Air – to – Air Heat Pumps for Space Conditioning

Education Module

Questions and Answers

- Ask questions in the chat box
- Use the “raise hand” function

We will answer questions as they come when there is a natural break

Questions and Answers

- Ask questions in the chat box
- Use the “raise hand” function

We will answer questions as they come when there is a natural break

About New Buildings Institute (NBI)

We push for **better buildings** that achieve **zero energy, zero carbon, and beyond**—through research, policy, guidance, and market transformation—to protect people and the planet.

NBI's work targets the aspects of the built environment that can make the greatest impact for the climate.

Research and guidance on "best-in-class" measures, practices and technologies

Advanced code and policy approaches

Training and education to build market capacity

Innovative, leading-edge program design and delivery approaches

Updates on issues critical to the utility energy efficiency business models

On-call subject matter experts

About Northeast Energy Efficiency Partnerships (NEEP)

Northeast Energy Efficiency Partnerships (NEEP) works to accelerate energy efficiency, electrification, and grid flexibility in the building sector as a core strategy to reduce climate pollution and build an affordable, sustainable, and resilient energy future. NEEP works across the 12 states and the District of Columbia that comprise the Northeast and Mid-Atlantic region.

About BENEFIT

U.S. Department of Energy Funded Project

Started in October 2021 and ends March 2025

Key Partners: Nevada GOE, Northeast Energy Efficiency Partnerships (NEEP), Steven Winter Associates (SWA), and International Code Council (ICC)

Session Agenda

1. Module 1: Why Electrification?
2. Module 2: Resource Highlight: Electrification Checklist for Home Energy Auditors
3. Module 3: Resource Highlight: Electrification and Electric Panel Upgrades

Agenda

- Introduction
- Module Goals
- Resource Overview
- Air-to-Air Heat Pump System Overview
- Air-to-Air Heat Pump Comparison Table
- Questions

Introduction

About New Buildings Institute (NBI)

We push for **better buildings** that achieve **zero energy, zero carbon, and beyond**—through research, policy, guidance, and market transformation—to protect people and the planet.

NBI's work targets the aspects of the built environment that can make the greatest impact for the climate.

Research and guidance on "best-in-class" measures, practices and technologies

Advanced code and policy approaches

Training and education to build market capacity

Innovative, leading-edge program design and delivery approaches

Updates on issues critical to the utility energy efficiency business models

On-call subject matter experts

About Northeast Energy Efficiency Partnerships (NEEP)

Northeast Energy Efficiency Partnerships (NEEP) works to accelerate energy efficiency, electrification, and grid flexibility in the building sector as a core strategy to reduce climate pollution and build an affordable, sustainable, and resilient energy future. NEEP works across the 12 states and the District of Columbia that comprise the Northeast and Mid-Atlantic region.

About BENEFIT

U.S. Department of Energy Funded Project

Started in October 2021 and ends March 2025

Key Partners: Nevada GOE, Northeast Energy Efficiency Partnerships (NEEP), Steven Winter Associates (SWA), and International Code Council (ICC)

Module Objectives

Module Objectives

What we hope folks get out of this module:

- Understanding how heat pumps relate to electrification of buildings
- Understanding of the contents of the Air-to-air heat pump factsheet resource
- Understanding of how stakeholders can best utilize the factsheet
- Understanding how different air-to-air heat pumps can be applied to different building applications

Resource Overview

Air-to-Air Heat Pumps for Space Conditioning

When it comes to electrifying space heating, heat pumps stand out due to their mature technology, high market awareness, and high efficiency.

Heat pumps are an effective way to heat and cool homes and buildings, while also saving on operating costs and reducing greenhouse gas emissions. A heat pump transfers rather than generates heat from a variety of sources. Heat pump technology can be categorized by the heat source (air, ground or water) and by the medium through which they distribute that heat (air or water). Heat pumps for building applications commonly fall into three main categories; Air-source, ground source and water source. This factsheet will focus on air-to-air heat pumps because they are the most common due to the variety of configurations and styles that make them well suited for a broad range of applications.

With technological advancements greatly improving this type of heating and cooling, 4,334,479 heat pumps are being installed. Historically, cold weather performance has been an issue for air source heat pumps: both energy efficiency and heating capacity have been significantly lower in colder conditions. However, in recent years, manufacturers have made great progress in advancing cold-climate heat pump technology. Today, product availability for key air-to-air heat pump (ASHP) product types is robust and both technology optimization and product diversity are expected to improve further.

Credit: Bennington College

	Air Distribution	Water Distribution
Air Source	Air-to-Air (Splits, VRF, PTHP, RTU)	Air-to-Water (Reverse cycle chiller, Hybrid VRF)
Ground Source	Ground-to-Air (GSHP with forced air distribution)	Ground-to-Water (GSHP with hydronic distribution)
Water Source	Water-to-Air (WSHP)	Water-to-Water (WSHP)

Air-to-Air Heat Pump System Overview

Heat Pumps for Space conditioning

- Electrification of homes and buildings growing trend
- With in homes and buildings, Space conditioning represents the largest end user of energy and related emissions
- Because Heat Pumps transfer heat rather and generate heat, efficiencies of over 300% are common

Available Heat Pumps for Space Conditioning

	Air Distribution	Water Distribution
Air Source	Air-to-Air (Splits, VRF, PTHP, RTU)	Air-to-Water (Reverse cycle chiller, Hybrid VRF)
Ground Source	Ground-to-Air (GSHP with forced air distribution)	Ground-to-Water (GSHP with hydronic distribution)
Water Source	Water-to-Air (WSHP)	Water-to-Water (WSHP)

Air-to-Air Heat Pumps are Ready for the Market

» Not your grandparents ASHP

- Variable capacity compressors (inverter driven)
- Sophisticated controls
- Flash injection

» Delivering capacity and efficiency at low outdoor temperatures

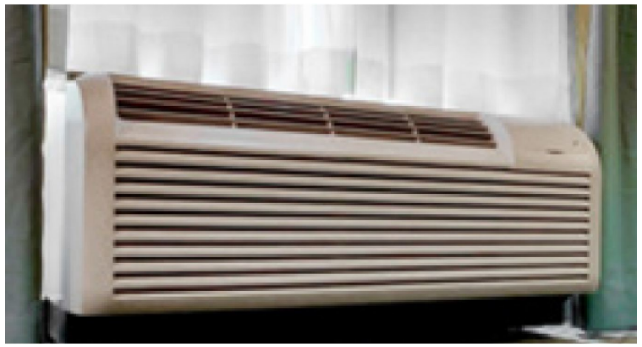
» Available in several configurations

Air-to-Air Heat Pump Comparison

Air-to-Air Heat Pumps Types

» Split Air-source Heat pump Systems (includes “mini-splits”)

» Variable Refrigerant Flow Systems (VRF)



» Packaged Terminal Heat Pump Systems (PTHP)

» Packaged Rooftop Unit Systems (RTU)

Split Air-Source Heat pumps

Split Air-Source Heat Pump System

(includes “Mini-splits”)

KEY FACTS

Heating/Cooling Capacities: Range from approximately 1-5 tons.

Building Types: All building types but most common in homes and small commercial buildings.

Availability: Widely available and commonly installed, including cold-climate models.

Configuration: Available in both a more traditional ducted configuration (i.e. centrally ducted) as well as a wide variety of ductless configurations (often referred to as mini-splits). Split systems can be designed as single- or multi-zone, with the ability to mix and match ducted and ductless indoor units for the unique needs of the home or building.

Benefits: Available in cold climate models. They are typically easier to install than some other types of space conditioning systems. They also can be small in size and flexibility for zoning or heating and cooling individual rooms.

Split Air-Source Heat pumps

Outdoor unit (horizontal discharge). Credit: Concord Municipal Light Plant (CMLP)

Outdoor unit (vertical discharge). Credit: NEEP images

Ductless Indoor Units

Ducted Indoor Units

Compact Ducted (low, medium static pressure)

Centrally Ducted (high static pressure)

All ductless and ducted images credit: Daikin

Variable Refrigerant Flow (VRF)

Variable Refrigerant Flow (VRF) Systems

KEY FACTS

Heating/Cooling Capacities: Range from approximately 5-60 tons.

Building Types: Commercial, multifamily, institutional. Best fit for larger buildings because of ability to attain high efficiencies by minimizing the overall energy demands associated with simultaneous heating and cooling from deep floor plates.

Availability: Perfected technology, widely available, commonly used.

Configuration: Current VRF systems use large volumes of conventional high global warming potential (GWP) refrigerants, which can significantly reduce the greenhouse gas (GHG) savings relative to other electric options. The outdoor unit is connected to the indoor units by refrigerant lines, and each indoor unit can be individually controlled to provide heating or cooling as needed. The system uses a heat pump cycle to transfer heat from the outdoor air to the indoor spaces, allowing for efficient heating even in cold temperatures.

Benefits: The system can provide simultaneous heating and cooling to different areas of a building. These systems circulate the minimum amount of refrigerant needed for each individual zone to satisfy the building load. Since there are no ducts, this eliminates the energy waste.

Packaged Terminal Heat pumps

Packaged Terminal Heat Pump (PTHP) Systems

KEY FACTS

Heating/Cooling Capacities: Range from approximately 1-2 tons.

Building Types: Commercial, multifamily, hospitality, education, institutional. Best for buildings with small or partitioned floor plates because, as permiter-sited systems, they cannot condition the interior core of the building.

Availability: While limited, a few manufacturers now have cold-climate PTHP lines that offer high efficiency heat pump operation at temperatures below freezing. Broadly available across the United States besides in cold climate areas.

Configuration: PTHPs are single packaged units installed in metal sleeves typically located below windows in living spaces and bedrooms. PTHPs heat and cool spaces using refrigerant and incorporate back-up heating mode, typically electric resistance heat, for lowest winter temperatures. They are packaged systems and require proper insulation to seal the envelope.

Benefits: PTHPs offer substantial efficiency savings over today's packaged terminal air conditioners (PTACs) that rel on electric resistance heating. Retrofit-ready units can replace an existing building's gas and/or electric PTAC.

Packaged Rooftop Unit Systems (RTU)

Packaged Rooftop Unit (RTU) Systems

KEY FACTS

Heating/Cooling Capacities: Range from approximately 3-25 tons.

Building Types: Commercial, Education, Institutional.

Availability: Widely available, very common. Manufacturers are beginning to develop heat pump units with cold climate heat pump capabilities, with the expectation that units may be available in two to three years.

Configuration: Currently, nearly all heat pump RTUs are part of either a gas pack and rely on the gas system to provide some heating or are matched with auxiliary heating provided by electric resistance coils.

Benefits: High GHG reductions compared to traditional equipment.

Summary of applicable buildings and climates for different Air-to-Air Heat pumps

	Building Type Applicability (yes/no)					Vintage Applicability		Cold Climate Performance Availability
	Single Family	Multifamily	Small Commercial	Large Commercial	Institutional	New Construction	Retrofit	
Split Air-Source Heat Pumps (Ducted and Ductless)	✔	✔	✔	✔	✔	high	high	high
Packaged Terminal Heat Pump (PTHP)		✔	✔		✔	medium	medium	medium
Variable Refrigerant Flow (VRF) Multi-Split Heat Pump		✔	✔	✔	✔	high	medium	high
Packaged Rooftop Unit (RTU)		✔	✔	✔	✔	high	high	low

Questions?

SECTION 2

Design Considerations For Electric Heating Swaps in Multi-Family

Questions and Answers

- Ask questions in the chat box
- Use the “raise hand” function

We will answer questions as they come when there is a natural break

Agenda

- Introduction
- Module Goals
- Background
- Heat Pump Sizing Steps
- How to use the resource
- Questions

Introduction

About New Buildings Institute (NBI)

We push for **better buildings** that achieve **zero energy, zero carbon, and beyond**—through research, policy, guidance, and market transformation—to protect people and the planet.

NBI's work targets the aspects of the built environment that can make the greatest impact for the climate.

Research and guidance on "best-in-class" measures, practices and technologies

Advanced code and policy approaches

Training and education to build market capacity

Innovative, leading-edge program design and delivery approaches

Updates on issues critical to the utility energy efficiency business models

On-call subject matter experts

Since 1972, Steven Winter Associates, Inc. has been providing research, consulting, and advisory services to improve the built environment for private and public sector clients.

Our services include:

- Energy Conservation and Management
- Decarbonization
- Sustainability Consulting
- Green Building Certification
- Accessibility Consulting

Our teams are based across four office locations:
New York, NY | Washington, DC | Norwalk, CT | Boston, MA

For more information, visit
www.swinter.com

About BENEFIT

U.S. Department of Energy Funded Project

Started in October 2021 and ends March 2025

Key Partners: Nevada GOE, Northeast Energy Efficiency Partnerships (NEEP), Steven Winter Associates (SWA), and International Code Council (ICC)

Module Goals

Goals

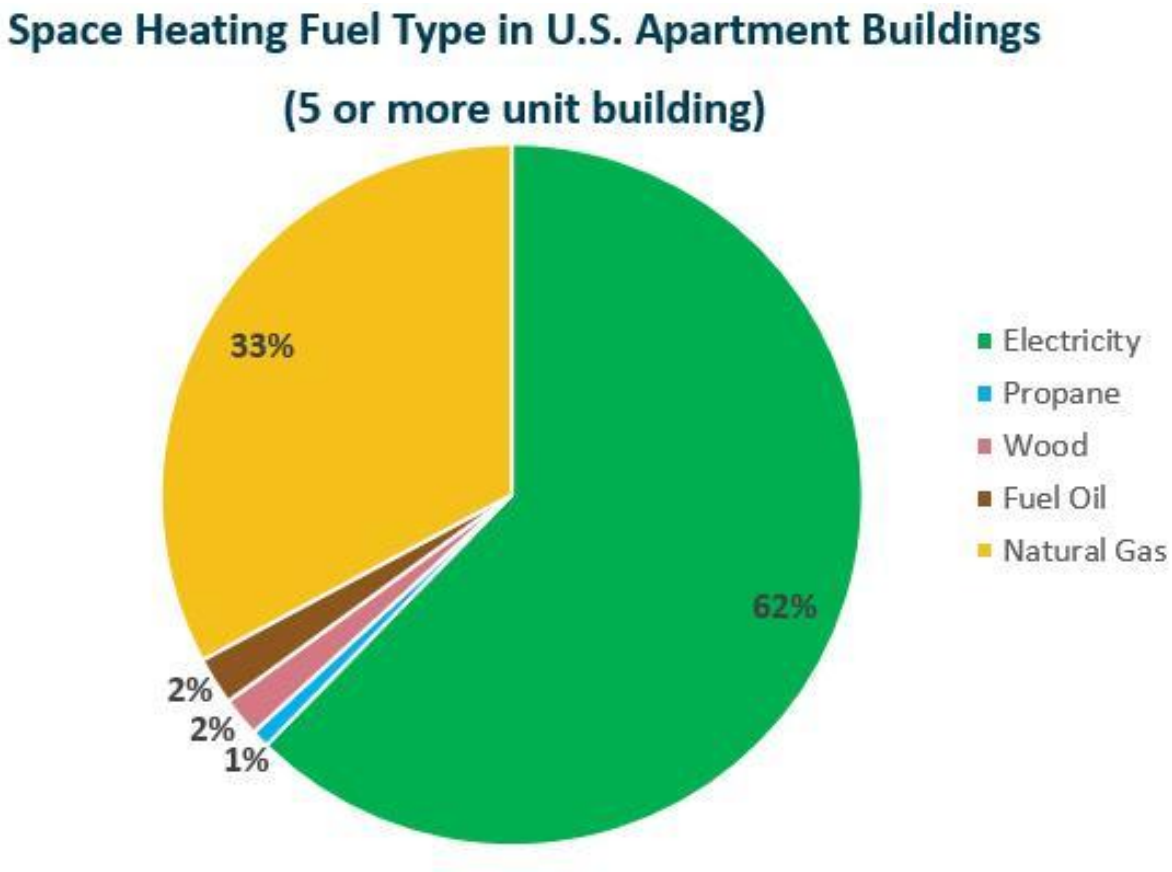
What we hope you will get out of this presentation:

- Understand the basic principles of heat pump technology.
- Recognize the importance of appropriately sizing heat pumps in multifamily buildings.
- Identify the basic steps to take when considering a space heating retrofit.
- Understand the resource and share with others.

Background

The Opportunity

Decarbonize
Increase Efficiency
Consolidate Utility Bills



Source: U.S. IEA 2020 Residential Energy Consumption Survey

What is Electric Heat Pump Space Heating?

Available Electric Systems

Heat Pumps

Unitized systems

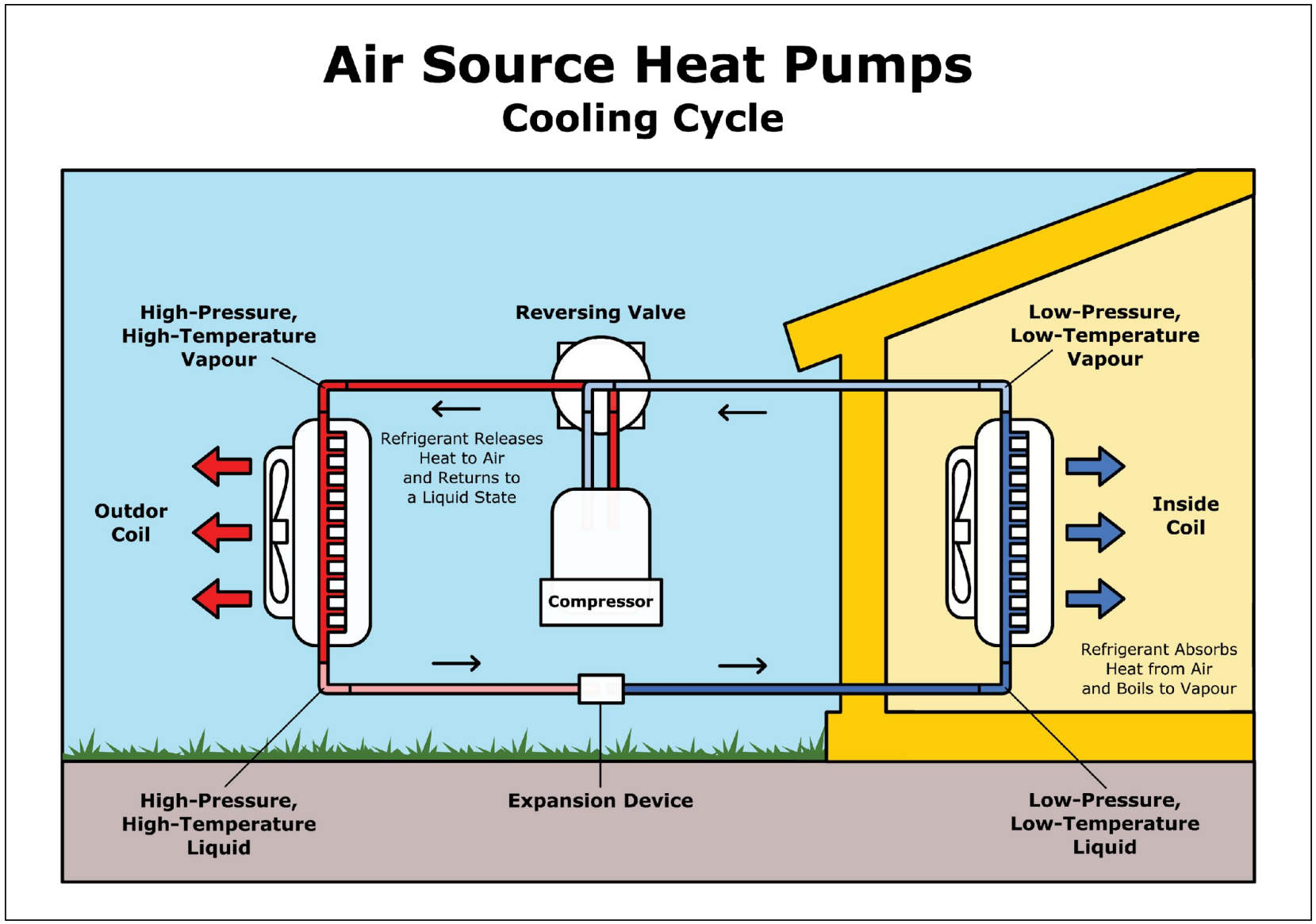
- » Air Source Heat Pumps
- » Mini-Splits
- » Packaged Terminal Heat Pumps (PTHP)

Central Systems

- » Water Source Heat Pumps
- » Variable Refrigerant Flow (VRF)

Rooftop Heat Pump Condensers

How Heat Pumps Work



Heat Pump Sizing Steps

Step 1: Establish Clear Goals

Step 1: Establish Clear Goals

Conduct an Energy Audit

- Provides snapshot of current energy use
- Identifies no-and-low-cost measures

Pay Special Attention to:

- Air Infiltration
- Weatherproofing
- Old Appliances & Lighting
- Window and Insulation Performance

Step 2: Calculate Loads Accurately

Step 2: Calculate Loads Accurately

Avoid Oversizing

- » Leads to short-cycling
- » Creates comfort issues
- » Reduces system efficiency

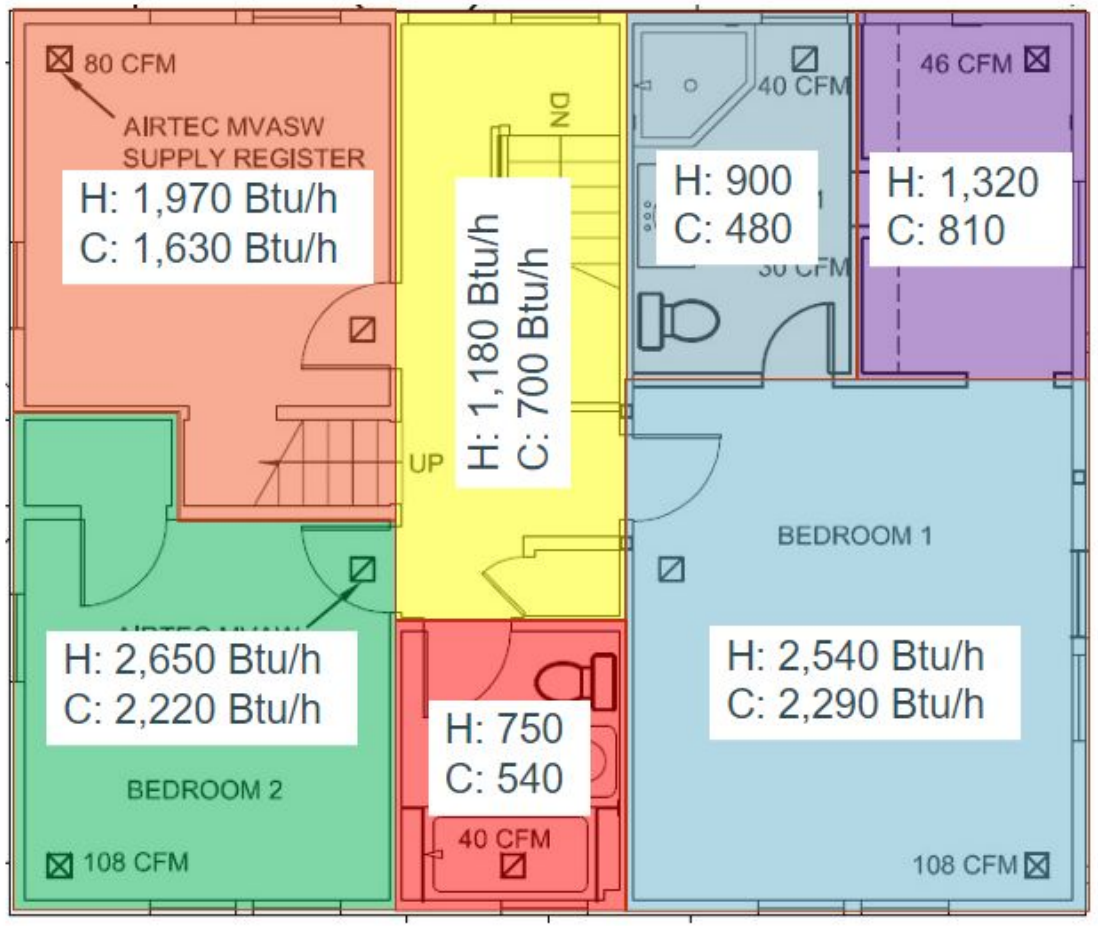
Tips to Avoid Oversizing

Be honest – use real conditions, not defaults

- » Construction type
- » Internal gains
- » Occupant load

Calculate loads for each condition using proper sizing tools

- » Do not estimate or assume values



Step 3: Identify Appropriate Configuration and Distribution Strategies

Step 3: Identify Appropriate Configuration and Distribution Strategies

Utilize Existing Heat Distribution Systems

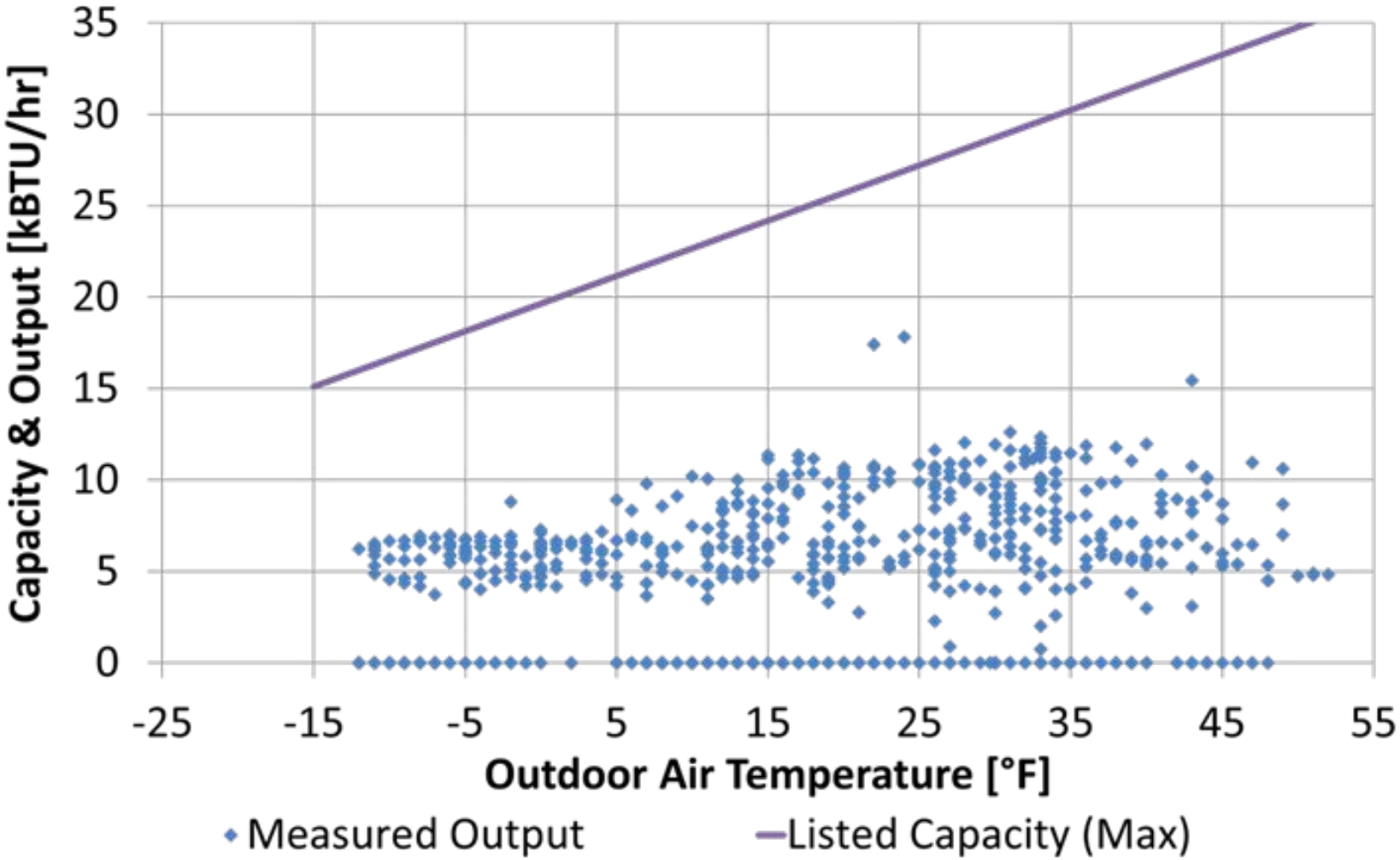
- » Ducted vs Ductless Heat Pump Models
- » Consider Whole Home vs Supplemental Systems

Properly place outdoor units

- » Heat rejection fans should face away from each other
- » Stacked units can create ice on units below

Step 4: Select Right-Sized, Climate Appropriate Equipment With Proper Controls

Step 4: Select Right-Sized, Climate Appropriate Equipment With Proper Controls



How to Use This Resource

Sizing Electric Heating Swaps

Introduction

This fact sheet is intended to assist those looking to make the transition to all-electric heating systems from systems that rely on fossil fuel combustion. Electrifying building heating systems allows building owners to decarbonize their property while improving indoor air quality for tenants. In some jurisdictions, electrifying building heating systems will help futureproof buildings from potential financial penalties imposed by legislation aimed at reducing the carbon footprint of buildings.

Multifamily buildings with fossil fuel heating generally provide heat to occupants in one of two ways: via a centralized heating system (typically with a large gas or oil burning boiler) or unitized (individual furnaces or packaged through-wall units). The process for sizing electric replacements will differ depending on your system type and heating needs. This guide focuses on buildings making the transition to air source heat pump split systems from either existing unitized or central fossil-based systems.

Questions?

SECTION 3

An Introduction to Heat Pump Space Heating Permitting & Inspection Checklist

Questions and Answers

- Ask questions in the chat box
- Use the “raise hand” function

We will answer questions as they come when there is a natural break

Agenda

- Introduction
- Module Goals
- Background
- How to use the resource
- Overview of National Reference Codes
- Overview of Checklist Contents
- Questions

Introduction

About New Buildings Institute (NBI)

We push for **better buildings** that achieve **zero energy, zero carbon, and beyond**—through research, policy, guidance, and market transformation—to protect people and the planet.

NBI's work targets the aspects of the built environment that can make the greatest impact for the climate.

Research and guidance on "best-in-class" measures, practices and technologies

Advanced code and policy approaches

Training and education to build market capacity

Innovative, leading-edge program design and delivery approaches

Updates on issues critical to the utility energy efficiency business models

On-call subject matter experts

About BENEFIT

U.S. Department of Energy Funded Project

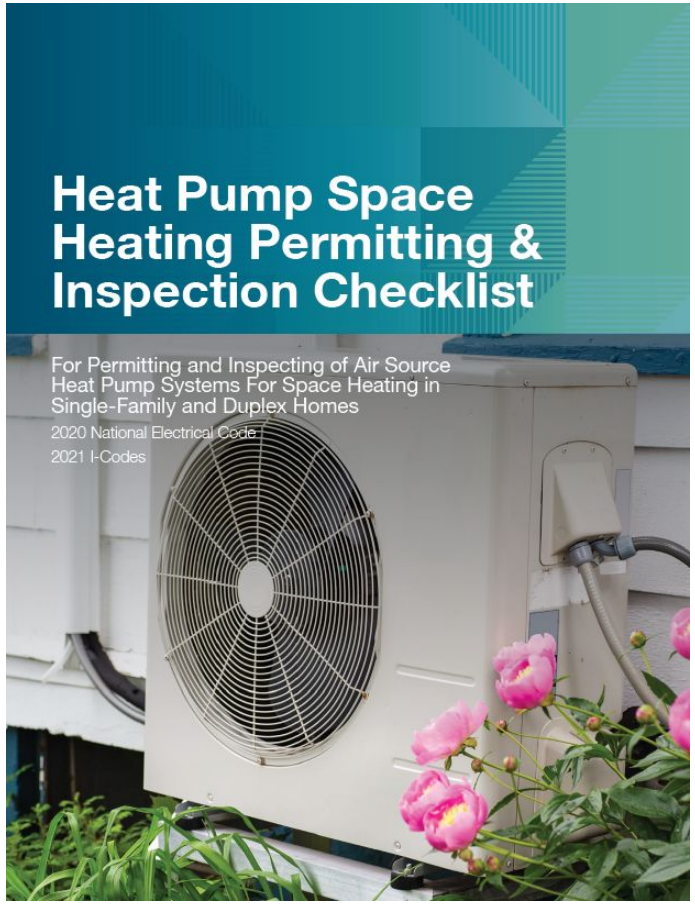
Started in October 2021 and ends March 2025

Key Partners: Nevada GOE, Northeast Energy Efficiency Partnerships (NEEP), Steven Winter Associates (SWA), and International Code Council (ICC)

Goals

What we hope you will get out of this presentation:

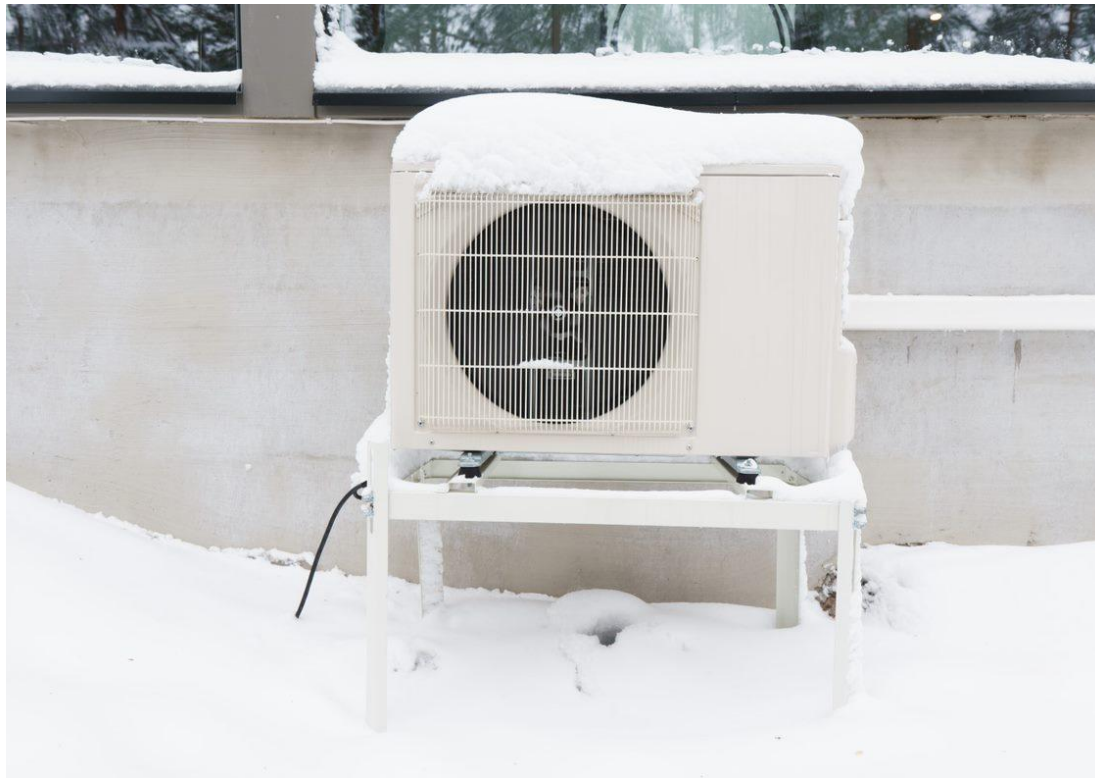
- Will learn more about installation requirements for ASHP
- Consistent enforcement for this technology
- Ensure actionable outcomes and best practices.
- Understand the resource and share with others.



Background

Heat Pumps

- Effective electrification of space heating
- Mature technology
- 3-5x more efficient than a standard electric or gas heating system



Heat Pumps

Key Stakeholders

BUILDING DEPARTMENT

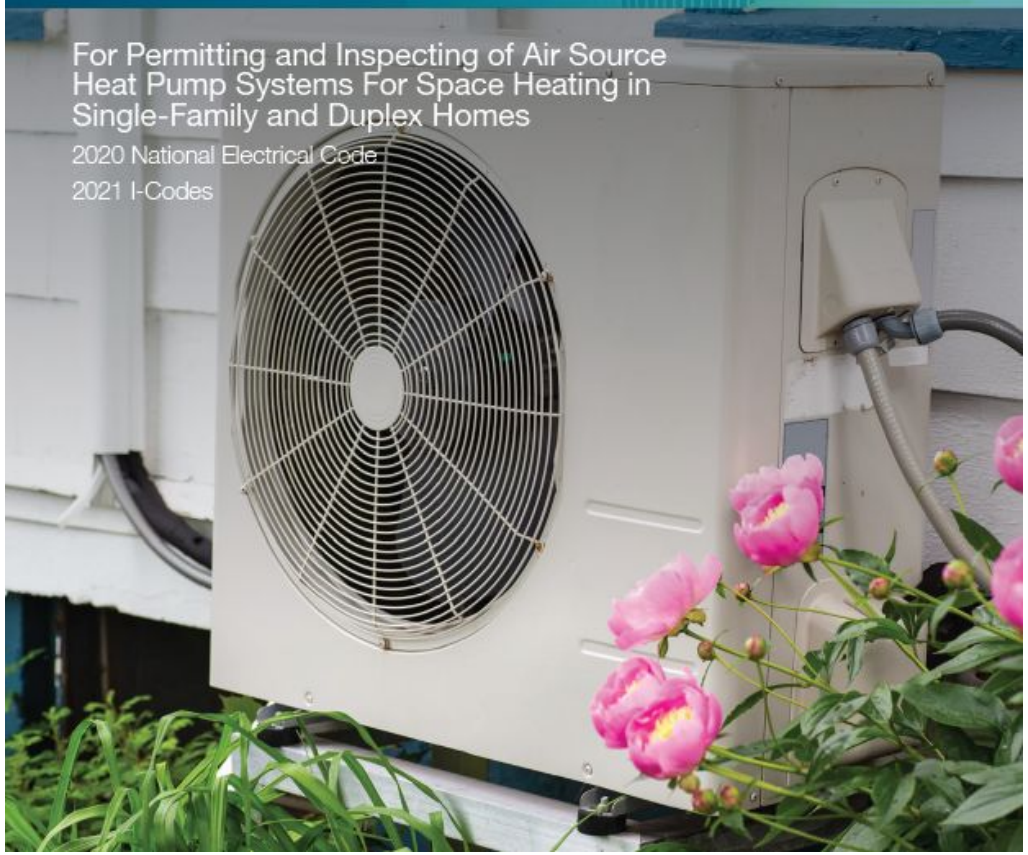
DESIGNERS

CONTRACTORS

BUILDING OWNERS

Overview of Checklist

Heat Pump Space Heating Permitting & Inspection Checklist



For Permitting and Inspecting of Air Source Heat Pump Systems For Space Heating in Single-Family and Duplex Homes

2020 National Electrical Code

2021 I-Codes

Limitations

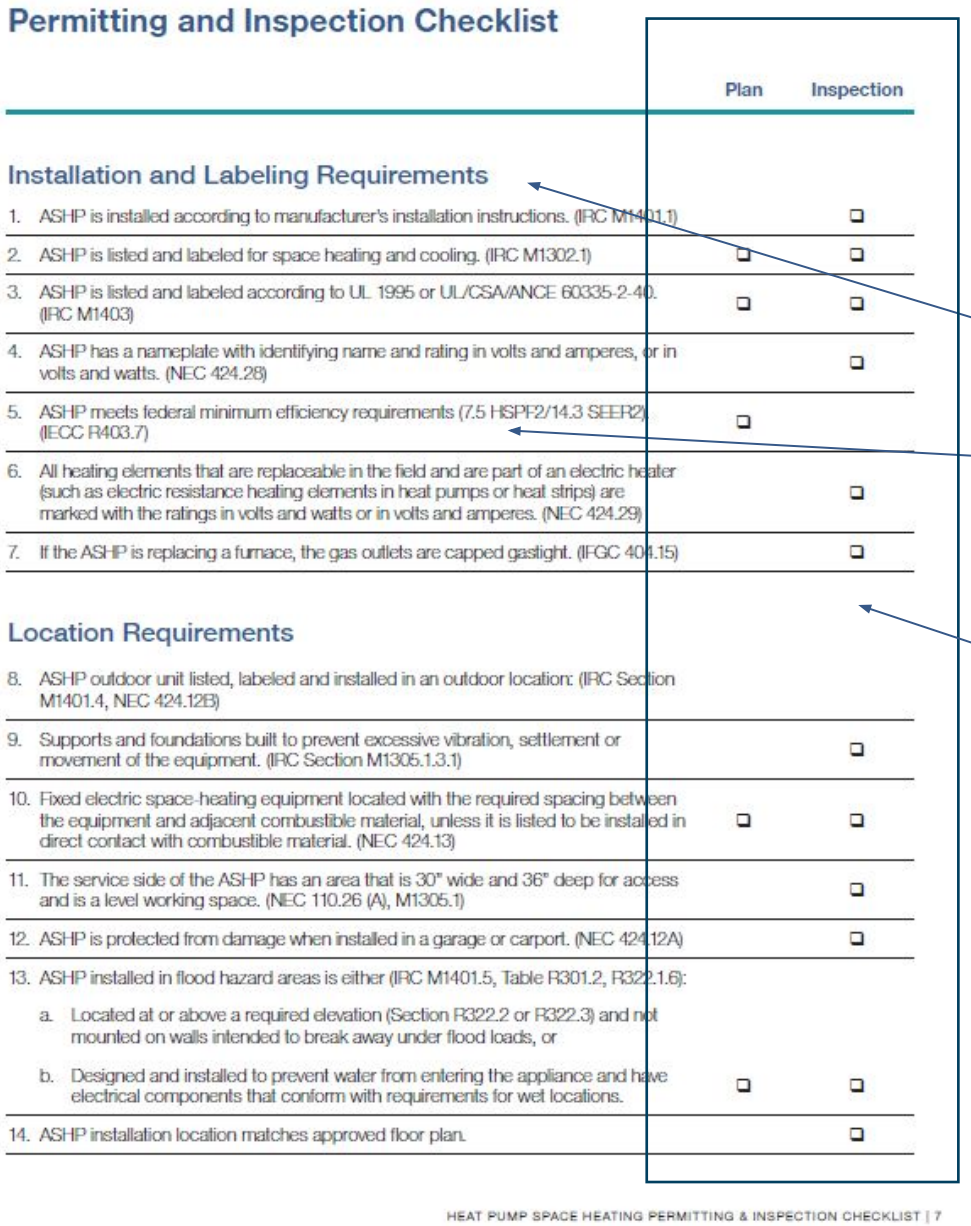
Does not include any service upgrades or ancillary electrical work.

Developed with the focus on the installation of air source split-system heat pumps in single family or duplex buildings.

Recommended process is the 2-in-1 model (mechanical and electrical)

Codes

- 2020 National Electrical Code (NEC)
- 2021 International Residential Code (IRC)
- 2021 International Fuel Gas Code (IFGC)



Permitting and Inspection Checklist

	Plan	Inspection
Installation and Labeling Requirements		
1. ASHP is installed according to manufacturer's installation instructions. (IRC M1401.1)		❑
2. ASHP is listed and labeled for space heating and cooling. (IRC M1302.1)	❑	❑
3. ASHP is listed and labeled according to UL 1995 or UL/CSA/ANCE 60335-2-40. (IRC M1403)	❑	❑
4. ASHP has a nameplate with identifying name and rating in volts and amperes, or in volts and watts. (NEC 424.28)		❑
5. ASHP meets federal minimum efficiency requirements (7.5 HSPF2/14.3 SEER2). (IECC R403.7)	❑	
6. All heating elements that are replaceable in the field and are part of an electric heater (such as electric resistance heating elements in heat pumps or heat strips) are marked with the ratings in volts and watts or in volts and amperes. (NEC 424.29)		❑
7. If the ASHP is replacing a furnace, the gas outlets are capped gastight. (IFGC 404.15)		❑
Location Requirements		
8. ASHP outdoor unit listed, labeled and installed in an outdoor location: (IRC Section M1401.4, NEC 424.12B)		
9. Supports and foundations built to prevent excessive vibration, settlement or movement of the equipment. (IRC Section M1305.1.3.1)		❑
10. Fixed electric space-heating equipment located with the required spacing between the equipment and adjacent combustible material, unless it is listed to be installed in direct contact with combustible material. (NEC 424.13)	❑	❑
11. The service side of the ASHP has an area that is 30" wide and 36" deep for access and is a level working space. (NEC 110.26 (A), M1305.1)		❑
12. ASHP is protected from damage when installed in a garage or carport. (NEC 424.12A)		❑
13. ASHP installed in flood hazard areas is either (IRC M1401.5, Table R301.2, R322.1.6):		
a. Located at or above a required elevation (Section R322.2 or R322.3) and not mounted on walls intended to break away under flood loads, or		
b. Designed and installed to prevent water from entering the appliance and have electrical components that conform with requirements for wet locations.	❑	❑
14. ASHP installation location matches approved floor plan.		❑

HEAT PUMP SPACE HEATING PERMITTING & INSPECTION CHECKLIST | 7

- Section
- Requirement with code reference
- Check box to be reviewed either during plan review or inspection

Permit Submission Requirements

To apply for a permit, submit the following

1. Combination permit application
2. Floor plan drawn to scale
3. Mechanical design
4. Electrical line diagram
5. Load calculation for HP and outlet installations
6. Equipment manufacturer specifications and installation manual

Installation and Labeling Requirements

Installation and Labeling Requirements

1. ASHP is installed according to manufacturer's installation instructions.
2. ASHP is listed and labeled for space heating and cooling.
3. ASHP is listed and labeled according to UL 1995 or UL/CSA/ANCE 60335-2-40.
4. ASHP has a nameplate with identifying name and rating in volts and amperes, or in volts and watts.

Installation and Labeling Requirements Cont.

5. ASHP meets federal minimum efficiency requirements (7.5 HSPF2/14.3 SEER2).
6. All heating elements that are replaceable in the field and are part of an electric heater (such as electric resistance heating elements in heat pumps or heat strips) are marked with the ratings in volts and watts or in volts and amperes.
7. If the ASHP is replacing a furnace, the gas outlets are capped gastight.

Location Requirements

Location Requirements

8. ASHP outdoor unit listed, labeled and installed in an outdoor location:
9. Supports and foundations built to prevent excessive vibration, settlement or movement of the equipment.
10. Fixed electric space-heating equipment located with the required spacing between the equipment and adjacent combustible material, unless it is listed to be installed in direct contact with combustible material.
11. The service side of the ASHP has an area that is 30” wide and 36” deep for access and is a level working space.
12. ASHP is protected from damage when installed in a garage or carport.
13. ASHP installed in flood hazard areas is either
14. ASHP installation location matches approved floor plan.

Location Requirements Cont.

12. ASHP is protected from damage when installed in a garage or carport.

13. ASHP installed in flood hazard areas is either

14. ASHP installation location matches approved floor plan.

Electrical Requirements

Electrical Requirements

15. For ASHP installations, the electrical service rating is greater than or equal to the electrical service load as demonstrated by electrical service load calculations.
16. Circuit conductors for ASHP are sized at 125% or more of electrical load.
17. ASHP is properly identified on electrical panelboard.
18. An individual branch circuit may supply any volt-ampere or wattage rating of fixed electric space heating equipment for which the branch circuit is rated.

Electrical Requirements Cont.

19. All 125-volt through 250-volt receptacles supplied by single-phase branch circuits rated 150 volts or less to ground have ground-fault circuit interrupter (GFCI) protection if installed: outdoors, in crawlspaces or basements, indoor damp and wet locations, laundry rooms or bathrooms.
20. All receptacles for ASHP installed in a wet location have a weatherproof enclosure with the attachment plug cap inserted or removed.
21. Appropriately sized overcurrent protection (e.g., circuit breaker) are provided for the branch circuit serving the ASHP.

Electrical Requirements Cont.

22.Fixed electric space-heating equipment requiring supply conductors with an insulation rating greater than 60°C are clearly and permanently marked.

23. Where equipment is installed outdoors on a roof, an equipment grounding conductor of the wire type shall be installed in outdoor portions of metallic raceway systems that use compression-type fittings.

24. A controller is marked with the manufacturer's name, trademark, or symbol; identifying designation; voltage; phase; full-load and locked-rotor current (or horsepower) rating; and other data as may be needed to properly indicate the motor-compressor for which it is suitable. (

25. Disconnecting means capable of disconnecting an ASHP, including motor-compressors and controllers, from the circuit conductors is installed within sight from the ASHP and be readily accessible.

Mechanical Requirements

Mechanical Requirements: Sizing, Controls, and Duct Requirements

26. ASHP is sized using ACCA Manual S based on loads determined using ACCA Manual J.

27. If energy recovery systems (ERVs) are installed, heating loads are adjusted to account for reductions in the load associated with the ERV using the ASHRAE HVAC Systems and Equipment Handbook. (

28. ASHP with supplementary electric-resistance heat have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.

29. Duct systems serving ASHP meet design, sizing, material, installation, location, sealing, testing insulation and other applicable requirements.

Mechanical Requirements: Condensate Drain and Refrigerant

30. Condensate from cooling coils and evaporators are drained from the drain pan outlet to an appropriate place of disposal (e.g., not a street, walkway, crawl space, above outdoor equipment, or other area where it would cause a nuisance). The condensate drain piping slopes downhill with a minimum 1-percent slope (1/8 unit vertical in 12 units horizontal).

31. A secondary drain or auxiliary drain pan is installed for each cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping.

32. Condensate pumps located in uninhabitable spaces, such as attics and crawl spaces, are connected to the ASHP such that when the pump fails, the ASHP will be prevented from operating. Condensate pumps are installed according to the manufacturer's instructions.

Mechanical Requirements: Condensate Drain and Refrigerant Cont.

33. Refrigerants used in direct refrigerating systems conform to the applicable provisions of ANSI/ASHRAE 34.

34. Refrigerant piping meet the following requirements

Appendices

Appendix: Example Permit Application

Appendix: Example Permit Application

❑ New Application ❑ Revised Application

SECTION 1: General Info

Project Address

( ) -

Property Owner's Name | Phone Number | E-mail

Property Owner's Mailing Address (if different from Project Address)

SECTION 2: Project Details

❑ Single-Family ❑ Multi-family ❑ Other _____

Project Scope:

Make & Model #: SEER2:

Volts and Ampacity: HSPF2:

Capacity (Tons):

Location of Air Handler: ❑ In conditioned space ❑ Garage or basement ❑ Attic

SECTION 3: Contractor Information

Business Address

( ) -

Contractor Contact Name | Phone Number | E-mail

Contractor Business Name | Contractor License Number

Electrician/Subcontractor Business Name | Electrician/Subcontractor License Number

Business Address

( ) -

Electrician/Subcontractor Contact Name | Phone Number | E-mail

SECTION 4: Permit Fee

[Include fee schedule/options and/or instructions for calculating fee, directions on how and when to submit the permit fee.]

SECTION 5: Important Notice

A permit must be obtained for all installations or alterations of electrical equipment BEFORE WORK STARTS. Refer to Permitting Checklist for additional documents required. Failure to provide all required documents, will delay permit approval. All permits expire six (6) months after date of issuance. Failure to start the work authorized by a permit within this six-month period renders the permit invalid and a new permit must be obtained. Once work begins, noticeable progress must continue until completion. All work must be complete within eighteen (18) months of a permit issue date.

Please submit the following additional documents with the ASHP Permit Application

- ❑ Site Plan or Floor Plan
- ❑ Electrical Load Calculations and Electrical Line Diagram
- ❑ Mechanical Design
- ❑ Equipment Manufacturer Specifications
- ❑ [Additional Document – edit or delete as necessary]

Submit Permit Application

[Describe the submission process, how should the permits be submitted? In-person, on-line, e-mail, fax, etc.]

SECTION 6: Applicant Signature

I, the undersigned, certify that I have proper authority to apply for this permit, that the Contractor has obtained a signed contract from the Property Owner for the specified work, that all contractors have consented to being listed, and that all the information contained on this application is true and accurate to the best of my knowledge.

Name | Title

Signature | Date

For Office Use Only

Application Number: Date Applied:

Permit Number: Date Issued:

Issued By:

Questions?

We want your Feedback!!

https://forms.office.com/r/sxQERRQyYa