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Tuesday, October 27, 2026 | Chippewa Valley Technical College | Eau Claire, WI

Welcome!

B4 Heat Pump Contractor Summit 2026

Presenter: JT Stewart | HVAC Consultant

Sponsored by Xcel Energy

Agenda:

- Welcome
  - + Xcel Energy
- Why heat pumps?
- Right sizing journey
- Break + networking
- Air-source heat pump myth-busting
- Dual-fuel systems
- Discussion
- Closing

Residential heat pump categories

Air-to-water

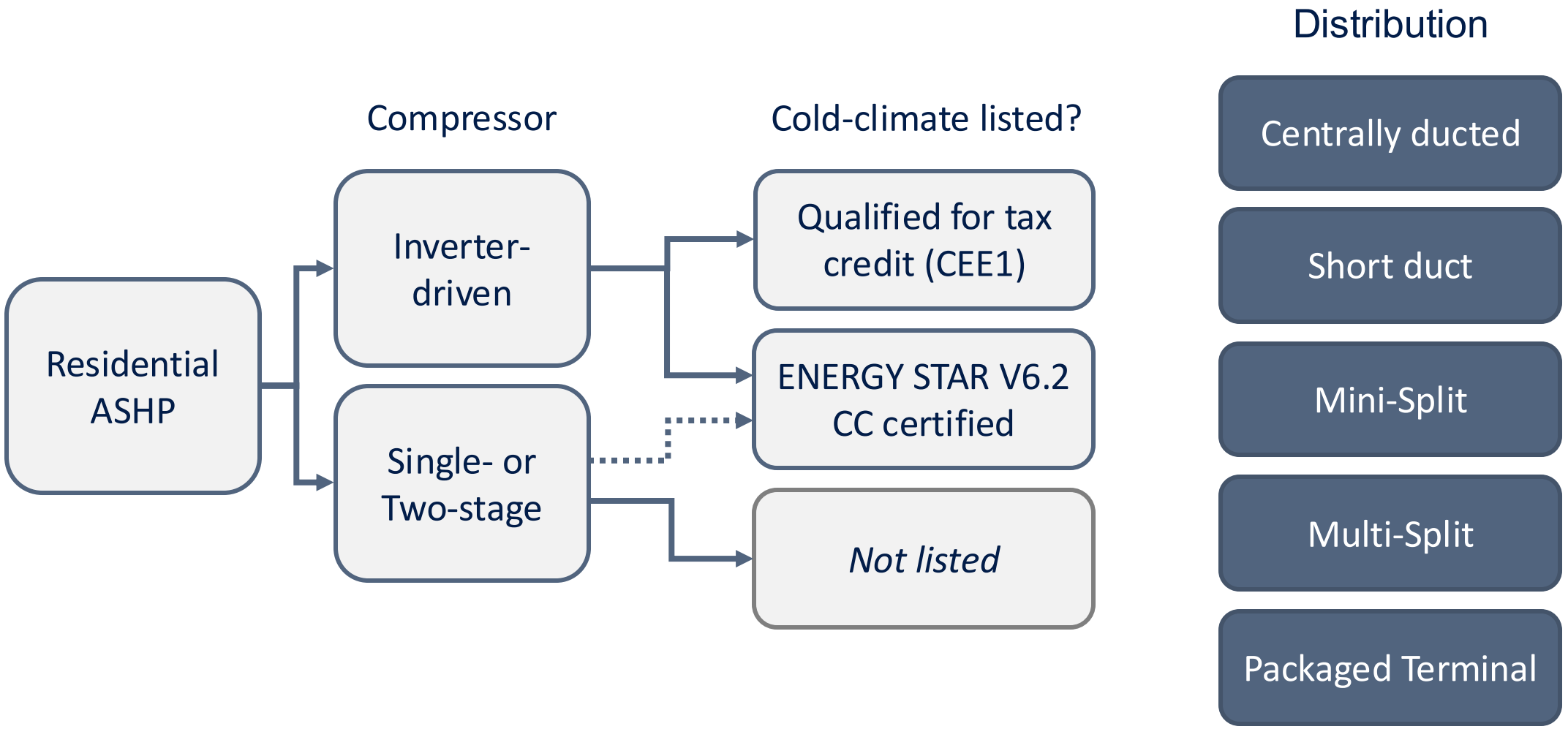
Air-to-air

Ground-source

Heat pump water heater

Our focus

Taxonomy of air-source heat pumps (ASHPs)



Cold climate heat pumps AKA “ccASHP”

Designed to perform well in cold climates

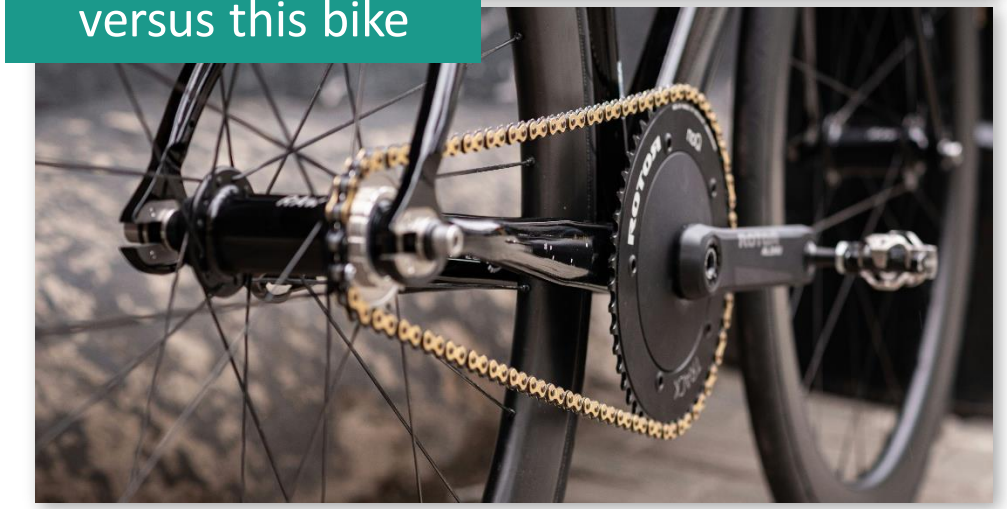
Meet efficiency and capacity criteria from Northeast Energy Efficiency Partnership (NEEP)

Improved components combine for *variable* speed

- Standard ASHPs are single- or two-stage only
- Like a multi-speed bike versus a fixed-gear bike

Like this bike…

versus this bike

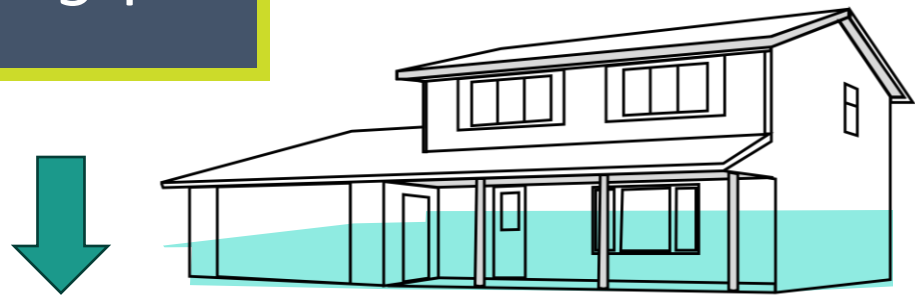


How modulation helps capacity

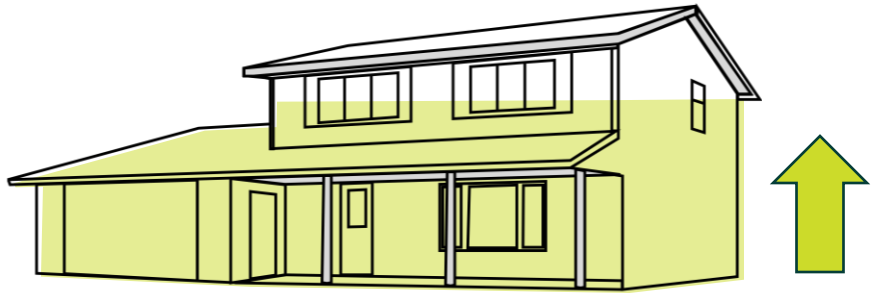
Traditional heat pumps cannot perform at low temperatures and need supplemental heat

Cold-climate heat pumps require little and/or often no supplemental heat

5°F

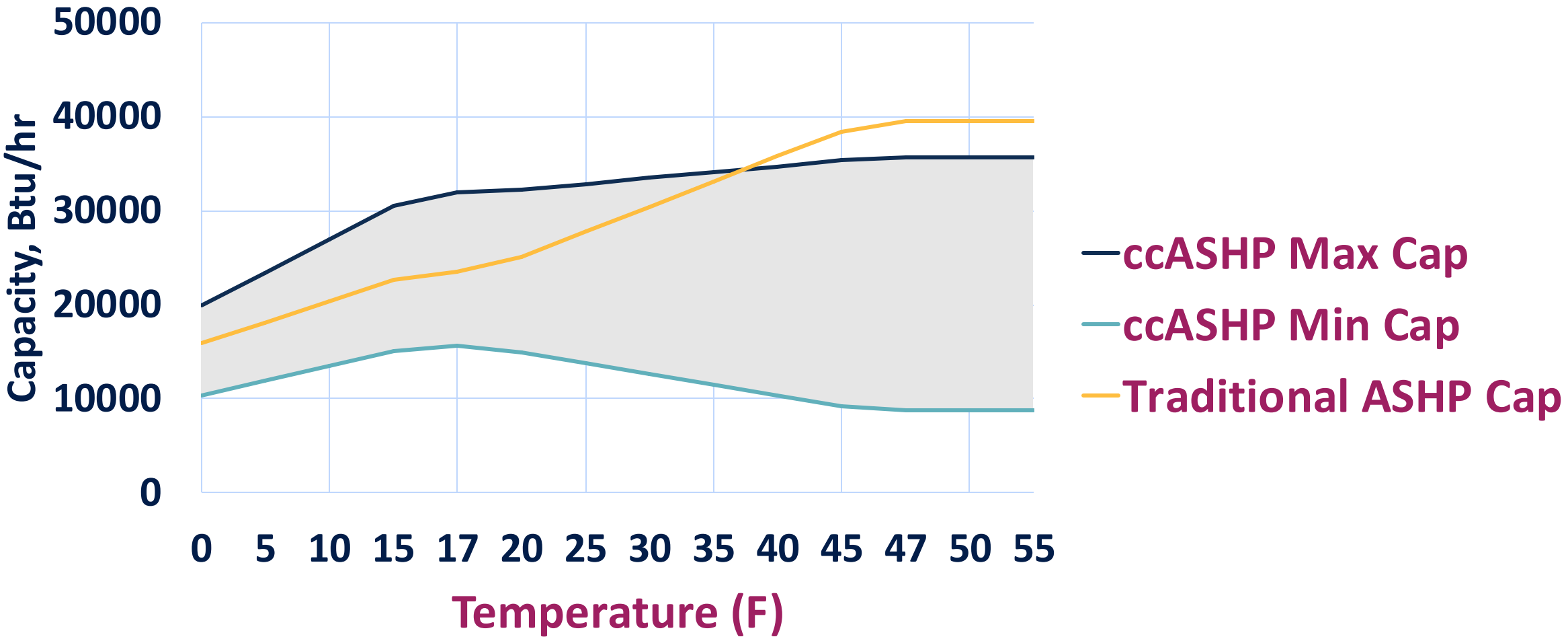


25-50% capacity with conventional HP



75-100% capacity with cold-climate HP

Air-source heat pump capacity comparison



Conventional or cold climate?

Both.

Why heat pumps?

JT's Morals

There is so much honest money to be made.

Education through communication.

Affordability is a design principle.

"No" is always an acceptable option.

Replacements are opportunities for change

67%

Are unsatisfied or somewhat unsatisfied
with their ***current*** heating system

source: 6th annual NW DHP Project Market Progress Report

What are customers looking for in an HVAC system?

Comfort

- Cooling in summer, heating in winter
- Less setpoint fluctuation
- Consistent temperatures throughout

Economical solutions

- Weighing upfront vs operational vs maintenance costs
- Incentives and rebates

Ease of use

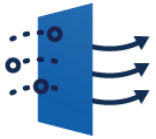
- “Set it and forget it”
- Low effort to control system

The big picture of heat pump benefits

Heating and cooling in one system

Energy bill savings

Improved comfort



Air filtration

Reduced carbon emissions

“People purchase based on emotion but want to justify the purchase based on facts.”

-Suzanne Shelton, The Shelton Group

What’s the difference?

The benefits and challenges of ASHP adoption

Benefits

Increased customer satisfaction

- Comfort improvements
- Energy bill savings

More customer referrals

- Reduced advertising costs

Challenges

- Increased need for training

Setting expectations can boost referrals

Set expectations for:

How the ASHP operates

+

How the ASHP should be controlled and maintained

=

More satisfied customers and more referrals

A replacement culture is more profitable than a repair culture

- Repair yields are 20-40% net profit
- Replacement yields are 20% net profit of a higher total
- Heat pumps increase the ticket total
- Rebates, incentives, and tax credits (when applicable) reduce the cost to customers
- Heat pumps can solve larger comfort issues
- Quality replacements increase customer referrals

The value of homeowner education

A well-installed outdoor & indoor unit = a satisfied homeowner!

Happy, well-educated homeowners are the best salespeople!

WHO should get one?

Literally, everyone.

WHERE does it work?

Literally, everywhere.

What is comfort?

According to the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), thermal comfort is defined as "that condition of mind which expresses satisfaction with the thermal environment and is assessed by subjective evaluation."

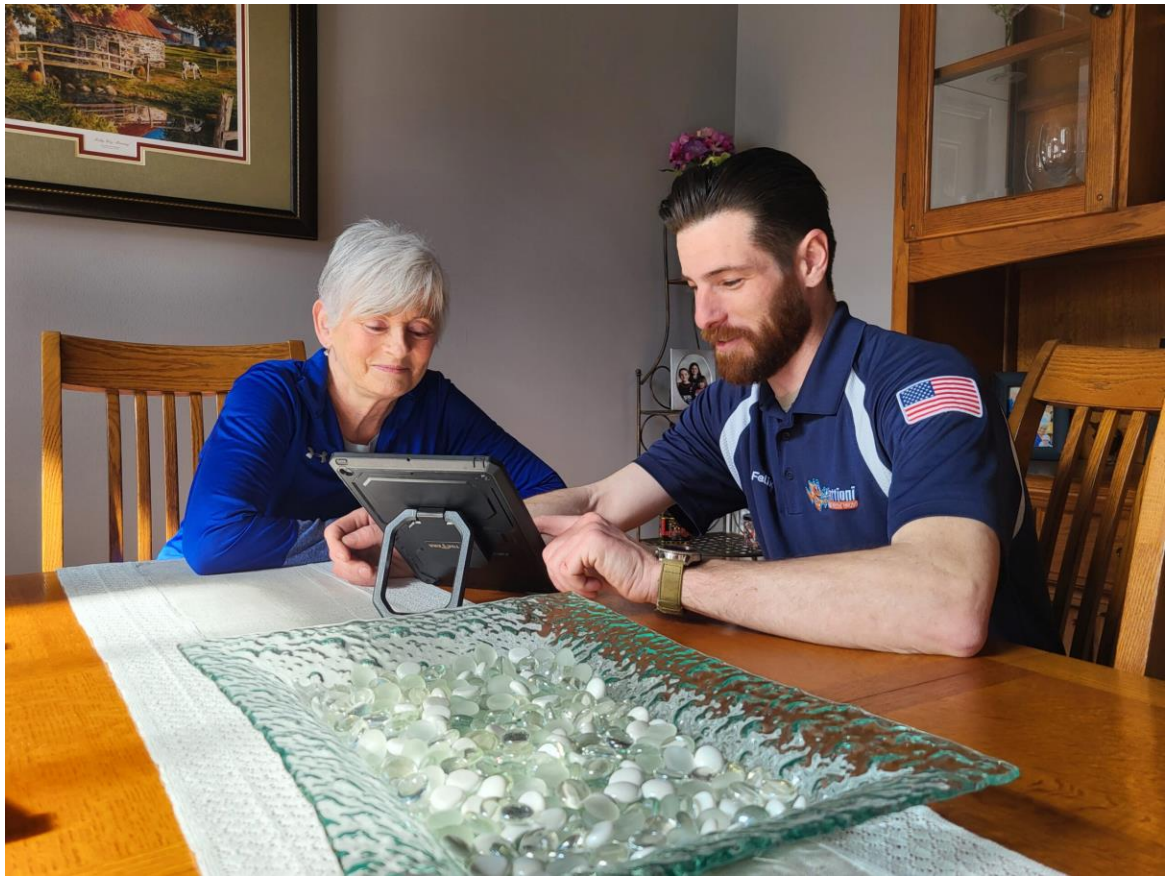
If comfort is subjective, it means we can change the perception.

The expanding opportunity to use heat pump technology in cold climates

Technology advancements: Variable-capacity advancements have expanded cold climate performance

Field research demonstrated: Heat pumps systems delivering heat in -25°F ambient temps observed

I hate to break it to you,



but it’s not the heat pump.

Setting the stage

- Picture of HVAC technician talking at table with homeowners – or the “decision makers.”
- 67% of homeowners are unhappy with at least 1 aspect of their current HVAC system
- Planned vs emergency replacement
- About 70% of all HVAC replacements are emergency service calls

Presenting the facts

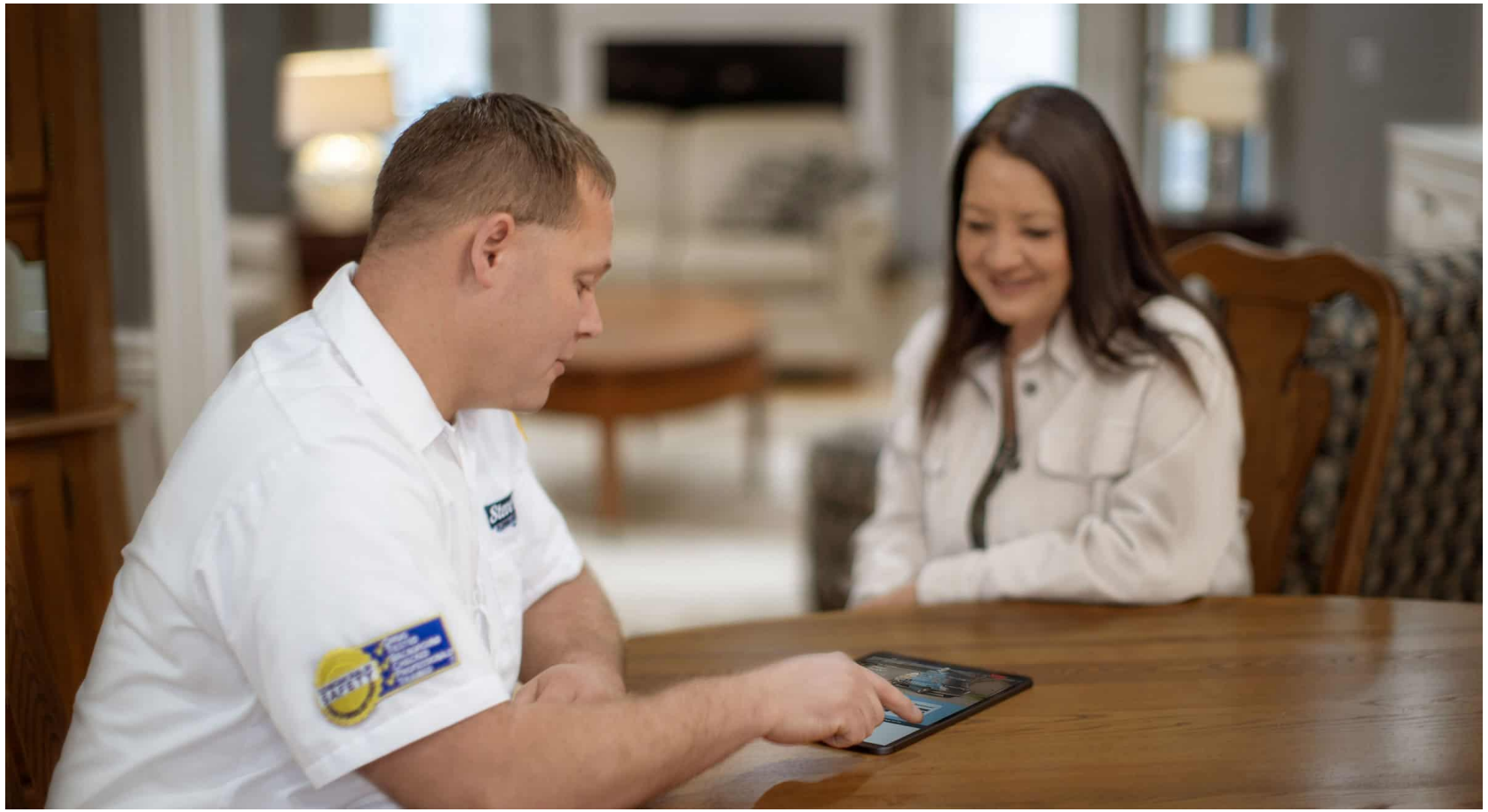


Photo credit Steve Huff Plumbing

Repair vs. replacement

Not talking about plan replacement

No one wakes up and states “I want to buy an HVAC system today!”

Whichever title does the system sizing and selection process for the sales, should look identical

“To ask the right question is already half the solution of a problem.”

-Carl Jung

Information from the homeowner

Question for occupant	Why ask the question?
Comfort issues? If so, where?	Equipment or house issue? Broad or targeted focus?
Any water issue? (*don't say it!)*	Identify if there is moisture or bulk water concerns
Indoor air quality concerns?	Identify if indoor air quality is a concern
Are your energy bills okay?	Determine if energy bills are a focus for the homeowner

What do customers want from a replacement of their HVAC system?

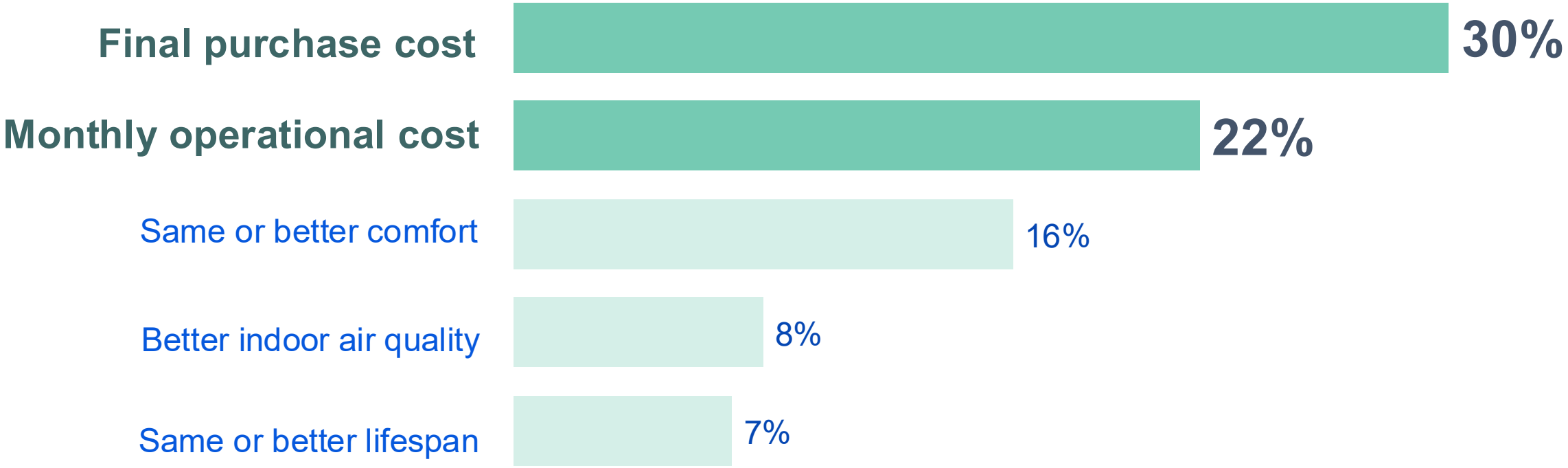
2024 market survey of Midwesterners

We worked with a research firm to better understand customer awareness and perceptions of heat pump technology.

- **30 homeowners** participated in focus groups
- **Over 3,000 Midwesterners** completed online surveys and message tests

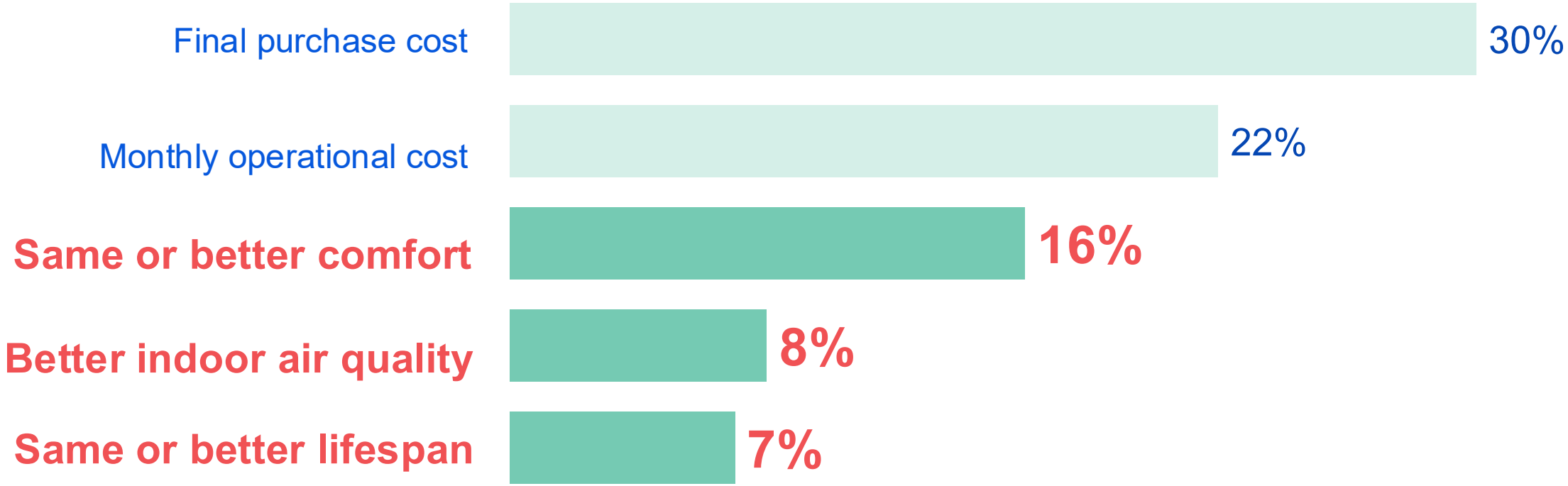
Cost is the top two priorities

Top-five ranked factors for home heat and cooling decisions to Midwesterners (n=1,733)



Items related to system quality are the rest of the top-five priorities

Top-five ranked factors for home heat and cooling decisions to Midwesterners (n=1,733)



A summary of customer priorities for new HVAC

Economical solutions

- Competitive upfront costs
- Taking advantage of incentives and financing
- Competitive operational costs

Quality equipment

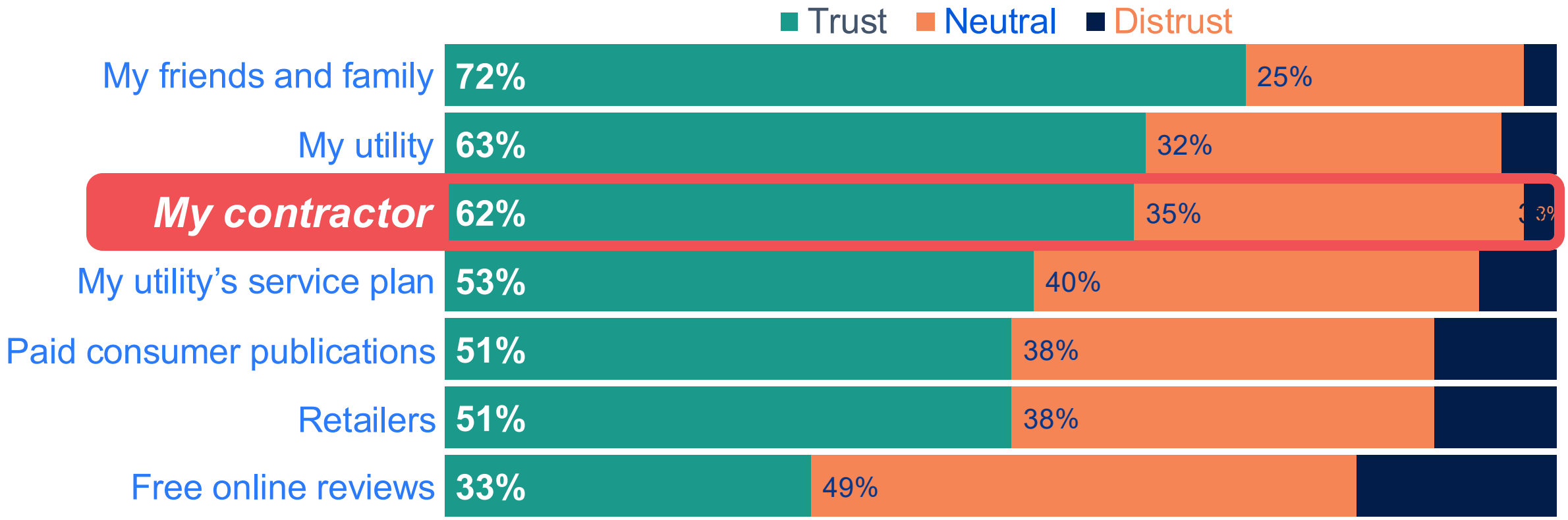
- Temperature consistency and balance around home
- Less fluctuation around set point
- Better indoor air quality
- System reliability and durability

How can you make simple modifications to your sales process to sell heat pumps?

How can you solve common customer needs with a heat pump solution?

Your voice is important! Contractors are a trusted resource for homeowners

Source of information that participants trust in the Midwest sample (n=4,007)

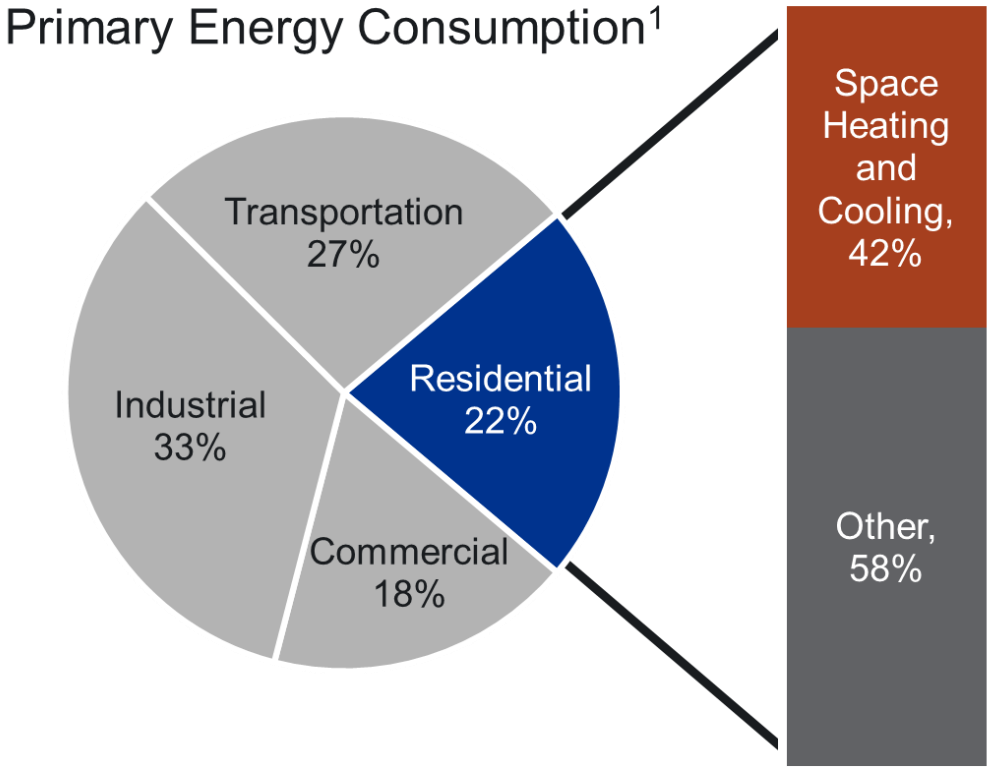


Be a knowledgeable source on incentives to address cost concerns

- Be familiar with your incentive landscape
- Be familiar with dual fuel or electric space heating rates from your utility and how to sign up for them
- Be able to communicate to your customers how the incentives can address cost barriers

Why residential HVAC matters

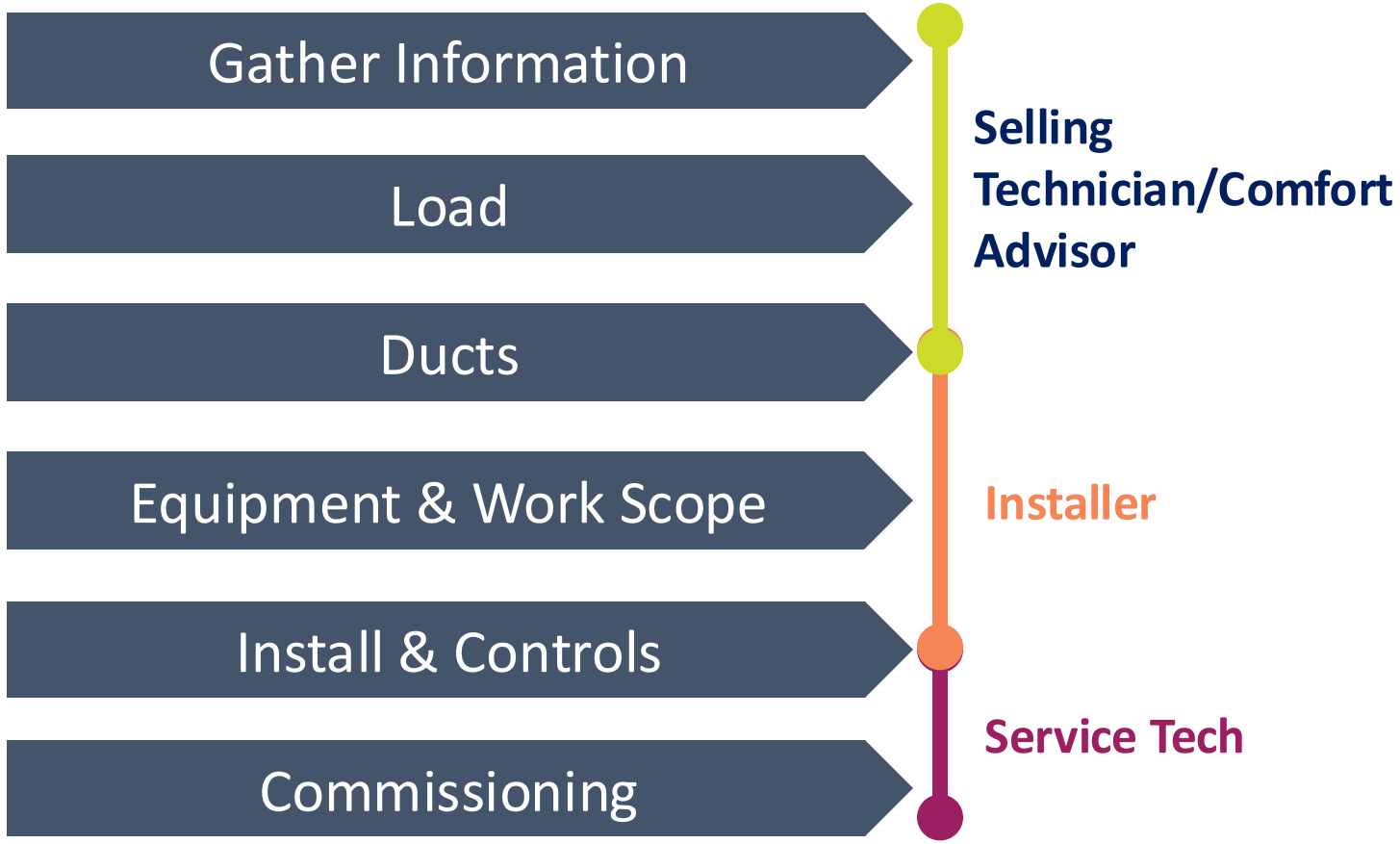
- ✓ Comfort
- ✓ Health and safety
- ✓ Energy use
- ✓ Carbon emissions



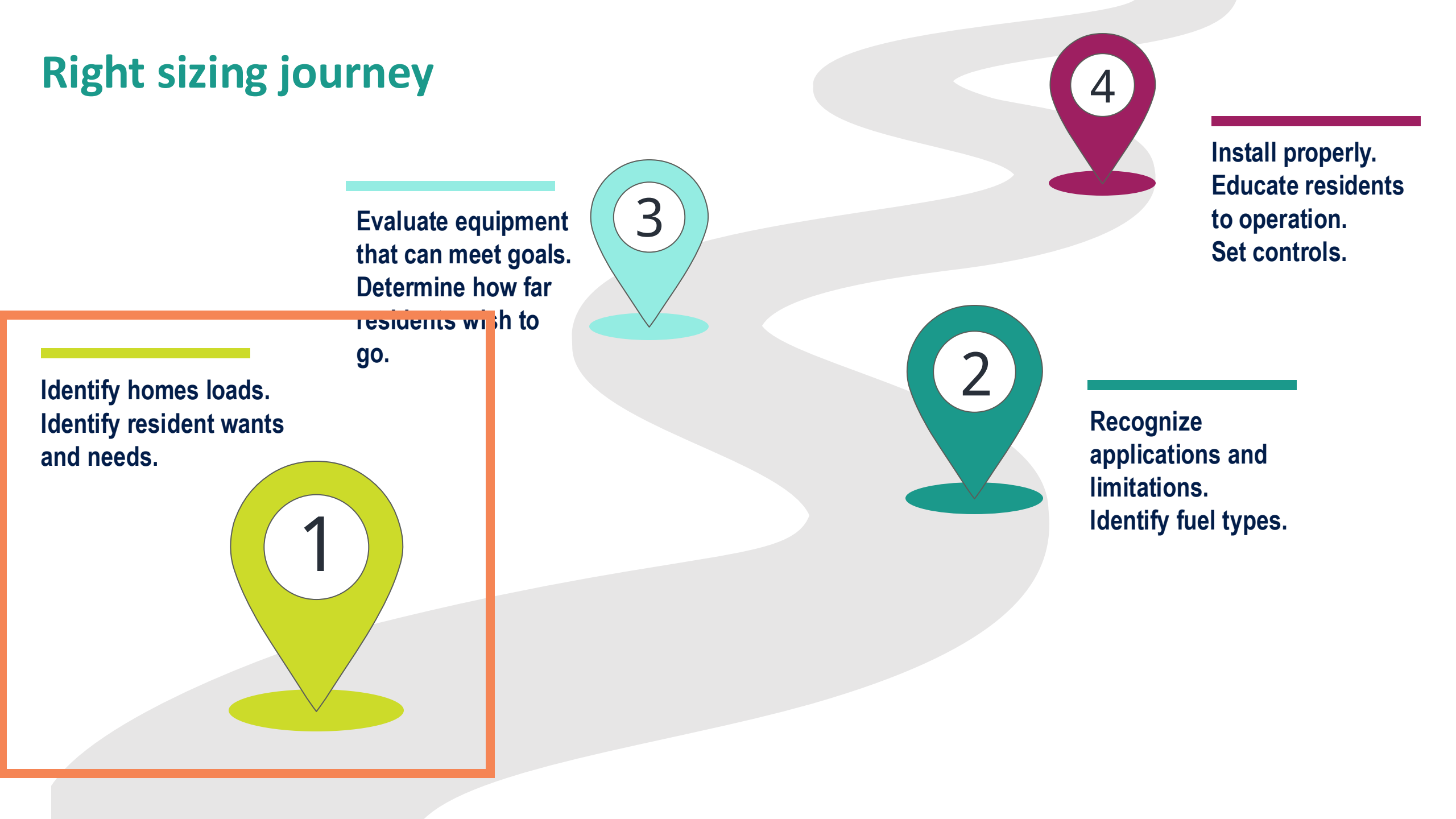
Right Sizing Journey

The 6-step heat pump retrofit process

Steps and expected roles:



Right sizing journey



A deeper look at pain points, needs and wants

Listen to pain points, needs and wants

Evaluate the home and **systems**

Design and **propose** the solution

Is this home ready for a heat pump?

The house, existing equipment, and homeowners' needs need to be considered.

Questions to determine modeling and equipment

- Central system, zonal, or displacement?
- Open floorplan?
- Multiple indoor units?
- Control strategy?
- Duct leakage?
- Duct balancing and airflow corrections (hot/cold rooms)?
- Duct design needed (new construction, additions)?

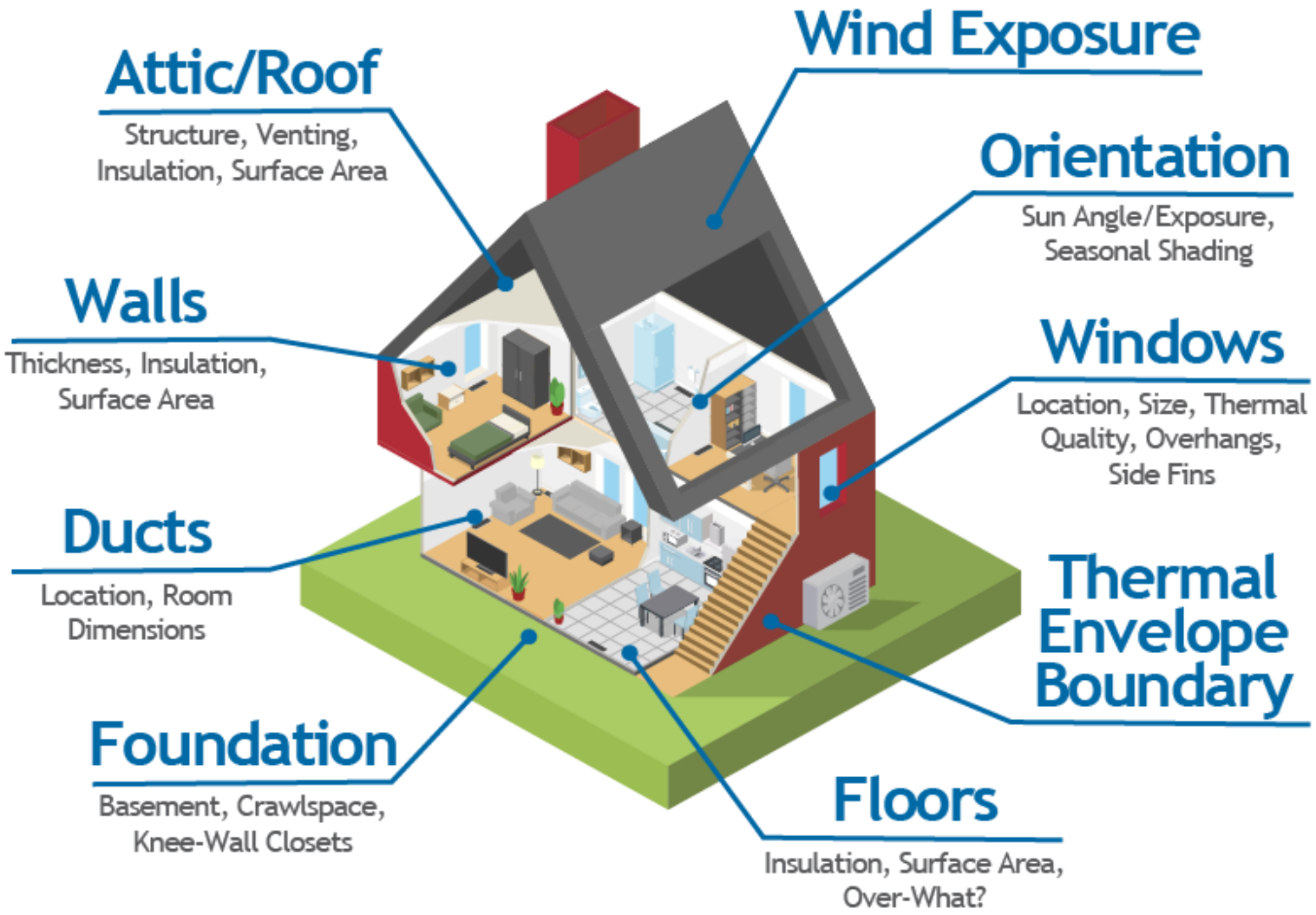
Load calculations – What are they?

The colder it is outside, the more heating energy is needed to stay comfortable.

The heating load is judged based on the coldest day of the year.

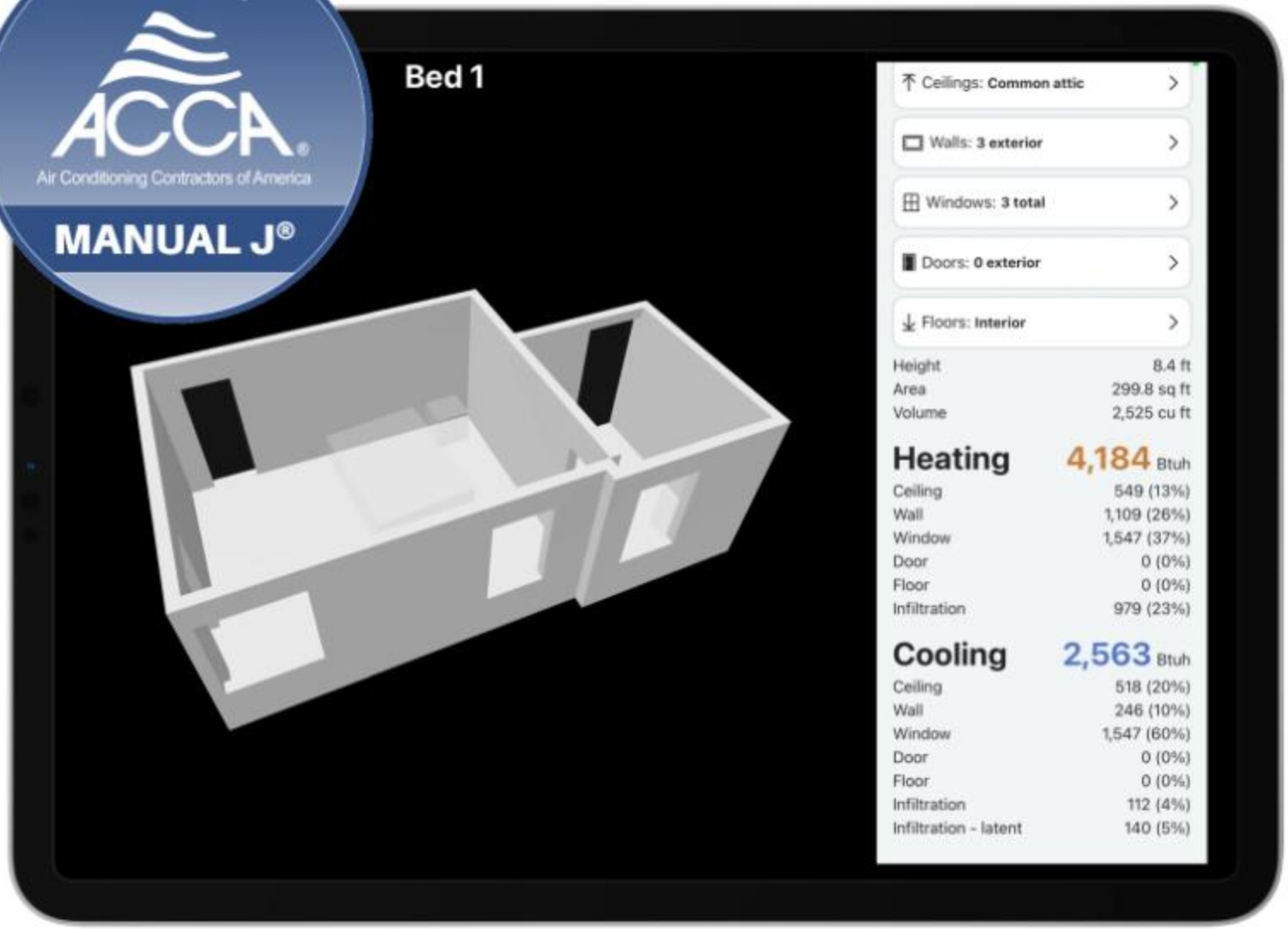
- **How much heat is needed?**
  - In the home (block load)
  - In a zone (e.g., floor or wing)
  - In a room
- **What goes into the calculation?**
  - Design temperature (the regional climate)
  - Size of the home
  - Insulation – walls, ceilings, floors
  - Window quality and location
  - Building orientation

What impacts the load? Construction details.



Load calc tools.....

Use ACCA approved software which can be found on the ACCA approved software website https://www.acca.org/standards/approved-software



https://info.amply.energy/blog/amply-earns-accas-powered-by-manual-j-certification

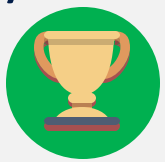
Status quo approaches to load calcs

Most common approaches:

Based on size of existing equipment

Rule of thumb

Utility bill analysis



Block load calculation

Room by room calculation

Slide courtesy Bruce Manclark

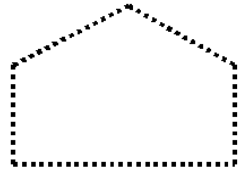
Sizing – rules of thumb

- One thousand BTU per 100 sq ft
- One cfm per sq. ft. of house
- 35 btu per sq ft

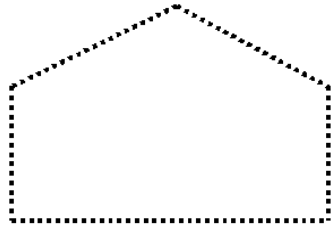
  50 BTU/sq ft in Zone 5 and up
- Tonnage = half the number of cylinders in the customer's biggest car/truck
- What's in the shop today
- ½ ton bigger than their neighbor

Air Conditioner or Heat Pump Sizing Chart

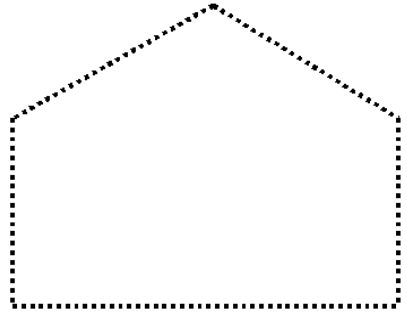
(Please understand that this is meant as humor,
however it is just as accurate as "x" number of square feet per ton!)



1 1/2 to 2 ton



2 1/2 to 3 1/2 ton



4 to 5 ton

High-quality method

Comfort consultation

Comfort Survey

Room-by-room Manual J or equivalent

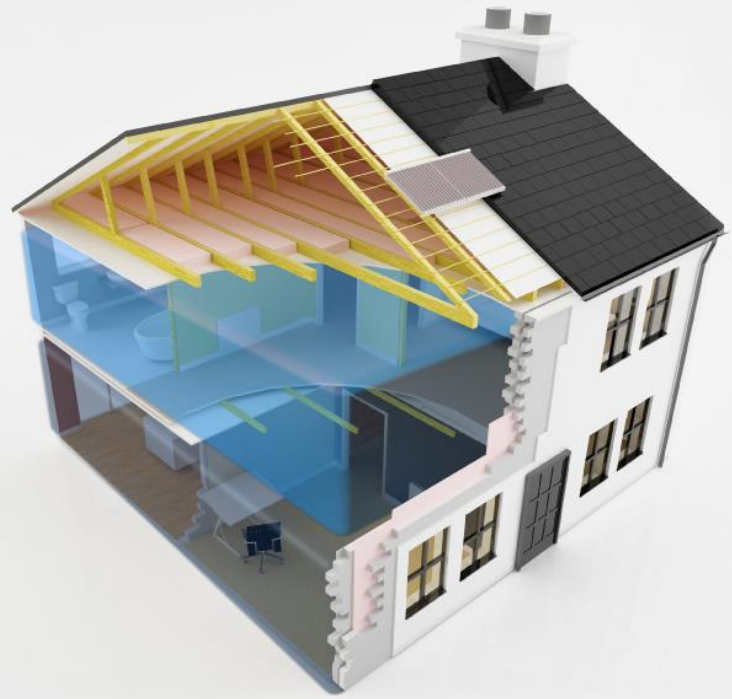
Account for detailed building envelope information

Ductwork evaluation

Factoring in existing equipment’s run time or customer’s utility bills

When applicable

Factor in design temperatures



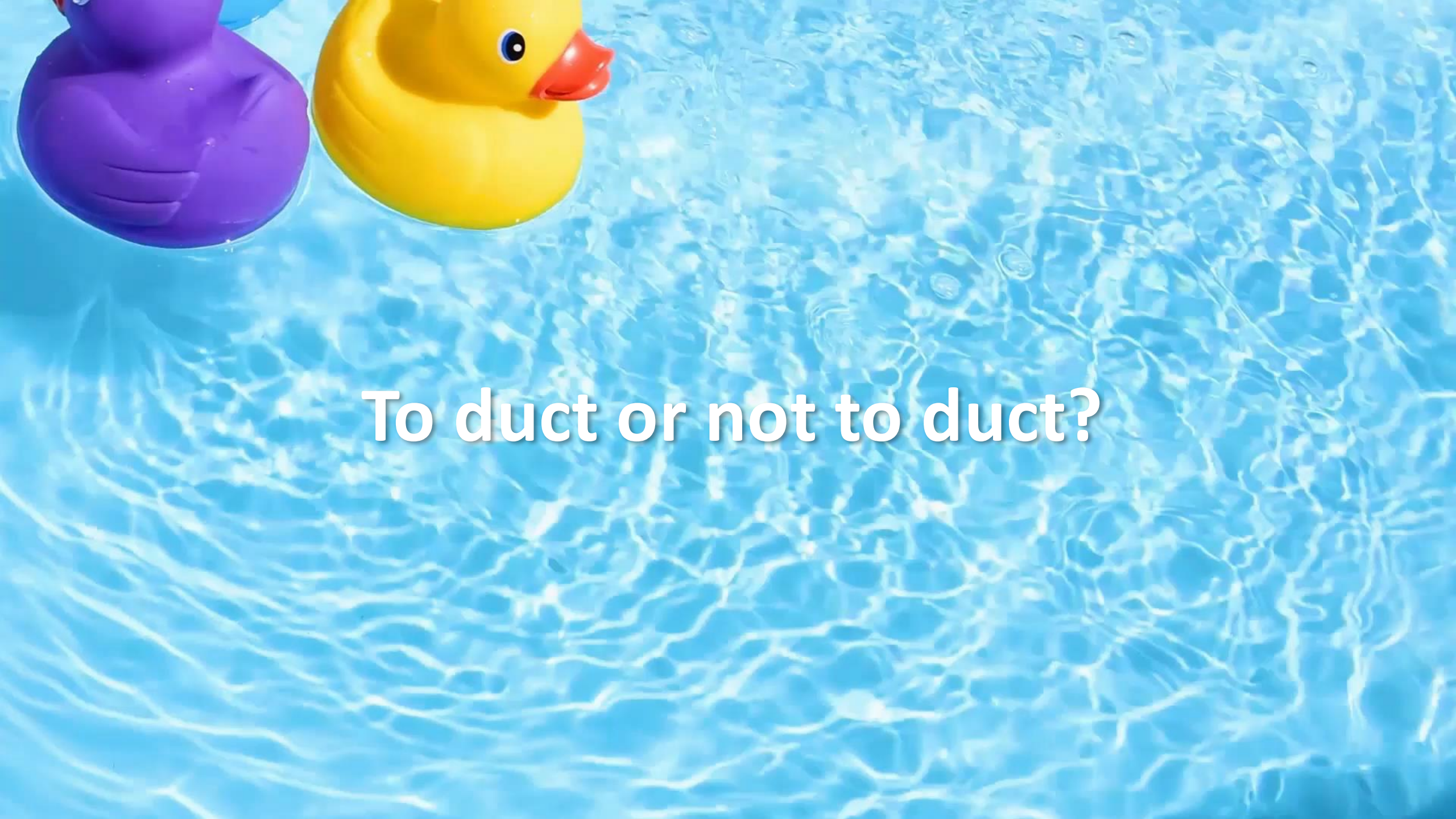
Right sizing journey

Identify homes loads.
Identify resident wants and needs.

Evaluate equipment that can meet goals.
Determine how far residents wish to go.

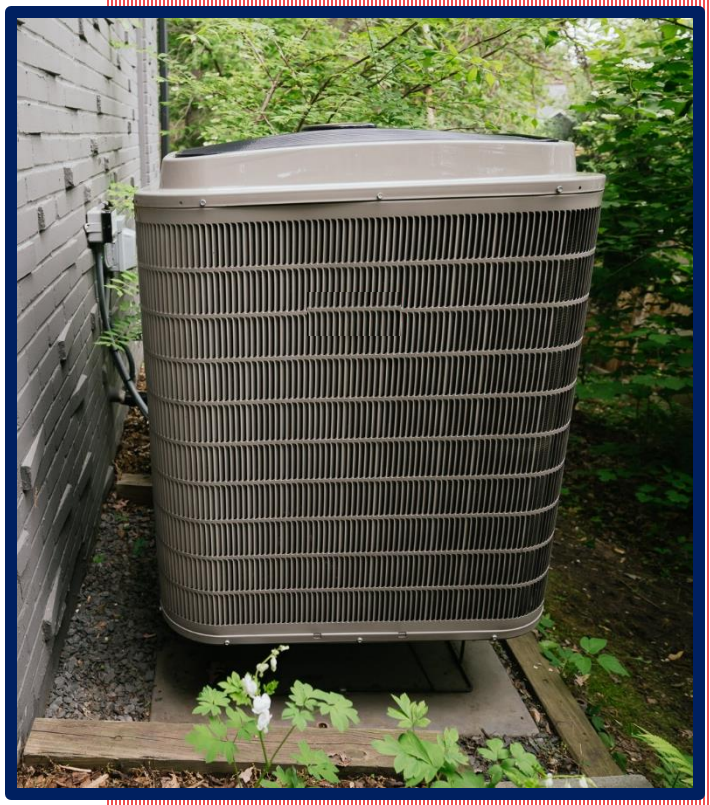
Recognize applications and limitations.
Identify fuel types.

Install properly.
Educate residents to operation.
Set controls.

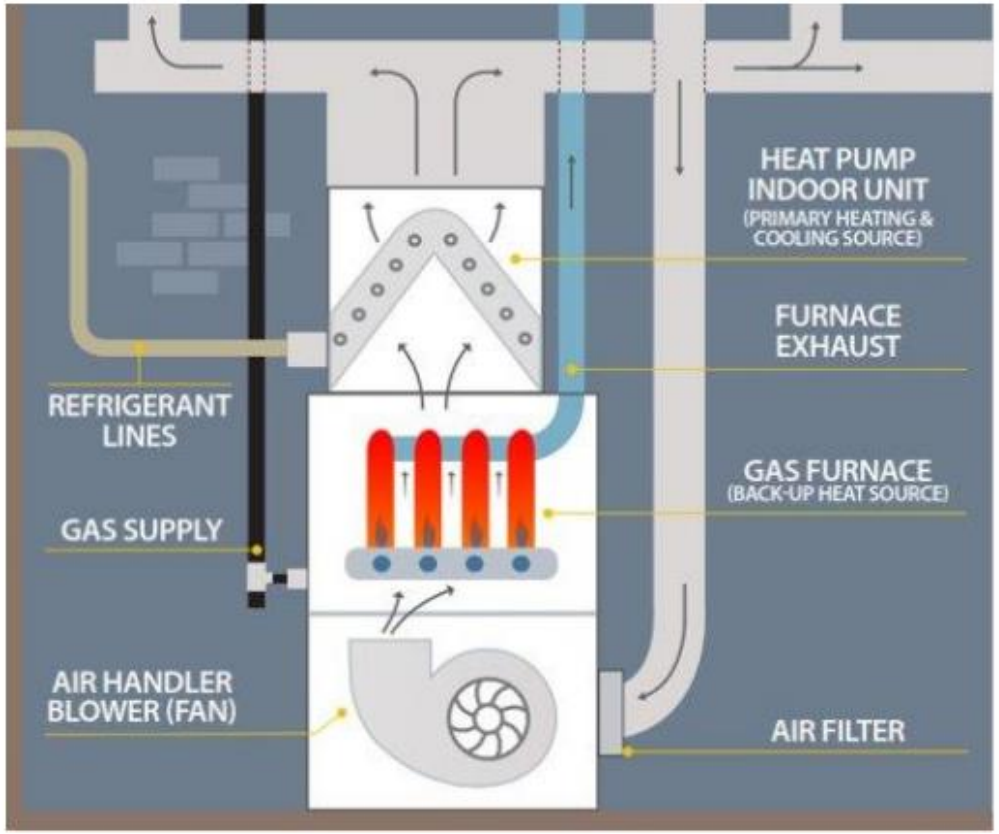

To duct or not to duct?

Types of centrally-ducted ASHP:

- **Standalone**
  - ASHP & new coil
  - Existing furnace kept
  - Caution: Few products in this category meet rebate eligibility
- **Single-Stage**
- **Two- or Three-Stage**
- **Variable-Capacity**
  - May or may not be NEEP cold-climate rated
  - Can include crossover solutions from Bryant/Carrier and Mitsubishi



Dual-fuel (hybrid) options



Type of Dual-Fuel Heat Pump	Relative Cost	Cold-climate potential performance
Single or two-speed	Low	No
Three-speed	Low to Moderate	Yes
Standalone add-on inverter system (outdoor unit + indoor coil)	Moderate	Yes
Modern inverter system	Moderate to High	Yes
Multizone inverter system	Moderate to High	Yes

Non-ducted air source heat pumps

1:1 Mini-Split Units

- Excellent for open spaces
- No thermal loss to duct work or unconditioned space

1:2-4 Multi-head Units

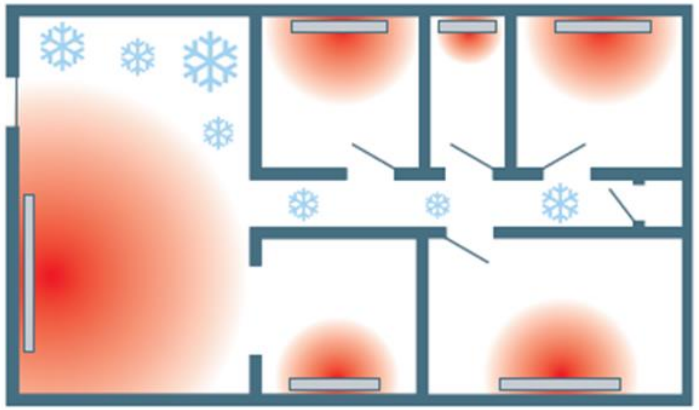
- Not optimal for highest efficiency
- Helpful under limited conditions

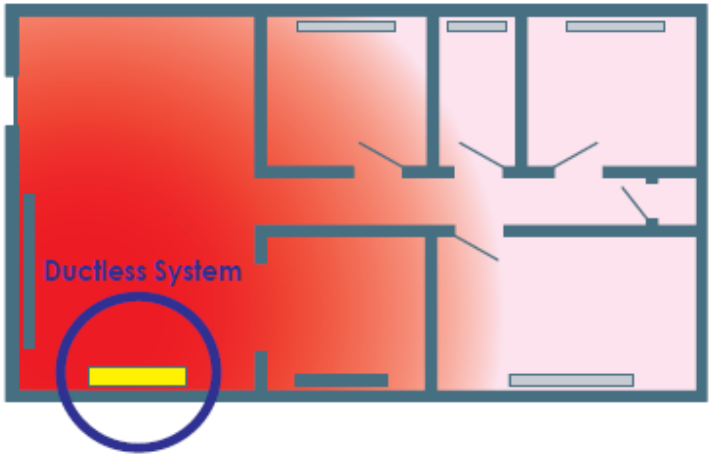
PTHP

- Fits in an existing PTAC sleeve

Best Uses

- Small weatherized homes
- Uncomfortable rooms
- Seasonal use cabins

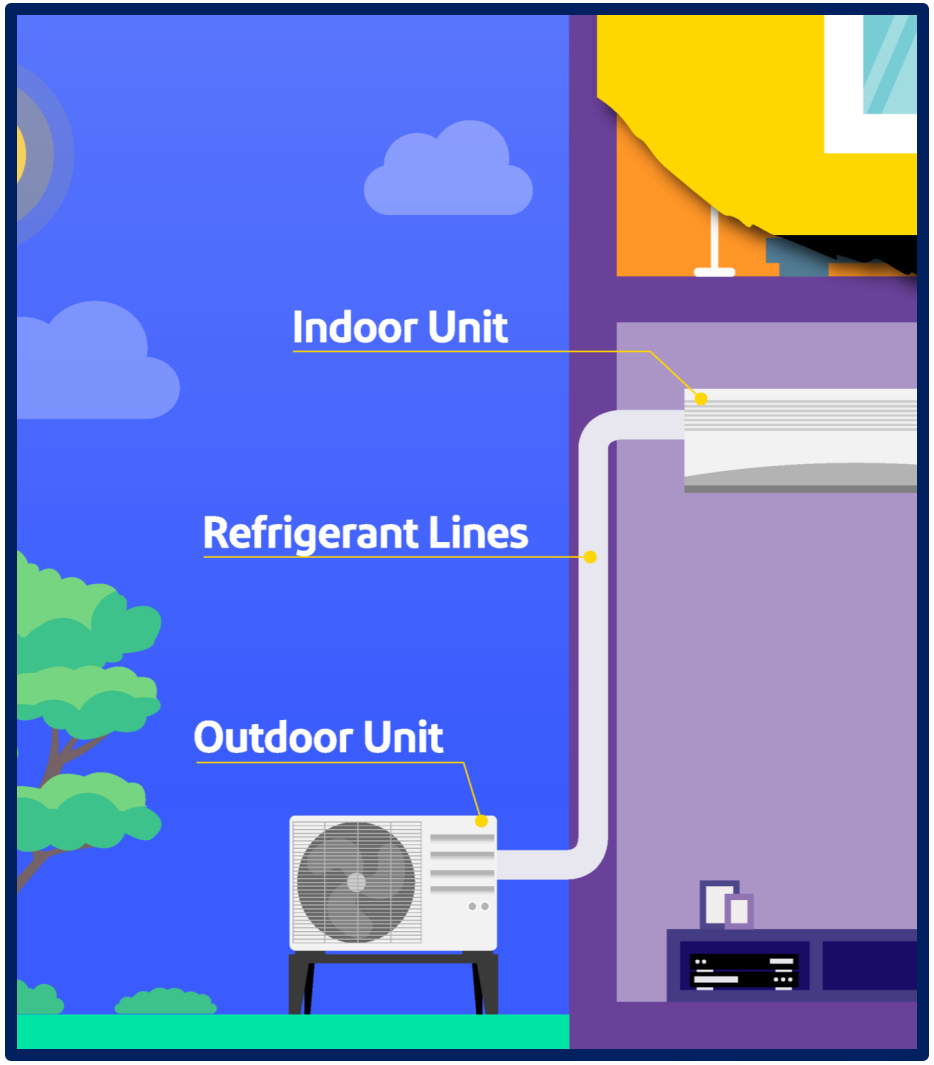




Ductless systems with non-connected back-up:

These systems consist mini- / multi-split and a non-connected heat source:

- Electric base board
- Boiler
- Wall furnace
- Existing ducted furnace (when ductwork changes are costly or challenging)



Right sizing journey

Identify homes loads.
Identify resident wants and needs.

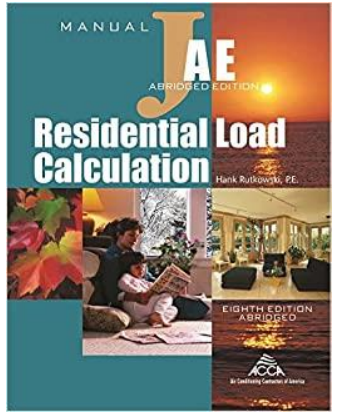
Evaluate equipment that can meet goals.
Determine how far residents wish to go.

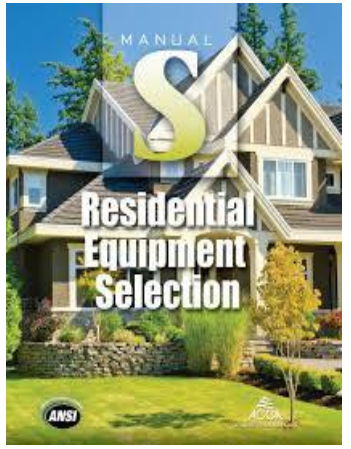
Recognize applications and limitations.
Identify fuel types.

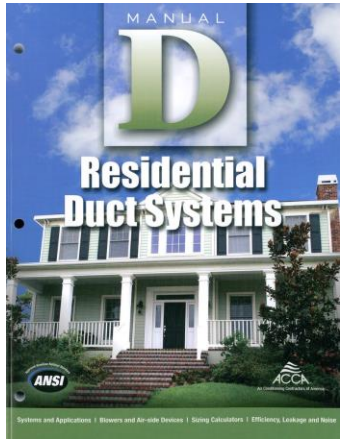
Install properly.
Educate residents to operation.
Set controls.

Challenges

- Collecting enough information for accurate load calculations
- Determining when to size for heating vs. cooling
- Distribution (ductwork) not properly designed for variable speed equipment
- Belief that heat pumps aren't a viable year-round heating technology in cold climates
- Inaccurate expectations of how heat pumps should operate, leading them to not use them/overuse them, or request unnecessary service calls
- Selecting the right heat pump for the use case
- Selecting the best control strategy for the customer and equipment
- For more resources visit: www.acca.org/standards/approved-software







Features to help rationalize the best option

Provides both heating and air conditioning

- Capacity varies with heating and cooling needs

Advanced heat pump technology

- Inverter driven compressor
- Low ambient noise
- Works well when it is cold outside

Highest efficiency

- Heating Seasonal Performance Factor (HSPF)
- Seasonal Energy Efficiency Ratio (SEER)

Neep's cold climate specification

- Variable capacity, residential-scale, air source heat pump. Ducted or ductless
- High rated heating efficiency (≥ 9 HSPF ductless, ≥ 10 HSPF ducted)
- High efficiency even at 5°F (COP ≥ 1.75)
- Highly rated cooling efficiency
- Capacity and efficiency data reported at multiple operating conditions

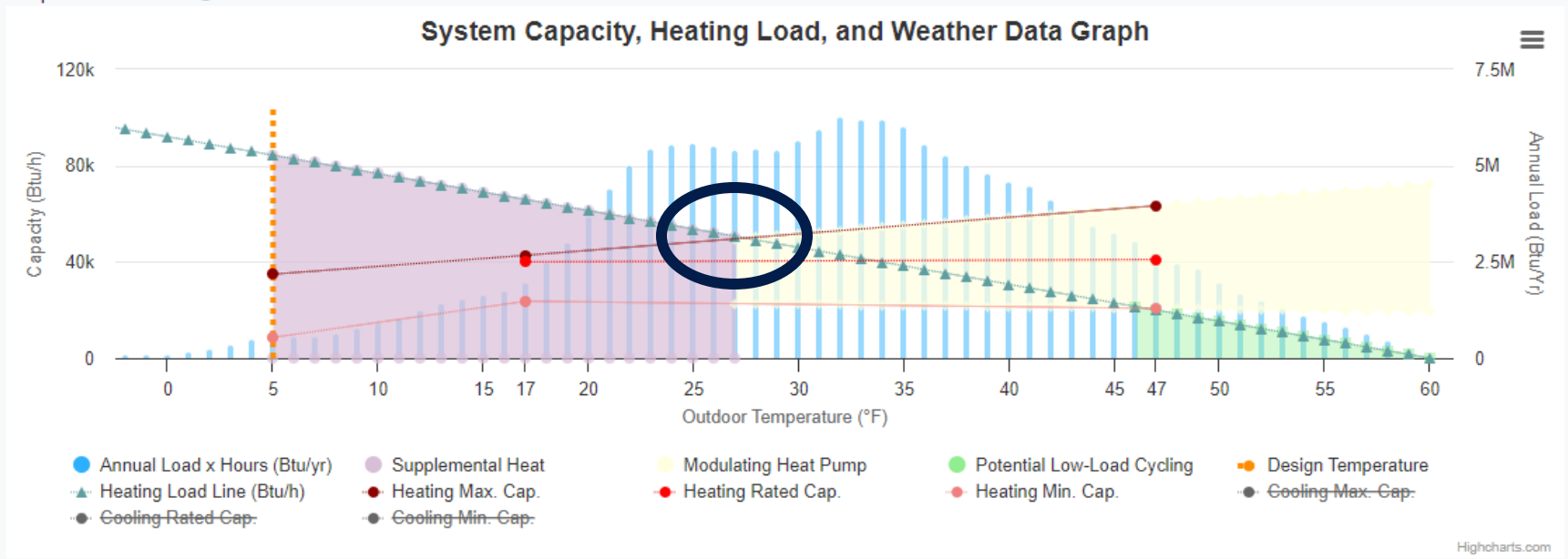
- Sets and periodically updates the standard
- Maintains a qualifying product list
- Publishes the resultant engineering data

https://ashp.neep.org/#!/product_list/

Determining the thermal / capacity balance point with the NEEP tool

This is the best place to *guess* and check on capacity balance points your customer may not be as forgiving as this tool!

Graph Information



Product Sizing For Heating

Field Information

Capacity Balance Point (°F)	27
Minimum Capacity Threshold (°F)	[illegible]
Maximum Capacity at Design Temp (Btu/h)	0
Percent Design Load Served	0.0%
Annual Heating Load (MMBtu)	[illegible]
Percent Annual Heating Load Served	67.5%

Field Information

Annual Btu's Covered by Supplemental Heat (MMBtu)	[illegible]
Hours Requiring Supplemental Heat	936
Percent Hours Requiring Supplemental Heat	[illegible]
Percent Annual Load Modulating	86.9%
Percent Annual Load with Low-Load Cycling	10.5%

Return to Standard Search

This tool is for preliminary product selection planning only. It is necessary to conduct full engineering capacity assessments that take line-length, multi-head impacts, and other factors into consideration. Use manufacturer's data and tools to finalize product sizing and selection determinations.

ZipCode

54701

Heating Design Temp. (°F)

-8

Cooling Design Temp. (°F)

87

Weather Station

Chippewa Valley Regional, Winter Design

Heating Design Load (Btu/h)

45000

Cooling Design Load (Btu/h)

24000

Building Square Footage

1500

Home Construction Year

1980

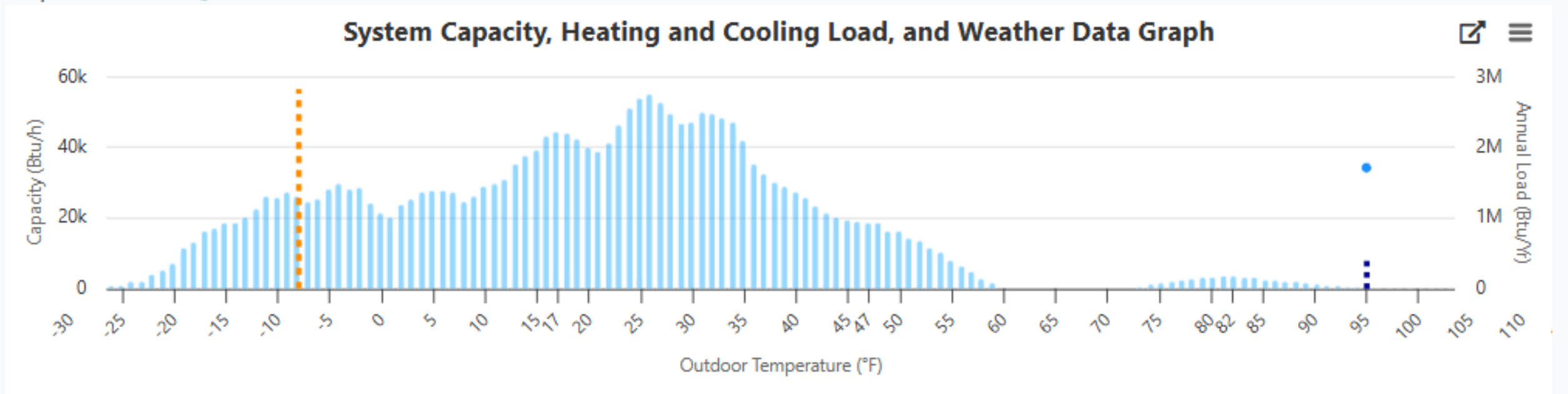
Limit search to one result per outdoor unit

Advanced Search - Sizing for Heating and Cooling User Guide and Design Load Calculators

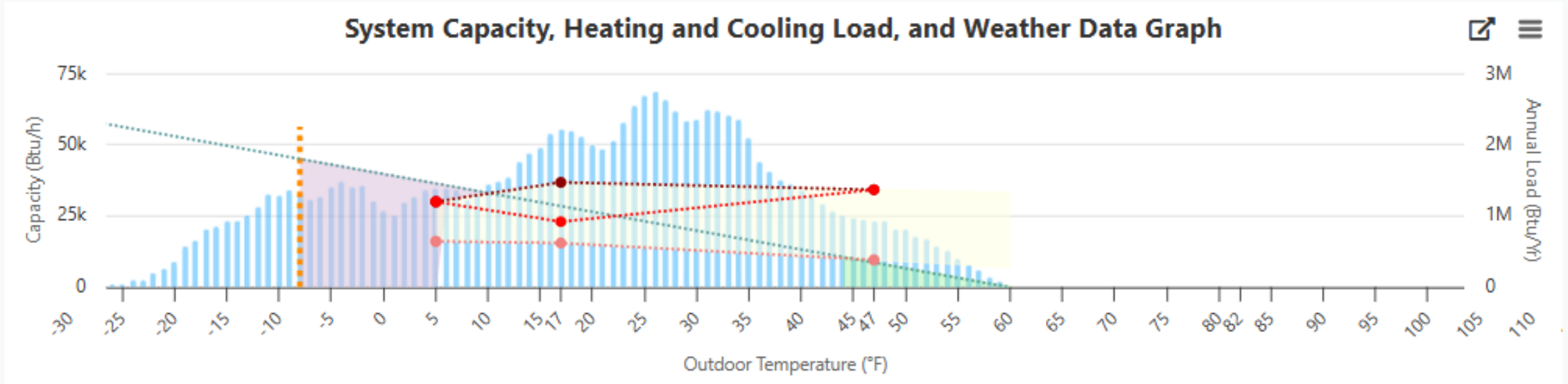
Click here for Optional Settings

Run Advanced Sizing for Heating Search

Graph Information



Graph Information



Definition/Use Cases

Capacity Balance Point (°F)	10
Minimum Capacity Threshold (°F)	44
Maximum Capacity at Design Temp (Btu/h)	No capacity at design Temperature
Percent Design Load Served	No capacity at design Temperature
Annual Heating Load (MMBtu)	113.8
Percent Annual Heating Load Served	69.4%

Definition/Use Cases

Annual Btu's Covered by Supplemental Heat (MMBtu)	34.8
Hours Requiring Supplemental Heat	847
Percent Hours Requiring Supplemental Heat	13.8%
Percent Annual Load Modulating	60.5%
Percent Annual Load with Low-Load Cycling	8.1%

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ENVIRONMENT

IT WEARS
BOTH SHOES
A heat pump gives you
lower energy costs and
a cleaner, healthier planet.
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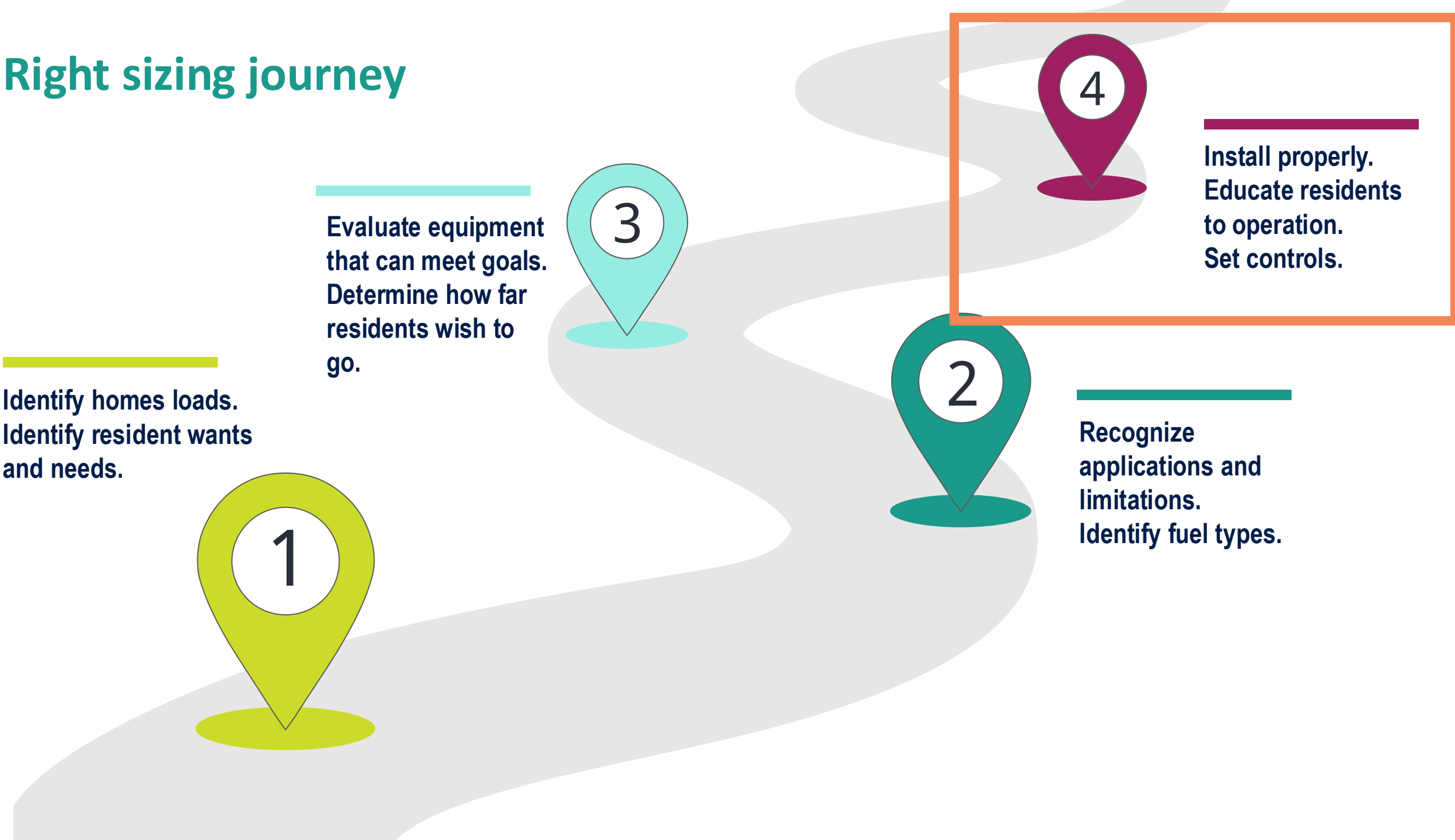
Definitions for Switchover Temperature / Balance Point

The balance point is a **temperature** at which switchover happens

Thermal balance point	• The outdoor temperature at which the heat pump can no longer produce the heat needed for the home. • Also called Capacity Balance point.
Economic balance point	• The outdoor temperature at which the cost to heat the home with the HP is more expensive than the back up heat cost. • Relies on the back up heat fuel cost.
Comfort balance point	• The outdoor temperature at which the homeowner experience discomfort when running the heat pump.

Right sizing journey



DAY 1

What is system commissioning?

Proving the system works the way it was designed to work.
Commissioning is the process of testing, verifying, and documenting that an HVAC system is:

- **Installed correctly**
- **Operating correctly**
- **Performing as designed**
- **Connected as a system**
- **Documented**

Bottom Line:
Installation puts the system in the building. Commissioning proves it works.

What are the benefits of commissioning?

Reduce callbacks

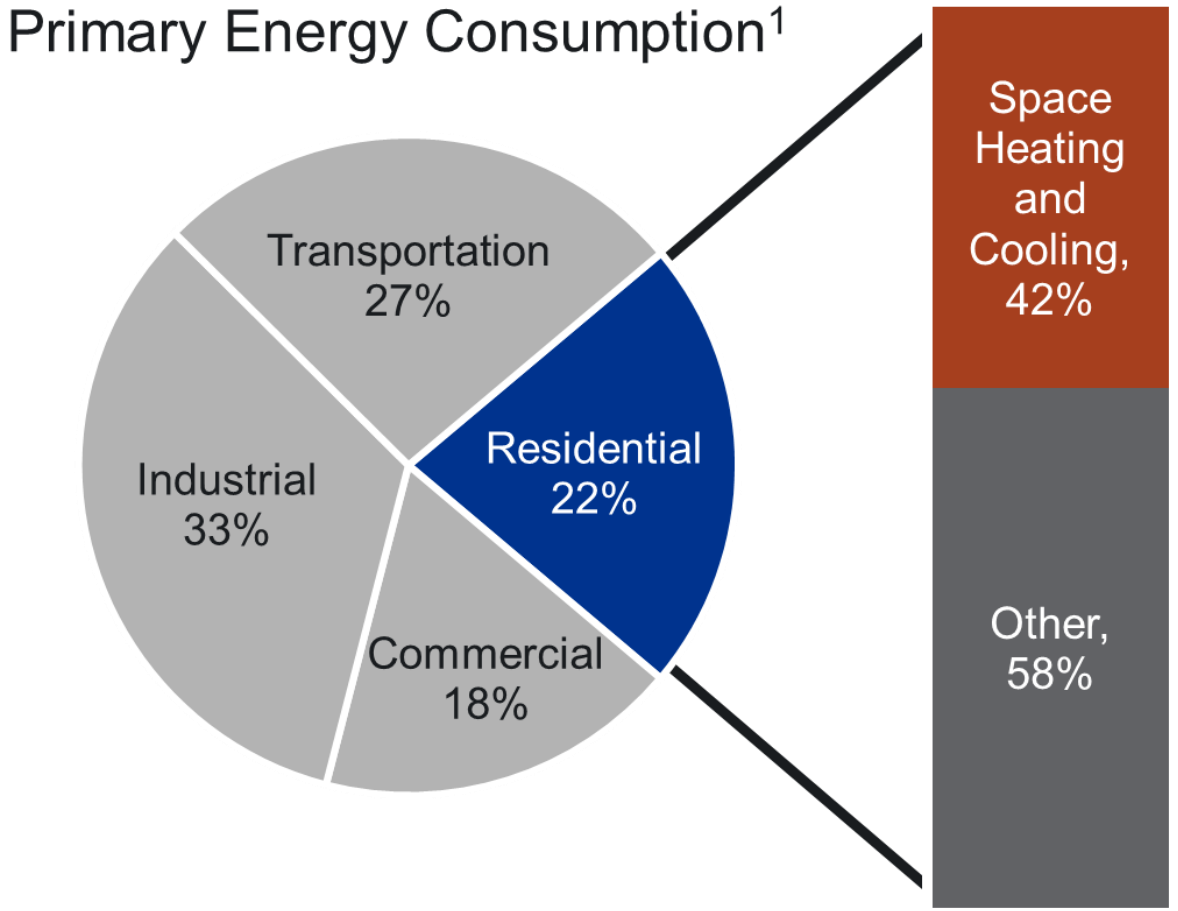
Ensure happy customers

Homeowner education topics

- Register & supply air temps
- Switchover temp & interaction with secondary heat
- Thermostat settings
- Defrost cycle
- Maintenance & cleaning
- Utility bill changes

Why residential HVAC matters

- ✓ Comfort
- ✓ Health and Safety
- ✓ Energy Use
- ✓ Carbon Emissions



HVAC efficiency over the years

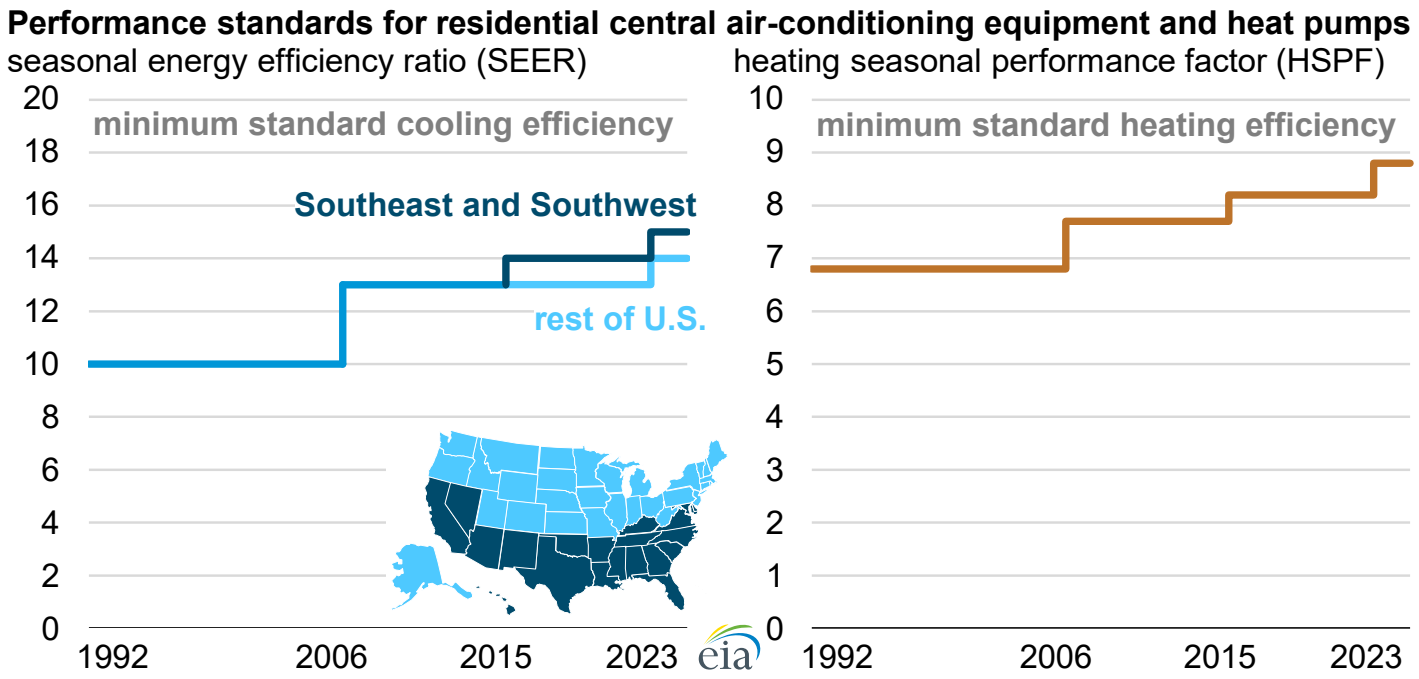


Figure: Performance standards for residential central air-conditioning equipment and heat pumps[1]

- Code-driven minimum HVAC efficiency continues to increase
- Premium high-efficiency HVAC units perform much better than code minimum
- Heat pumps are on the rise
- Efficiencies are not always realized in the field

Impact of improper installation

Improper installation or maintenance of central air conditioning (CAC) and air-source eat pump (ASHP) systems results in decreased performance, energy waste, and reliability concerns.

- At least **one energy wasting fault in 70-90% of homes**[2]
- At least 20% of CAC/ASHPs experience failure due to improper installation[2]
- Estimated **9% energy waste** due to decreased CAC/ASHP performance due to inadequate airflow and improper refrigerant charge[3]

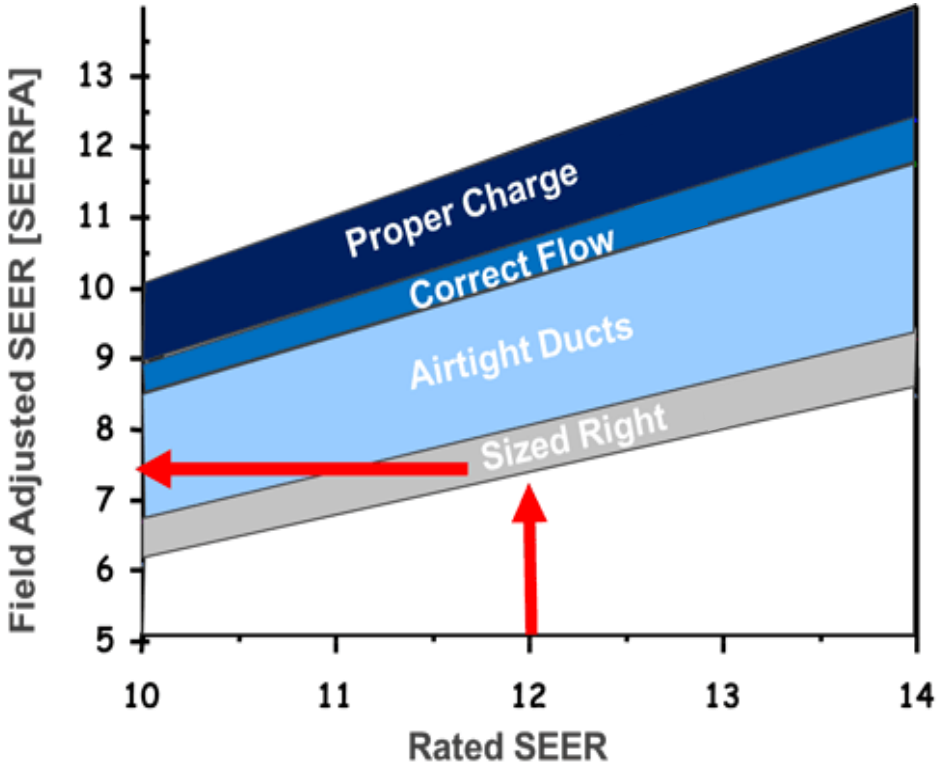
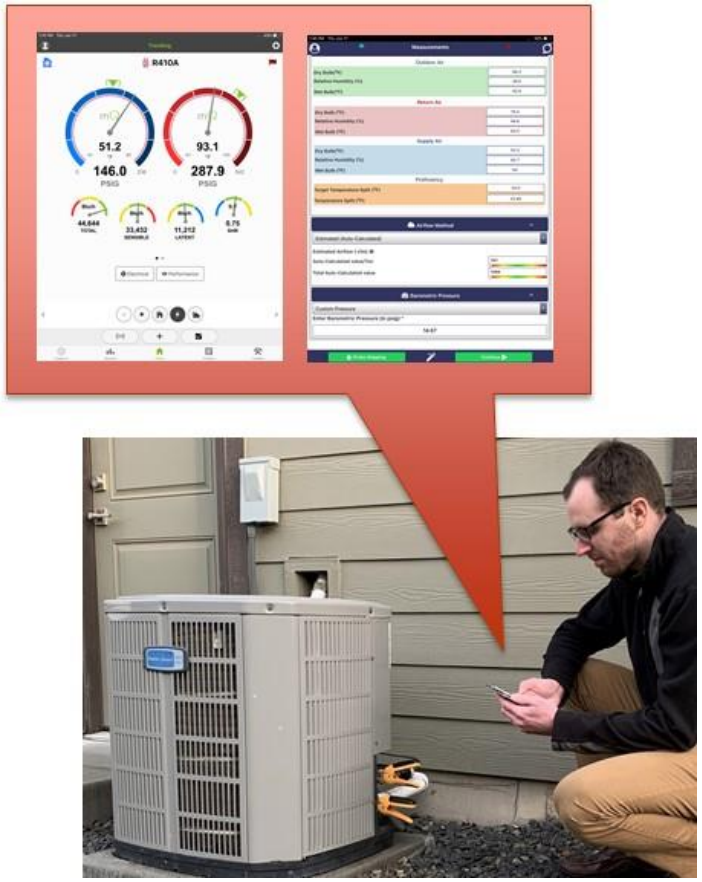


Figure: Theoretical field adjusted SEER caused by installation and sizing issues[1]

What quality contractors strive for

- ✓ Eliminating callbacks
- ✓ Ensuring every HVAC system runs at peak efficiency
- ✓ Every HVAC system is commissioned

Why smart diagnostic tools?



- Expand Capabilities
- Streamline Processes
- Ensure HVAC Efficiency
- Improve Customer Satisfaction
- Boost Reputation
- Create Business Value

Old school tools

R-410A Pressure-temperature chart

PSIG	°F	PSIG	°F	PSIG	°F	PSIG	°F	
12	–37.7	114	37.8	216	74.3	318	100.2	
14	–34.7	116	38.7	218	74.9	320	100.7	
16	–32.0	118	39.5	220	75.5	322	101.1	
18	–29.4	120	40.5	222	76.1	324	101.6	
20	–36.9	122	41.3	224	76.7	326	102	428
22	–24.5	124	42.2	226	77.2	328	102.4	430
24	–22.2	126	43	228	77.8	330	102.9	432
26	–20.0	128	43.8	230	78.4	332	103.3	434
28	–17.9	130	44.7	232	78.9	334	103.7	436
30	–15.8	132	45.5	234	79.5	336	104.2	438
32	–13.8	134	46.3	236	80	338	104.6	440
34	–11.9	136	47.1	238	80.6	340	105.1	442
36	–10.1	138	47.9	240	81.1	342	105.4	444
38	–8.3	140	48.7	242	81.6	344	105.8	446
40	–6.5	142	49.5	244	82.2	346	106.3	448
42	–4.5	144	50.3	246	82.7	348	106.6	450
44	–3.2	146	51.1	248	83.3	350	107.1	452
46	–1.6	148	51.8	250	83.8	352	107.5	454
48	0	150	52.5	252	84.3	354	107.9	456
50	1.5	152	53.3	254	84.8	356	108.3	458
52	3	154	54	256	85.4	358	108.8	460

Find data plate image:
Target Subcooling = 10°F

Measurement uncertainty

Take for example a 500-psi gauge:

- Class B, 3%-2%-3%
  - ±10 psi to ± 15 psi
- Class 1, 1% Accuracy
  - ±5 psi

Analog

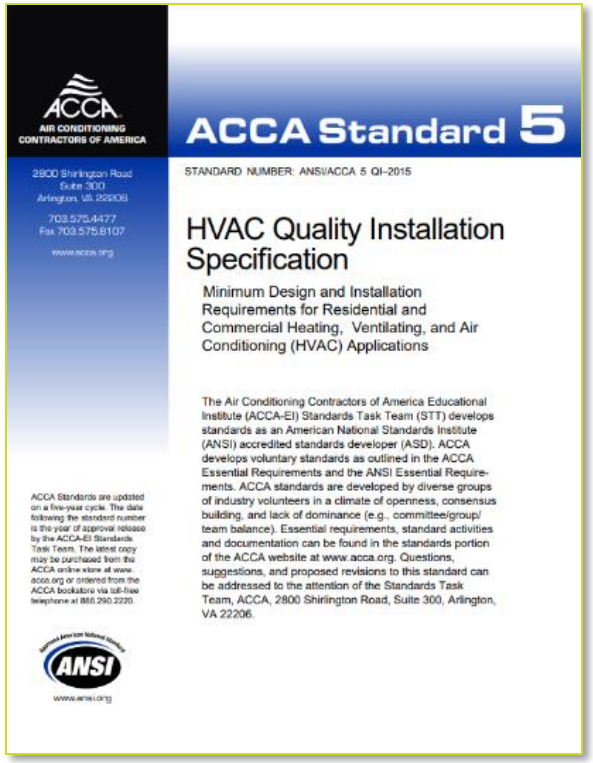
Read between the lines!

For 580-psig max digital probes/gauges:

- Fieldpiece JL3PR Pressure Probe
  - ±1 psi to ±2 psi
- Fieldpiece SM380V
  - ±1 psi to ±2.74 psi

Digital

Measurement uncertainty



Ex.

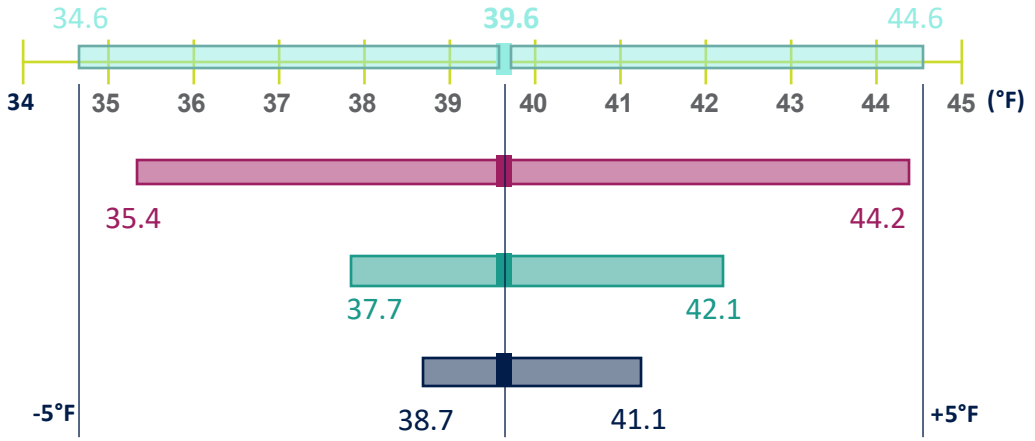
R410A, non-TXV,

Indoor Wetbulb = 66°F, Outdoor Drybulb = 95°F

Target Superheat of 10.0°F

Measured Suction Temp = 49.6°F

Suction Pressure = 118.0 psig → 39.6°F Saturation Temp



Class B, 3-2-3 Gauge (±10 psig)

Class 1, 1% Accuracy Gauge (±5 psig)

Digital Gauge, Fieldpiece SM380V (±2.74 psig)

4.3.1 Requirements:

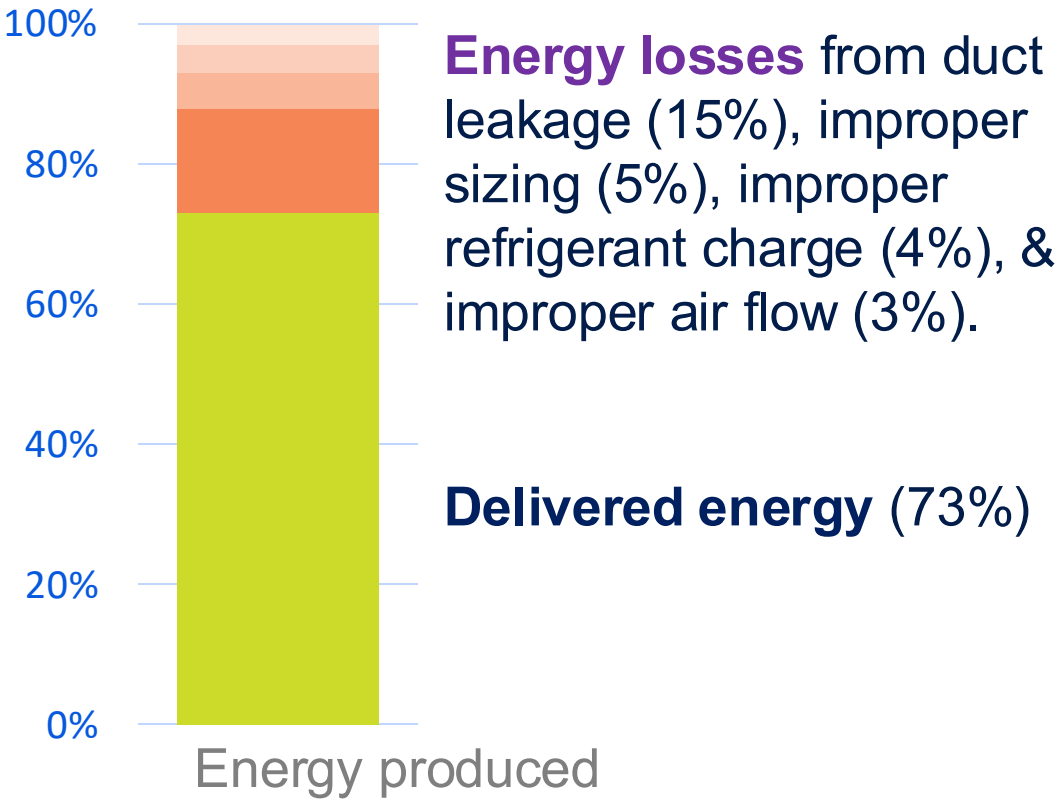
The contractor shall ensure:

a) For the SUPERHEAT method, system refrigerant charging per OEM data/instructions and within ±5°F of the OEM-specified superheat value

What goes into commissioning?

- Check load calculations, sizing, and ductwork
- Check air flow
- Weigh in refrigerant
- Check superheat or subcool
- Check watt draw
- Set controls
- Educate residents

Sources of energy loss in a typical installation*



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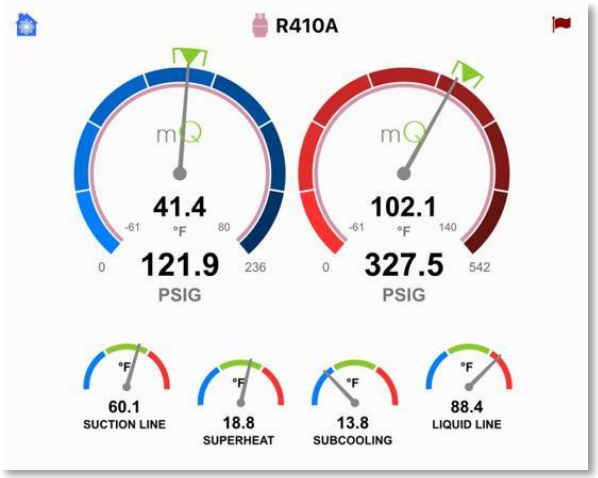
Smart diagnostic tools

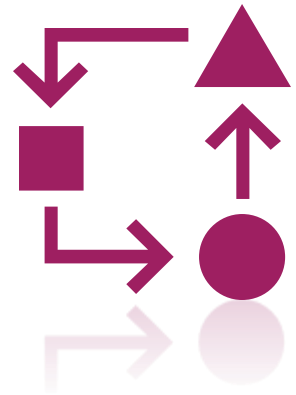
Digital Sensors, Probes, and Manifolds

Smartphone/Tablet Diagnostic App



- ✓ Wirelessly connected
- ✓ Provides Diagnostics
- ✓ Suggest Corrective Actions
- ✓ Run Performance Calculations

Summary of key milestones



Understand	Understand the resident's goals, pain points, wants, and budget as a guide
Perform	Perform an accurate load calculation
Design around	Design around application and fuel types
Evaluate	Evaluate ductwork
Size and Select	Size and Select to the right application and fuel type
Use Tools	Use tools that help you sell and instill confidence!

Education through Communication.

"Arrive a stranger, Leave as a friend"

Break + Networking

ASHP Myth busting

The “core” argument

Heat pumps don’t work.

WHY?

Top 10 myths surrounding heat pumps – lightning round!

1. “Heat pumps don’t work (below freezing)
2. “You need a furnace as backup.”
3. “Heat pumps are always expensive to operate in the winter”
4. “Bigger equipment is better for cold climates”
5. “Heat pumps cannot keep a home comfortable (in extreme cold)”
6. “You have to upgrade/replace ductwork/insulation first”
7. “Heat pumps only make sense in new construction”
8. “You have to turn the thermostat down at night to save energy.”
9. “If the outdoor unit is covered in frost, something is wrong”
10. “If the equipment is installed correctly, the job is done.”

Myth 1 – ““Heat pumps don’t work (below freezing)“

Reality: Cold-climate models are designed to provide heat at subfreezing temperatures, and some can operate at temperatures well below 0°F. Available heating capacity and efficiency decrease as outdoor temperatures drop, depending on the model.

Myth 2 - “You need a furnace as backup.”

Reality: Not every home needs fossil-fuel backup. A properly selected and installed heat pump may meet the home's heating needs on its own. Other homes/drafty homes benefit from supplemental electric heat or a dual-fuel system.

Myth 3 - “Heat pumps are always expensive to operate in the winter”

Reality: Operating cost depends on electricity and fuel prices, equipment efficiency, the home's heating load, and system controls. A heat pump can cost less to operate than combustion heating in some markets, but not every rate and home will produce the same result.

Myth 4 - “Bigger equipment is better for cold climates”

Reality: Oversizing can increase cost, worsen humidity control during cooling, and contribute to cycling or comfort issues. Proper load calculations and equipment selection matter more than simply buying the largest unit.

Myth 5 - “Heat pumps cannot keep a home comfortable (in extreme cold)”

Reality: A properly designed system can provide comfortable, consistent heat in cold climates. Capacity, airflow, distribution, controls, and the home's insulation all influence the result.

Myth 6 - “You have to upgrade/replace ductwork/insulation first”

Reality: Not necessarily. Existing ducts and the building envelope should be evaluated. Some homes need targeted improvements; others can work well with the existing infrastructure or a ductless solution.

Myth 7 - “Heat pumps only make sense in new construction”

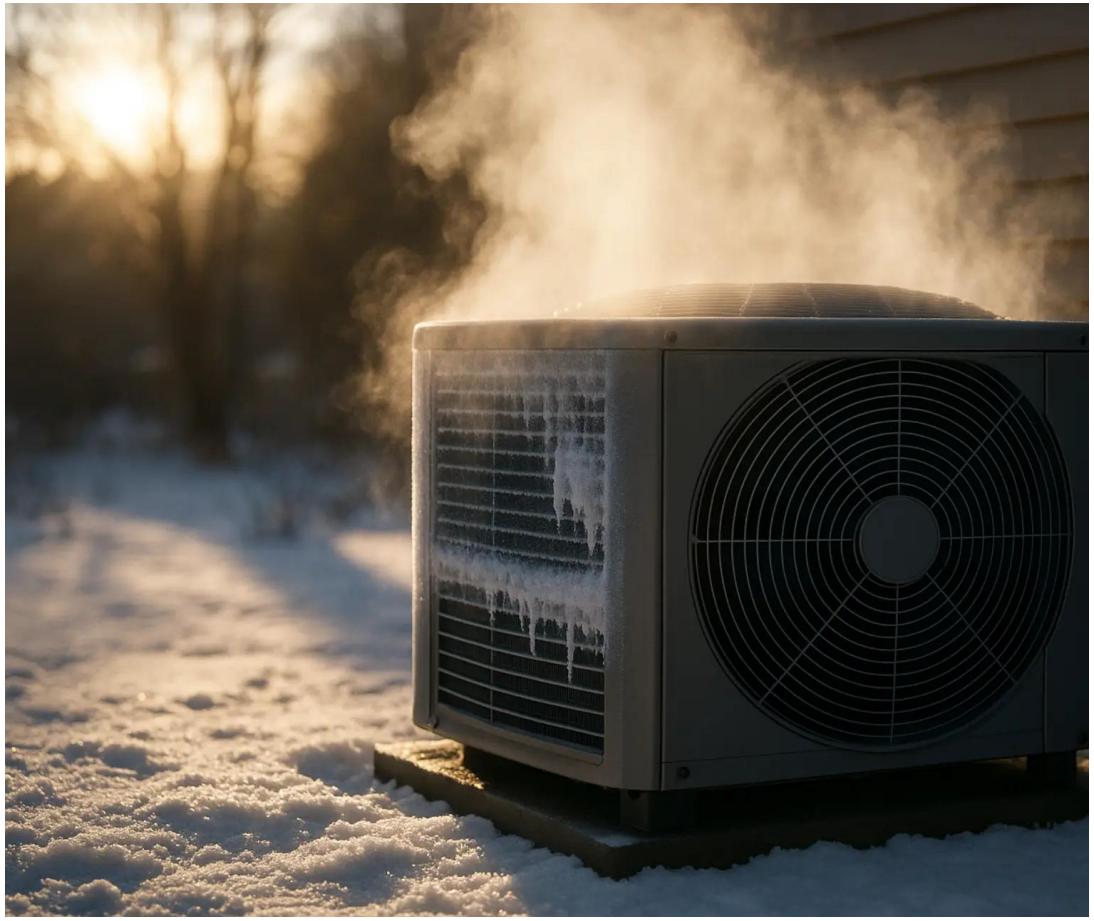
Reality: Heat pumps can be installed in existing homes, including older homes, homes with ductwork, and homes historically heated with oil, propane, or natural gas. The right solution depends on the building and the homeowner's needs.

Myth 8 - “You have to turn the thermostat down at night to save energy.”

Reality: Heat pumps can work efficiently with steady temperature settings, especially when recovering from a large setback requires supplemental resistance heat. The best strategy depends on the equipment, controls, weather, and utility rates. “Set it and forget it”

Myth 9 - “If the outdoor unit is covered in frost, something is wrong”

Reality: Frost accumulation is normal in certain cold, damp conditions. The system periodically runs a defrost cycle to remove it. Persistent heavy ice, blocked drainage, or failure to defrost can indicate a problem.



Myth 10 - “If the equipment is installed correctly, the job is done.”

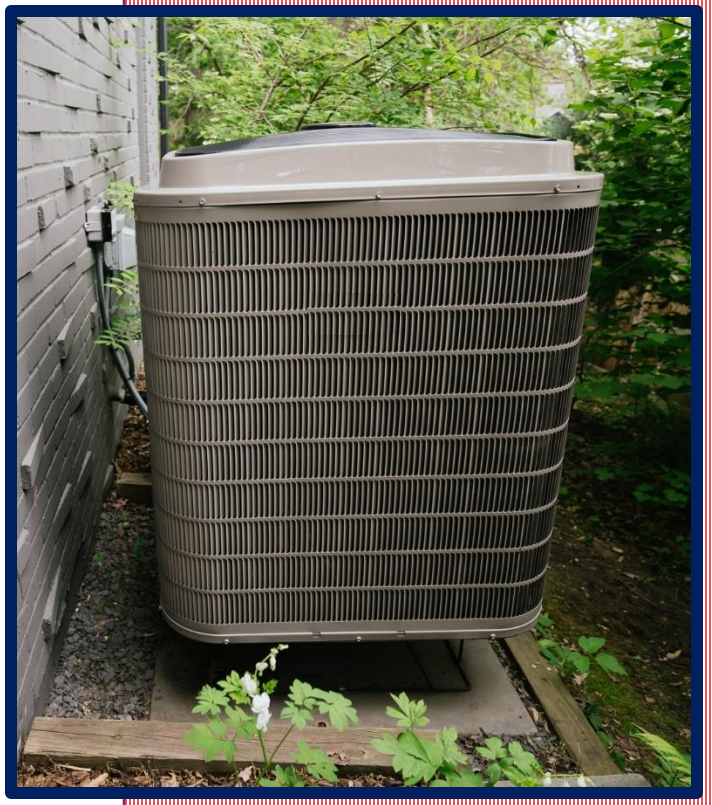
Reality: Installation is only part of the equation. Proper commissioning, airflow measurement, refrigerant verification, control setup, and homeowner education help the system deliver the performance it was designed for.

Phew….

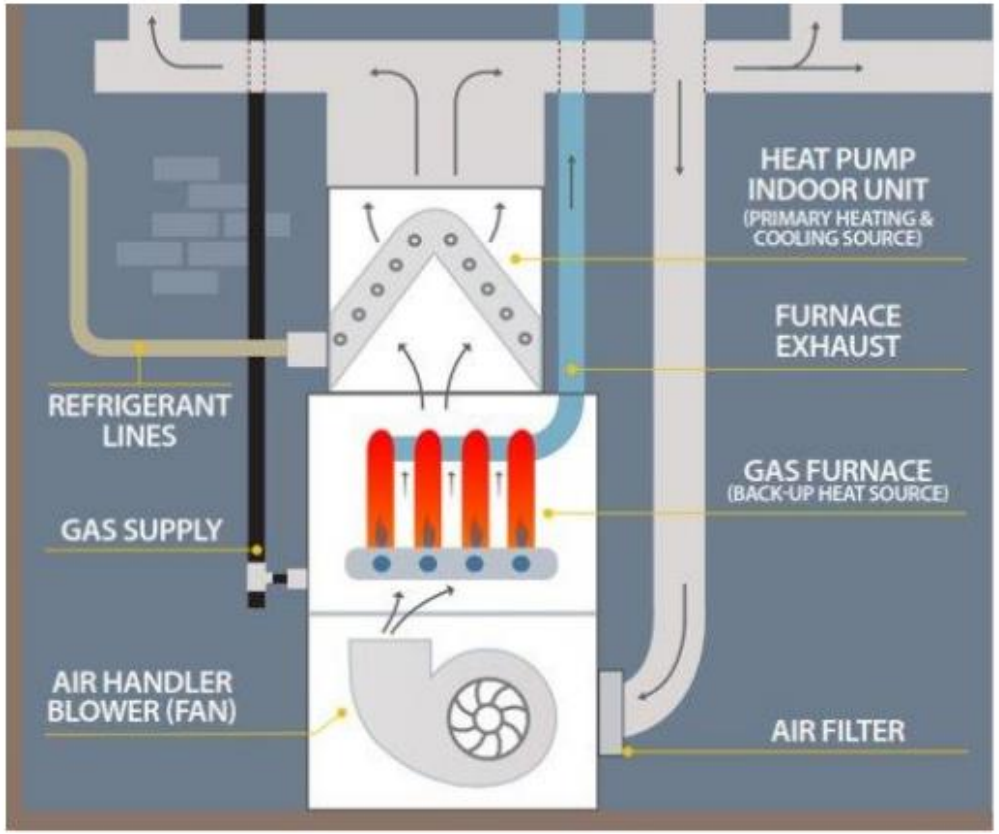
Dual-fuel systems

Types of centrally-ducted ASHP:

- **Standalone**
  - ASHP & new coil
  - Existing furnace kept
  - Caution: Few products in this category meet rebate eligibility
- **Single-Stage**
- **Two- or Three-Stage**
- **Variable-Capacity**
  - May or may not be NEEP cold-climate rated
  - Can include crossover solutions from Bryant/Carrier and Mitsubishi



Dual-fuel (hybrid) options



Type of Dual-Fuel Heat Pump	Relative Cost	Cold-climate potential performance
Single or two-speed	Low	No
Three-speed	Low to Moderate	Yes
Standalone add-on inverter system (outdoor unit + indoor coil)	Moderate	Yes
Modern inverter system	Moderate to High	Yes
Multizone inverter system	Moderate to High	Yes

Simultaneous operation

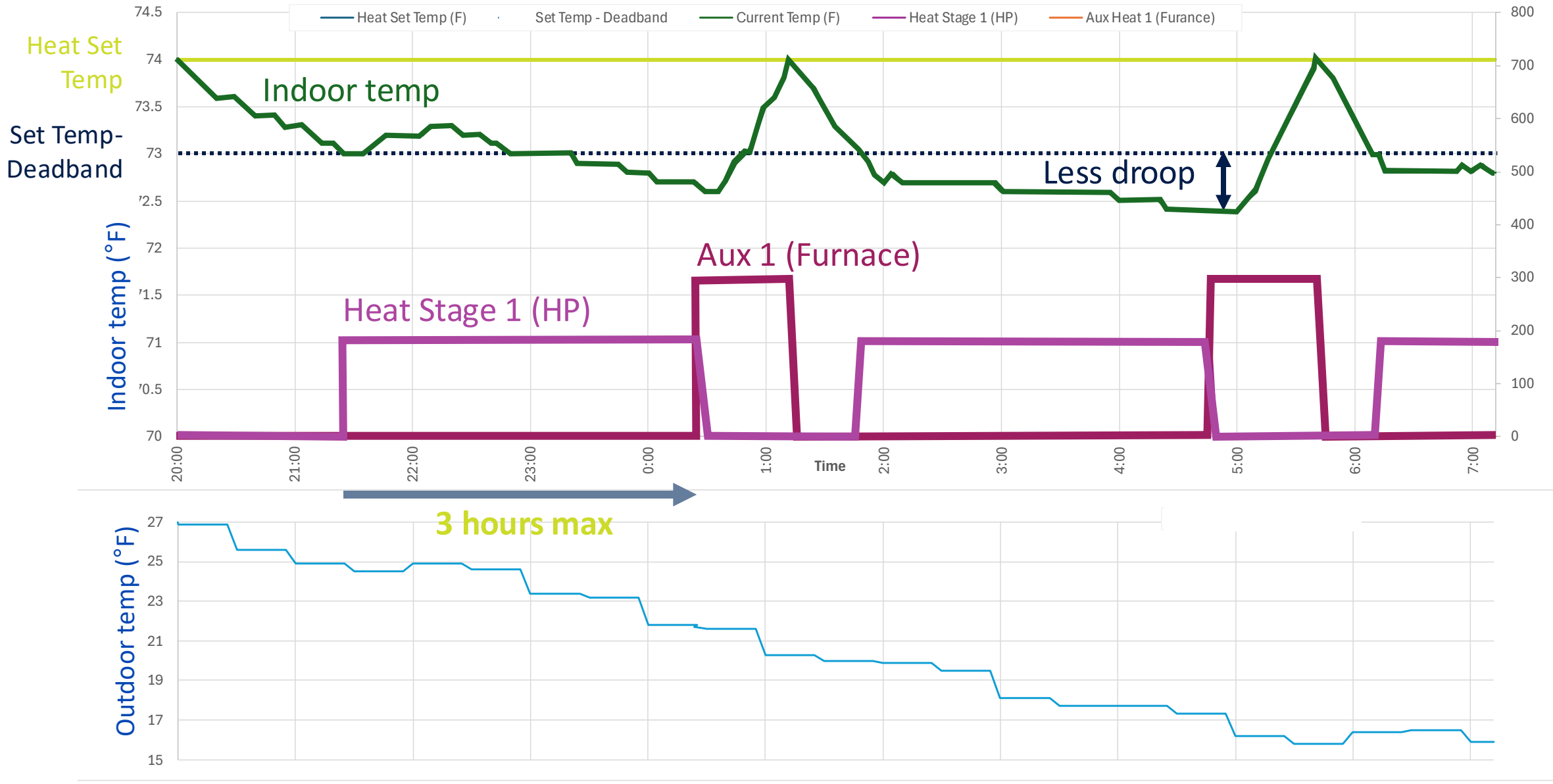
Setting that determines whether AUX heat and heat pump will simultaneously run

Yes with electric AUX: Always run simultaneously to reduce costs

No with gas AUX: *Do not run simultaneously!* Risk of equipment damage.

Mitigate a callback risk by getting these right!

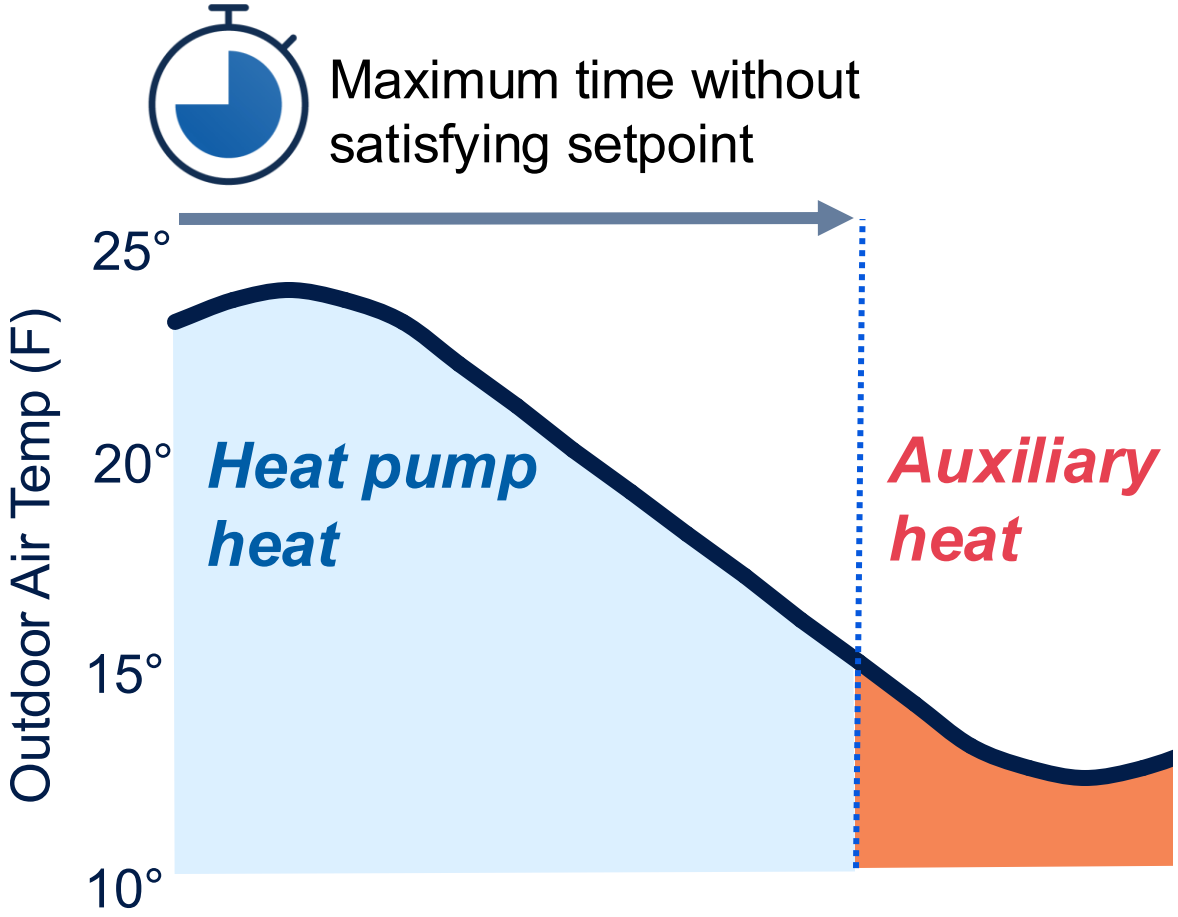
Real world example of maximum run time (3 hours)



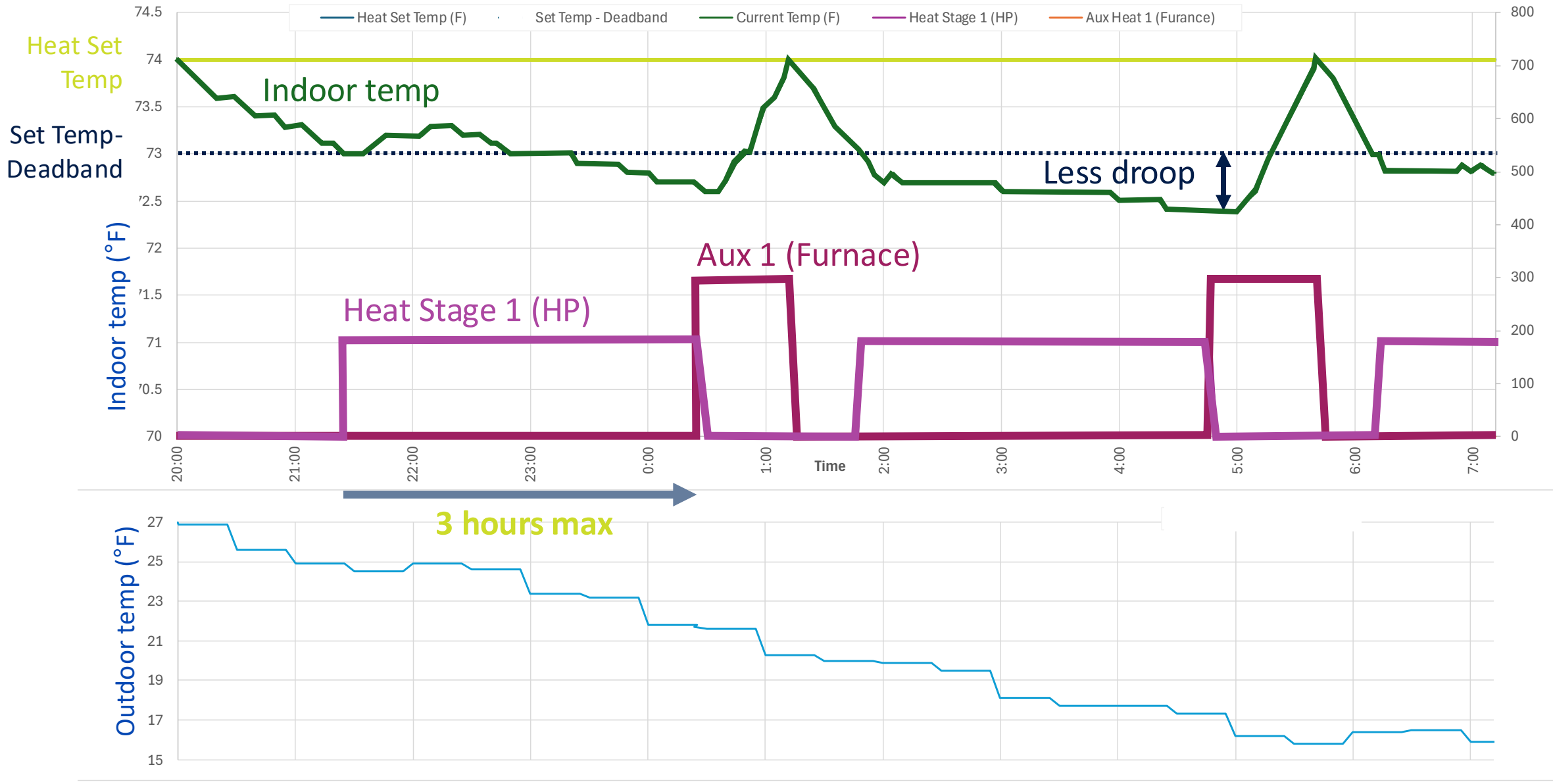
Maximum run time

What it is: The setting that controls how long the heat pump can run *without satisfying setpoint* before thermostat turns on AUX heat.

- May avoid uncomfortable cold swings.
- Check in thermostat manual if droop and max run time can be used simultaneously
- If simultaneous operation possible, check which one has priority



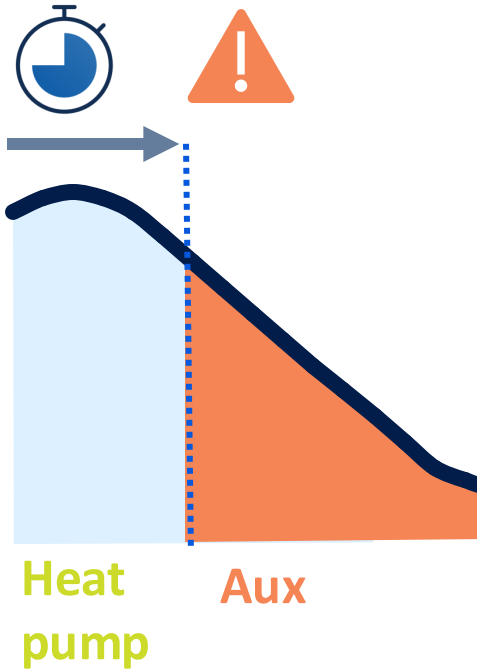
Real world example of maximum run time (3 hours)



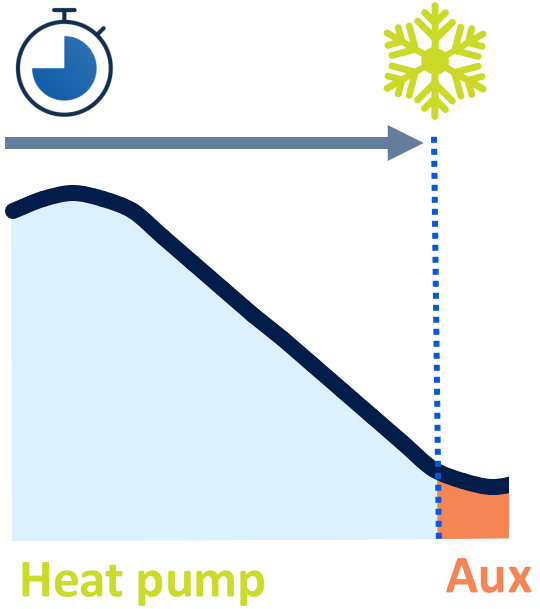
Maximum run time- callback risk!

Setting the maximum run time too short or too long can cause issues.

Too short? May use AUX heat excessively



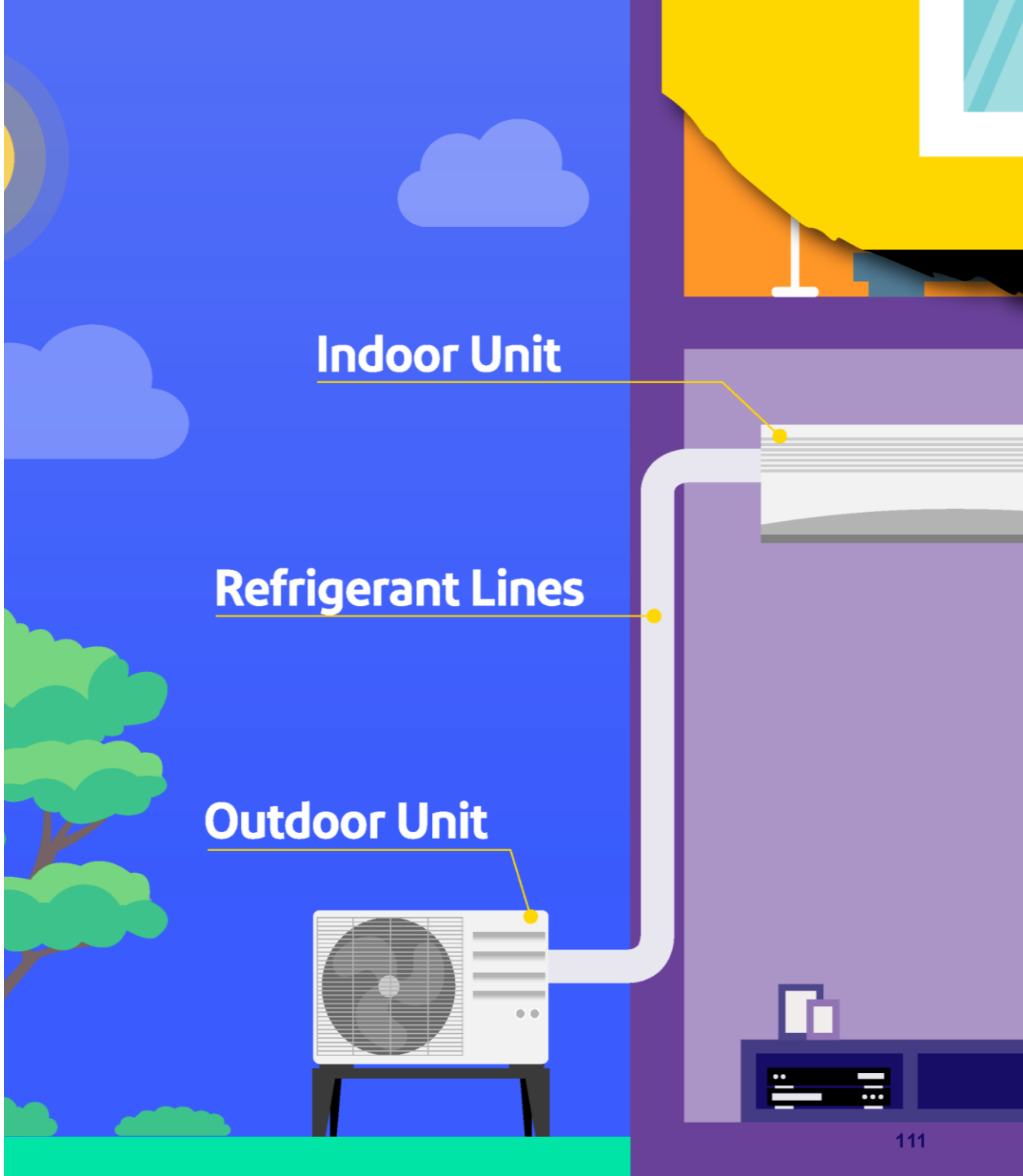
Too long? May cause house to get cold before AUX turns on



Ductless systems with non-connected back-up

These systems consist mini- / multi-split and a non-connected heat source:

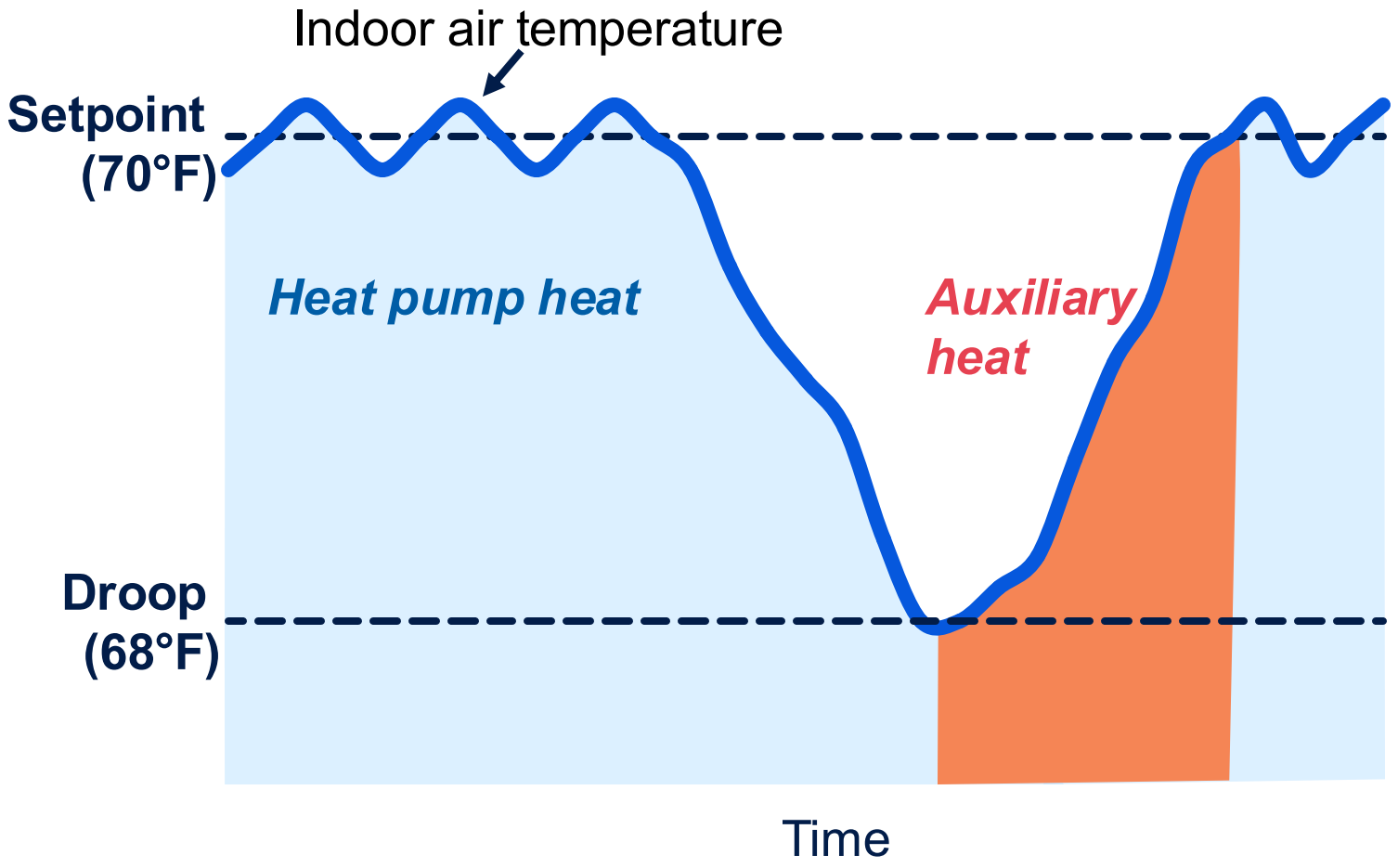
- Electric base board
- Boiler
- Wall furnace



Temperature droop

What it is: The setting that controls when thermostat turns on AUX heat based on indoor air temperature

- Larger droop uses less AUX heat, but may create uncomfortable cold swings



CEE and Slipstream's FIELD RESEARCH RESULTS

✓Significant savings for replacing propane and electric resistance

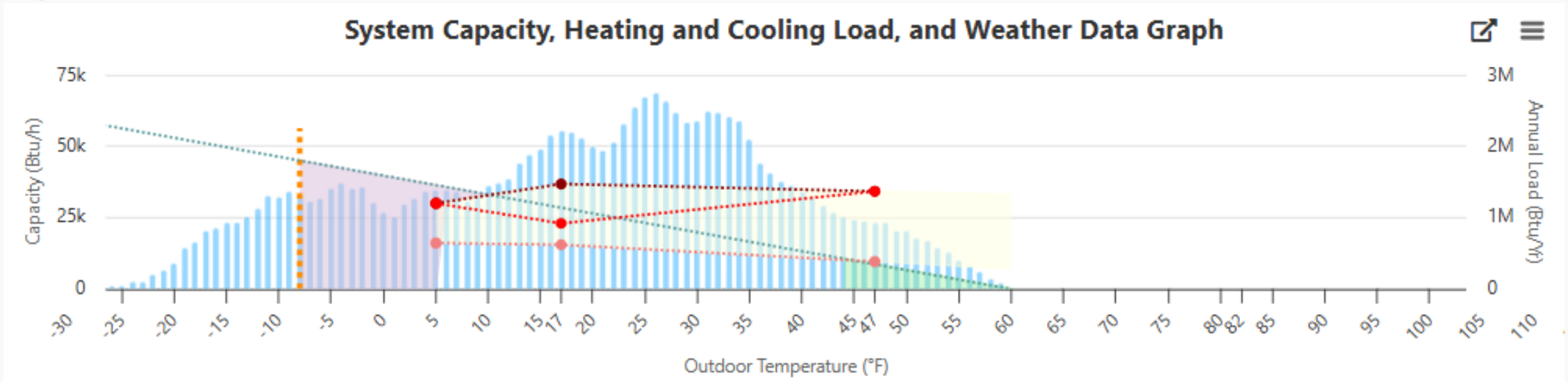
Percentage Reductions for ccASHPs				
	Site energy	**Source energy**	**Homeowner cost**	**Emissions**
Dual-fuel ASHP vs. propane furnace	40%	10%	30%	5%
All-electric ducted & ductless HP vs. electric resistance	55%	55%	55%	55%

Annual Cost of Operation		Annual Cost Savings		
Baseline	ASHP	Total	Total (% over baseline)	Propane Reduction
$2,033	$1,453	$579	28%	53%

Best case strategy?

Remember this system?

Graph Information



Definition/Use Cases

Capacity Balance Point (°F)	10

Percent Annual Heating Load Served	69.4%

Sized at Manual S requirements. Alike AC size retrofit.
Do not need to switch over at 35-40 degrees.

Result of adding ductless mini-splits

Discussion

Clarity?

BETTER BUILDINGS: BETTER BUSINESS®

POWERED BY slipstream

Tuesday, October 27, 2026 | Chippewa Valley Technical College | Eau Claire, WI

Thank you for being here!

Please contact:

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