

NORTHWEST RESIDENTIAL HVAC MARKET TRENDS

BPA WEBINAR

SEPTEMBER 1, 2022



Why **Res HVAC**?

RAPIDLY EVOLVING MARKET

Heat pump technologies

Demand for cooling

Weatherization & thermostats

Other Residential

29%

10%
of total regional
load*

61%

Residential HVAC

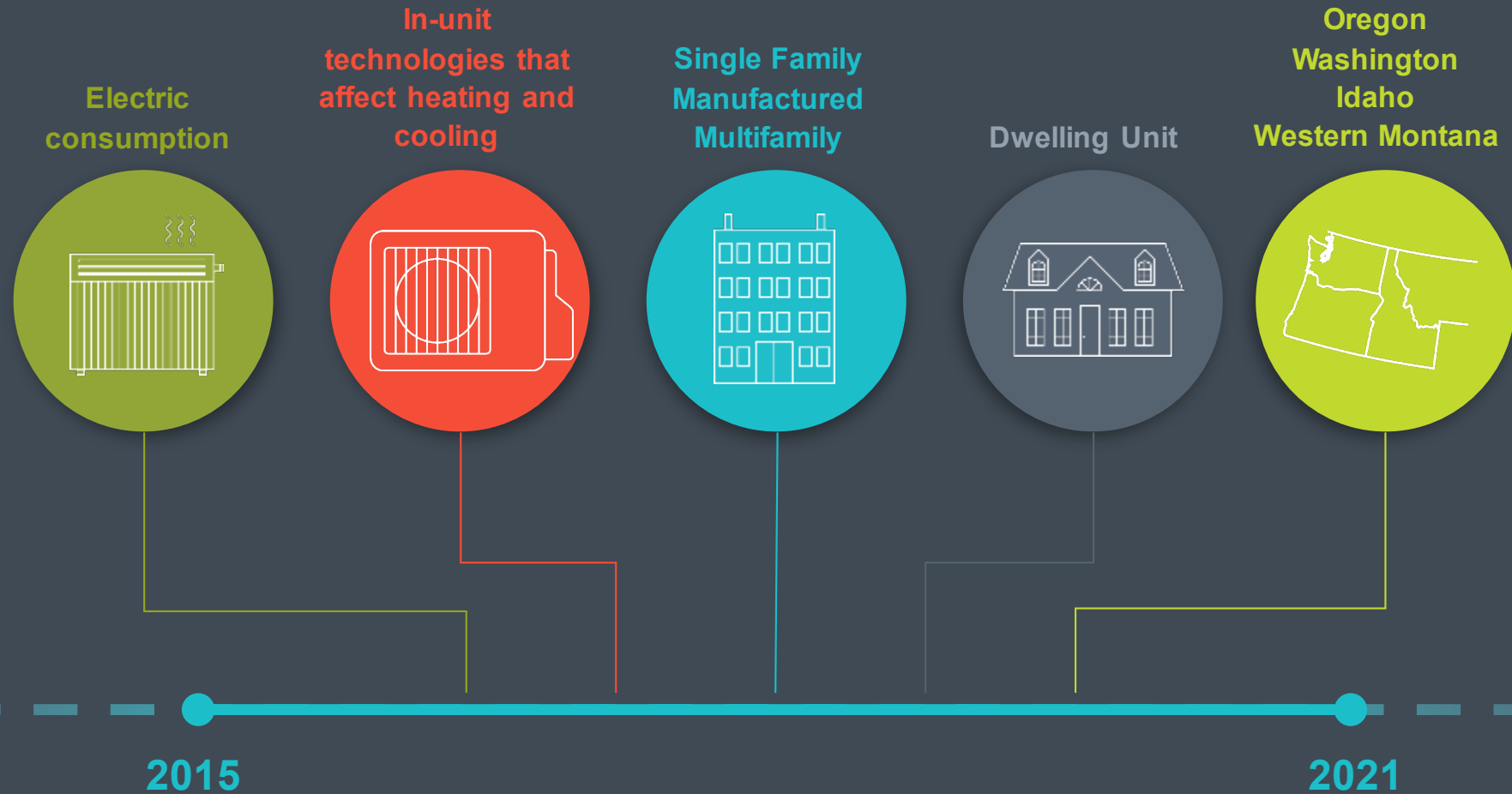
10%

Non-Residential

**2018 Consumption in the 2021 Power Plan*




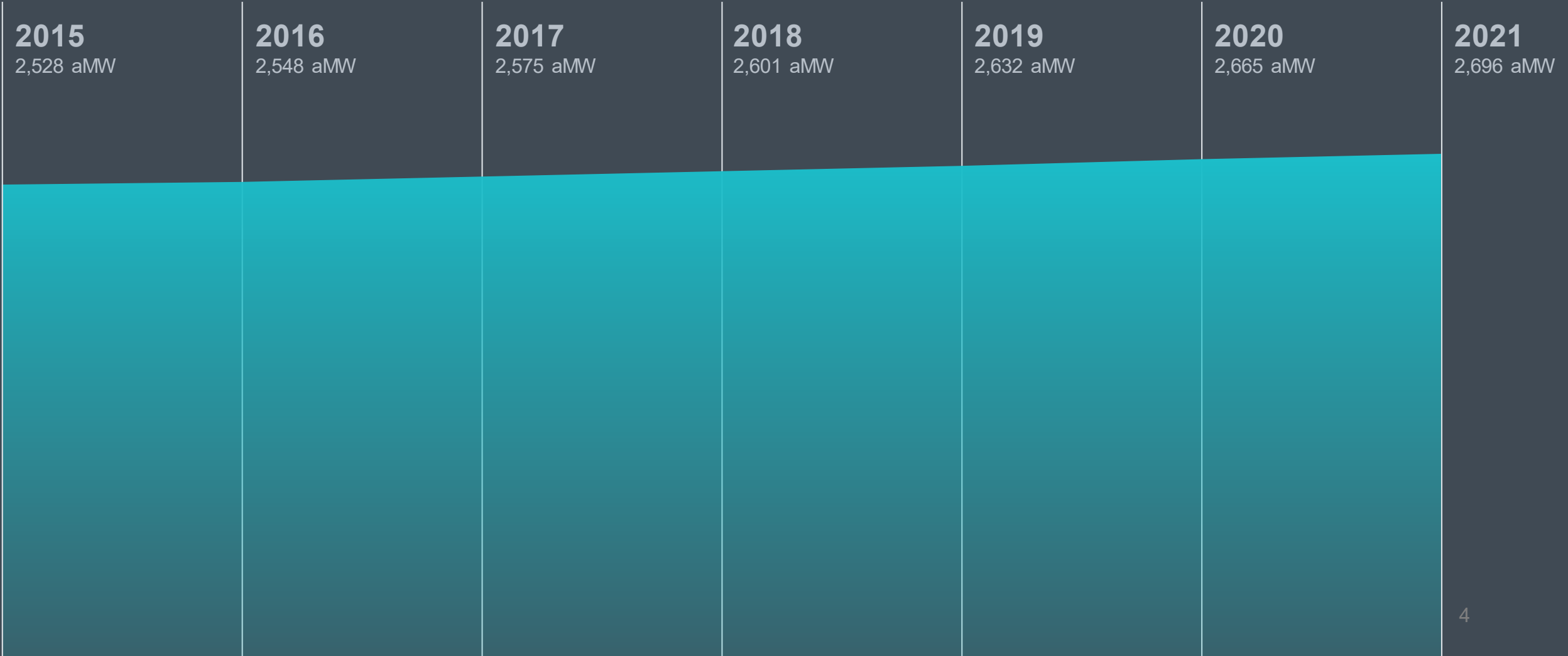
What do we mean by the **Res HVAC** market?





Total regional residential HVAC electric consumption has **increased**

 aMW at Busbar





WHAT TRENDS ARE BEHIND THAT HVAC ENERGY CONSUMPTION?





The increase in consumption comes from **added cooling**

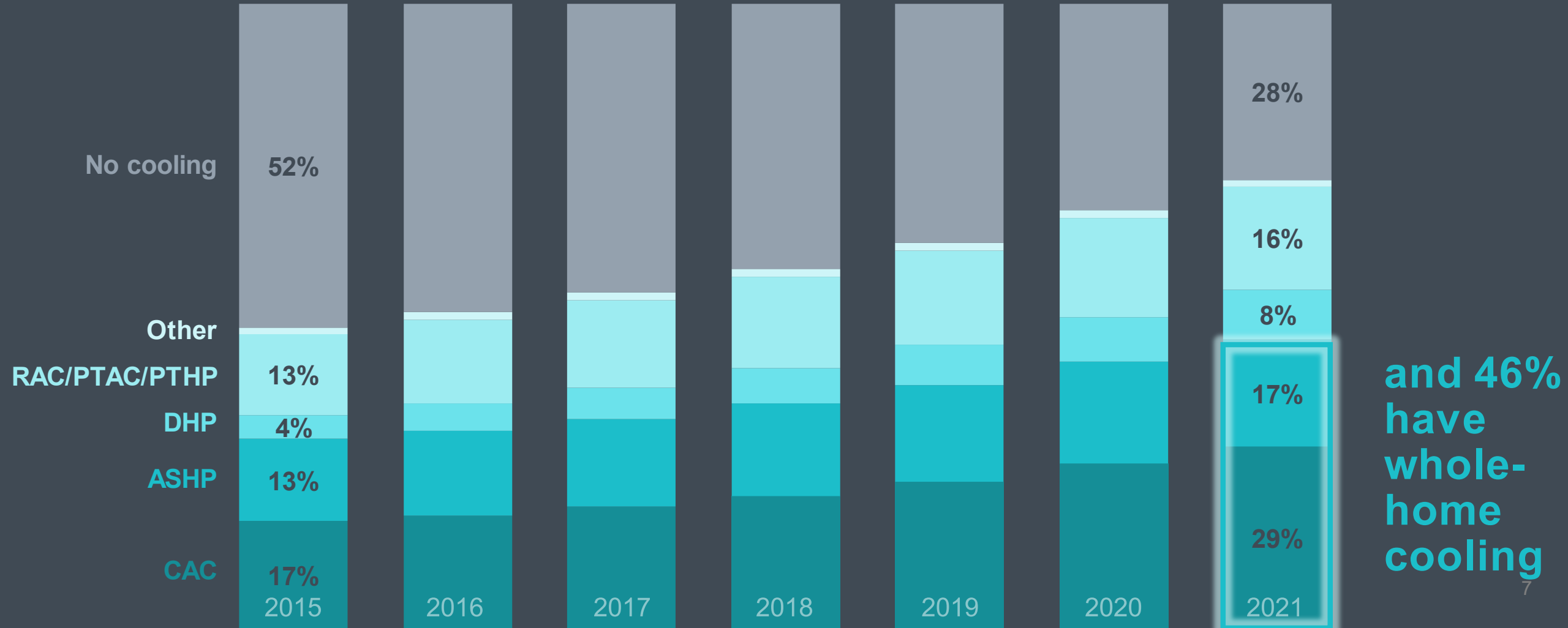


Cooling consumption



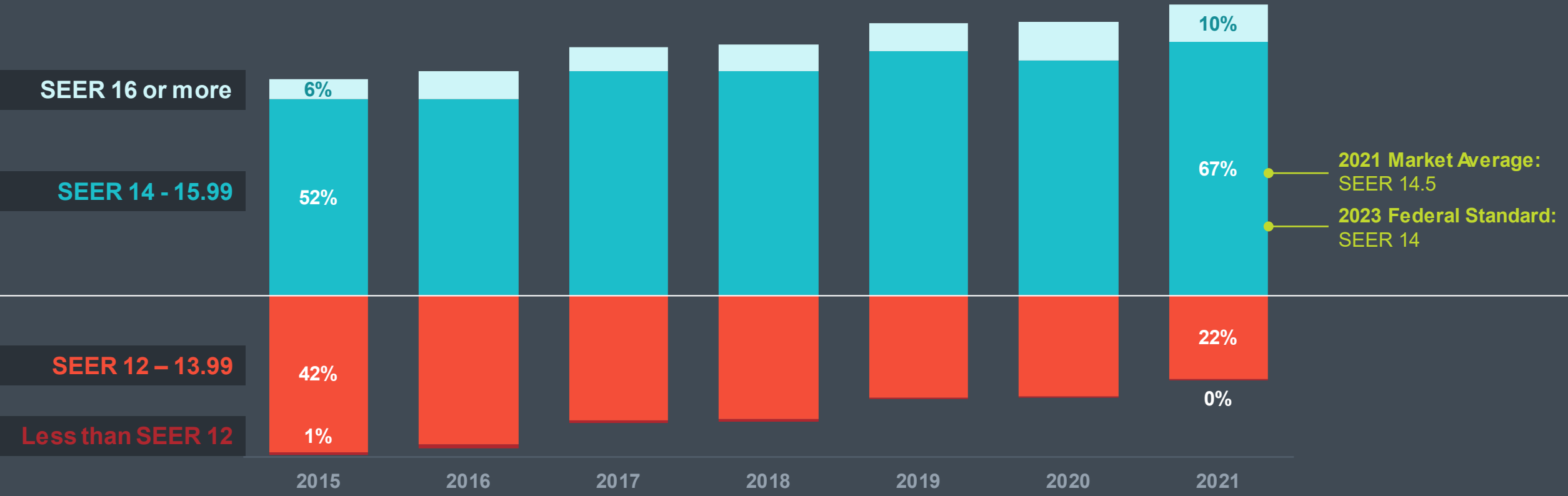


By 2021, **72%** of homes have a form of cooling



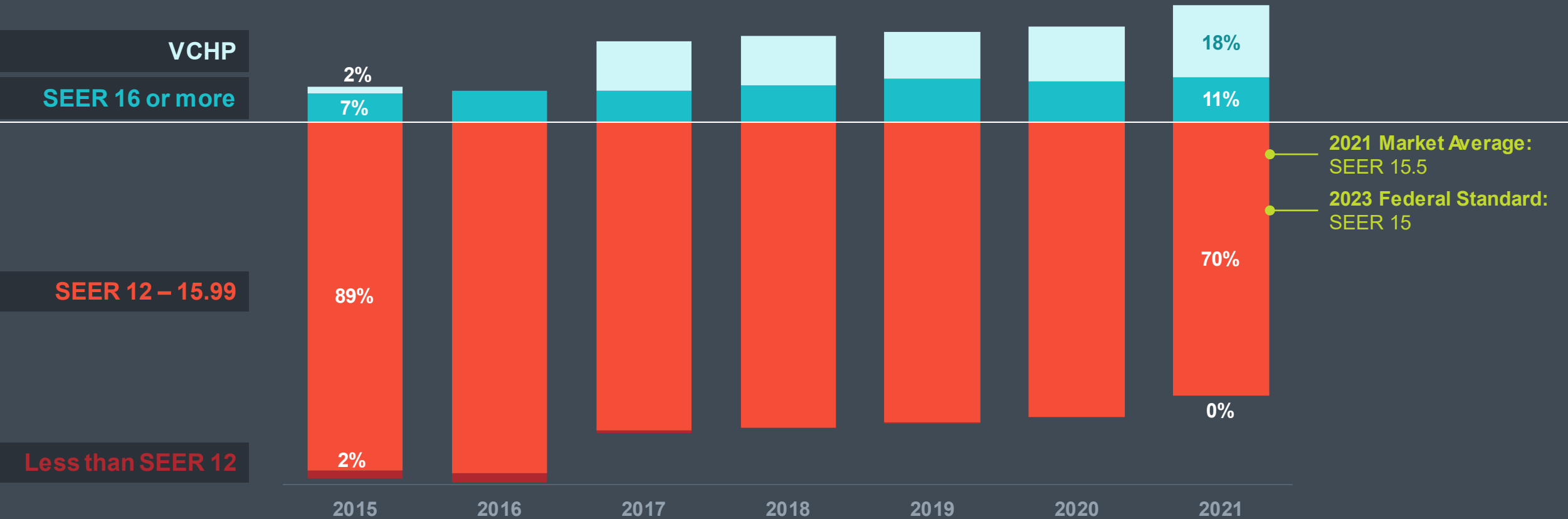


Fortunately, equipment ratings of new CACs are **going up**





ASHP market average SEER has exceeded 2023 Federal Standard





VCHP sales have reached a **fifth** of the ASHP market

Variable Capacity (or speed) Heat Pumps

Compressor speed varies based on demand

Not tied to SEER/HSFP

Single- or two-stage

Variable speed



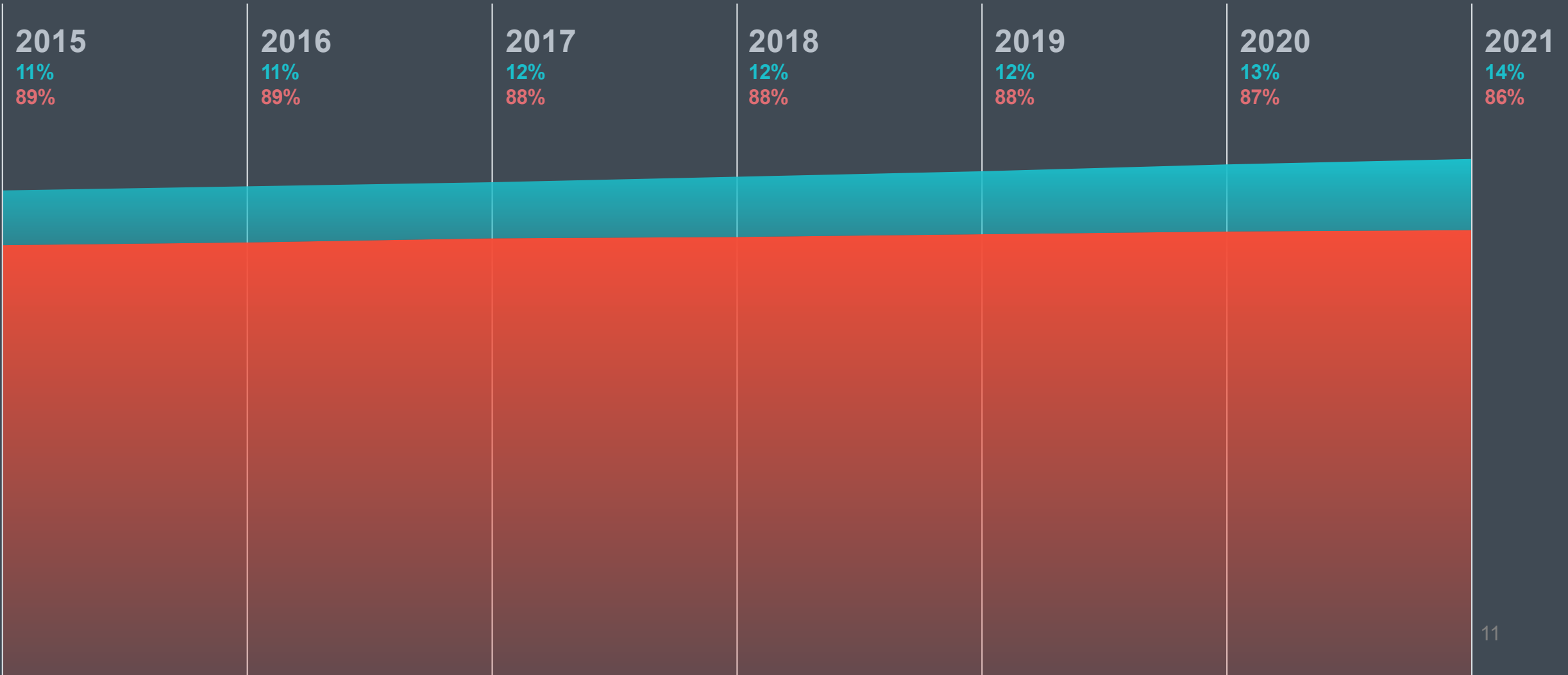
We're still a **heating-** **dominant** region



Cooling consumption



Heating consumption

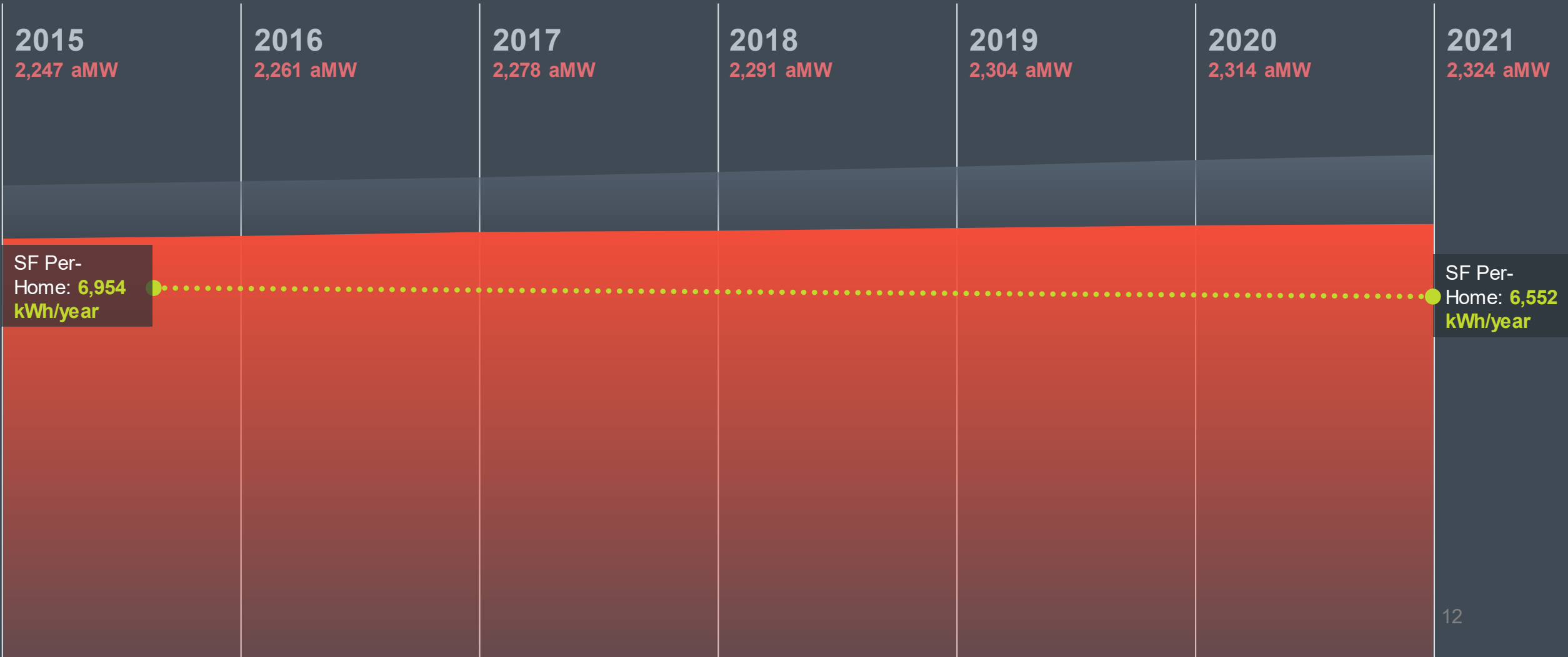




Demand for cooling has led to **heating efficiency gains**

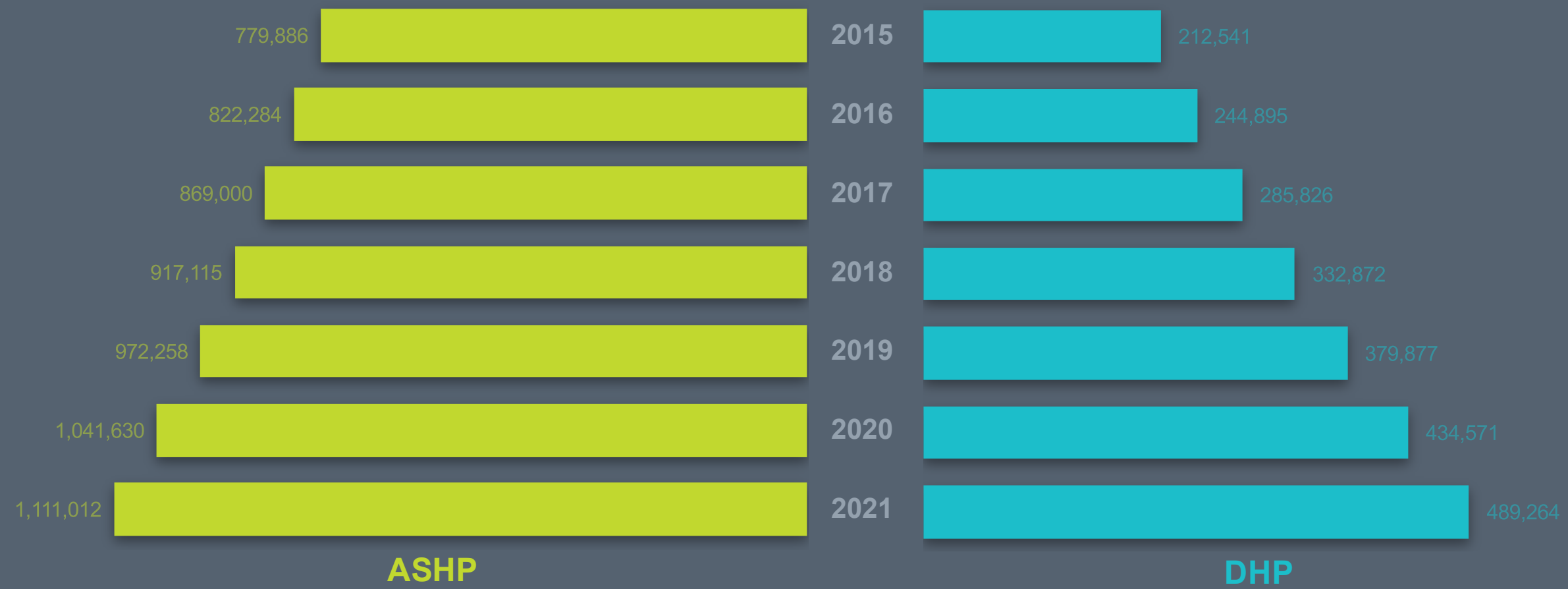


Heating consumption



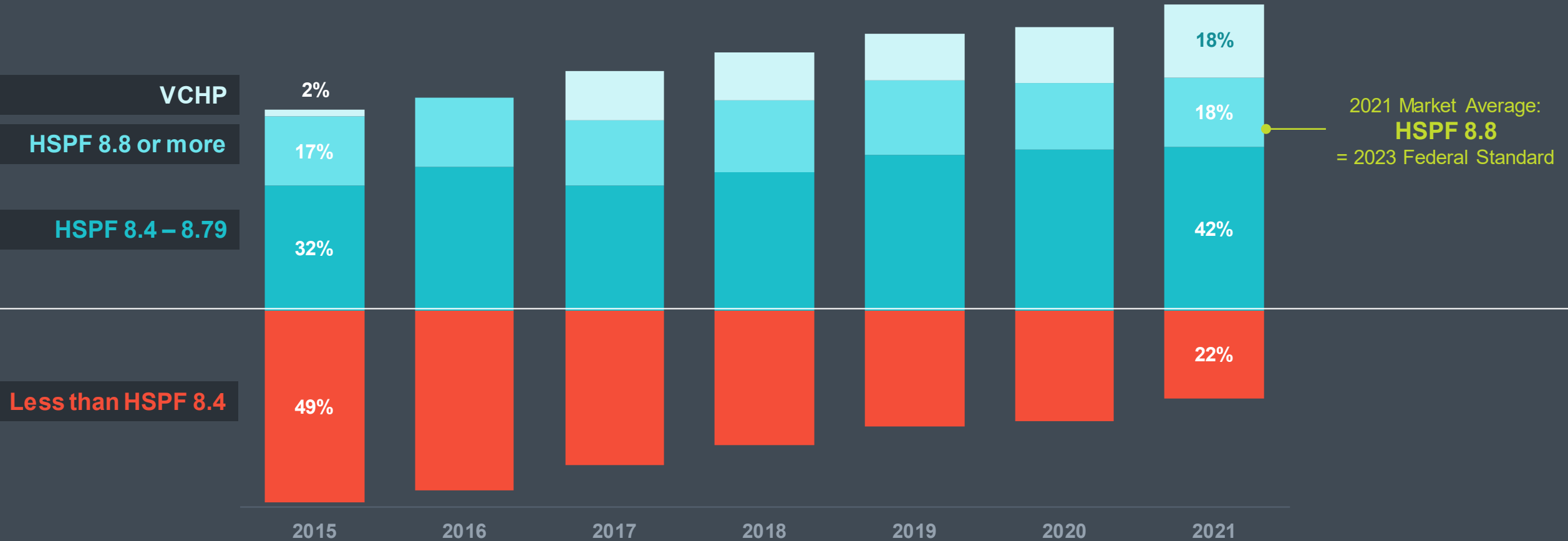


More than a quarter of homes use **ASHPs and DHPs** for primary heating



NUMBER OF HOMES WITH ASHP AND DHP AS PRIMARY HEATING TECHNOLOGY

When people purchase ASHPs, we see heating ratings **improving**





Most DHPs are in **Single Family** homes with **Electric Zonal** heat



SF

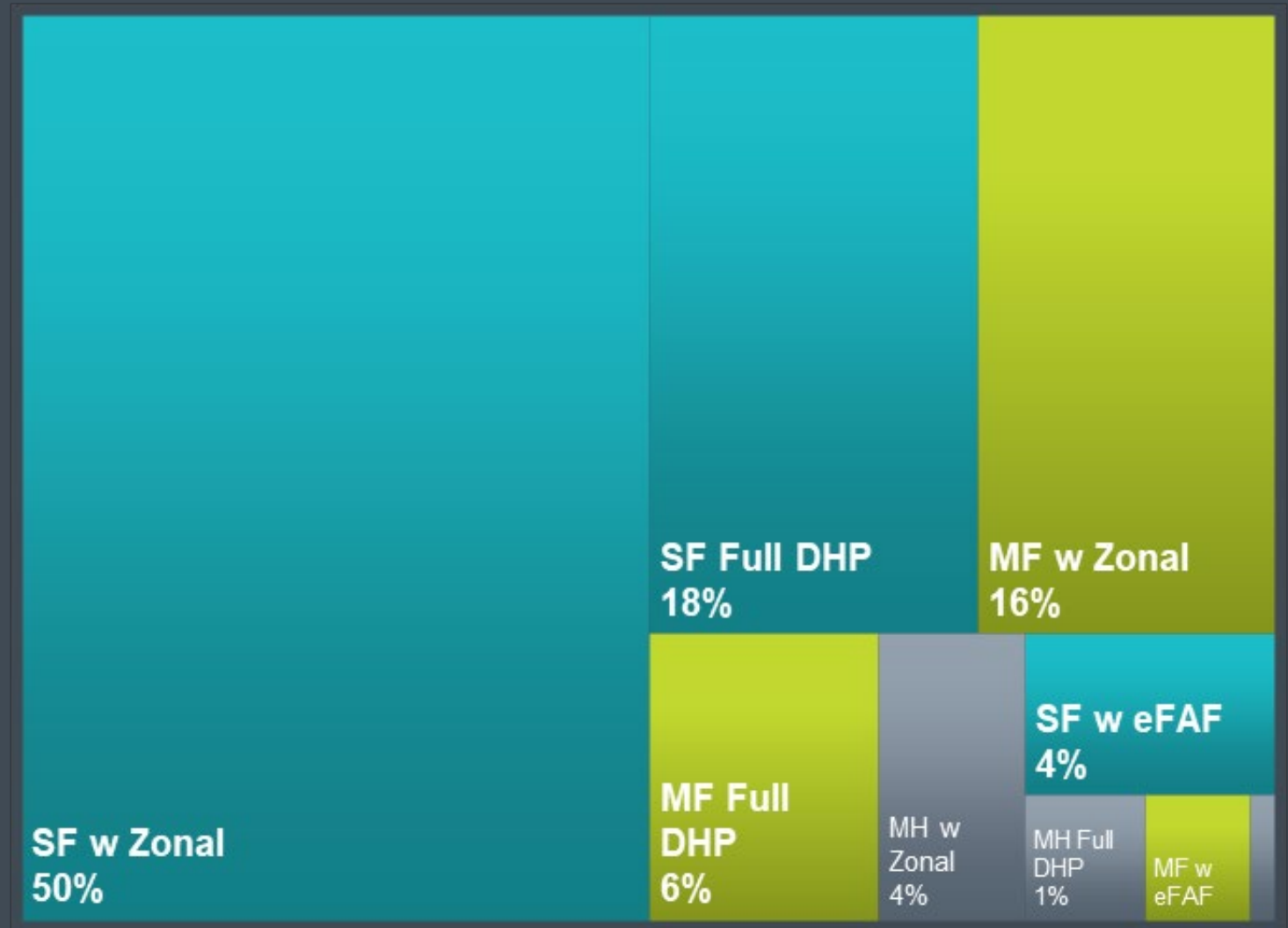


MF



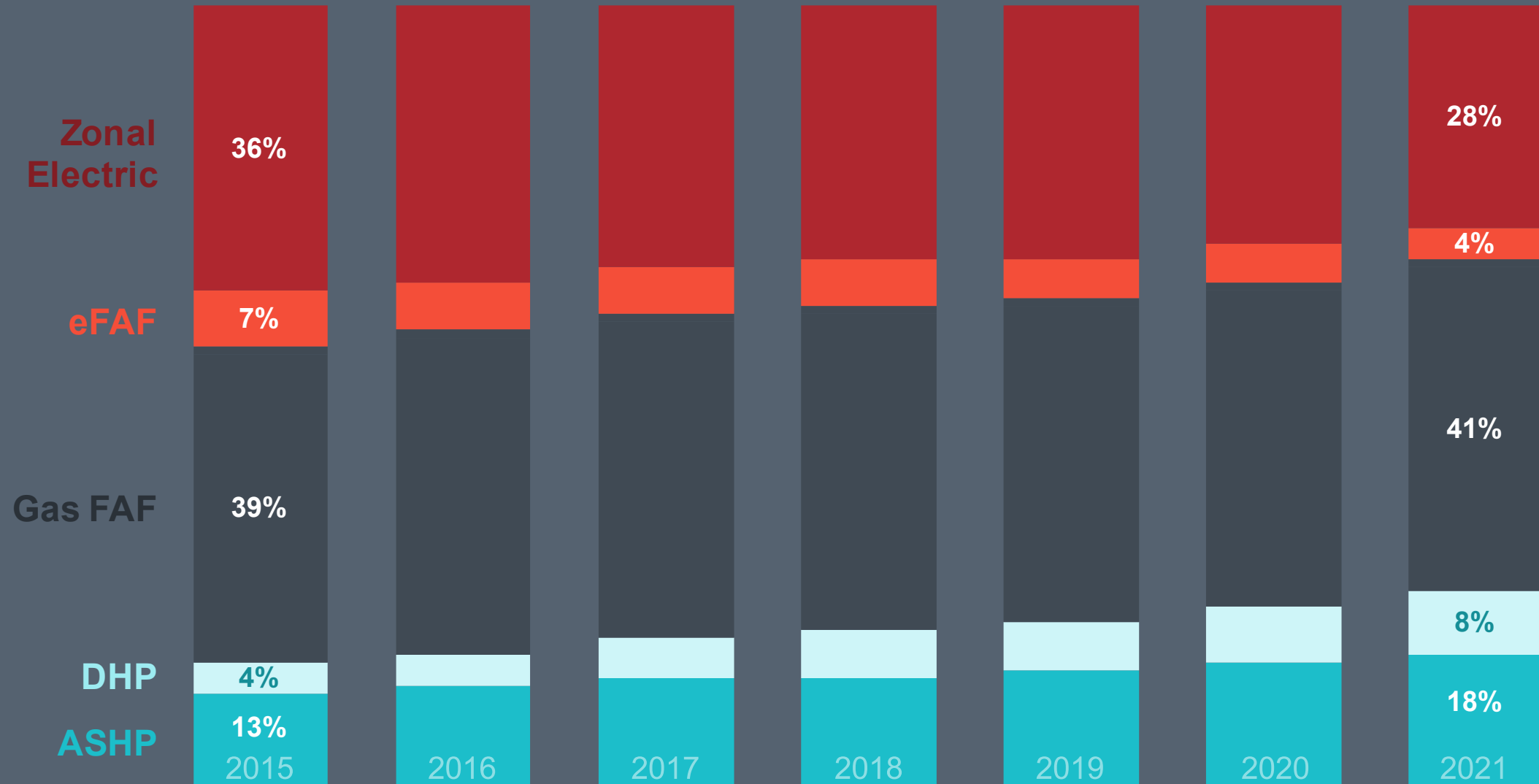
MH

Multifamily homes installing DHPs **faster** than manufactured homes.



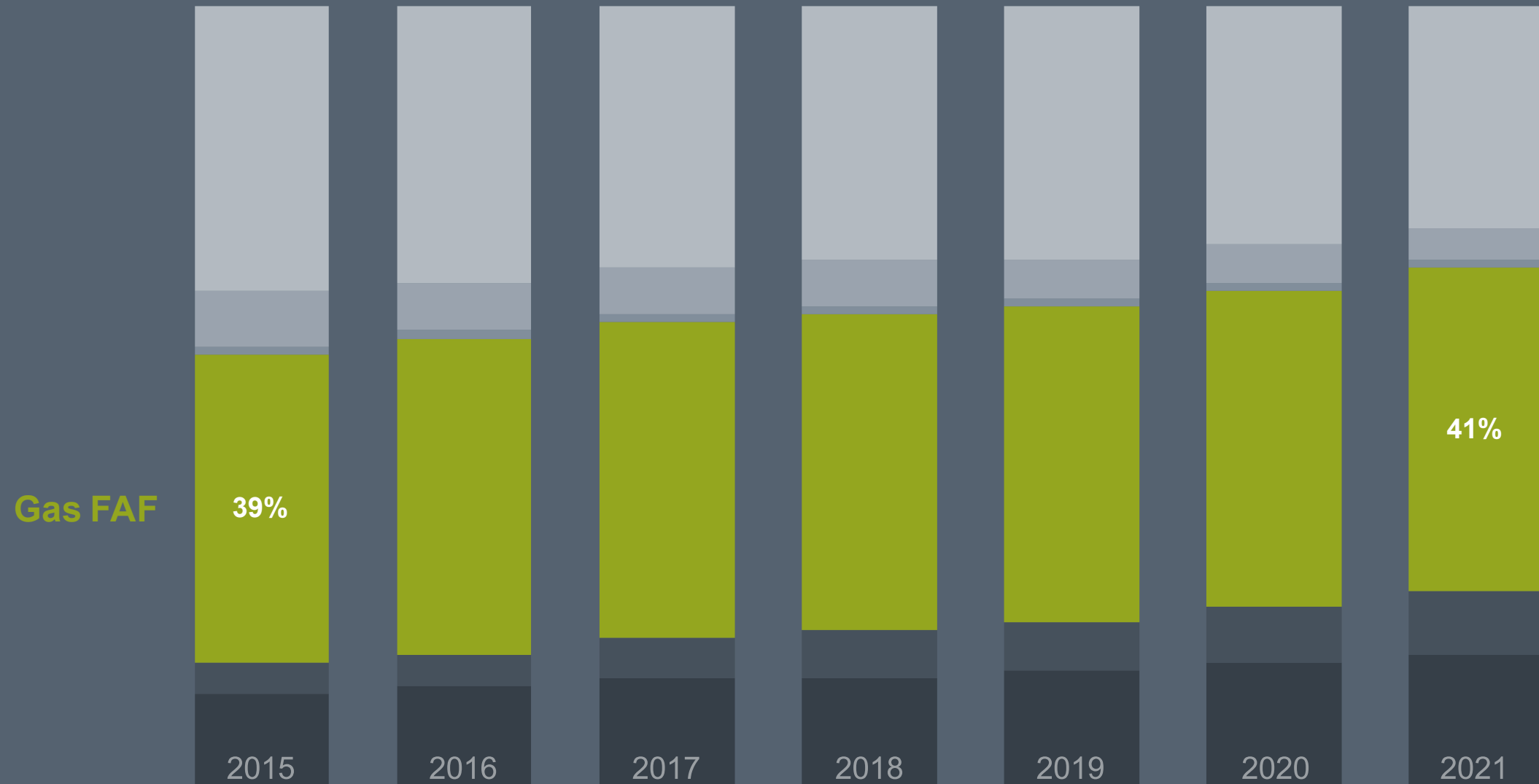


Heat pumps primarily replace eFAF and zonal electric



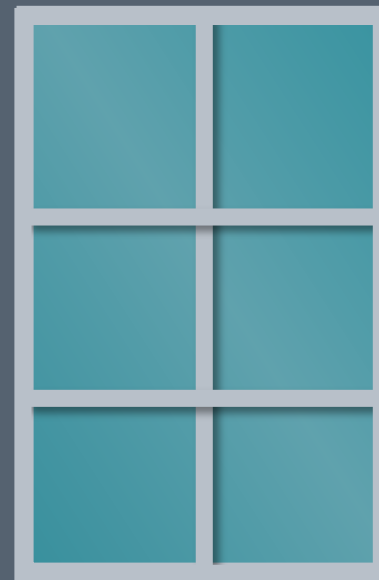


Interestingly, share of gas furnaces in the stock has **held steady**

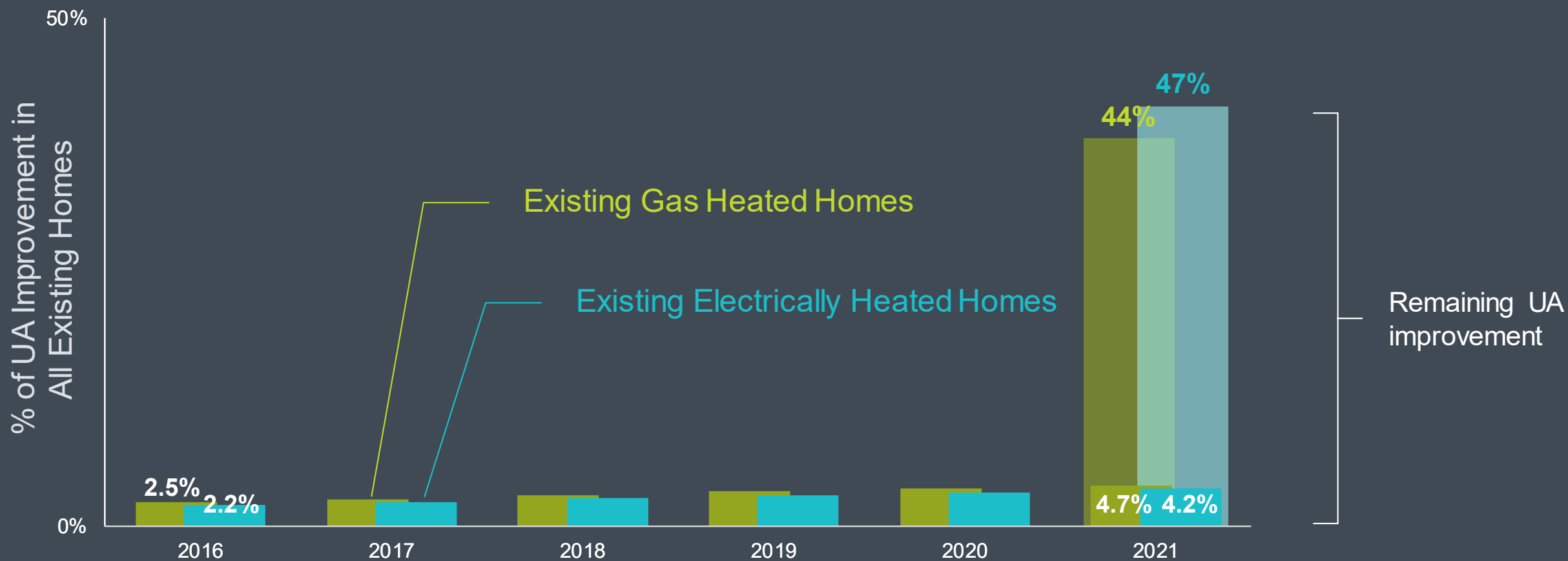




WHAT ELSE IMPACTS HVAC ENERGY CONSUMPTION?



Building shell conditions are improving, but there are still **plenty of opportunities**

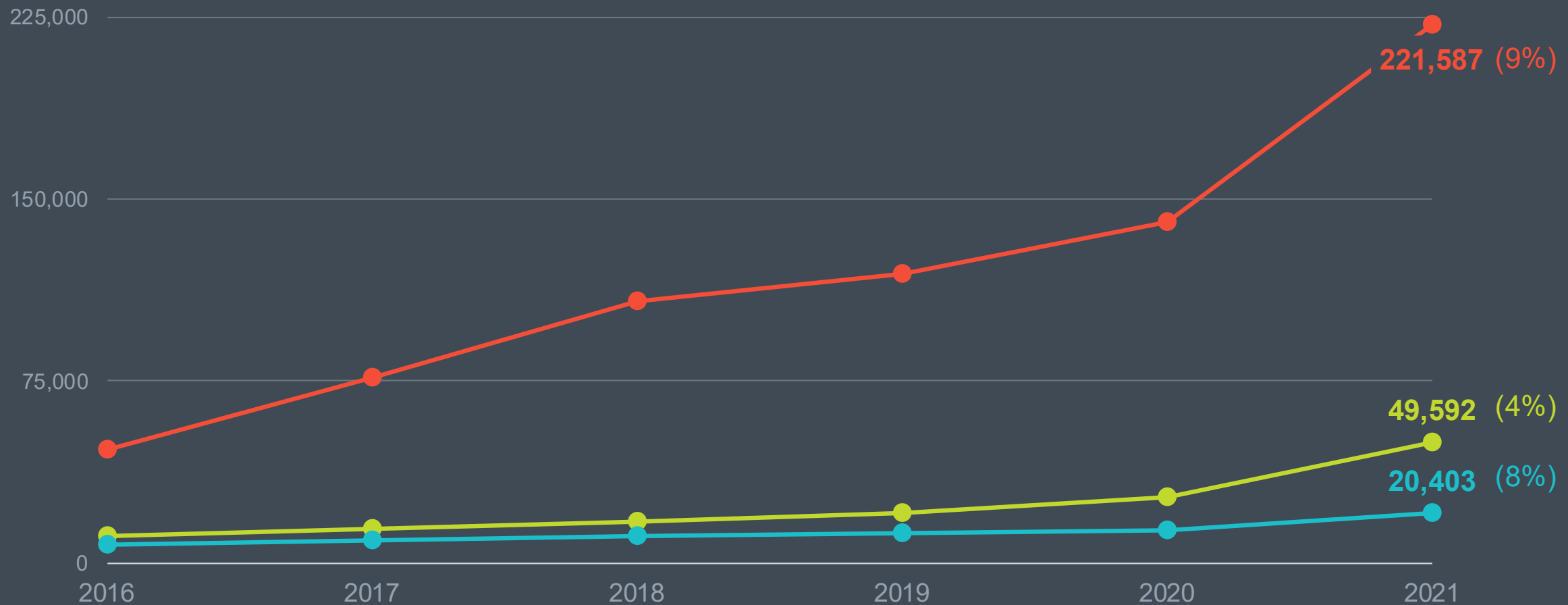




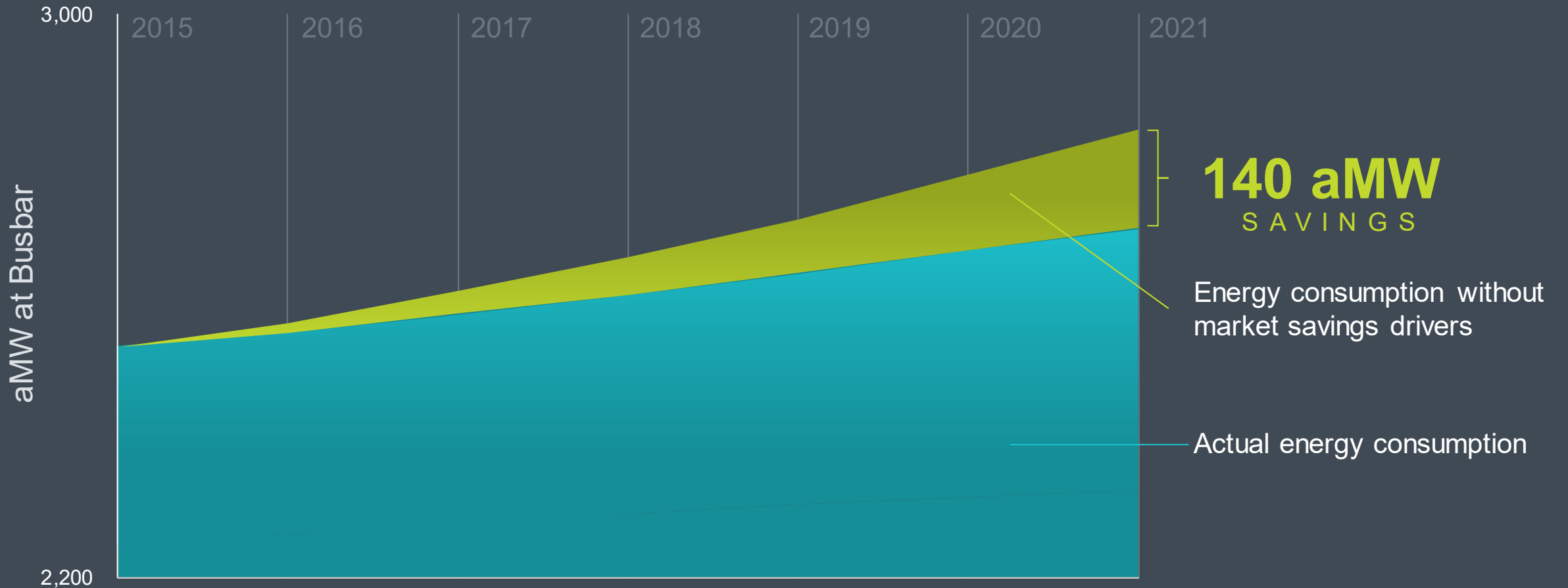
We've seen growth in Advanced Smart Thermostats, but **could see more**

- Gas FAF
- ASHP
- Electric FAF

Installed Advanced Smart Thermostats



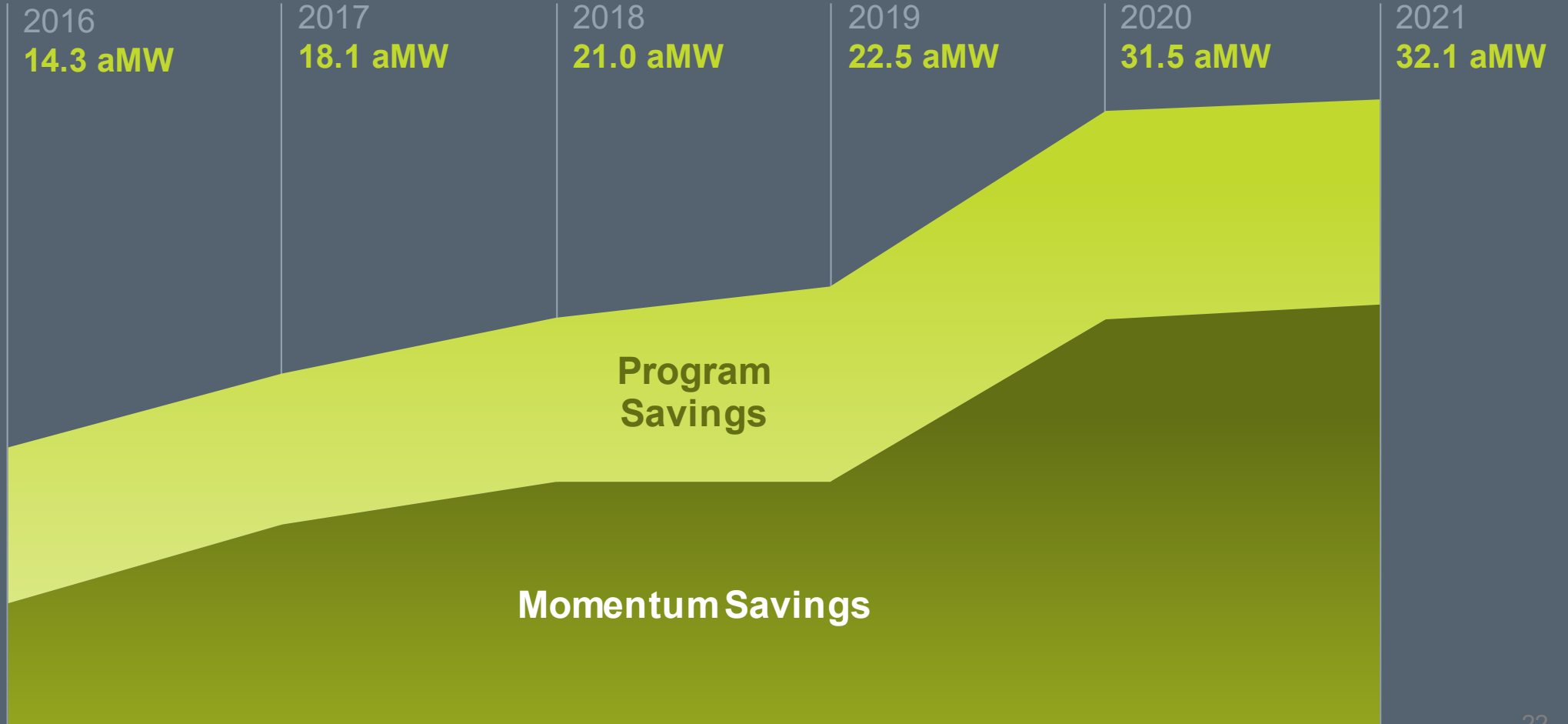
Efficient equipment and non-equipment upgrades drive market savings



Programs have paved the way

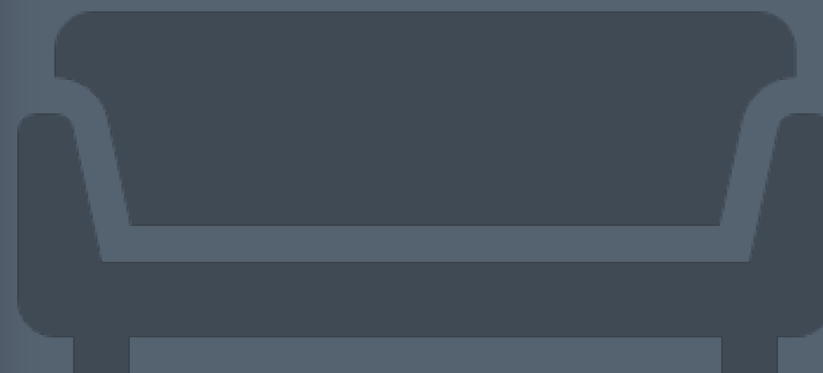
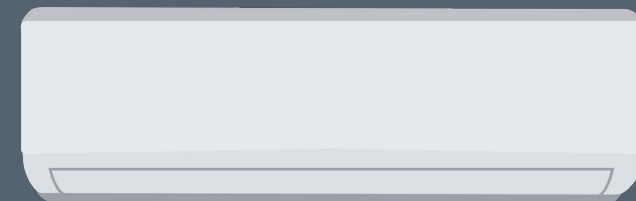
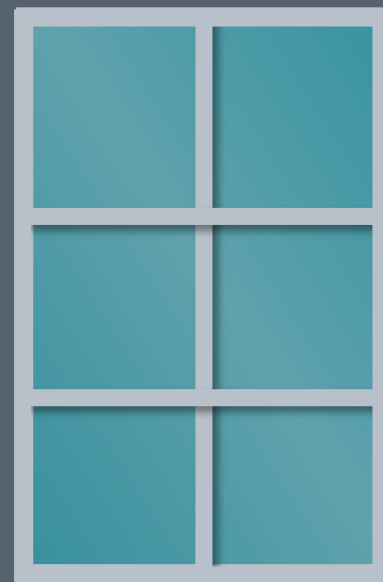
Total Market Savings by Year:

aMW at Busbar





WHERE ARE OPPORTUNITIES FOR THE FUTURE?





ASHPs and DHPs will continue to be
a **crucial technology**

This allows us to ride the
cooling wave for
opportunities and benefits





Where does the **research** go from here?

RBSA III

New HVAC Sales Data

VCHP and Tech-Specific Studies

RTF Measure Updates



CONTACT

For more information, visit

<https://www.bpa.gov/energy-and-services/efficiency/market-research-and-momentum-savings/hvac-market-research>

Questions? Contact

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