load (kbtu/year)	1,810,449
Assumed COP	2.5
kwh per year (assume 2.5 COP)	185,377
Cost/ kwh (master or direct)	$0.21
Estimated Cost per year	**$38,900**
HOT WATER UTILITY COST ESTIMATOR	
Gallons/year oil used for DHW	11,434
Conversion: kbtu/gallon	145
KBtu/year DHW	1,657,920
Overall DHW efficiency	50%
DHW improvements (e.g. low flow)	0%
Load (kbtu/year)	828,960
Assumed COP	2.5
kwh/year	97,182
Cost/ kwh (master or direct)	$0.21
Estimated Cost per year	**$20,400**

PILOT INCENTIVE ESTIMATOR (Will be revised at bi					
Scope Item	**Proposed BAU Scope**	**Baseline Cost**			
Heating & Hot Water System					
Proposed Heating System	*Oil-Gas/Steam-Hydronic*	$690,800.00	*Mini/multi*		
Commercial Heating (if different)					
Hot Water (if part of pilot)	*Separate Gas DHW*	$217,602.00	*Split HPH*		
Related Costs					
Electrical Upgrades(for Heating/DHW)	*No Electric Service Upgrade*	$0.00	*Electric D*		
Dunnage & Supports	*No Dunnage Req'd*	$0.00	*Dunnage*		
Patching & Blocking	*No Blocking & Patching*	$0.00	*Blocking*		
Flues/ Chimneys/ Etc.	*Flue for Oil-to-Gas (per story)*	$175,000.00	*No Flue i*		
Demo Oil Tank	*Demolition - Oil Tank*	$34,540.00	*Demolitio*		
Demolition Heating System	*Demolition - Htg Distribution System*	$69,080.00	*Demolitio*		
Other (Describe)		$0.00			
Other Covered Costs					
Stoves/ Cooking (per DU)	*Stove - New Gas Stove*	$70,200.00	*Stove - Induction w/ Pots (per DU)*	$105,300.00	$35,100.00
Ventilation	*Not in Scope*	$0.00	*Not in Scope*	$0.00	$0.00
Roof Insulation	*Roof - BAU*	$414,480.00	*Roof - HP*	$483,560.00	$69,080.00
Windows	*Windows - BAU*	$690,800.00	*Windows - HP*	$898,040.00	$207,240.00
SUB-TOTAL BEFORE INCENTIVES		**$2,362,502**		**$4,274,546**	**$1,912,044**
Clean Heat (Heating)			*> 25000 SF*	*$ (207,240)*	*$ (207,240)*
Clean Heat (Hot Water)			*> 10000 SF*	*$ (207,240)*	*$ (207,240)*
INCREMENTAL COST AFTER CLEAN HEAT		**$2,362,502**		**$3,860,066**	**$1,497,564**
Max Pilot Incentive/ DU			*Combined Scope*	*$ (2,051,400)*	
Max Incentive per Project				*$ (1,000,000)*	
Adjusted Incentive Amount (may not exceed incremental cost/ maximum per/DU or per/Project amount)					**-$1,000,000**

Summary Form:

NYC Department of Housing Preservation & Development | NEW YORK STATE OF OPPORTUNITY. NYSERDA | Taitem Independent Contractors to NYSERDA

HPD/NYSERDA Retrofit Electrification Pilot: Eligibility Summary

PROJECT INFORMATION:		
Date:	Date sent to HPD and Project Team	
Project Name:	511 W 171 Street Cluster	
Owner/ Archtiect/ Engineer:	X, Y, Z	
HPD Program	TBD	
Rental or Coop:	Rental	
# Buildings in Project (total)	5	
# Buildings being proposed for Pilot	5	
# Dwelling Units proposed for Pilot	78	
Commercial or Community Space?	2	
Current Heating Fuel Source:	Oil	
Comments or Questions	Use field for anything unusual about project	
SCOPE (Proposed for acceptance into Pilot):		
Pilot Scope being Requested	Scope 1 & 2: Full Electrification of all buildings	
Baseline Scope	Oil to gas/ steam to hot water conversion, decouple DHW, add flue for gas service. Upgrade gas ranges, windows & roof. No ventilation or electrical work.	
Proposed Electrification Scope	Mini-split heating, central DHW heat pumps. Induction cooktops. Dunnage, electrical upgrades and patching.	
Proposed Metering for Heating *HPD approval req'd for tenant-paid heat*	Team is proposing owner-paid heating & cooling. Note that HPD approval is required for resident-paid heating.	
Scope Comments:	Note that induction cooking requires in-unit upgrades not covered by the incentive. This may drive costs to unsupportable levels.	
HARD COST IMPACTS (Estimated based on proposed BAU and proposed Electrification Scope)		
Estimated Incremental Cost	$1,500,000.00	*per project/ per year, adjusted to current rates*
Estimated Clean Heat Incentive(s)	-$414,500.00	*NYS Clean Heat Incentives subject to change*
Estimated Pilot Incentive	**-$1,000,000.00**	*based on current incremental costs*
Maximum Available Incentive	**-$1,000,000.00**	*$2.3K/DU Scope 1, $24K/ Scope 2, $1mm cap*
Estimated Net Cost After Incentives:	**$85,500.00**	*based on assumptions above, may change*
Estimated Net Cost per DU:	**$1,100.00**	*based on assumptions above, may change*
Cost Comments:	Project costs may vary as project is designed. For multi-building projects, does not include cost impact on non-pilot projets.	
M&O IMPACTS (Estimated based on proposed BAU and proposed Electrifiction Scope)		
Current Heating/Hot Water Costs	$114,300.00	*per project/ per year, adjusted to current rates*
Est. Heating/ Hot Water Costs	$104,300.00	*per project/ per year, using current utility rates*
Estimated Annual Savings	9%	*based on estimates above, could be negative*
Est. Average Cooling Costs	$220.00	*per DU/ per year, only calculate if owner paid*
Est. Maintenance Costs:	TBD	*compare current costs w/ estimates from engineer*
M&O Comments:	These are estimates only. As project evolves, more accurate projections can be determined and used for underwriting. Note that for projects approved by HPD to include resident-paid heating, heating costs will shift from M&O to resident, using HPD's utility allowances.	

Note: HPD Program Approval is required for acceptance into the Pilot.

please see Page 2 for additional conditions & next steps

DESIGN & CONSTRUCTION PROCESS

TAP assists team to design and integrate electrification

DESIGN

- 3 design meetings (min)
- Optimize design for cost effectiveness & efficiency

TAP assists with bidding

BIDDING

- Ensures full scope is included in bid docs
- Reviews Electrification Rider

TAP visits site & approves payments

CONSTRUCTION

- 3 site visits (min)
- Reviews requisition payments

TAP helps train staff & residents

PROJECT TURNOVER

- Commissioning
- Staff & Resident Training

NOTE: If a comment addresses a firm program requirement, it must be addressed. Recommendations (for example, best practices that are not program requirements) may be rejected.

DESIGN & CONSTRUCTION CHECKLISTS

HPD Drawing Review Comments		
Technical Requirements	**Taitem CD Review DATE**	**Team Response**
	Drawings dated:	**Date:**
Split Systems: Must meet or exceed NYS		
Minimum 10-year parts warranty, 1-year		
Design requirements		
System shall be designed to meet Clean Heat "Full Load" requirements (heat		
Locate outdoor units to minimize length of		
Electric resistance backup shall not be used for heat pumps (e.g. in the same space).		
Heat pump shall have a variable speed compressor.		
Size the heat pump to the heating load,		
Consider best practices as outlined in HPD/NYSERDA best practices, including:		

Design review checklist

Project Info				
Project Name:				
Building Address:				
Inspection Dates				
Kickoff Meeting				
Construction Inspection				
Final Inspection				
Number	Equipment	HPD Stage	Category	Objective / Task Description
6.1	Condensate	Construction / Final Inspection	Installation	Observe condensate line where ac terminate in either a domestic drair not terminate onto another heat pu cause slips if condensate freezes. indication of condensate line leaka Condensate tubing shall be minimu and corrugated tubing shall not be Note that code-approved materials disposal does not include plain ste generally not be used for condensa Fastening of condensate tubing sh

Construction inspection checklist

PROJECT TURNOVER

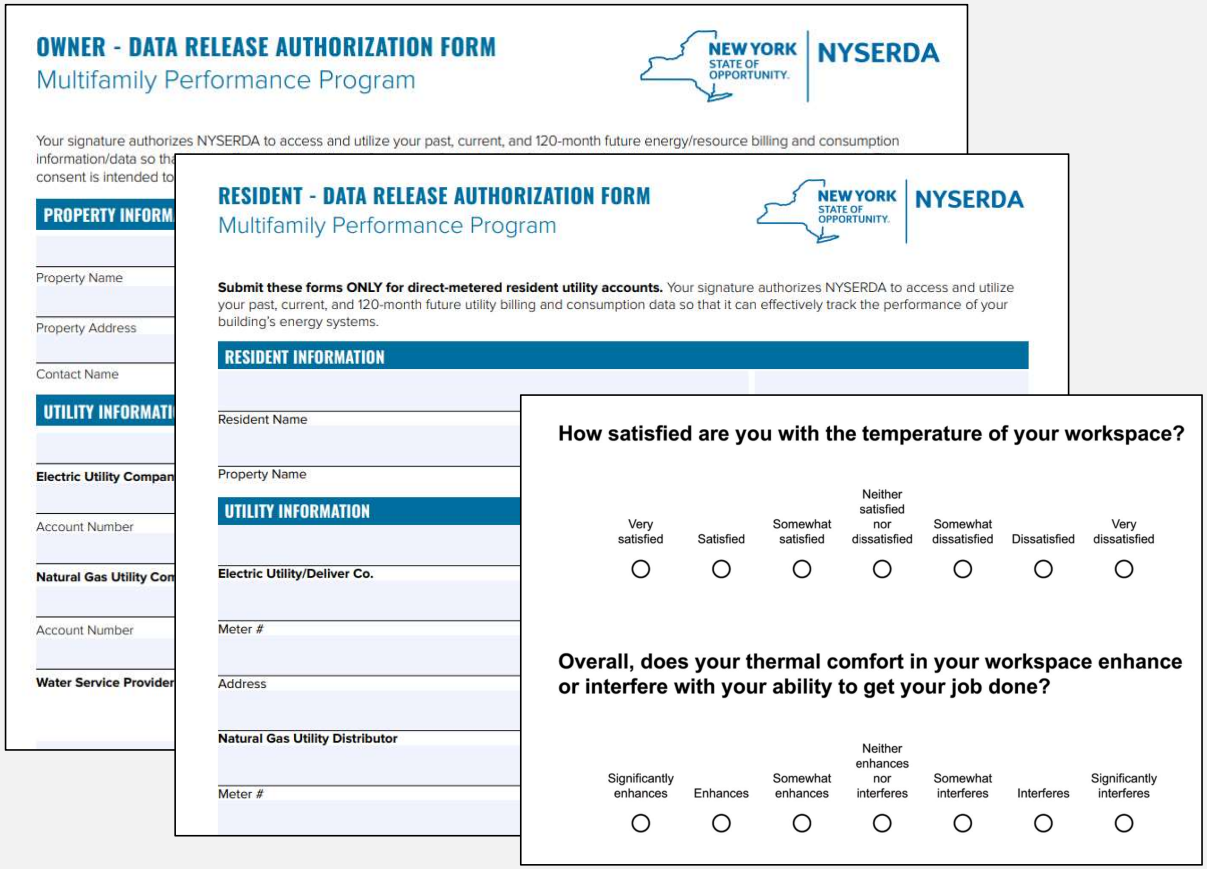
Owner Responsibilities

- Access to the site
- Utility data release forms
- Assist NYSERDA with owner and tenant surveys

MEASUREMENT & VERIFICATION

1. Collect utility information
2. Collect cost & scope info.
3. Owner surveys
4. Tenant surveys

MEASUREMENT & VERIFICATION (M+V)



OWNER - DATA RELEASE AUTHORIZATION FORM
Multifamily Performance Program

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Your signature authorizes NYSERDA to access and utilize your past, current, and 120-month future energy/resource billing and consumption information/data so th
consent is intended to

PROPERTY INFORM

Property Name

Property Address

Contact Name

UTILITY INFORMATI

Electric Utility Compan

Account Number

Natural Gas Utility Con

Account Number

Water Service Provider

RESIDENT - DATA RELEASE AUTHORIZATION FORM
Multifamily Performance Program

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Submit these forms ONLY for direct-metered resident utility accounts. Your signature authorizes NYSERDA to access and utilize your past, current, and 120-month future utility billing and consumption data so that it can effectively track the performance of your building's energy systems.

RESIDENT INFORMATION

Resident Name

Property Name

UTILITY INFORMATION

Electric Utility/Deliver Co.

Meter #

Address

Natural Gas Utility Distributor

Meter #

How satisfied are you with the temperature of your workspace?

Very satisfied	Satisfied	Somewhat satisfied	Neither satisfied nor dissatisfied	Somewhat dissatisfied	Dissatisfied	Very dissatisfied
○	○	○	○	○	○	○

Overall, does your thermal comfort in your workspace enhance or interfere with your ability to get your job done?

Significantly enhances	Enhances	Somewhat enhances	Neither enhances nor interferes	Somewhat interferes	Interferes	Significantly interferes
○	○	○	○	○	○	○

HPD and NYSERDA Electrification Pilot - FAQ Series

HPD/ NYSERDA Retrofit Electrification Pilot

Best Practices + Case Studies

NYC Department of Housing Preservation & Development | NEW YORK STATE OF OPPORTUNITY. NYSERDA | Taitem Independent Contractors to NYSERDA

RESOURCES

SUPPORT AND GUIDANCE FOR PROJECT TEAMS

PILOT WEBPAGE

Design Guidelines

HPD-NYSERDA Retrofit Electrification Pilot

Share

Print

Building owners receiving HPD financing for rehabilitations of multifamily buildings up to 7 stories that are interested in electrification of Hot Water Heating and/or Space Heating and Cooking may be eligible for funding and technical support through the HPD-NYSERDA Electrification Retrofit Pilot. Projects must meet the criteria listed in the Program Requirements to be considered. Funding will cover incremental costs for electrification and will be granted on a first-come, first-served basis. Funding may be capped on a per-project basis and will be limited to $1 million per project.

Program Requirements

- Joint HPD/NYSERDA Retrofit Electrification Pilot: Program Requirements

All interested owners must read this and the program requirements before we talk to them.

https://**www1.nyc.gov/site/hpd/services-and-information/hpd-nyserda-retrofit-electrification-pilot.page**

Program Documents

- Technical Requirements - Heat Pump for Space Heating
- Technical Requirements - Heat Pump Water Heater
- Owner's Participation Agreement (sample)
- Electrification Rider to Contract (sample)
- Incentive Award Letter (sample)
- Incentive Eligibility Letter (sample)

To Apply

Please complete the Pilot Screening Tool (submission instructions are included on the tool).

Pilot Resources

- Pilot Process Flow Chart
- FAQ: Electrification Pilot FAQ Series: What is a Heat Pump
- FAQ: Electrification Pilot FAQ Series: What is a Heat Pump for Hot Water
- FAQ: Roof Considerations for Heat Pumps (coming soon)
- FAQ: Heat Pump System Design (coming soon)
- Video: Lessons Learned on an HDFC Heat Pump Project

Additional Resources

DOB Resources:

- Design Professional Requirements: Mechanical (information about codes and zoning around mechanical equipment)
- Registrant Project Requirements: Mechanical Work and Inspections
- DOB Now: Build Mechanical Systems (MS) Resources
- 2020 Energy Conservation Code
- New York City Construction Codes

Zoning Resources:

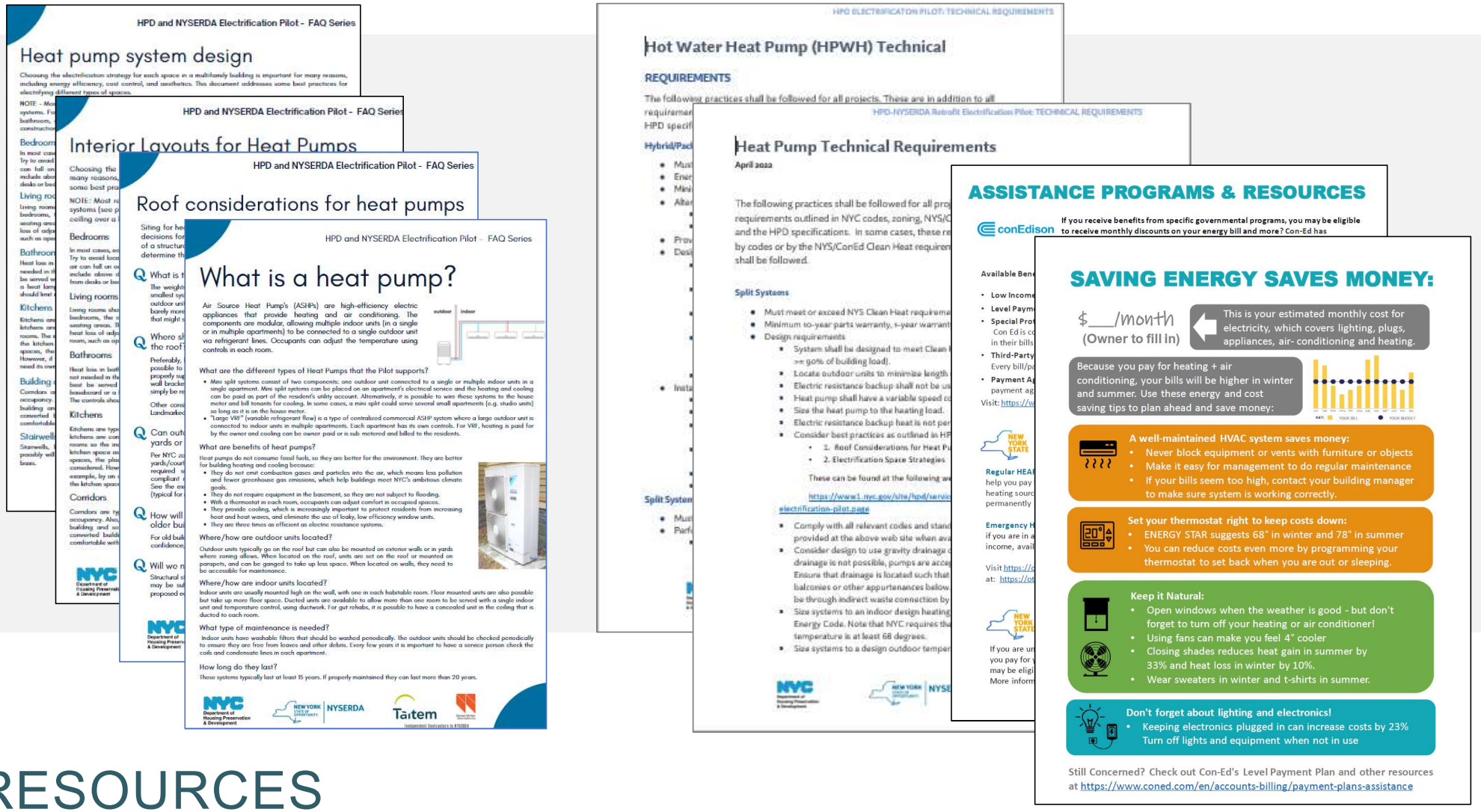
- Zoning Resolution

DEP Resources:

- Noise Control for Building Exterior Heating, Ventilation, and Air Conditional Guidance Sheet

NYS Clean Heat Program

- About the NYS Clean Heat Program

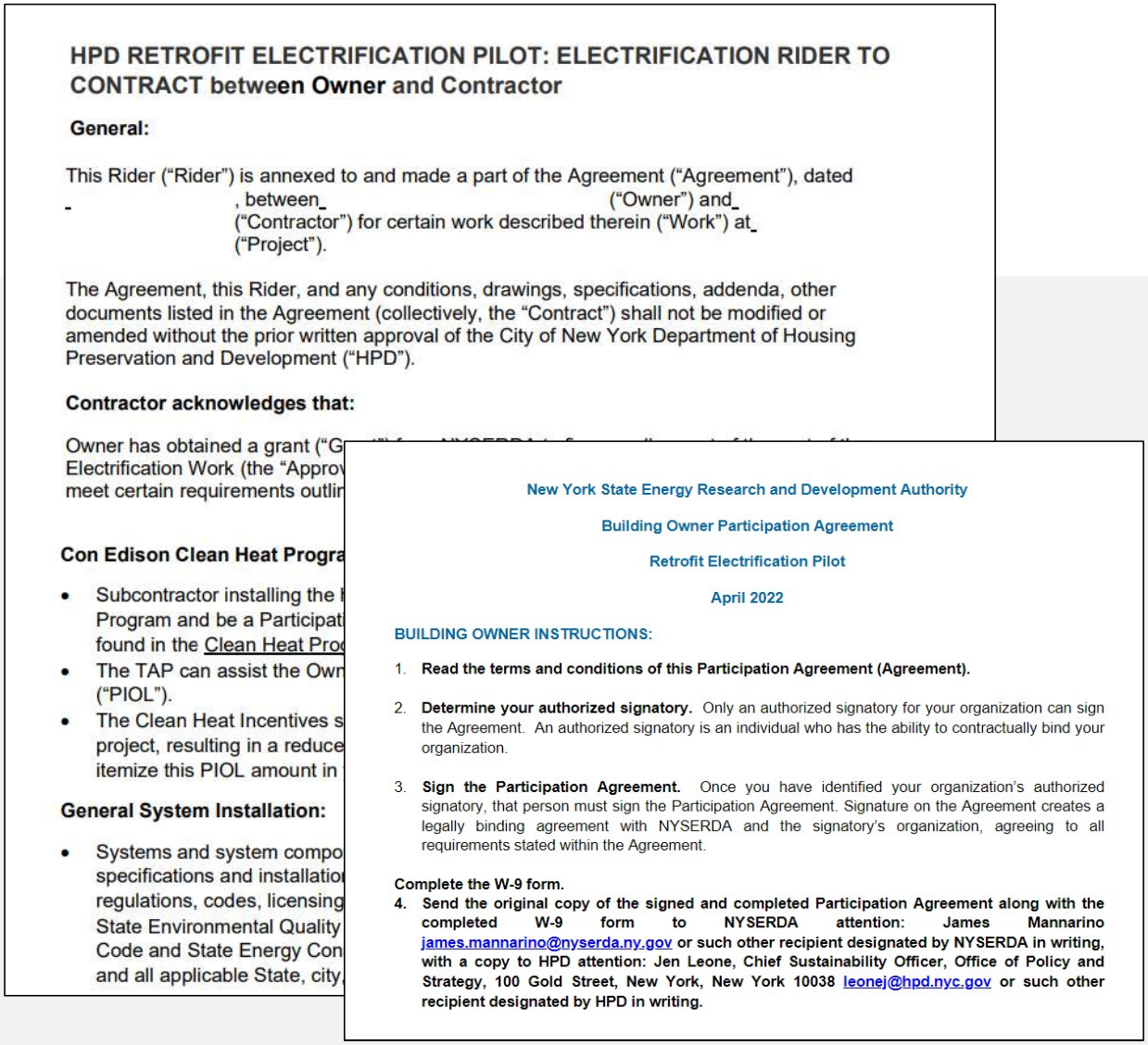

HPD and NYSERDA Electrification Pilot - FAQ Series
Heat pump system design
HPD and NYSERDA Electrification Pilot - FAQ Series
Interior Layouts for Heat Pumps
HPD and NYSERDA Electrification Pilot - FAQ Series
Roof considerations for heat pumps
HPD and NYSERDA Electrification Pilot - FAQ Series
What is a heat pump?
Air Source Heat Pump's (ASHPs) are high-efficiency electric appliances that provide heating and air conditioning. The components are modular, allowing multiple indoor units (in a single or in multiple apartments) to be connected to a single outdoor unit via refrigerant lines. Occupants can adjust the temperature using controls in each room.
What are the different types of Heat Pumps that the Pilot supports?
What are benefits of heat pumps?
Where/how are outdoor units located?
Where/how are indoor units located?
What type of maintenance is needed?
How long do they last?
NYC Department of Housing Preservation & Development
NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY | NYSERDA
Tatem
HPD ELECTRIFICATION PILOT: TECHNICAL REQUIREMENTS
Hot Water Heat Pump (HPWH) Technical
REQUIREMENTS
HPD-NYSERDA Retrofit Electrification Pilot: TECHNICAL REQUIREMENTS
Heat Pump Technical Requirements
April 2022
Split Systems
ASSISTANCE PROGRAMS & RESOURCES
conEdison
SAVING ENERGY SAVES MONEY:
$___/month
(Owner to fill in)
This is your estimated monthly cost for electricity, which covers lighting, plugs, appliances, air- conditioning and heating.
Because you pay for heating + air conditioning, your bills will be higher in winter and summer. Use these energy and cost saving tips to plan ahead and save money:
A well-maintained HVAC system saves money:
Never block equipment or vents with furniture or objects
Make it easy for management to do regular maintenance
If your bills seem too high, contact your building manager to make sure system is working correctly.
Set your thermostat right to keep costs down:
ENERGY STAR suggests 68° in winter and 78° in summer
You can reduce costs even more by programming your thermostat to set back when you are out or sleeping.
Keep it Natural:
Open windows when the weather is good - but don't forget to turn off your heating or air conditioner!
Using fans can make you feel 4° cooler
Closing shades reduces heat gain in summer by 33% and heat loss in winter by 10%.
Wear sweaters in winter and t-shirts in summer.
Don't forget about lighting and electronics!
Keeping electronics plugged in can increase costs by 23%
Turn off lights and equipment when not in use
Still Concerned? Check out Con-Ed's Level Payment Plan and other resources at https://www.coned.com/en/accounts-billing/payment-plans-assistance

RESOURCES

PARTICIPATION AGREEMENT & ELECTRIFICATION RIDER

Legal documents reference:

- The NYSERDA grant
- Clean Heat Requirement
- The Technical Requirements
- Maintenance Requirements System Warranties
- TAP Access for Site Visits & Inspections
- Incentive Payment Structure
- Bidding Requirements



HPD RETROFIT ELECTRIFICATION PILOT: ELECTRIFICATION RIDER TO CONTRACT between Owner and Contractor

General:

This Rider ("Rider") is annexed to and made a part of the Agreement ("Agreement"), dated - , between_ ("Owner") and_ ("Contractor") for certain work described therein ("Work") at_ ("Project").

The Agreement, this Rider, and any conditions, drawings, specifications, addenda, other documents listed in the Agreement (collectively, the "Contract") shall not be modified or amended without the prior written approval of the City of New York Department of Housing Preservation and Development ("HPD").

Contractor acknowledges that:

Owner has obtained a grant ("G
Electrification Work (the "Approv
meet certain requirements outlir

Con Edison Clean Heat Progra

- Subcontractor installing the
Program and be a Participat
found in the Clean Heat Proc
- The TAP can assist the Own
("PIOL").
- The Clean Heat Incentives s
project, resulting in a reduce
itemize this PIOL amount in

General System Installation:

- Systems and system compo
specifications and installatio
regulations, codes, licensing
State Environmental Quality
Code and State Energy Con
and all applicable State, city,

New York State Energy Research and Development Authority

Building Owner Participation Agreement

Retrofit Electrification Pilot

April 2022

BUILDING OWNER INSTRUCTIONS:

1. **Read the terms and conditions of this Participation Agreement (Agreement).**

2. **Determine your authorized signatory.** Only an authorized signatory for your organization can sign the Agreement. An authorized signatory is an individual who has the ability to contractually bind your organization.

3. **Sign the Participation Agreement.** Once you have identified your organization's authorized signatory, that person must sign the Participation Agreement. Signature on the Agreement creates a legally binding agreement with NYSERDA and the signatory's organization, agreeing to all requirements stated within the Agreement.

Complete the W-9 form.

4. **Send the original copy of the signed and completed Participation Agreement along with the completed W-9 form to NYSERDA attention: James Mannarino james.mannarino@nyserda.ny.gov or such other recipient designated by NYSERDA in writing, with a copy to HPD attention: Jen Leone, Chief Sustainability Officer, Office of Policy and Strategy, 100 Gold Street, New York, New York 10038 leonej@hpd.nyc.gov or such other recipient designated by HPD in writing.**

CASE STUDIES

PILOT PROJECTS

STATUS OF THE PILOT

Samaritan Supportive Housing

Bronx, NYC

This 54-unit, 45,000 SF Supportive Housing building is pursuing Scope 2: Electrification of Heating System

- **Oil/steam heating is being replaced with residential mini-splits**
- **Includes new high-performance windows, roof, and air-sealing.**

Owner pays heating and cooling, which is typical for Supportive Housing

Incentive Amount:
$1million

Estimated Savings:
$50,000/ year

Estimated GHG Reduction:
up to 50%

Pacific Street HDFC

Brooklyn, NY

This 17-unit, 14,300SF HDFC coop will pursue Scope 1+2: Electrification of Heating & DHW:

- Equipment in cellar **routinely floods**
- **Oil/steam system** will be replaced with **unitized mini-splits & heat pump hot water heaters**
- Includes **high-performance roof, windows, and air-sealing – and possibly solar.**

Shareholders will pay heating and cooling, which is typical for coops

Incentive Amount:
~$450,000

Estimated Savings:
$11,000/ year

Estimated GHG Reduction:
> 50%

ON THE HORIZON

Multi-building Oil Conversion Proposing Scopes 1+2:

- PTHP (Ephoca) + split-system Hot Water Heat Pumps
- Gut Rehab includes in-unit electrical upgrades, wall insulation and tenant relocation
- Mostly studio & 1BR apartments
- **Ephoca, if approved, will have heating wired to house meter**

Rental building Oil Conversion Proposing Scopes 1+2:

- Proposing unitized mini-splits
- Significant envelope improvements
- Rental building is undergoing rent restructuring
- **Project is proposing tenant-paid heating using new Utility Allowances for Heat Pumps**

2022 HPD Utility Allowances

TYPE		0 BR	1 BR	2 BR	3 BR
g & Hot Water: Energy Efficient Heat Pumps					
ASHP (split-system)*	Heat Pumps (Multifamily New Construction)	$25	$29	$40	$51
	Heat Pumps (Multifamily Retrofits)	$35	$40	$50	$61
	Heat Pumps (1-4 Family New Construction)	$32	$37	$48	$61
	Heat Pumps (1-4 Family Retrofits)	$41	$47	$59	$72
r - Hybrid Heat Pump	Hybrid Electric Heat Pump Water Heater	$14	$27	$55	$82

at Pumps must be NEEP Approved for Cold Climates ("cc"): https://neep.org/smart-efficient-low-carbon-building-energy-solutions/air-source-heat-pu

refers to buildings built subject to the 2016 NYC Energy Code at minimum

MOVING FORWARD

Pilot will assist ~1,500 units in 35 Buildings

Small & Large Buildings

Multi-Building Clusters

Across multiple billing arrangements

Rentals & Coops

Metering Configurations

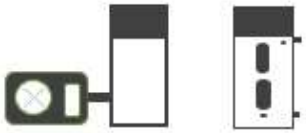
To transition various High Carbon Systems

Fossil-Fueled

Electric Resistance

To Cold Climate Electric Heat Pumps

Space Heating



Domestic Hot Water

DISCUSSION

https://**www1.nyc.gov/site/hpd/services-and-information/hpd-nyserda-retrofit-electrification-pilot.page**

HPD

WORKING THROUGH PROGRAM CHALLENGES

Billing Challenges
(who pays heating and who pays cooling, especially for

- **Rental projects**
- **Rental to coop conversions**

Integrating the grant into the construction payment schedule

Incremental costs are hard to establish

Demand is high - and it is hard to say no, especially on large projects with oil

NYSERDA

WORKING THROUGH PROGRAM CHALLENGES

Identifying incremental costs

How to distill cooking and ventilation

Layering Incentives

Clean Heat pause

Program mgmt.

Desired impact?

NYSERDA funding docs vs closing timeline

The goals of the project?

Bring on additional resources

Funding award process changes

Con Edison coordination

WORKING THROUGH PROGRAM CHALLENGES

Resident-Paid Heat/Owner-paid cooling Issue

Incremental costs are hard to establish

Demand is really high

ANCP projects

WORKING THROUGH PROGRAM CHALLENGES

Emerging Technology

Code Regulations

Advancing Best Practices

Incremental costs being ball park