



Momentum Savings & Market Research Quarterly Call



February 1, 2023





Name

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Org Name

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Answer this question:
What is your *primary*
HVAC system?



Northwest HVAC Sales Data 2016-2021

Plus, information on new standards



HVAC Sales Data Collection

Annual collaboration between NEEA and BPA

Goal: Understand changes in residential and light commercial HVAC sales volumes and efficiency levels from 2016 to 2021



Data Collection &
Model Matching



Data Analysis &
Reporting



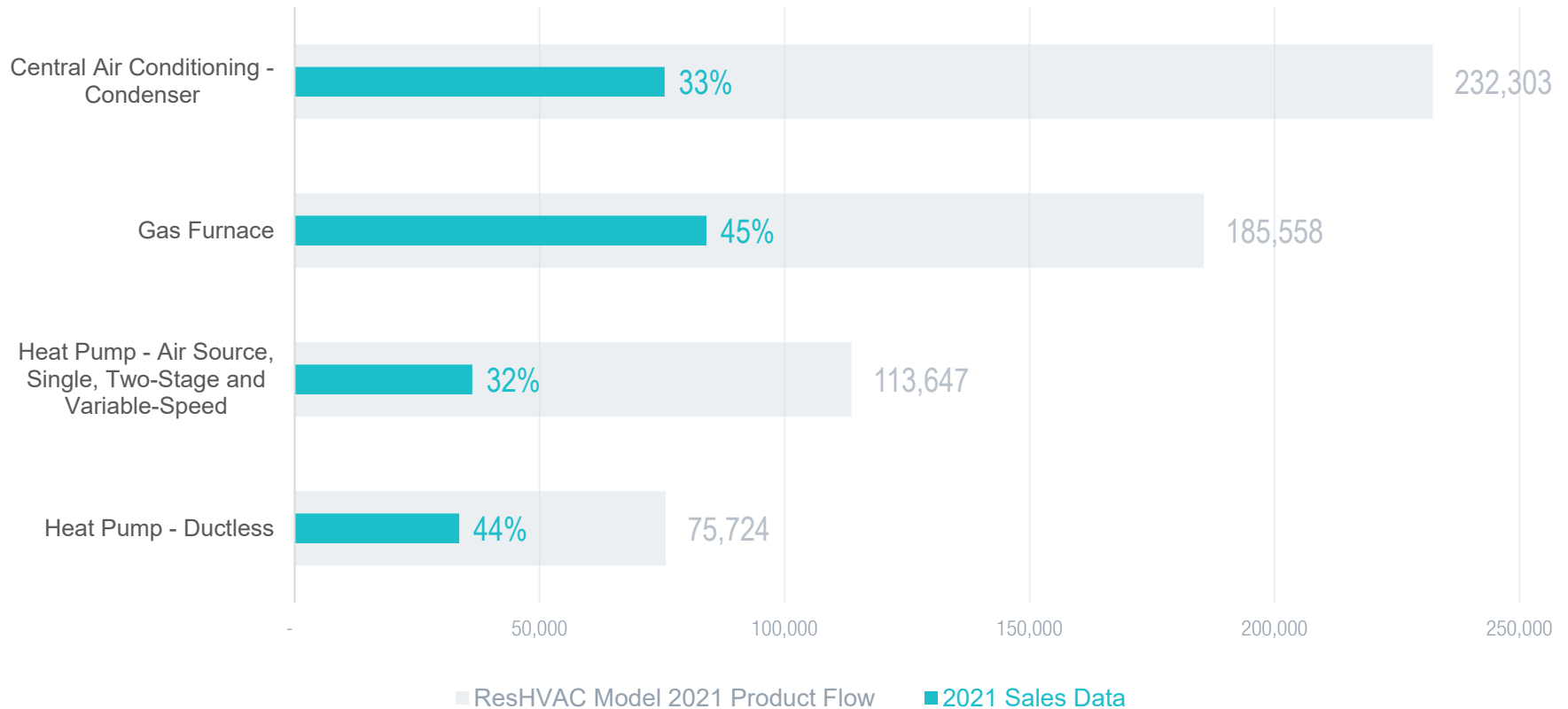
Participating suppliers largely supply the residential market

Market	Known Suppliers	Participating Suppliers	Increase in Participating Suppliers from last round
Residential	3	3	2 ↑
Commercial	8	0	0
Residential & Commercial	20	11	1 ↑
Total	31	14*	3 ↑

✓ All data shown are focused on residential sales.

Sales data represents 32%–45% of total product flow into NW

2021 Residential Sales Data – Market Coverage



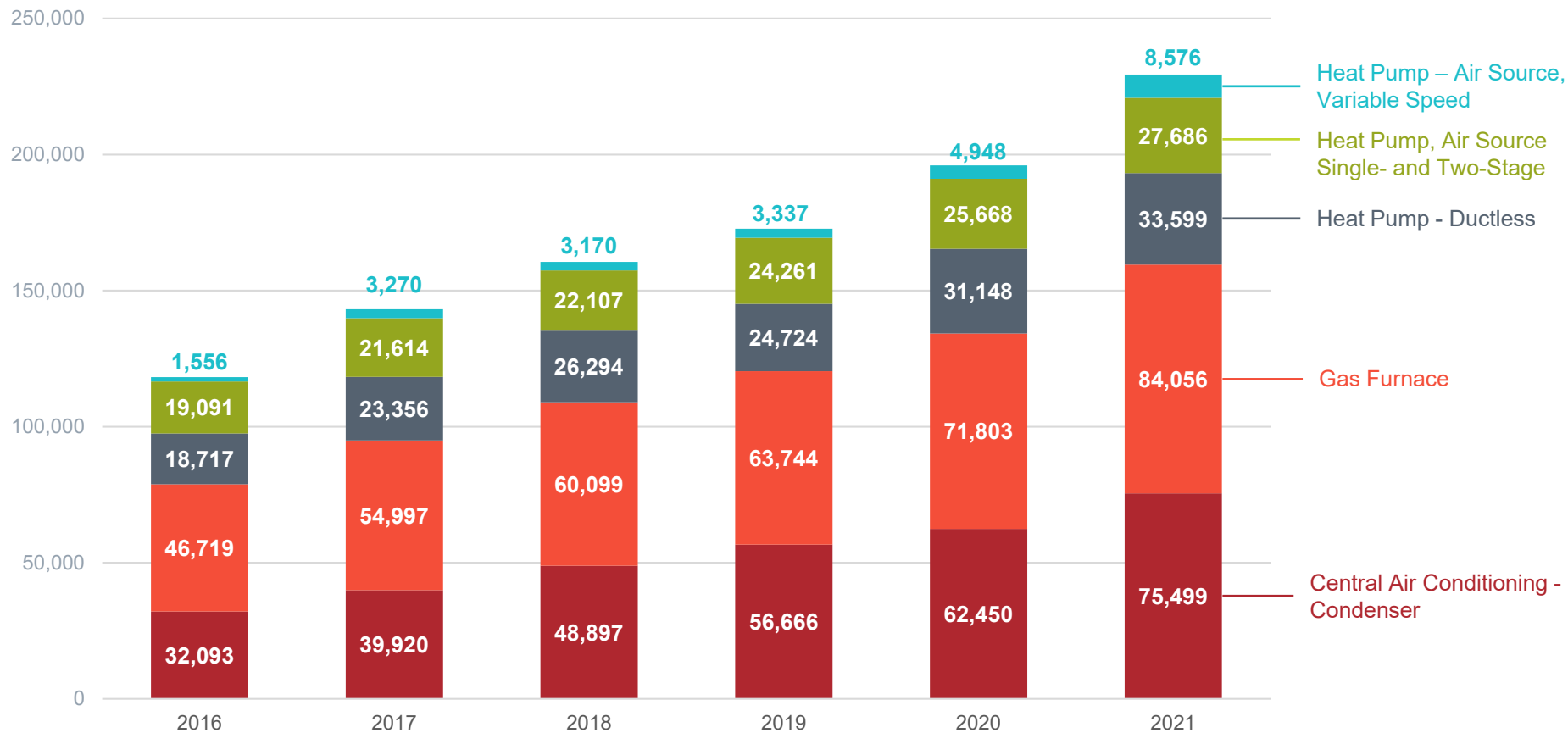


Residential Sales Insights



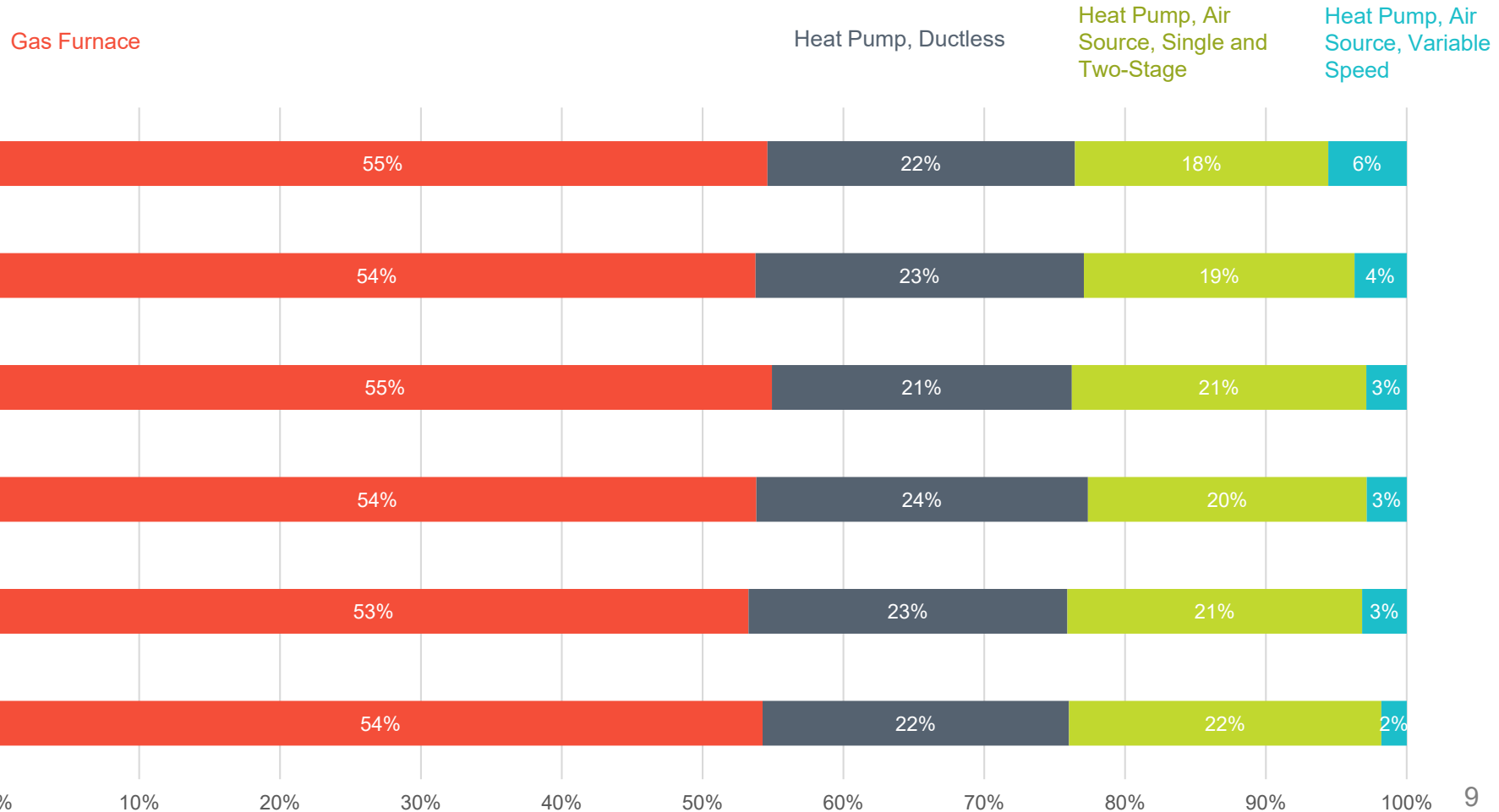
Sales continue to increase for every major technology

Extrapolated Sales for Key Residential Technologies



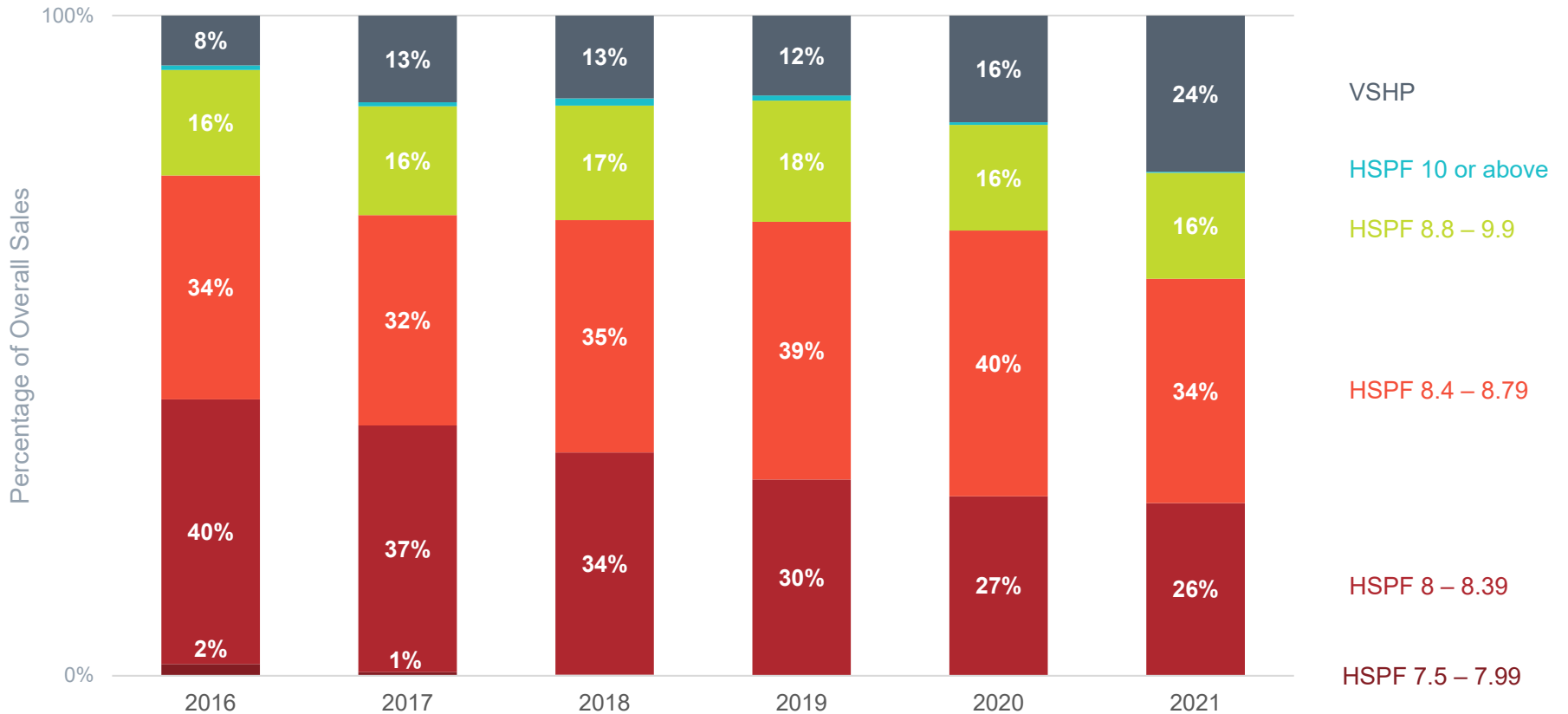
Relative share of heating technologies is stable

Residential Heating Technology Shares



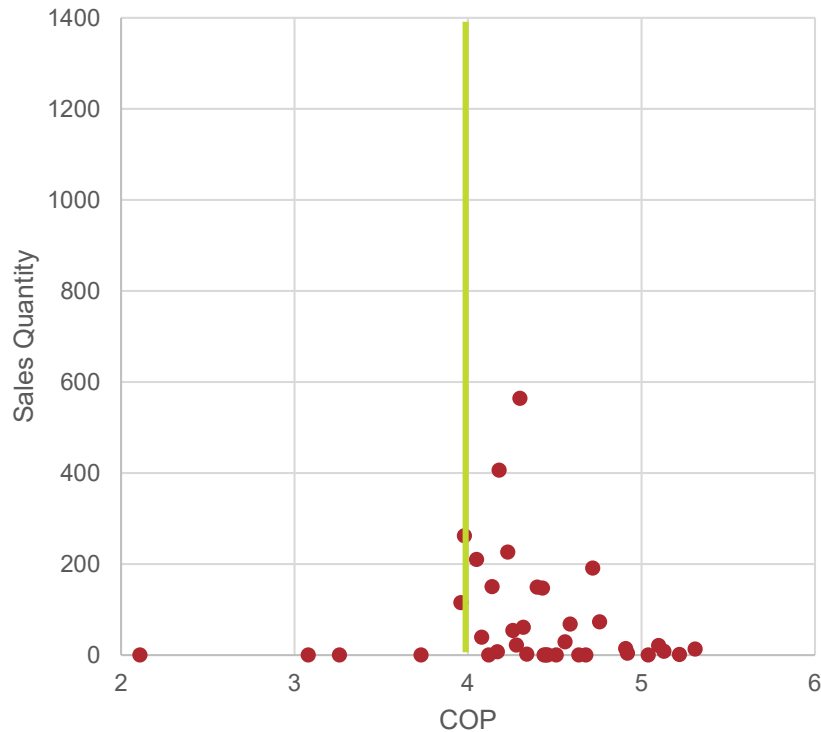
Lower efficiency ASHPs are phasing out

Heating Efficiency Mix – Air Source Heat Pumps

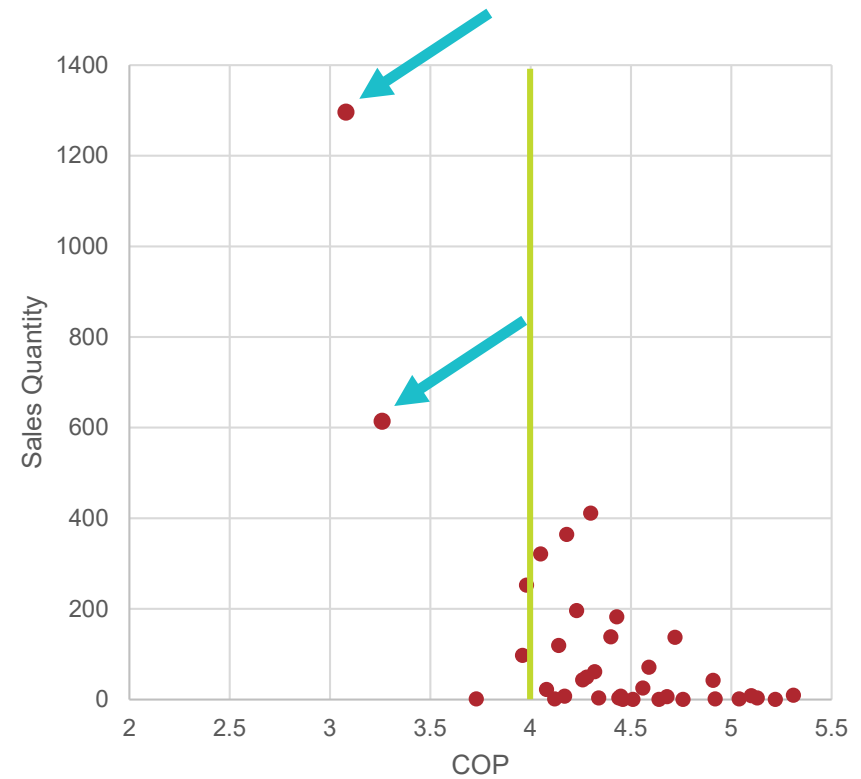


2021 saw three new VSHP models with poor low-load COP

COP at Min. Capacity 47°F - 2020 Sales



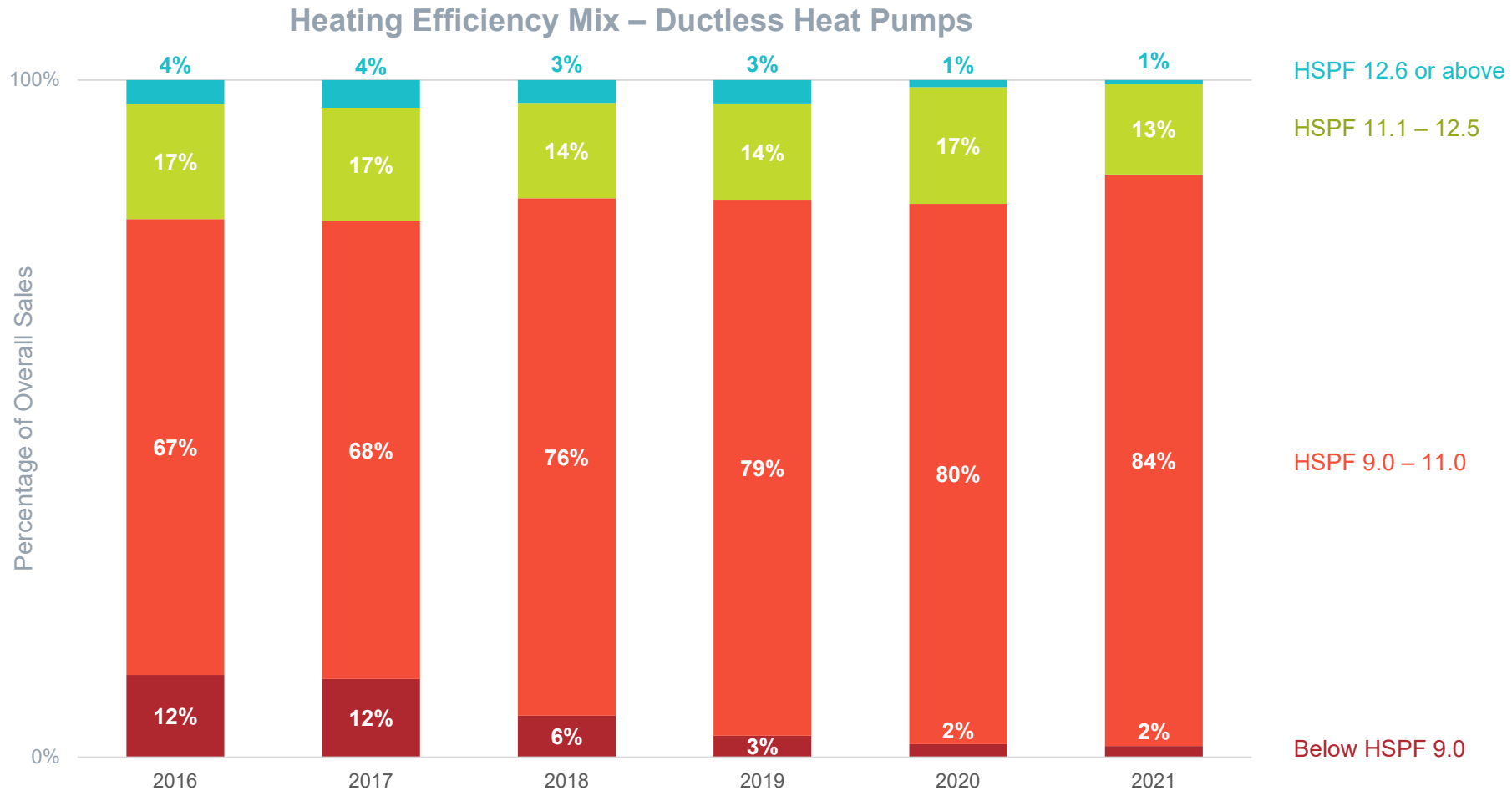
COP at Min. Capacity 47°F - 2021 Sales



Poor performers account for :

13% of VSHP sales in 2020
50% of VSHP sales in 2021

Mid-tier ductless heat pumps dominate sales



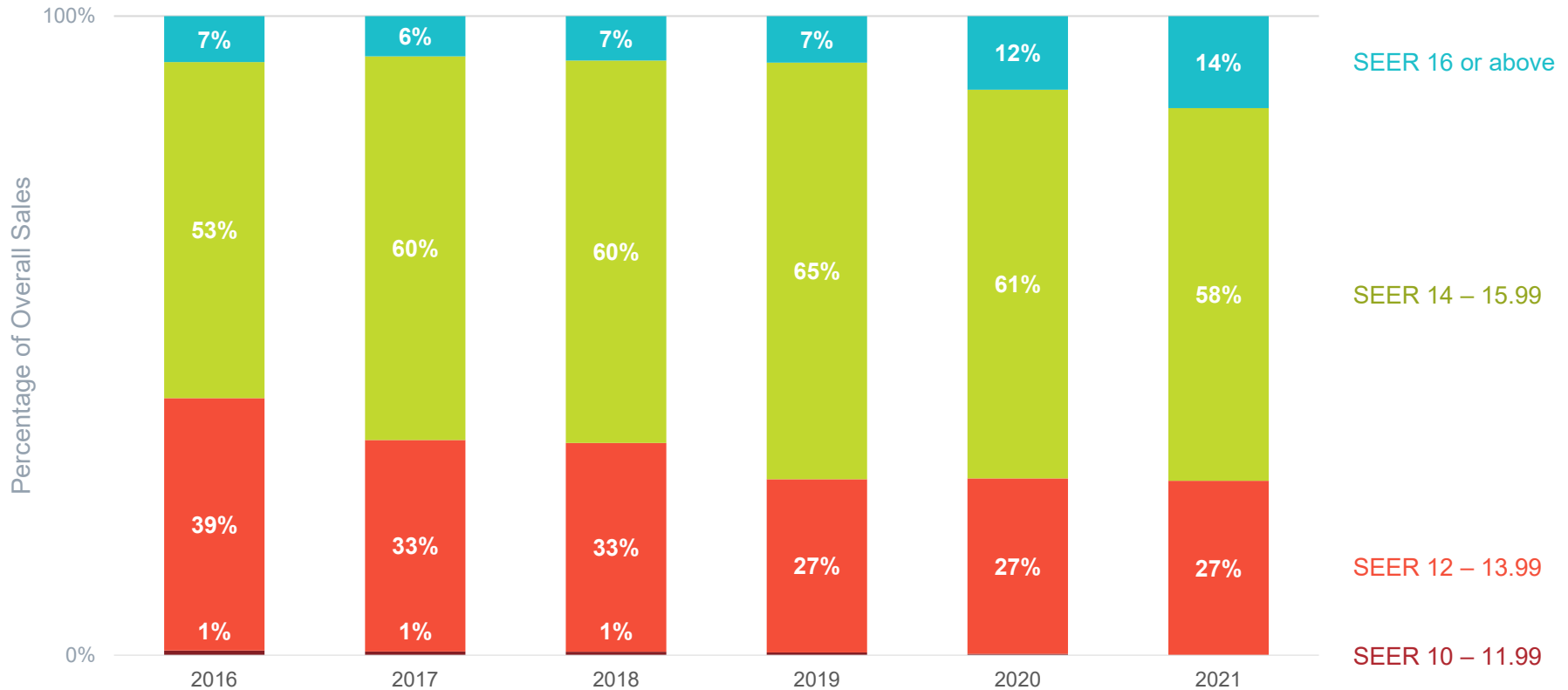
Some homeowners install “ducted” DHPs

- › At least **8%** of mini-splits are paired with ducts
- › Indoor units include “concealed heads” and furnace style
- › **Additionally**, some may get paired with gas furnaces
 - Either new construction or existing homes

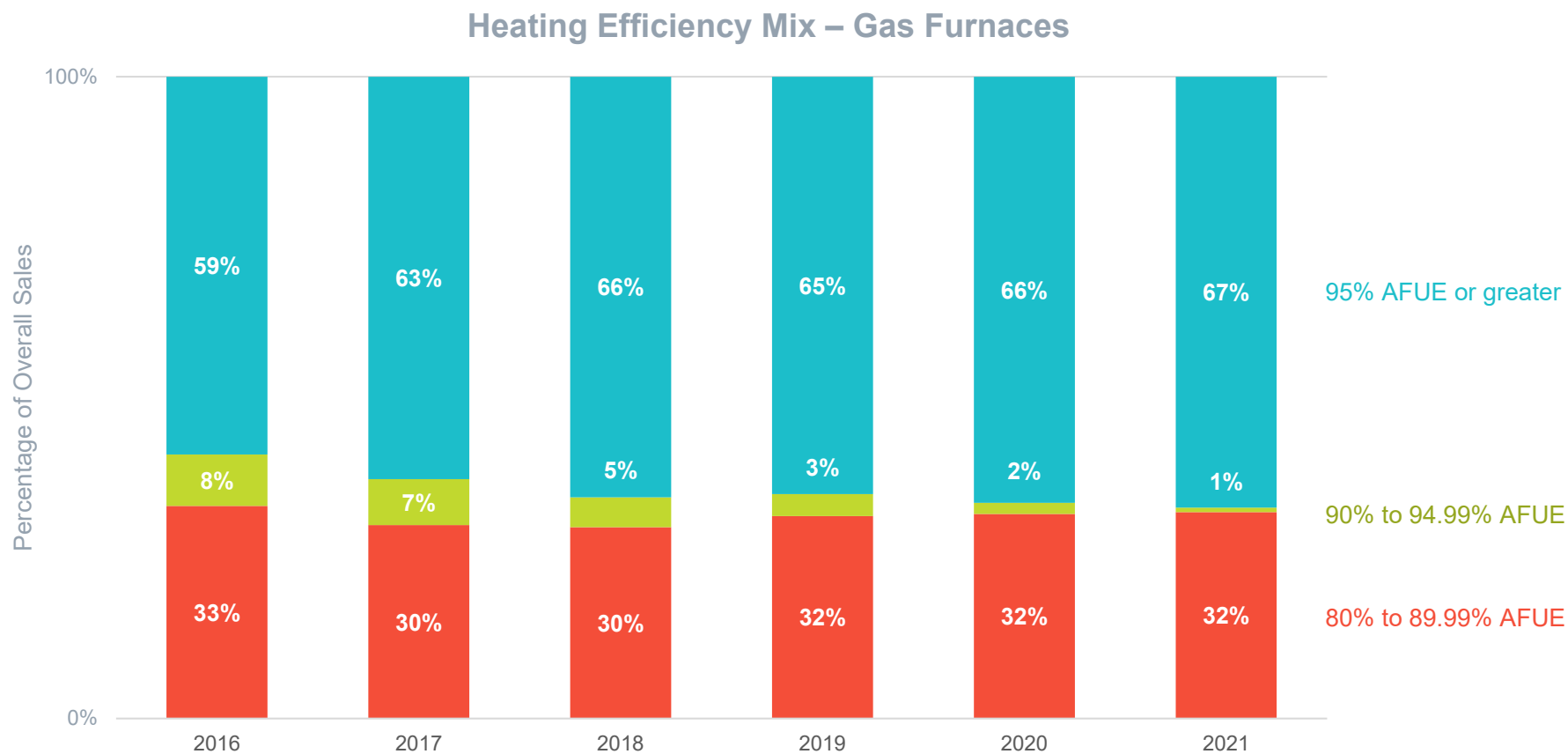


Sales of high-efficiency central AC units are increasing

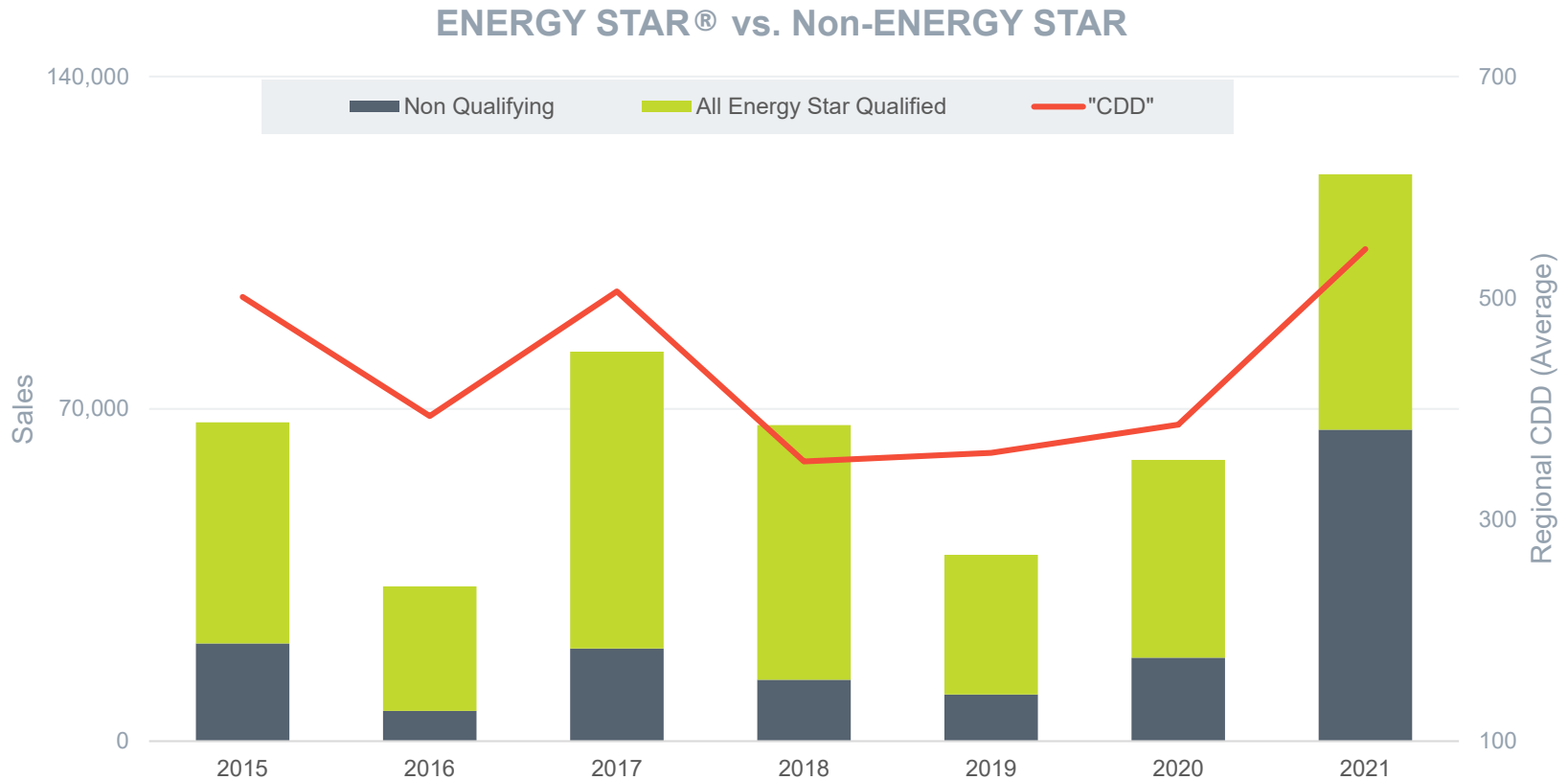
Cooling Efficiency Mix – Central Air Conditioning



Gas furnace efficiency trends move slowly



Room air conditioner sales seem to follow the weather



2021 was the first year that low-efficiency unit sales surpassed efficient sales.



New standards & test procedure



2023 Standards & M1 Test Procedure

Product Class	Current Standards		Standards as of Jan. 1, 2023 – using old metrics		Standards as of Jan. 1, 2023 – using new M1 Test Procedure	
	SEER	HSPF	SEER	HSPF	SEER2	HSPF2
Split-System Air Conditioners	13		14		13.4	
Split-System Heat Pumps	14	8.2	15	8.8	14.3	7.5



Appendix M1 Details

1. **New higher external static pressure requirements** for all units, including unique minimum external static pressure requirements for mobile home systems, ceiling-mount and wall-mount systems, low- and mid-static multi-split systems, space-constrained systems, and small-duct, high-velocity systems.
2. A unique default fan power for rating mobile home coil-only units and new default fan power for all other coil-only units.
3. Revisions to the heating load line equation in the calculation of the heating mode efficiency metric, HSPF2.
4. Amendments to the test procedures for variable-speed heat pumps that change speed at lower ambient temperatures and add a 5° F heating mode test option for calculating full-speed performance below 17° F
5. Establishment of a 4- or 8-hour delay time before the power measurement for units that require the crankcase heating system to reach thermal equilibrium after setting test conditions.

Current BPA Residential HVAC Measures (PTCS)

Residential UES Measures

Equipment	BPA QUALIFYING VALUES	CURRENT EFFICIENCY REQUIREMENT
PTCS Air-Source Heat Pumps	7.6 HSPF2 or above, and 13.4 SEER2 or above	9.0 HSPF or above, and 14.0 SEER or above
PTCS Variable Speed Heat Pumps		
ASHP Conversion from Electric Forced-Air Furnace (without PTCS)		
Variable-Speed Air-Source Heat Pump Conversion from Electric Forced-Air Furnace (without PTCS)		
Air-Source Heat Pump Upgrade (without PTCS)		
Variable-Speed Air-Source Heat Pump Upgrade (without PTCS)		
PTCS Commissioning, Controls, and Sizing for Heat Pumps with an HSPF below 9.0:	Less than 7.6 HSPF2	Less than 9.0 HSPF
Centrally Ducted Air Conditioners	15.2 SEER2	16.0 SEER
Ductless and Ducted Mini-Split Heat Pumps	7.6 HSPF2	9.0 HSPF
Ductless Heat Pump Upgrade	10.4 HSPF2	11.0 HSPF

Ductless Heat Pumps (Conversions and Upgrades)

INDOOR UNIT TYPE	BPA QUALIFYING VALUES	CURRENT EFFICIENCY REQUIREMENT
Non-Ducted	10.4 HSPF2	11.0 HSPF
Ducted or Mixed	9.4 HSPF2	10.0 HSPF

Upcoming Refrigerant Changes



December 2022

<https://www.epa.gov/climate-hfcs-reduction>

FACT SHEET

Proposed Rule - Phasedown of Hydrofluorocarbons: Restrictions on the Use of Certain Hydrofluorocarbons under Subsection (i) of the American Innovation and Manufacturing Act

Sectors and Subsectors	Proposed GWP Limit	Compliance Date
Residential and light commercial air conditioning and heat pump systems	700	January 1, 2025
Residential and light commercial air conditioning – variable refrigerant flow systems	700	January 1, 2026



Thank you!

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Access 2016-2021 HVAC Sales Data Summary & Data at
<https://www.bpa.gov/energy-and-services/efficiency/market-research-and-momentum-savings/hvac-market-research>.

Contact Joan Wang jjwang@bpa.gov and Bonnie Watson
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