



DRIVING TRANSFORMATION

Behavior, Energy & Climate Change (BECC) / November 12-15, 2023 / Sacramento, CA

Co-Convened by

Stanford

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Clean Energy Outreach in the **Northeast**

November 13, 2022

Sean Brennan | The Cadmus Group

Convened by:

Agenda

Who is Cadmus?

Why do we need Community Outreach?

An Early Adopter Story

What's new in the Northeast?

How should we engage?



Greetings

Sean Brennan, PE

Mechanical engineer and clean energy advocate

Lives in Mamaroneck, NY along Long Island Sound

Worked at start-ups, non-profits, and design firms

Published a series of research reports that supported New York City's recent laws that aim to reduce emissions from large buildings:

- Building Emissions Law (Local Law 97 of 2019)
- All-Electric Buildings Law (Local Law 154 of 2021)



Supporting Clean Energy Transformations



Largest statewide all-sectors decarbonization plan in U.S



25 Major transportation electrification initiatives



50+ Building electrification and market transformation engagements

DSM STRATEGY &
REGULATORY
SUPPORT

STRATEGIC
ELECTRIFICATION

STAKEHOLDER
ENGAGEMENT

EQUITY
ADVANCEMENT

ALIGNMENT OF GRID
& CUSTOMER
STRATEGY

RESILIENCE
INTEGRATION
STRATEGY

CADMUS

Why Community Outreach?

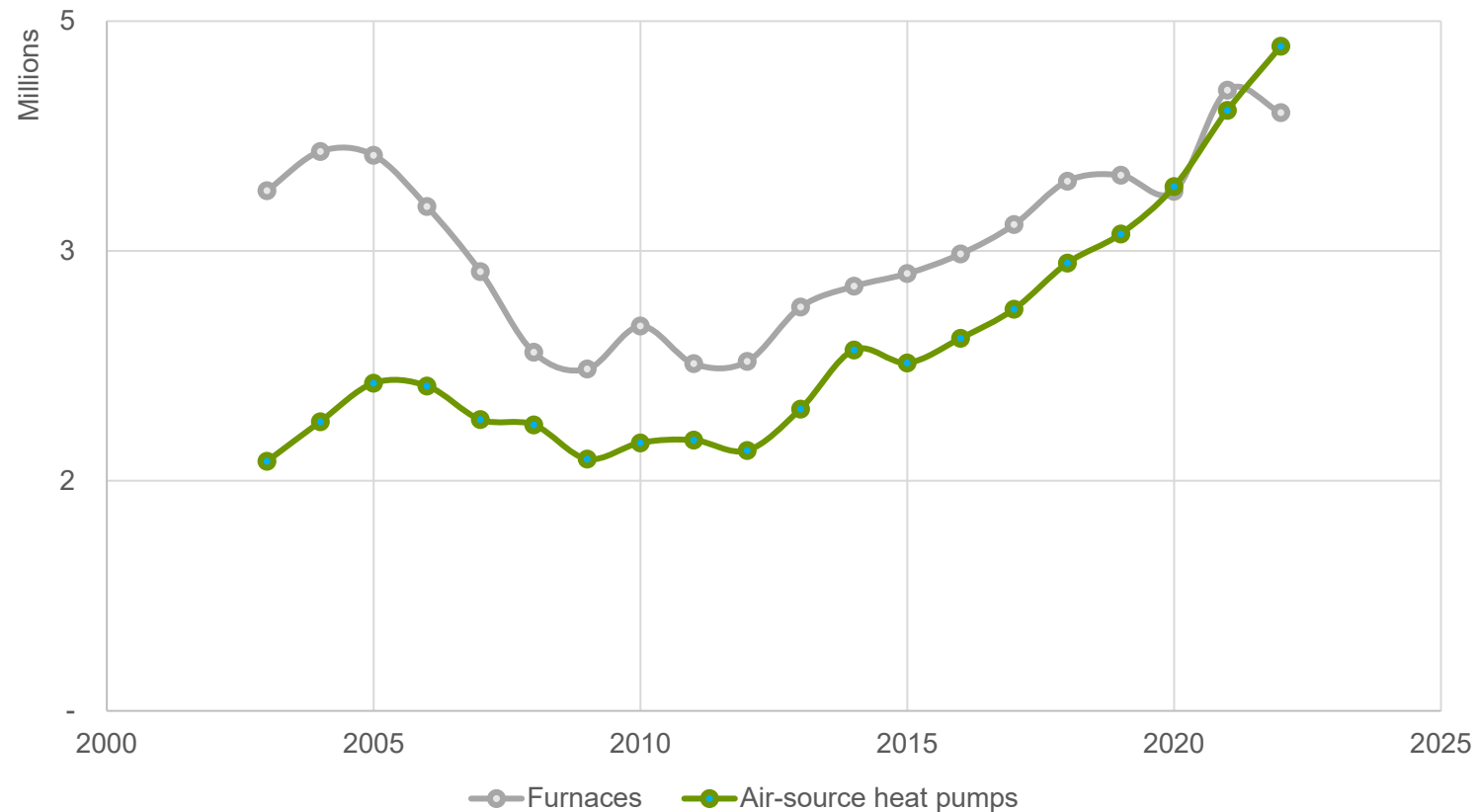
In 2022, more ASHPs were sold than furnaces nationally

- ASHPs: 4.33M
- Furnaces: 3.9M

Maine surpassed 100K goal, now 175K by 2025

New York aims to have 2M electric homes by 2030

Air-source Heat Pumps Overtake Furnaces
(AHRI data on units sold 2003 - 2022)

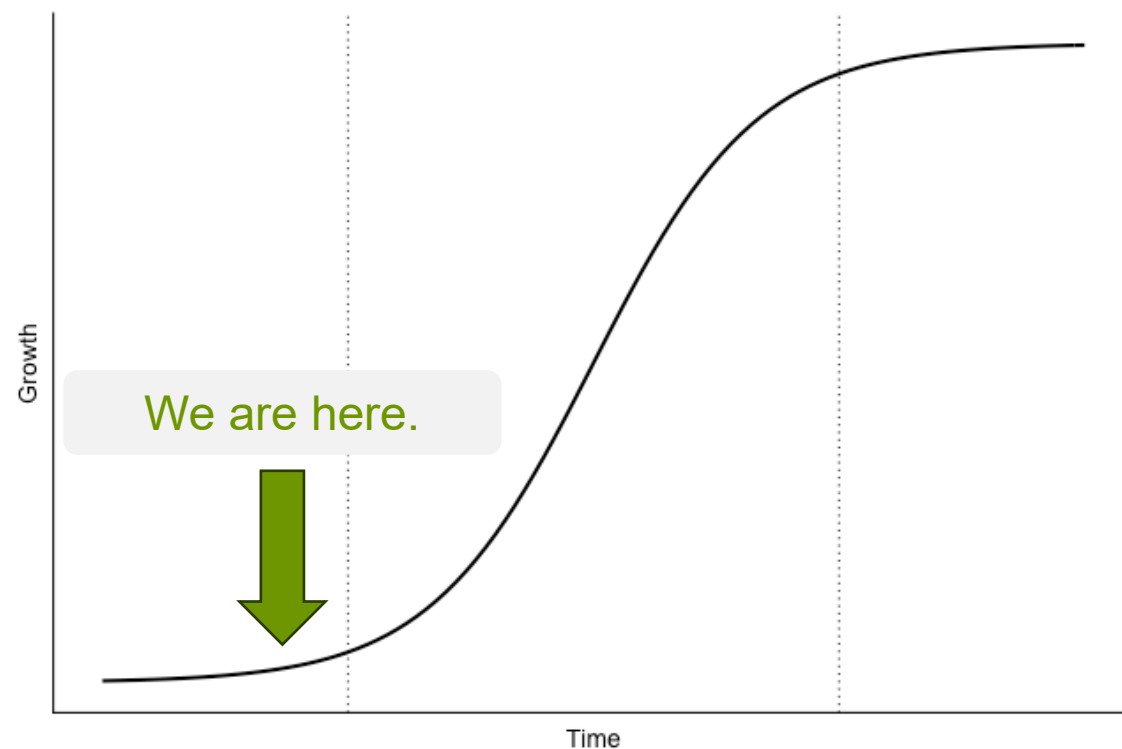


Why Community Outreach?

Progress on clean energy technology

- Solar PV Systems
- Electric Vehicles
- Heat Pumps for Heat
- Heat Pumps for Hot Water

Heat pump adoption S-curve



Story of an early-adopter

A 1920s home need its steam heat replaced – high utility bills and drafty. Renovation replaced heating system, installed new windows, and insulated attic.

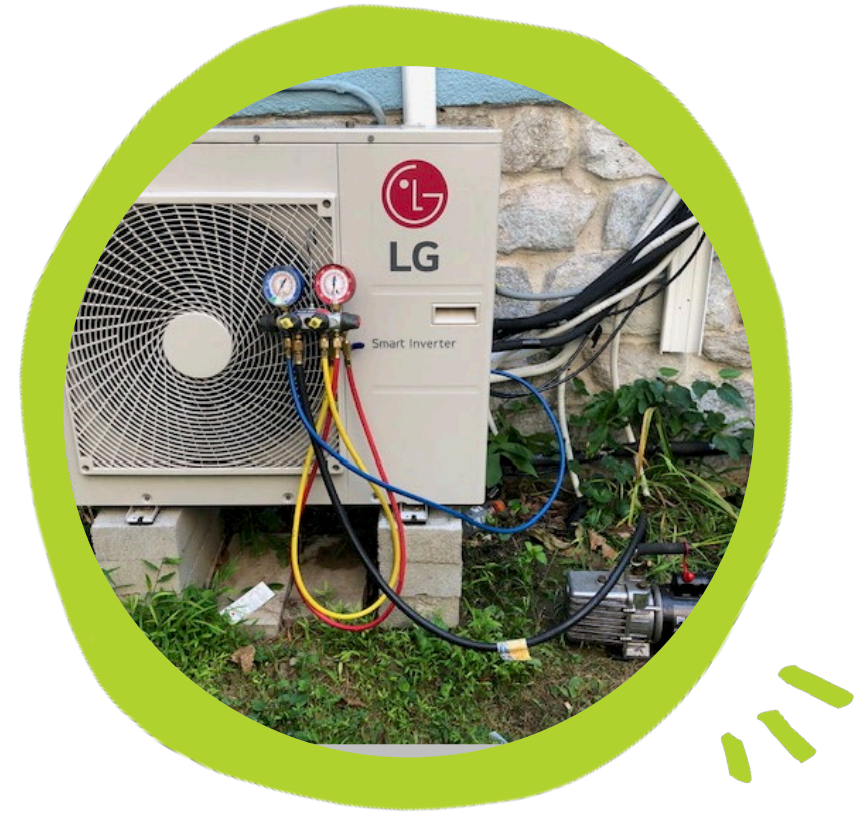


Story of an early-adopter

Owner found an installer, trained by manufacturer, for cold-climate air-source heat pump system

After six months, problems started:

- **Error codes and no heat**
- **Condensate leaks in ceiling cassettes**
- **Refrigerant leaks and short runs**



Northeast Community Programs

Massachusetts

HeatSmart Mass

Solarize Mass Plus

New York

Solarize NY/Community Solar NY

Clean Heating and Cooling Communities

Regional Clean Energy Hubs



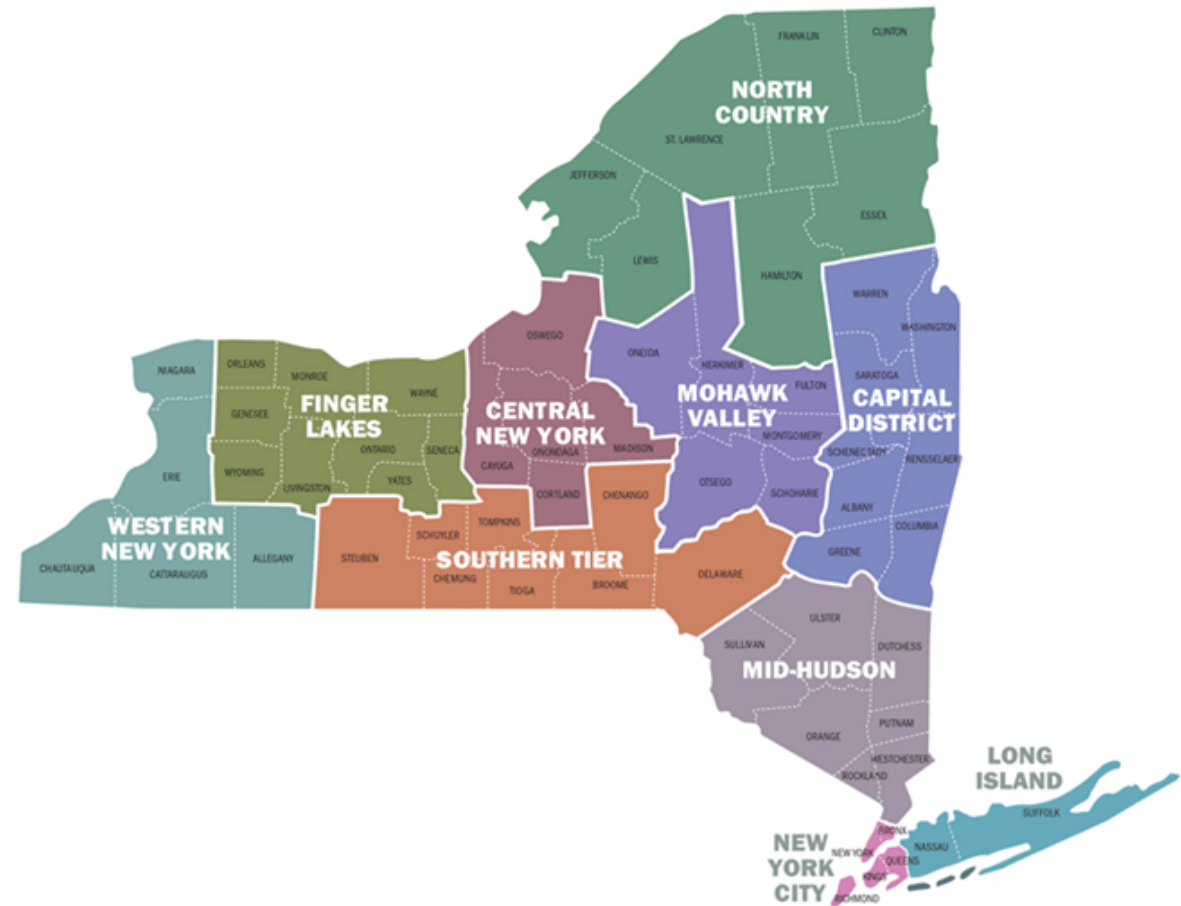
Regional Clean Energy Hubs

NYSERDA

The Hubs build local capacity across the clean energy, social service, housing, workforce development, and public health sectors to meet the needs of all New Yorkers.

Each Hub is led by a community group or academic institution

- Cornell Cooperatives
- Association for Energy Affordability (AEA)
- Sustainable Westchester
- PUSH Green (Buffalo)
- WE ACT for Environmental Justice



Creating Campaigns

People have questions (and misunderstandings)

- Is New York banning wood fires?
- Do heat pumps really work in cold climates?
- Will my utility bill go down if I electrify?
- Can the grid handle all this new demand?



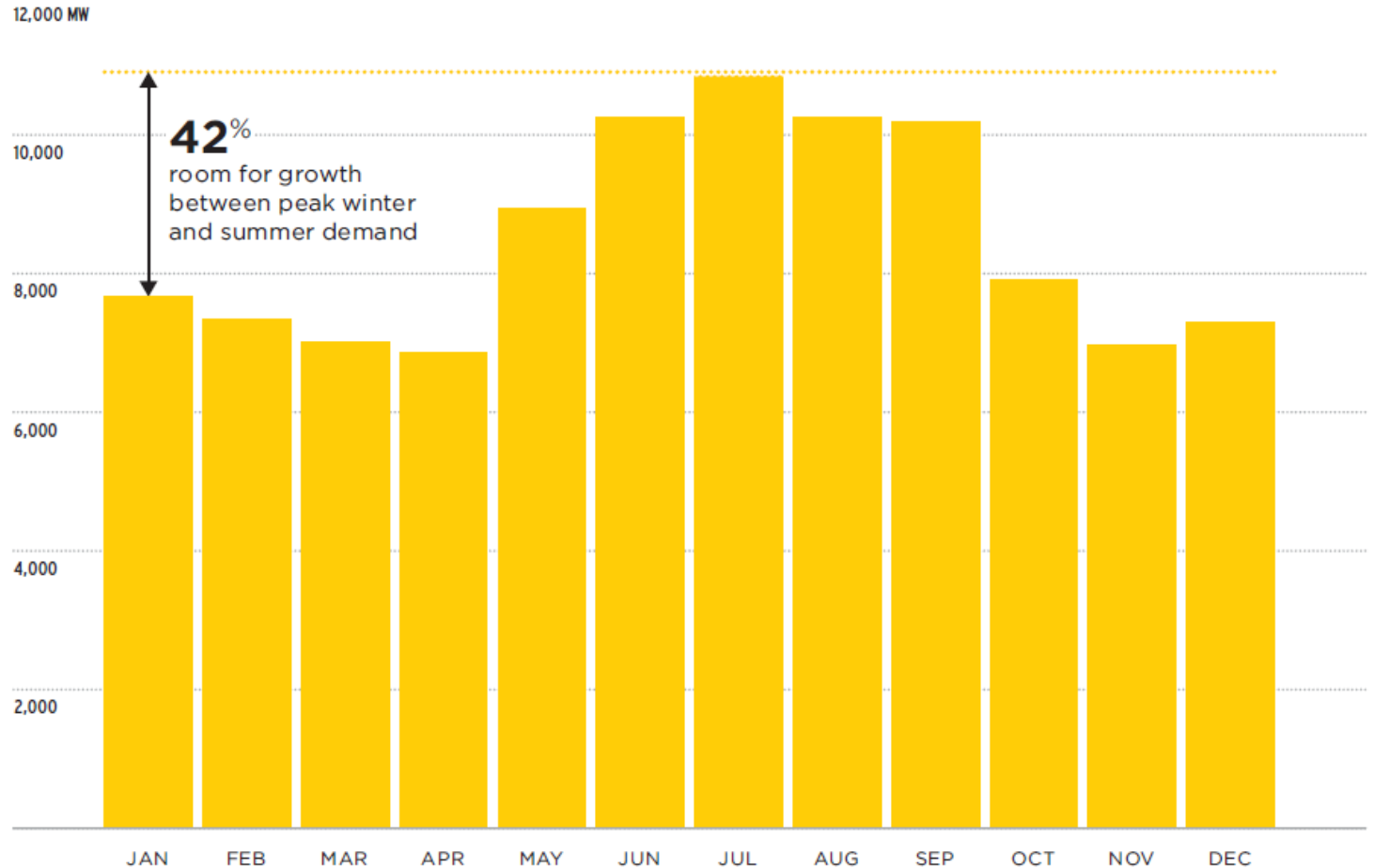
Will Electrification Kill the Grid?

No, this doesn't happen overnight

The grid is designed for summer peaks

Utilities are carefully watching demand and upgrading incrementally

AVERAGE MONTHLY PEAK DEMAND OVER DECADE



SOURCE: [Grid Ready, 2021. Urban Green Council](#)







Do Heat Pumps Work?

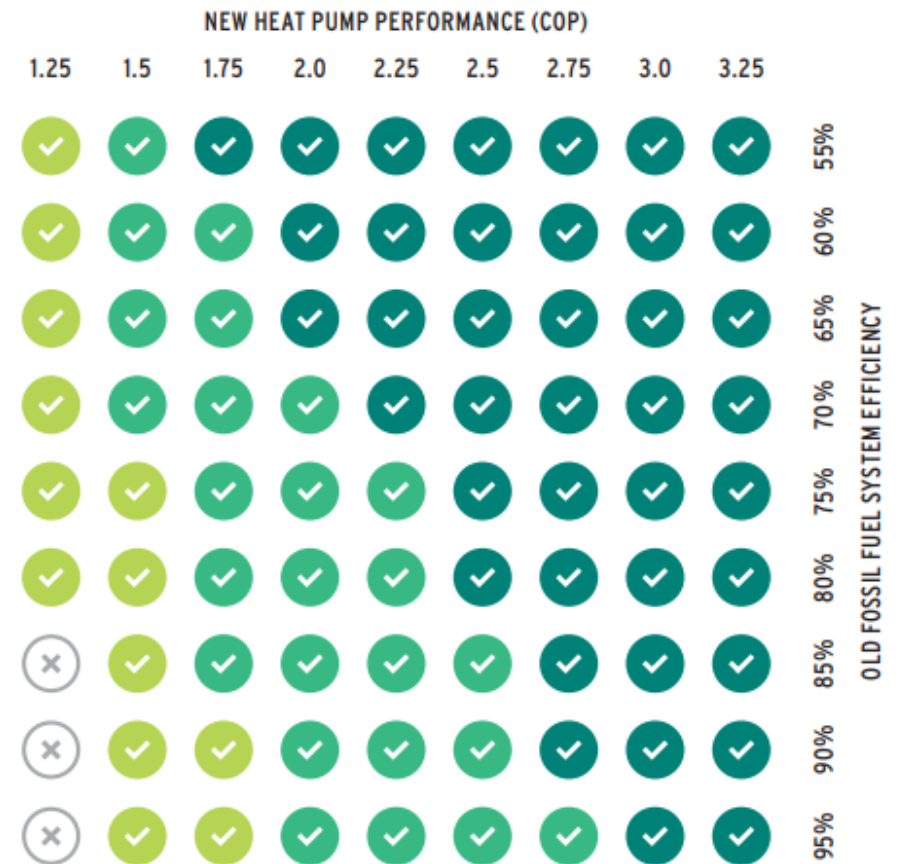
Yes, in climates from downstate New York to Quebec

Cadmus measured seasonal COPs in over 50 homes → 2.3 on average

Heat pumps also will **cut carbon emissions** from home heating in almost in any situation

-  51-75% CARBON SAVINGS
-  26-50% CARBON SAVINGS
-  1-25% CARBON SAVINGS
-  NO SAVINGS

HEAT PUMP EMISSIONS SAVINGS: LONG-TERM GRID



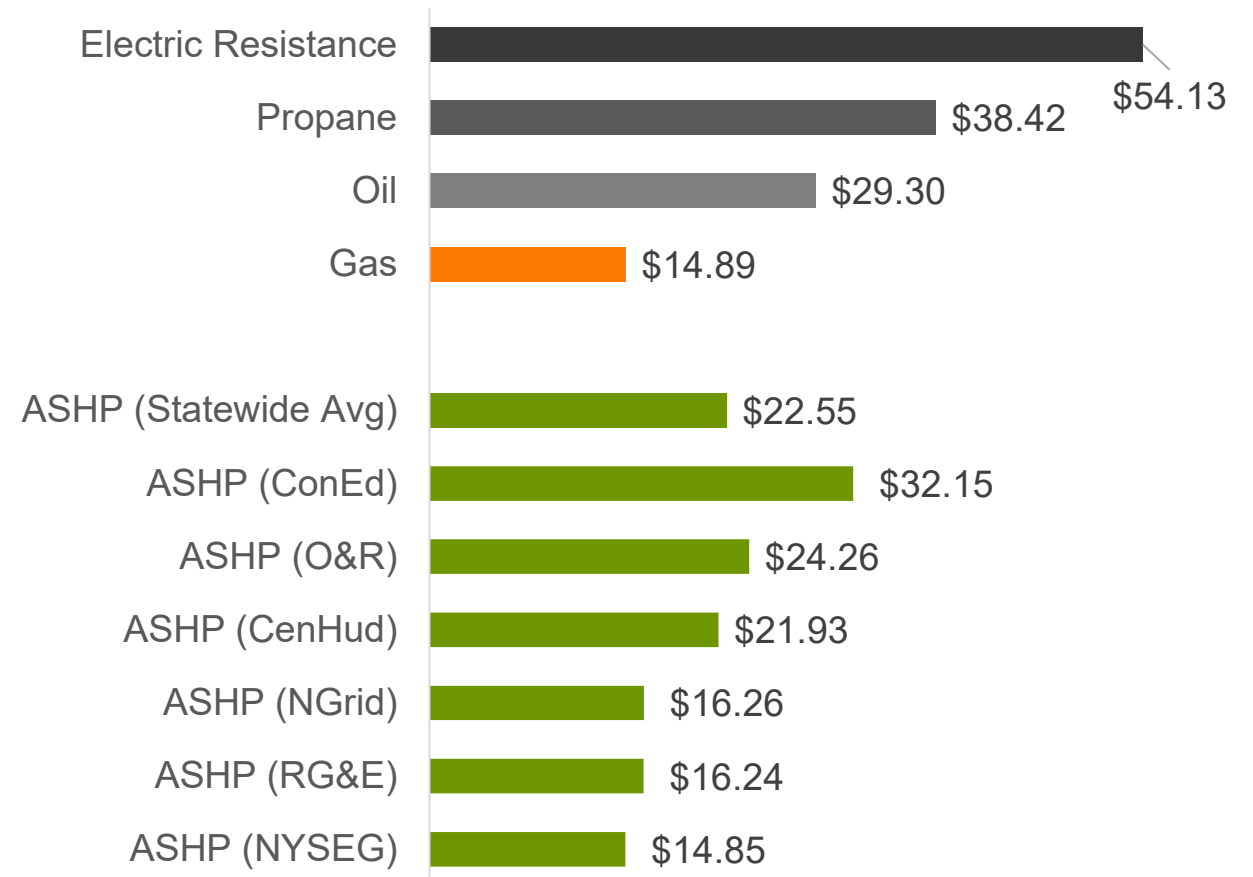
Will Energy Bills Drop?

It depends.

Cost savings from ASHP are dependent on fuel and electricity prices

Walking through utility bills with customers is critical

Comparison of Heating Fuels (\$/MMBtu)
5 year NY state avg. costs



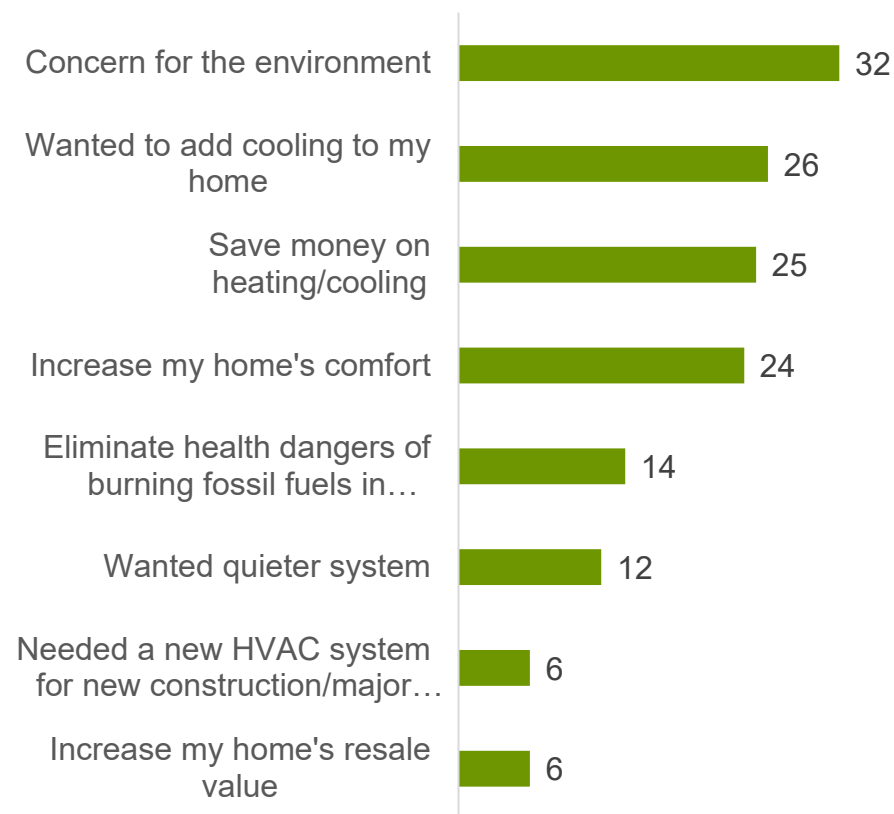
Homeowner Motivations

Energy efficiency programs focused on utility bill savings

Electrification programs cannot guarantee savings

Engage with other homeowner needs

Reasons for Installing a Heat Pump
(n = 47)



Communication Best Practices

Give Transparent Cost Data:

- Share comprehensive information on installation costs, energy costs, and estimated energy savings – case studies with real data.
- Recognize challenges in providing accurate information due to site-specific considerations and technology unfamiliarity.

Consider Key Audiences:

- Tailor message to show different benefits of clean technologies, including comfort, health, and low operating costs.
- Different audiences may prioritize different benefits (e.g., energy independence, home comfort vs. reducing emissions).

Include Hot Topics and FAQs:

- Discuss factors such as the low cost of natural gas heating and potential additional expenses for retrofits and upgrades.
- Prepare participants for contractor visits and anticipate questions that may arise during the adoption process.
- Communicate using non-technical terms for better understanding.
 - Examples: Use "low operating costs" instead of "ROI" and "insulation" instead of "home weatherization."



Thank you

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Sean.Brennan@cadmusgroup.com