Guidehouse

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Market Transformation through Collaboration: Advancing Heat Pump Adoption in the Midwest

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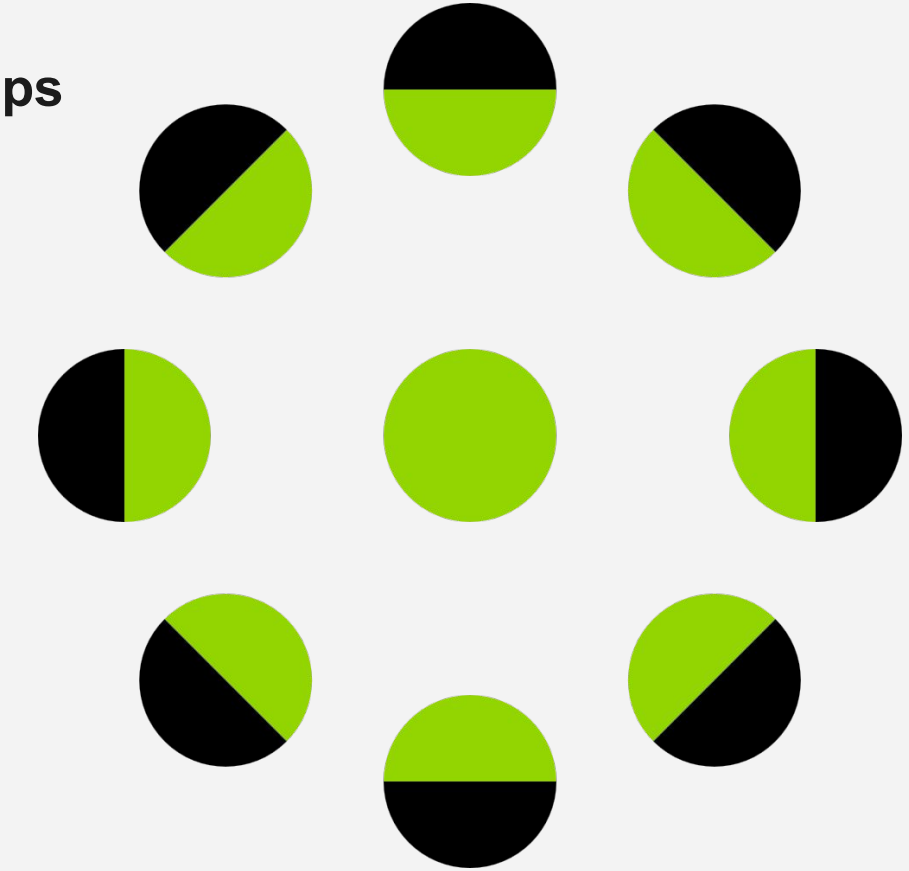
outwit complexity™

Agenda

Residential Utility Program Market Trends: Heat Pumps



Analysis Background & Purpose

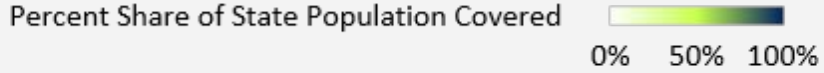
Analysis identified common challenges to **utility rebate program adoption** for **air source heat pumps** (ASHPs), **heat pump water heaters** (HPWHs), and **building envelope upgrades** across the **Midwest**, **Northeast**, and **Southeast**

2024 Program Data:
Combination of public data and interviews

Identified successful approaches:
Provide insights for rebate programs in comparable climate and regulatory environments to meet similar program objectives

Findings cover a substantial portion of residential utility customers:
Approximately 53% in the Midwest, 82% in the Northeast, and 43% in the Southeast.

Technology	Midwest	Northeast	Southeast
ASHP	34	33	-
HPWH	26	-	7
Envelope Measures	70	23	13



Alternative Heating & Cooling Technology Options

While analysis focused on ASHPs, customers have a wide range of heating and cooling options, including geothermal or ground-source heat pumps (GSHP), dual fuel heat pumps, absorption heat pumps (gas-fired), and both gas and electric furnaces

27 GSHP Programs in the Midwest

Utilities in the Midwest and Northeast regions have conducted pilots and created rebate programs

High Rebates Offered Compared to Other HVAC Technologies

Average utility rebate for GSHPs in the Midwest ranged from $857 to $1,626. In the Northeast, utility GSHP incentives for single family homes ranged from $650 to $35,000

Installation declining

Utilities offering GSHP rebates noted a decline in installations due to high equipment costs and space limitations

Data fuel and customer choice

The ability to have both electric and gas heating led to higher program participation because it allayed customers' fears about giving up their familiar natural gas furnace. Cost and installation issues are also challenges

Program Challenges & Opportunities

Several cross-regional themes on challenges and opportunities for program improvement identified through the REEOs' interviews with program administrators

Rebate Program Challenges	Possible Solutions
Low Engagement with Downstream Approach: Utilities note issues with low rebate submissions and dependency on contractors to correctly submit applications in a downstream approach.	**Shifting to a midstream or upstream approach** helps programs redesign rebate applications to shift rebate forms away from customers and contractors to work directly with distributors. **Utilizing expert staff** can answer customer questions and expand awareness of programs to deepen customer and contractor engagement.
Contractor Skepticism towards New Technologies: Stakeholders across the Midwest, Northeast, and Southeast highlight that contractors feel reluctant to adopt unfamiliar technologies, including ASHPs and HPWHs, due to performance uncertainty.	**Developing and sharing third-party verified information** reduces contractor skepticism because contractors do not trust performance data from salespersons, such as manufacturers, distributors, or wholesalers. Utilities identified third-party information as a useful source that local contractors would trust.
Limited Customer Engagement Opportunities: Educating and engaging with customers in-person presents a challenge for utilities due to limited staff resources or a large and/or dispersed customer base.	**Educating contractors**, who then inform customers, on utility program offerings for emergency or routine equipment replacements expands the program's reach. **Providing talking points** to contractors to use during site installations standardizes communication.
Coordination Challenges between Heat Pump and Envelope Contractors: Midwestern utilities noted a lack of coordination between equipment and envelope contractors could lead to lower customer satisfaction and project inefficiencies. HVAC contractors focus on equipment, rather than coordinating with envelope contractors to time installations and size equipment correctly.	**Offering bonuses or bundled incentives** for coordinating HVAC and envelope upgrades and **requiring the incorporation of envelope measures** for projects can encourage collaboration between the different contractors by incentivizing coordination.
High Upfront Costs for Envelope Upgrades: Customers view envelope programs unfavorably across regions due to occupant disruption and high upfront installation costs compared to the payback period. Some contractors believe that rebate amounts are too low compared to the effort required to complete the upgrades, leading to lower participation.	Working with other utilities or non-profits to **stack rebates or cover the full costs of upgrades** can increase the total incentives available for envelope upgrades. **Developing strong relationships with multifamily building owners** can encourage them to undertake whole home comprehensive upgrades, rather than piecemeal upgrades, to maximize energy savings and resident comfort.

Summary of ASHP Program Findings

Region	Program Count	Downstream	Midstream	Average Rebate Per Customer
Midwest (SF and MF)	34	24	8	$475-$929
Northeast (SF Only)	33	31	2	Cooling: $480-$5,150
				Heating: $1,033-$1,333

Utilities in MN offer highest Midwest rebate: $1000-$1250

For context, a $900 rebate on a $12,000 ASHP installation covers 7.5% of the cost

Northeast Ducted and ductless whole home solutions

Incentivized per project and offer the highest average minimum rebate amounts in the Northeast

Shift from downstream to midstream approach

Driven by regulatory requirements, program cost savings, and to simplify the program for contractors. Can have lower rebates and increase ASHP supply

Some program required home assessment or weatherization

noted that these assessments are crucial to identifying other measures but noted in some cases to deter customers from selecting heat pumps

Increasing installation in both regions vs. national decrease

Sales decrease nationally from 2022 to 2023. Rising equipment and installation costs leading to lower heat pump installations

Multifamily Specific Considerations

Multifamily programs are offered by 18 of the 31 utility program administrators interviewed across 10 states in the Midwest. Of those programs, 3 offer heat pump rebates.

Hard to Support

Programs report difficulty supporting ASHP installations for multifamily buildings.

Decreased Rebate Impact and Eligibility

These buildings often required ductless ASHP systems based on existing hydronic equipment or systems with lower upfront costs which may not have met the TRM's efficiency levels for ASHPs. This decreases the rebate impact and eligibility.

Low-income Success

Some utilities saw success with focused multifamily programs for income-qualified customers with up to $7,500 in assistance for heat pumps.

Key Established Relationships

Many multifamily building owners typically have established relationships with contractors for HVAC who frequently promote familiar technologies rather than new technologies. Utilities can leverage existing strong relationships with property owners and provide advice on equipment upgrades that fit the needs of their building profile to proactively address potential future issues.

Reported Challenges & Opportunities for Air Source Heat Pumps in the Midwest

Equipment durability and maintenance costs

- **High labor costs for repairs** beyond manufacturer provided 10-year parts warranties
- **Essential to consider environment and manufacturer instructions.** Compressors used in ASHPs are designed for air conditioning units and expected to last 15-20 years however per reported feedback some may be subject to increased usage or cycling due to climate or installation characteristics, resulting in faster burnout and higher equipment degradation rates.

Contractor confidence and understanding

- Many contractors **do not have experience explaining ASHP technology** and **require training and support** from utilities to build confidence and understanding **to communicate with customers**
- **A lack of interest in rebate program participation** due to unfamiliarity or resistance to the technology, **hesitancy due to equipment upfront cost**, and **limited capacity to assist** customers with rebate forms
- **Localized shortages prevent busy contractors from engaging** with utility training programs or **learning about new technologies**

Friction with rebate application processes

- Complicated rebate application processes can require contractors to help customers complete forms
- **Reasons cited not to help:** Operational preferences, cumbersome rebate application, or a perception that incentives were too low
- Possible **solutions** include
  - adding **training manual** or guide, simplifying the rebate form,
  - **digitizing** the process,
  - providing regular **status updates** to contractors
  - **Energy advisors** where available
  - Instant rebates
- **Strong contractor engagement** and education/training on offerings, incentives, and forms enables uptake and interest in incentives

Midwest Regulatory Trends

Analysis for this report found that the policy and regulatory environments among the 31 utility programs reviewed varies slightly across states. Despite policy and regulation variations, many midwestern program administrators agree on the need to keep electricity costs from rising for customers amidst efforts to improve energy efficiency.

State	IRP or Similar	State or Regional TRM	EERS	Fuel Switching Regulations	Spending Cap	Recuperate EE Investment	State-wide Program
IA	No	Yes	Yes	No policy	Yes	Yes	No
IL	Yes	Yes	Yes	Allowed	Yes	Yes	No
IN	Yes	Yes	No	No policy	No	Yes	No
KS	Yes	No	No	Prohibited	No	Yes	No
KY	Yes	No	No	No policy	No	Yes	No
MI	Yes	Yes	Yes	Allowed	No	Yes	No
MN	Yes	Yes	Yes	Allowed	Yes	Yes	No
MO	Yes	Yes	No	Prohibited	No	Yes	No
ND	Yes	No	No	No policy	No	No	No
NE	Yes	No	No	No policy	No	N/A	No
OH	Yes	Yes	No	No policy	No	No	No
SD	Yes	No	No	No policy	No	Yes	No
WI	Yes	Yes	Yes	Allowed	No	Yes	Yes

IL Regulatory Framework & Heat Pump Adoption

- Illinois' Future Energy Jobs Act (FEJA, 2018-2021) created the regulatory, efficiency, and workforce foundation that allowed heat pump adoption to grow.
- The Climate and Equitable Jobs Act (CEJA, 2022-2025) accelerated heat pump adoption by:
  - Requiring utilities (ComEd, Ameren) to claim electrification (fuel-switching) savings.
  - Setting 5% of savings goal from electrification (2022–2025), increasing to 10% in 2026.
  - Mandating that 25% of electrification savings come from Income Eligible customers.
- Illinois Clean and Reliable Grid Affordability Act (CRGA, 2026) expands CEJA requirements for utility EE portfolios. Lets ComEd increase electrification share to 20% of incremental annual savings and Ameren 10%. Minimum 25% IE spend allocation (up to 35% allowable).
- Ameren as dual-fuel utility faces different incentives from ComEd. ComEd is looking for significant electrification savings.
- Illinois Technical Reference Manual (TRM) updates support both electric heat pumps and gas-fired heat pump technologies, installation applicability and savings estimations.

ComEd Residential Programs Heat Pump Adoption

Programs

- Contractor/Midstream Rebates
- Electric Homes New Construction
- Whole Home Electric (SF & MF)
- Retail/Online
- Heat Pump Water Heater Pilot

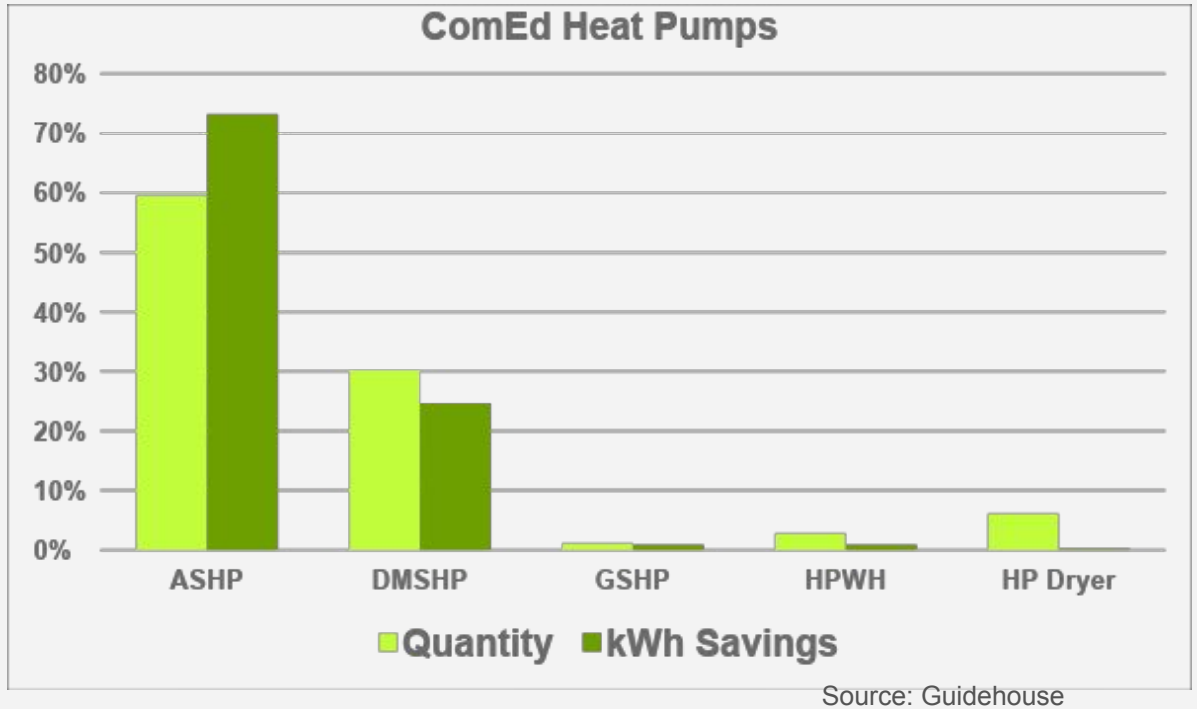
Measures

Illinois heat pump rebate strategies emphasize rebates to overcome upfront costs and align with CEJA electrification and decarbonization goals.

ComEd rebates are often applied instantly at the point of purchase or installation, using a heat pump-trained contractor or geothermal service provider.

- Ducted ASHP & Mini-Split : $1,200 - $2000
- Ductless/Mixed-Use Mini-Splits: Up to $1,000
- GSHP (including loop) - up to $6,000 per home
- GSHP (indoor unit replacement) - $800 - $1200
- Heat Pump Clothes Dryer - $300
- Both all-electric and dual-fuel heat pump systems are important components to achieving ComEd’s savings goals

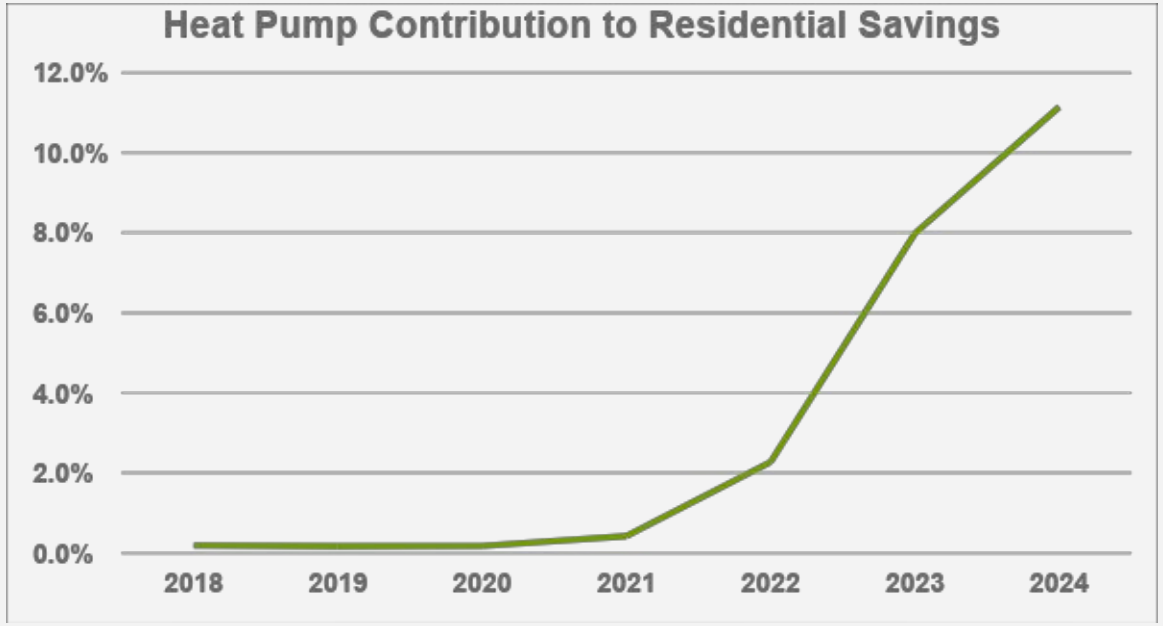
Heat Pump Mix: Installations & Savings Contribution



Source: Guidehouse evaluation

- ComEd midstream and downstream residential programs have installed over 21,600 heat pump systems between 2018-2024.
- ASHP contributes the majority 60% of the count and 73% of the heat pump savings.

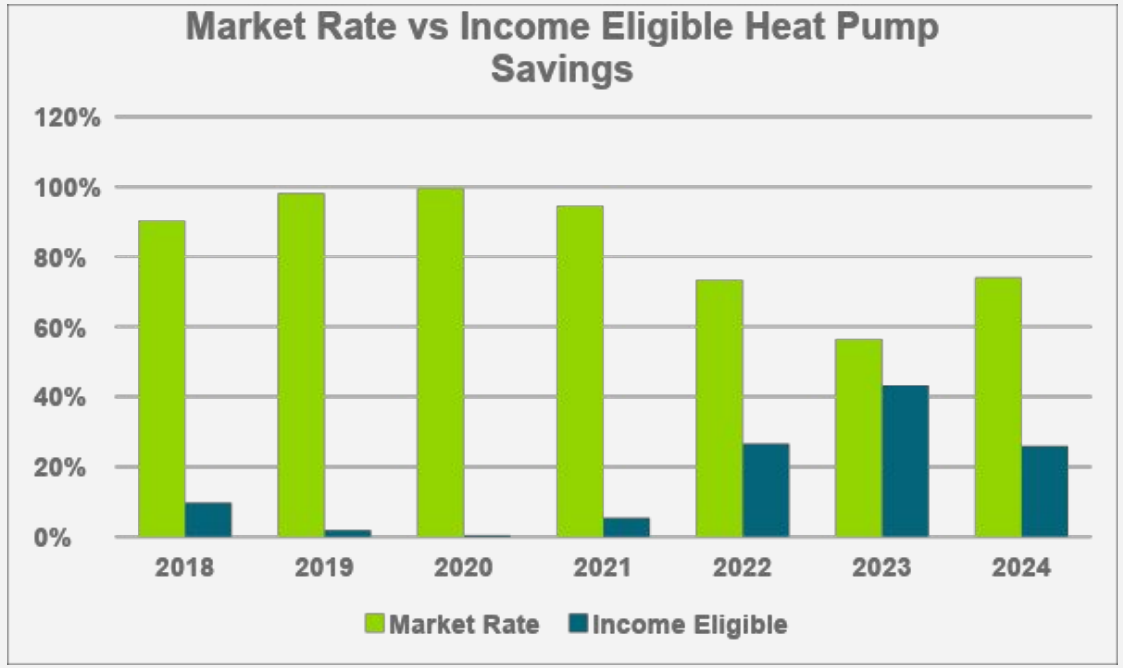
Heat Pump Savings as Share of Residential Portfolio



Source: Guidehouse evaluation

- Heat pumps have contributed 162 GWh of electric savings from 2018-2024, representing 4% of the ComEd portfolio residential savings.
- Majority 86% of ComEd residential heat pumps were adopted since CEJA became effective in 2022.
- Accordingly, heat pump savings have accelerated significantly following CEJA, with the sharp increase from 0.4% in 2021 to 11% by 2024.
- Residential programs contribute 81% of electrification (fuel switch) savings. Heat pumps represent 89% of those savings.

Heat Pump Contribution to IE Portfolio



Source: Guidehouse evaluation

- Spending and adoption of heat pumps in income eligible sector has increased since 2022, with 30% of heat pump savings attributed to IE households.
- ComEd continues optimization of EE portfolio through growth of Midstream offerings. However, it is difficult to verify the volume of heat pumps installed in IE households from Midstream programs.
- ComEd achieved its mandated 25% IE electrification savings in 2022 and 2023. The IE cap was not met in 2024, partly due to delivery and cost constraints to heat pump adoption, even as savings target increased due to regulation.

IL Gas Utilities Heat Pump Initiatives

Peoples Gas & North Shore Gas

- Evaluating heat pump technologies through their research and development and market transformation programs to gather real-world data to inform future program designs. Current initiatives include:
- Gas heat pump customer installations for:
  - Residential space heating
  - Multifamily water heating
  - Commercial water heating
- Workforce trainings
- Additional lab and field monitoring of:
  - Hybrid ASHP systems (residential & commercial)
  - Water source heat pump systems
  - Gas engine-driven heat pumps (commercial)
  - Gas heat pump RTUs

Nicor Gas

- Commercial gas heat pumps
  - Custom rebate offering – $4 per therm saved
  - Ongoing market characterization research via MT
- Residential gas heat pumps
  - MT initiative; Ongoing 15 home field pilot
- Hybrid residential HVAC systems
  - Ongoing research to inform future program design
  - Field demonstrations under Smart Neighborhood™
- Commercial hybrid rooftop units
  - MT initiative; 2 ongoing field pilot sites

Looking Ahead

- Because of CRGA, utilities are revising their plans for 2027-2029. They will file new plans by June 2026. We do not know what they will contain but we will not be surprised to see an increase in electrification, heat pumps, and a substantial amount of effort targeted at IE heat pumps.

- The IE and other midstream and downstream residential spending opportunity are expected to boost heat pump adoption. This will require leveraging community partners and network of qualified service providers to manage higher project volumes.

- Programs that include electrification heat pumps can prove to be cost effective, suggesting the need for a sustained customer innovative approaches, strengthening delivery channels and collaboration with other utility stakeholders to address existing delivery constraints.

- IL gas utilities, Nicor Gas, Peoples Gas and North Shore Gas include natural gas heat pumps in their Plan 5 (2026-2029) programs. We continue to assess these emerging technologies, rebate offerings and future customer adoption and energy savings.

Data Collection

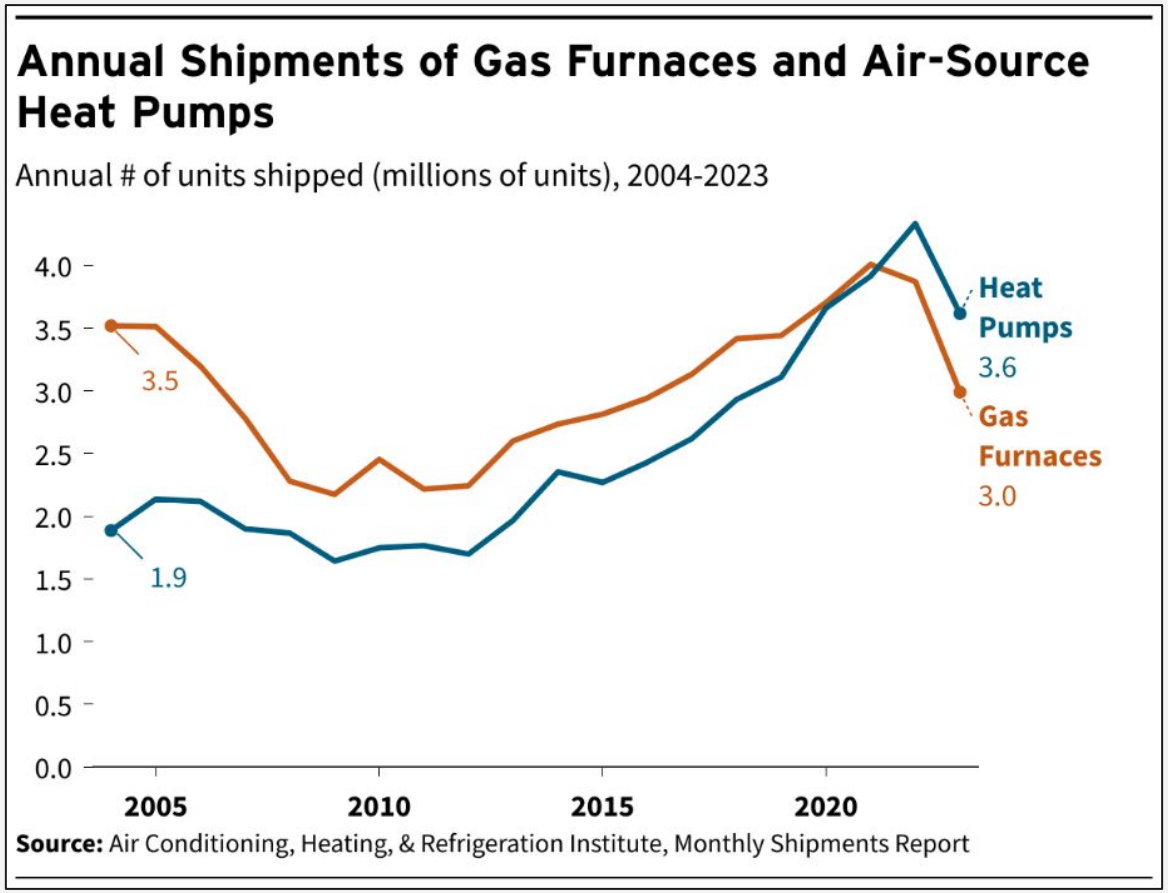
- MEEA, NEEP, and SEEA worked with regional electric and gas utility partners, energy-efficiency program administrators, manufacturers, distributors, and other stakeholders to conduct interviews and collect open-source data on residential rebate programs from 2023 - 2025.
- Quantitative metrics and qualitative information captured on residential utility heat pump, heat pump water heater, and envelope rebate programs were reviewed for 63 energy efficiency program administrators in 33 states and the District of Columbia.
- In the Midwest, MEEA collected information from 31 program administrators (including one state-administered program) encompassing approximately 53% of residential electric utility customers in the region.

Key data and information collected:

- Number of projects by program type
- Program participation rate
- Percentage of heating equipment installed
- Percentage of cooling equipment installed
- Program design
- Definitions of program success
- Rebate incentive levels
- Contractor engagement and training strategy
- Manufacturer/distributor engagement strategy
- Customer engagement strategy

ASHP Program Findings

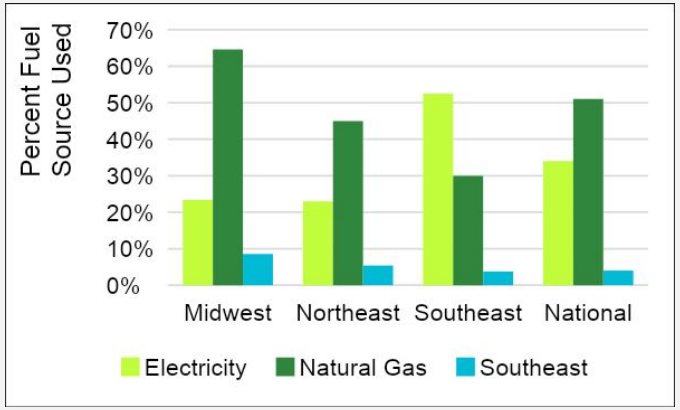
- Approximately 3.6 million ASHPs were shipped to customers in 2023 compared to approximately 3 million gas furnaces (AHRI 2025)
- About half of U.S. homes used natural gas heating equipment (62.7 million out of 123.5 million homes), which includes central warm-air furnaces, steam or hot water systems, built-in room heaters, and other natural gas heating equipment (U.S. Energy Information Administration 2022).
- In comparison, about one-third of U.S. homes relied on electric heating (42.57 million out of 123.5 million homes). Heat pumps accounted for the largest electric heating equipment source among homes heated with electricity (approximately 16 million homes)
- Average equipment and installation costs for ASHPs, excluding add-ons and duct work, range from $4,000 to $12,000 depending on home size and unit capacity (Hazen 2024)



Midwest Regional Characteristics

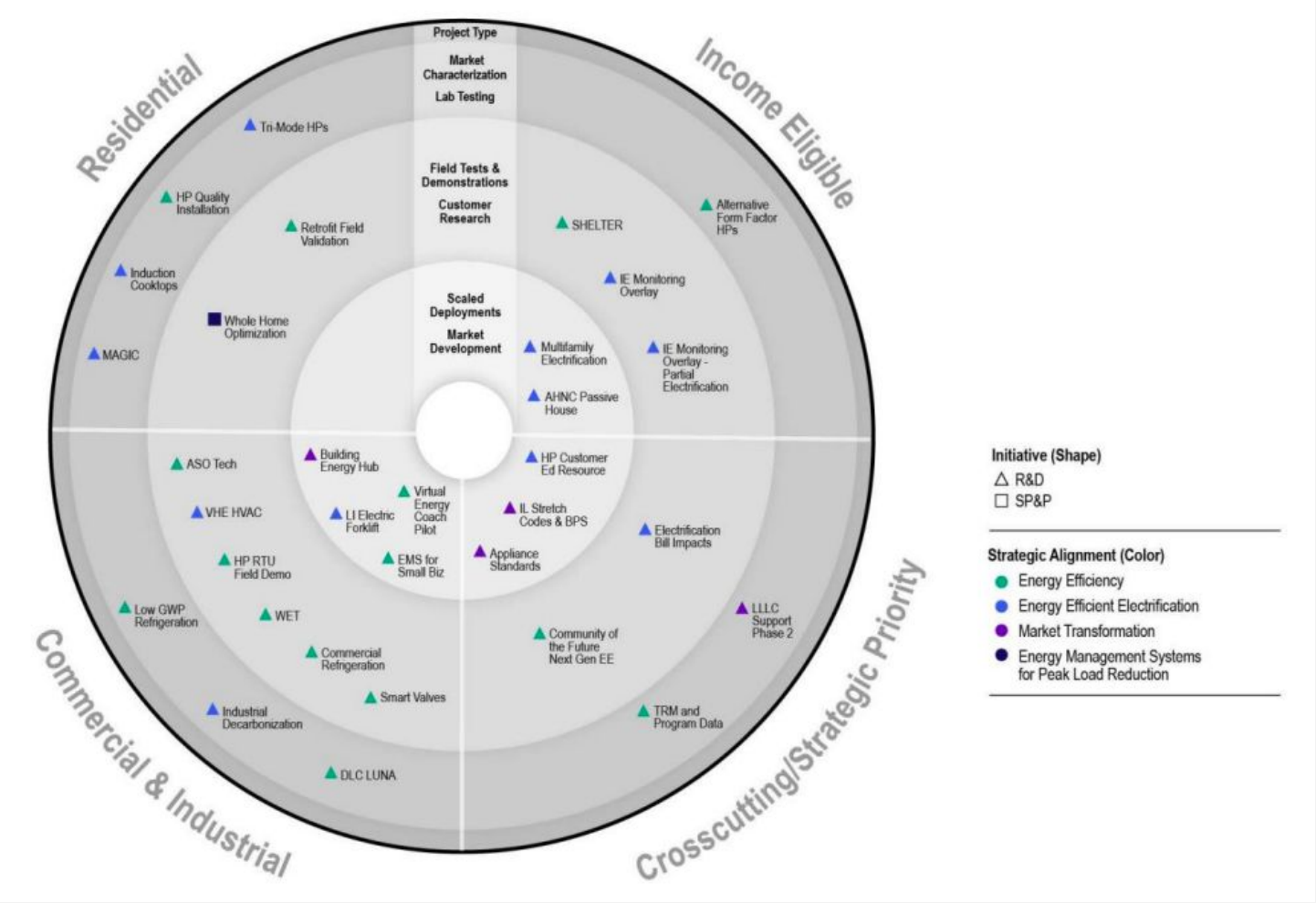
Utility energy efficiency program approaches and data collection are influenced by the regulatory and economic trends of the service territory. These include local objectives for energy efficiency programs, state utility regulations, state or regional energy efficiency goals where applicable, regional relative fuel prices, and accessibility of energy sources.

- Cost-effectiveness for energy savings and customer and contractor engagement are common objectives across the 31 ASHP, HPWH, and envelope programs in the Midwest.
- Program administrators prioritize understanding customer satisfaction and simplifying program designs to make it easier for customers and contractors to take advantage of energy efficiency program benefits.
- Educating customers and contractors on program offerings and equipment or weatherization options, training contractors on proper equipment sizing and installation, and quality control measures are also priorities that utilities seek to address to achieve program goals.
- A secondary objective of these programs involves cultivating ecosystems and contractor bases to support new highly efficient technologies.
- Furthermore, many programs seek to align with relevant state energy policies and regulatory frameworks while helping customers reduce bill impacts.



Average homes' fuel source by region used for space heating (2020

ComEd Customer Innovation Efforts



Market Adoption Research & Development

The visualization provides an overview of ComEd's Customer Innovation selected research concepts and projects, organized by stage of research and relevant customer segments. Some electrification R&D includes:

- Developing energy efficiency & electrification education and awareness campaigns for residential customers adopting heat pumps.
- Conducting case studies of customer's potential bill impacts to switching to electrification (heat pump) measures.
- Interviews with heat pump contractors and service providers to better understand perceptions and barriers around heat pump adoption and electrification opportunities.
- Testing energy savings, costs, and customer experience in real-world conditions for programs promoting heat pumps.
- R&D of outreach tactics and delivery models to provide customers with easy application and savings information.

Source: www.ilsag.info/wp-content/uploads/CY2025-Q2-ComEd-EE-Report-Final.pdf