



Equity Heat Pump Exchange™, LLC

| Key Terminology and Constructs

- **IRA:** Inflation Reduction Act that is bringing billions of dollars to State Energy Offices , including for two programs of specific interest for the Exchange-enabled pilots:
 - Home Electrification Appliance Rebate (**HEAR**) program (electrification)
 - Home (Energy) Efficiency Rebate (**HEER**) program (general energy efficiency)
- **Justice40:** Section 220 of Presidential Executive Order 14008, directs 40% of the benefits of federal investments, including those related to IRA, flow to disadvantaged communities
 - “Benefits” has generally been interpreted as funding
- **ENERGY STAR:** Joint DOE-EPA brand qualifying various appliances and equipment as meeting defined energy efficiency specifications
- **CEE Listing:** The Consortium for Energy Efficiency provides a listing of appliances and equipment that meet specifications required by utility members

Note: All equipment photos, descriptive text, and performance data are per Midea and Gradient cut sheets

Window Heat Pump Technology

| Background

The Clean Heat for All Challenge was a 2022 partnership between the New York Power Authority (NYPA), New York State Energy Research and Development Authority (NYSERDA) and the New York City Housing Authority (NYCHA) to develop a new electrification product:

- Heat pump designed to work in cold climates
- Installed in existing windows
- Powered by 120-volt, 15-amp service
- Installed by unskilled workers (DIY) in 15 to 30 minutes
- Specifically built to provide heating and cooling needs of existing multifamily buildings

The resulting electrification product is a 9,000 BTH window heat pump (WHP) developed by two manufacturers, Gradient and Midea. The units will meet ENERGY STAR requirements for cold climate heat pumps and be listed on the Consortium for Energy Efficiency for eligibility for utility programs and federal rebates and tax credits.

The partnership continues as NYCHA pilots both manufacturers' products.

| Gradient Window Heat Pump

Product Highlights

- Designed for cold climates
- 9000 BTU/hr heating/cooling
- AC & heat pump; no resistive heater
- Inverted-U configuration
- Variable window depth
- Standard 120 VAC 15 A outlet
- Variable speed compressor/fans
- DIY install
- Internal condensate pump
- Smart controls (WiFi & Bluetooth)
- R32 hermetically sealed refrigerant
- Airtight window seal design
- Single loop, direct expansion
- Dual supply vent
- Drip-free meltwater atomizing



Source: Gradient cut sheet

| Gradient Window Heat Pump

Technical Specs

Electrical Requirement	Voltage	Phase	Circuit Amps
	120 VAC	60 Hz	15 A
Thermal Performance	Outdoor Temp	Capacity	Efficiency
	95 °F (35 °C)	9000 BTU/h	10.0 (EER)
	47 °F (8.3 °C)	9000 BTU/h	4.00 (COP)
	17 °F (-8.3 °C)	9000 BTU/h	2.60 (COP)
	5 °F (-15 °C)	7200 BTU/h	2.35 (COP)
	-7 °F (-21.7 °C)	4900 BTU/h	1.71 (COP)
Weight	125 lbs		



Source: Gradient cut sheet

| Midea Window Heat Pump

Product Highlights:

- Self-contained highly efficient 9k BTU package window- mounted heat pump(PWHP)
- Cold climate inverter heat pump technology with operation down to -13F
- Adjustable saddle-style construction to work with various window and wall construction types
- Pivoting outdoor section with lift-assisted mounting for easy installation.
- No auxiliary resistance electric heater
- Self-contained condensate management system that does not require condensate drain/plumbing
- Compatible with standard 15A-120VAC outlet
- Humidity control in both cooling and heating seasons to optimize comfort
- Smart controls and BACnet mesh capability
- System designed to provide quiet operation
- R-32 Low Global Warming Potential(GWP) refrigerant



Source: Midea cut sheet

Midea Window Heat Pump

Technical Specs

Voltage	120 VAC		
Phase	60 Hz		
Minimum Circuit Ampacity	15 A		
	Working Condition	Eco Mode	
		Capacity (btu/h)	Efficiency
Cooling Mode	95 F/35 C	8965	EER = 12.6
	82 F/27.8 C	8940	EER = 19.2
Heat Mode	47 F/8.3 C	9008	COP = 3.57
	17 F/-8.3 C	8864	COP = 2.36
	0 F/-18 C	6159	COP = 1.71
Lowest Operating Temperature	-13 F/-25 C		
Unit Dimensions	25.5" x 34" - 39.5" x 20.5" (indoor/outdoor)		
Unit Weight	118 lbs.		
Variable Speed Compressor	Yes		
Indoor Sound Level	52/44/39/36 dba (high/medium/low/sleep)		



Source: Midea cut sheet

Equity Heat Pump Exchange

| But...A Problem and a Solution

Problem:

Although the window heat pumps are establishing a track record of working as specified, the market is stuck in a chicken & egg situation where parties cannot buy what isn't being produced and manufacturers cannot risk investing in production capacity until the demand is there.

Solution:

The Equity Heat Pump Exchange provides EE and electrification program administrators production quantity product supply for implementers of multifamily direct-install programs.

Sole focus is the 9,000 BTU/hr through the window, 120-volt, heat pump meeting ENERGY STAR and CEE cold climate specifications.

| Equity Heat Pump Exchange and Pilots/Programs



1. The Equity Heat Pump Exchange coordinates schedules and direct-delivery to participating programs/projects, providing this nascent product without the complexity, risk and cost typically handicapping manufacturer-direct purchasing and shipping by utility and partner programs.
2. Product commitments are based on program partner/client purchase orders, with funds released by the program partner/client upon confirmation by Exchange of re-shipping (clean bills of lading) to program partner/client ship-to address, which also signals transfer of ownership to the program partner/client.
3. **No debt, no risk, just transfer of the funds upon shipment.**
4. The “exchange” charges a very nominal fee of \$300/unit administrative/facilitation time and materials.

The Equity Heat Pump Exchange enables pilots/programs to directly install window heat pumps in the Justice40 residential segment at no cost to residents.

| Exchange Details

- Patterned after the NY pilot, the Equity Heat Pump Exchange delivers the specialized products directly from the factory to installers and/or participant property owners.
- Enrollment authorizes the Exchange to act as property owners' agent:
 - Combine ("Aggregate") product quantities of multiple programs as required.
 - Schedule factory production line space that is already reserved.
 - Facilitate shipment from factory to installation entity or participating building.
 - Provide as standalone program or leveraged into WAP, utility multifamily direct install programs, etc.
 - Affect payment (from lead program administrator/purchaser).
- Factory warrants the product to be free of defects and swing units are held in reserve if product replacement is necessary.
- There is no stocking retailer or franchise activity, product is manufactured and shipped as ordered; there are no returns.
- Payment is via purchase order from which Exchange directs release of funds to the manufacturer upon presentation of shipping documents, etc.

Alignment with SEO Priorities

Priority.	Alignment
Justice40	Exchange focus is facilitation of low-income, multifamily initiatives.
Workforce Development	Exchange encourages use of community-based organization (CBO) labor to supplement participating facility staff.
Consumer Education	Exchange encourages “train the trainer” for CBO staff to educate window heat pump recipients on proper use.
Electrification	Window pumps electrify heat in whole or in part.
BABA	May require waiver since no US-based manufacturing exists (yet)

Benefits to Parties of Equity Heat Pump Exchange Pilots/Programs

| Benefits

- Residents:
 - Likely utility bill savings
 - Cleaner, safer, more reliable heating and cooling
- SEO/Other Partners:
 - Improve Justice40 residents' comfort, health, and satisfaction
 - Meet Justice40 funding (benefit) targets
 - Reveal themselves as innovation leaders in deploying IRA funds via leveraged partnerships with utilities and their existing programs and distribution/supply chain relationships
- Utilities:
 - Improve Justice40 residents' comfort, health, and satisfaction
 - Meet utility performance (savings) targets
 - Reveal themselves as innovation leaders in collaborative programming to leverage non-utility funds and partners

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