



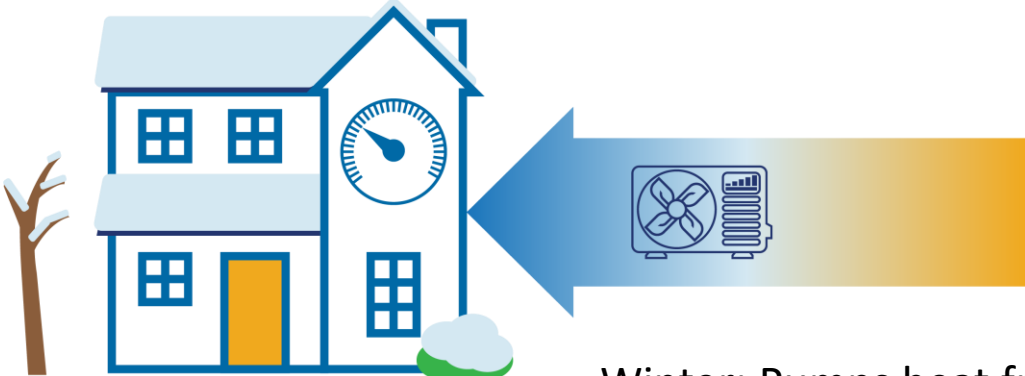
Dispelling Myths to Mainstream New Technology
Chris Bradt – Performance Construction Manager



What is a heat pump?

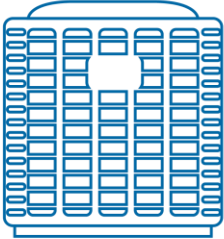


Summer: Pumps heat from the inside to the outside

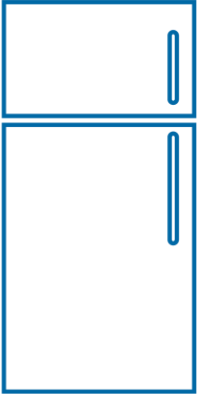


Winter: Pumps heat from the outside to the inside

Same technology as:



Air-conditioner



Refrigerator

Why install an All Climate Heat Pump?

Quiet operation

High performing

Variable capacity

All-electric

No backup needed

Room-by-room comfort



Myth: Heat pumps are the thing on the wall, right? Aren't they all the same?

Busted: Heat pumps come in many shapes and sizes.

Terms you'll hear:

- Ductless Mini-Splits
- Cold Climate Heat Pumps
- All Climate Heat Pumps

Conventional Single Speed Heat Pump



Variable Capacity Heat Pump (VCHP)



Myth: Heat pumps are the thing on the wall, right? Aren't they all the same?

Busted: You have choices if a nice wall mount isn't your thing...

Multiple manufacturers offer a full range of air-handlers & ceiling cassettes



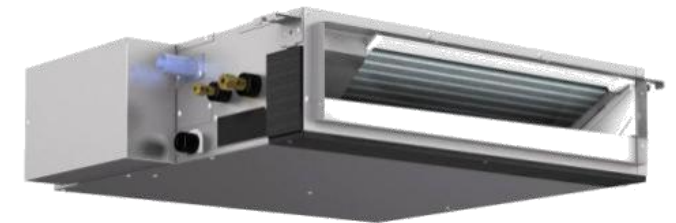
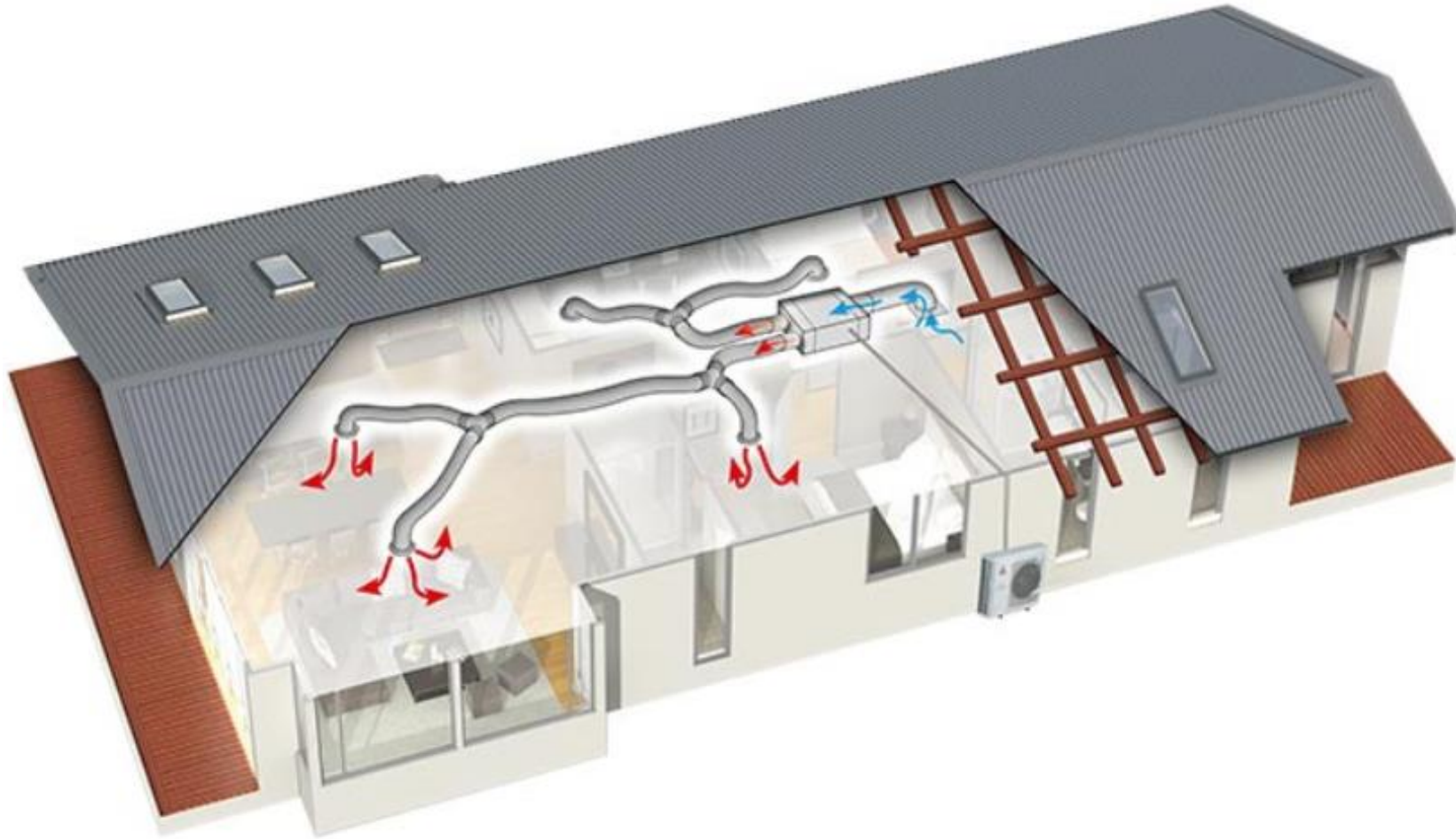
One Way Ceiling Cassette



Four Way Ceiling Cassette



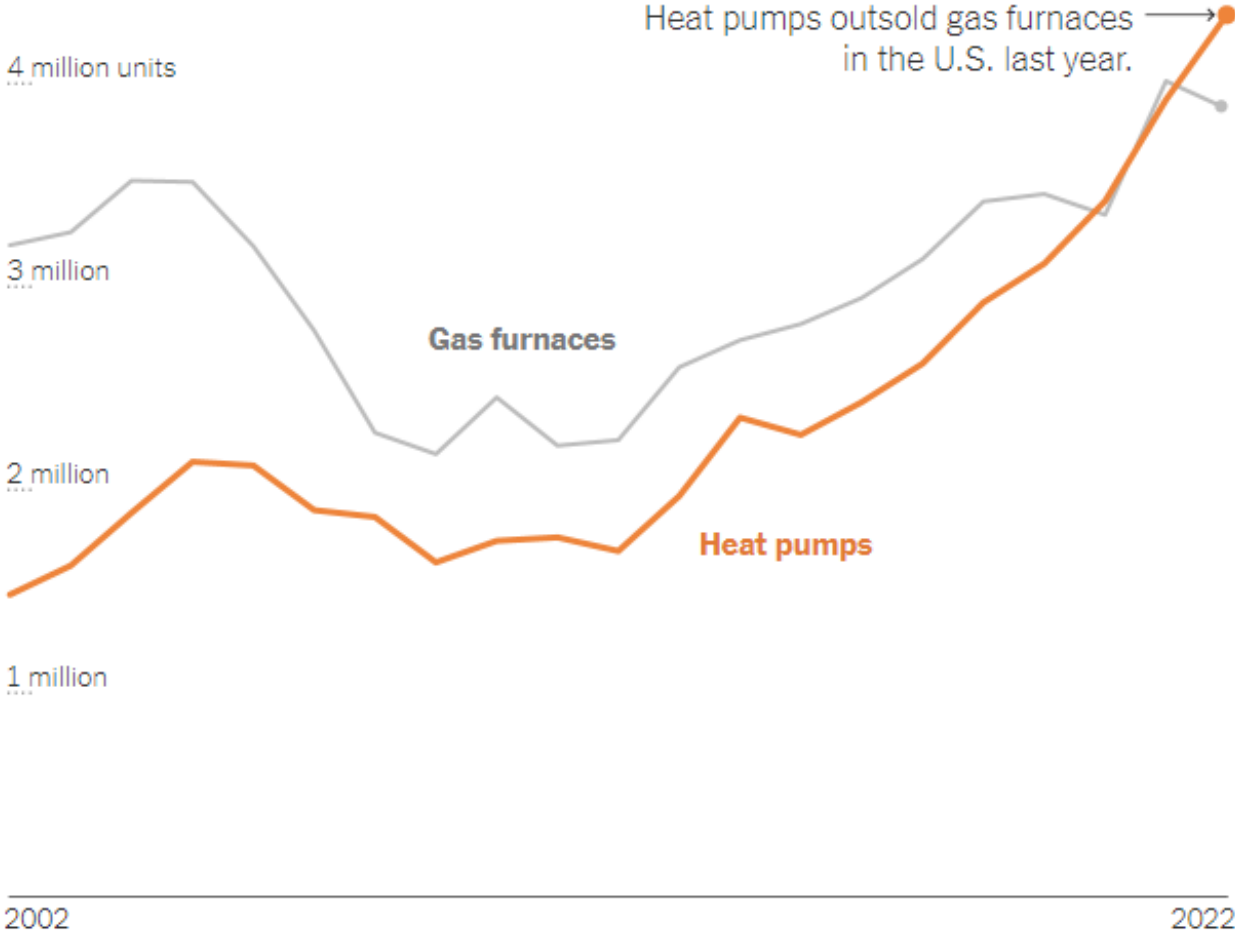
Ducted Air Handlers





Myth: Heat pumps are a new technology. Is anyone using them?

Busted: Heat pumps outsell furnaces in the US



Source: Rewiring America, using data from [Air-Conditioning, Heating, and Refrigeration Institute](#) • Note: Data shows units shipped to customers in the United States. There may be a lag between shipments and sales, but shipments are generally an approximation of sales.

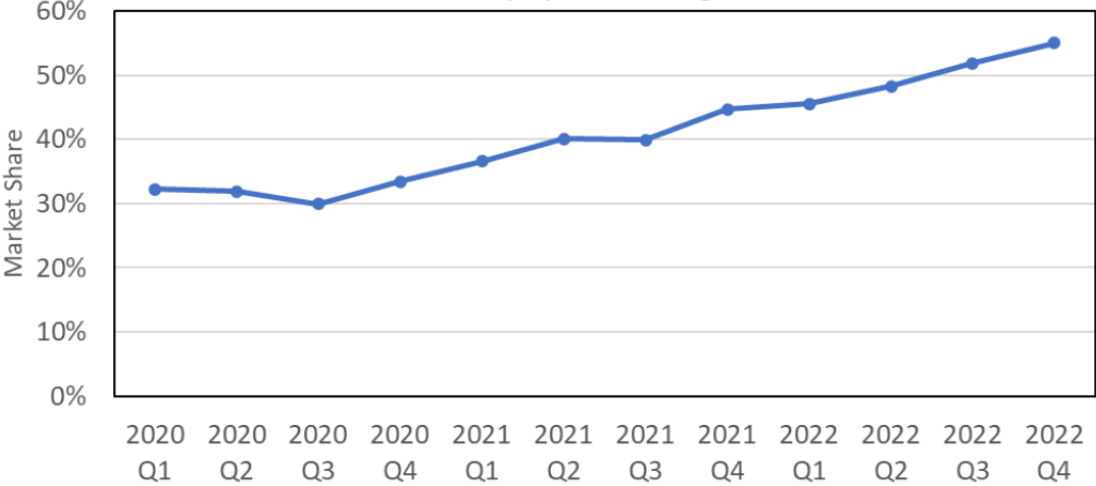
Myth: Heat pumps are a new technology. Is anyone using them?

Busted: Heat pumps are most common HVAC solution for new homes in California

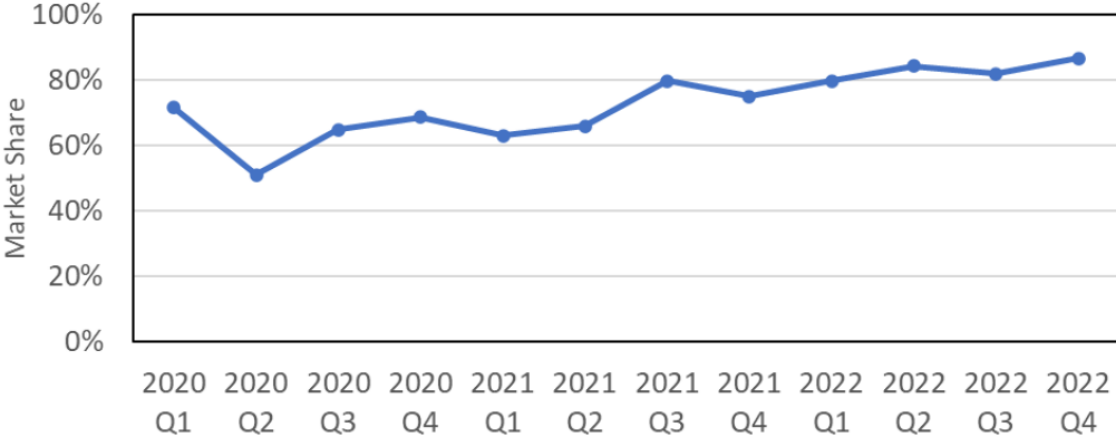
Single family new construction heat pump space conditioning **OVER 50%**

Multifamily new construction heat pump space conditioning **OVER 80%**

Single Family New Construction Heat Pump Space Heating



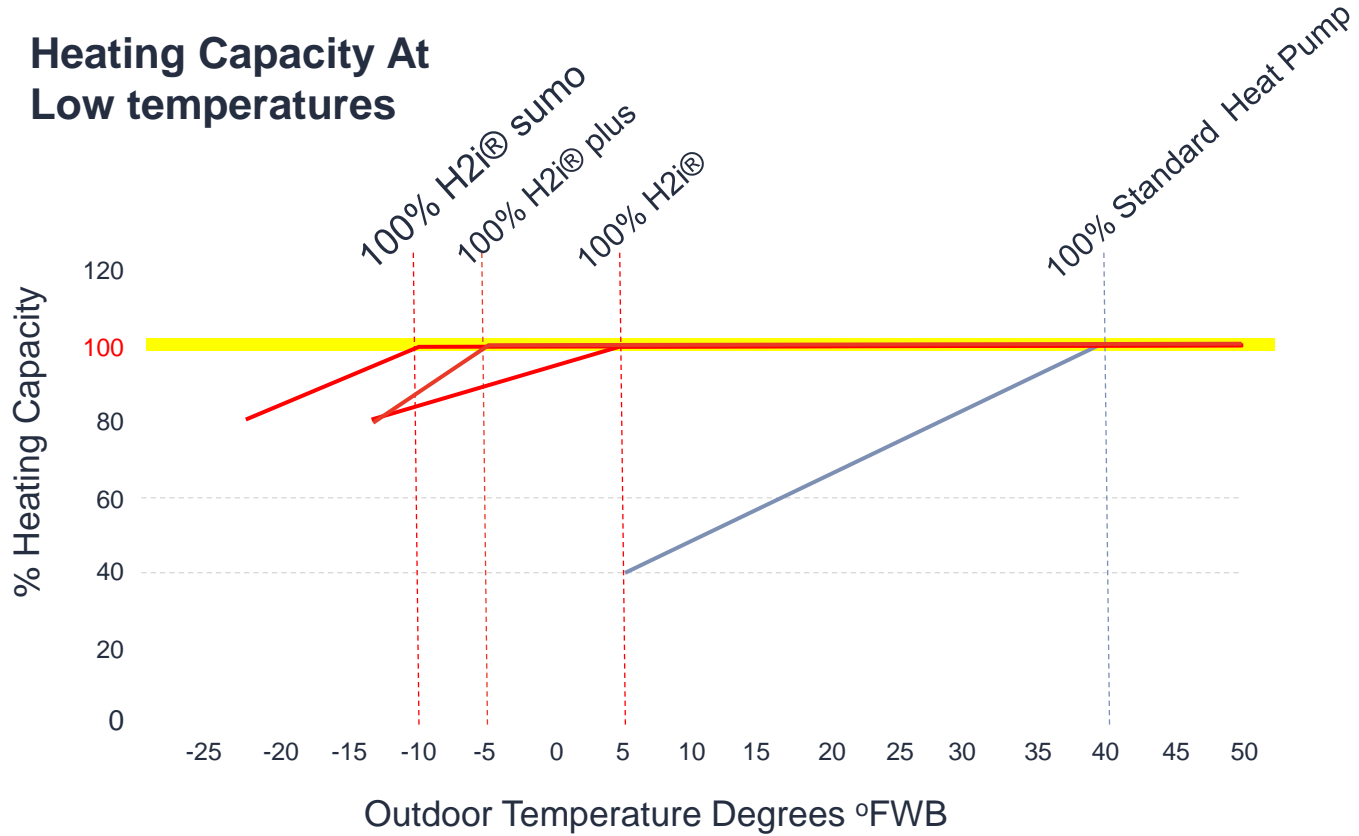
MultiFamily New Construction Heat Pump Space Heating



Myth: Heat pumps do not work below 40F unless you use strip heat

Busted: All Climate heat pumps, no back up

Heating Capacity At Low temperatures



Hyper-heating H2i[®]
100% heating at 5° F
Guaranteed heating to -13°



Hyper-heating H2i sumo[®]
100% heating at -10° F
Guaranteed heating to -22°F



But what happens when it is ridiculously cold?



8,800 ft elevation
-18F and “haven’t needed
backup heat”

7,600 ft elevation
-22F and “very comfortable”
operating beyond specification



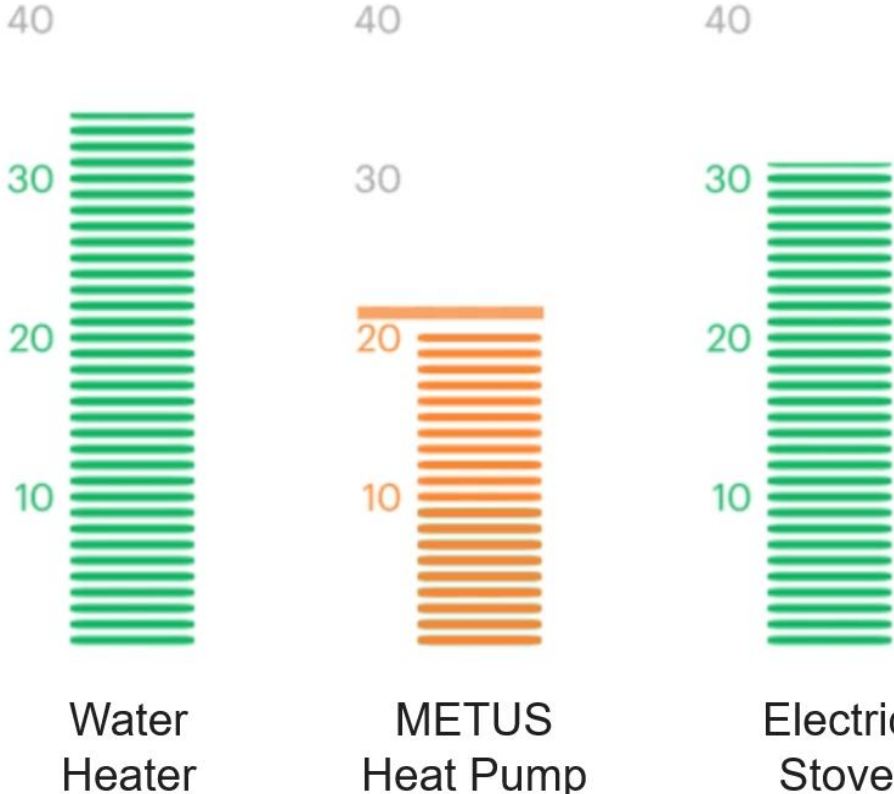
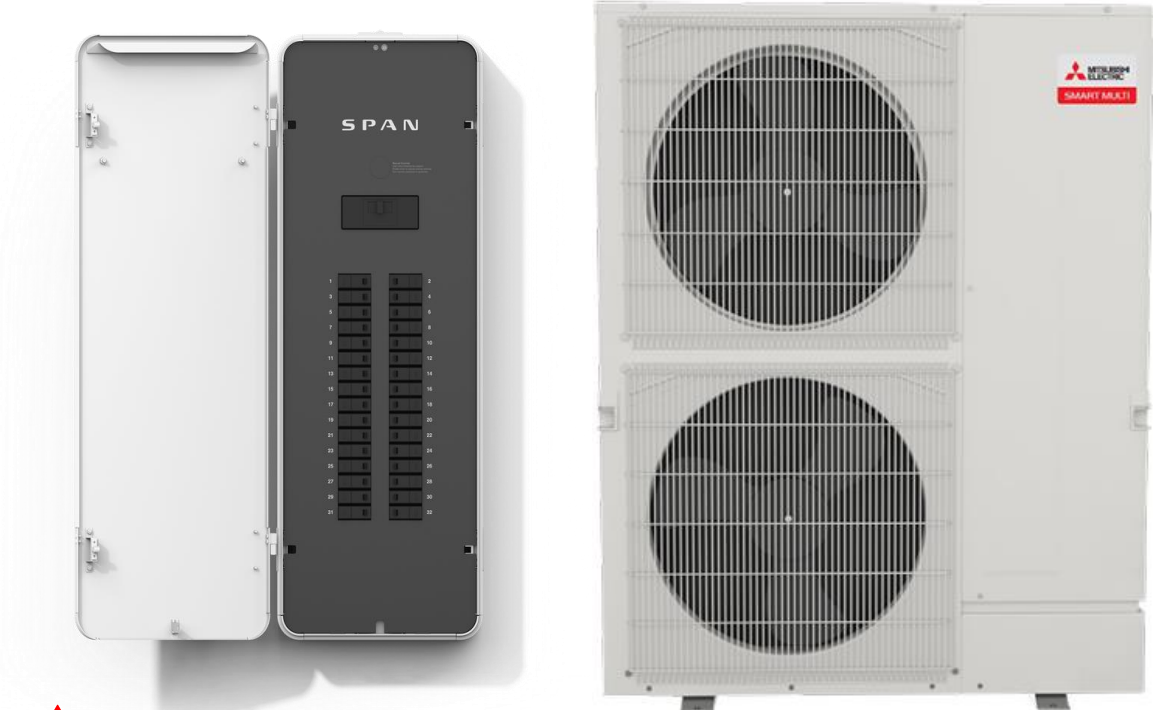
8,600 ft elevation
“Operates below -30°F”

Myth: Heat pumps require upgraded electric service

Mitsubishi Electric + SPAN

SPAN throttles power to all-climate heat pump
SPAN adjusts to meet high-current demands
Imperceptible indoor temperature impacts

SPAN circuit power adjustments



Myth Busting with Partners & Influencers



*Pacific Gas and
Electric Company*



SOUTHERN CALIFORNIA
EDISON[®]

Energy for What's AheadSM



SMUD[®]



A  Sempra Energy utility



TRI-COUNTY REGIONAL
ENERGY NETWORK



**ADVANCED
ENERGY
CENTER**



Local Governments Empowering Our Communities



BUILDING INDUSTRY ASSOCIATION



Working together to exceed expectations



Thank you!

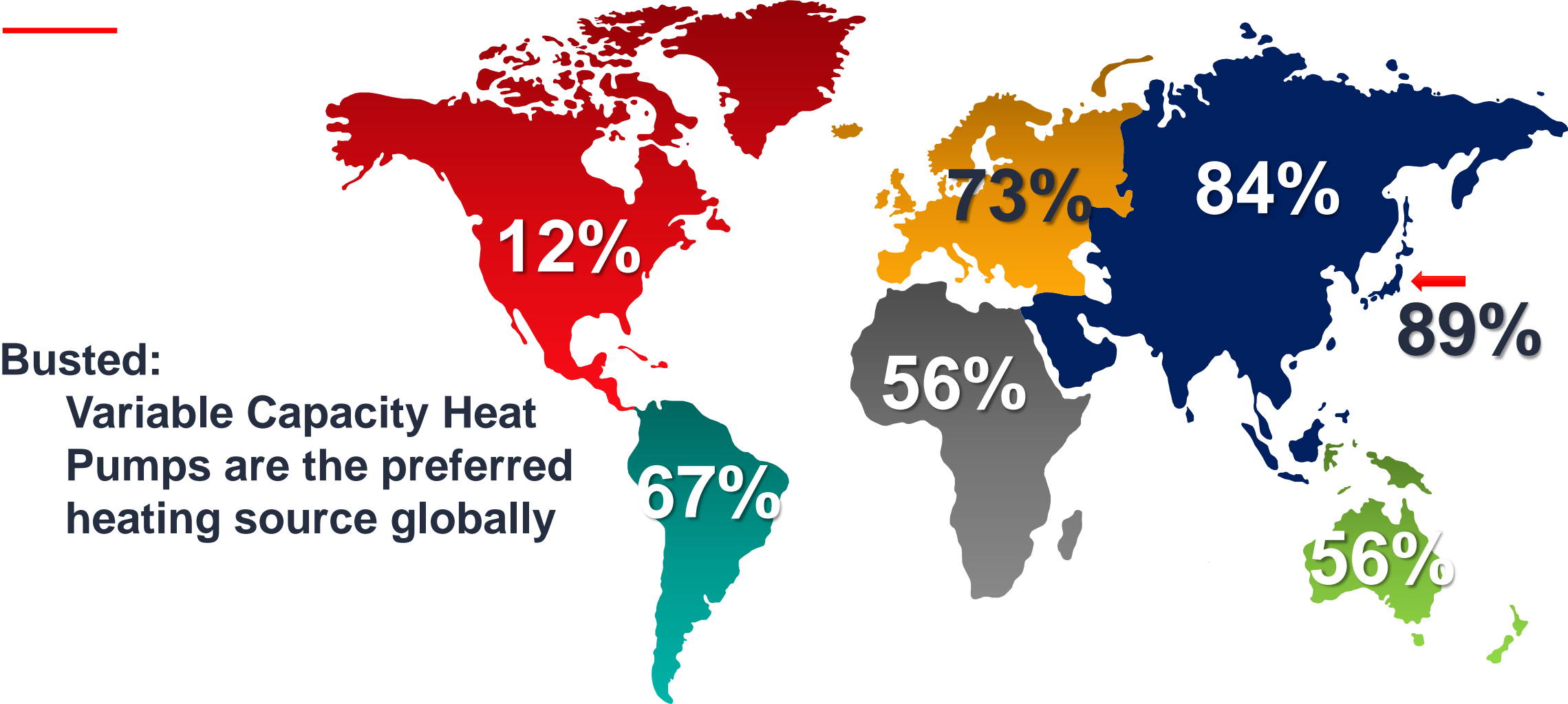


Mitsubishi Electric

Chris Bradt
Performance Construction Manager
Northern California & Nevada
510-318-2402
cbradt@hvac.me.com

DISCUSSION CONTENT

Myth: No one is using heat pumps



Busted:
Variable Capacity Heat Pumps are the preferred heating source globally

Myth: Heat pumps require upgraded electric panels

Variable Capacity Heat Pump

- (1) All-Climate Heat Pump circuit

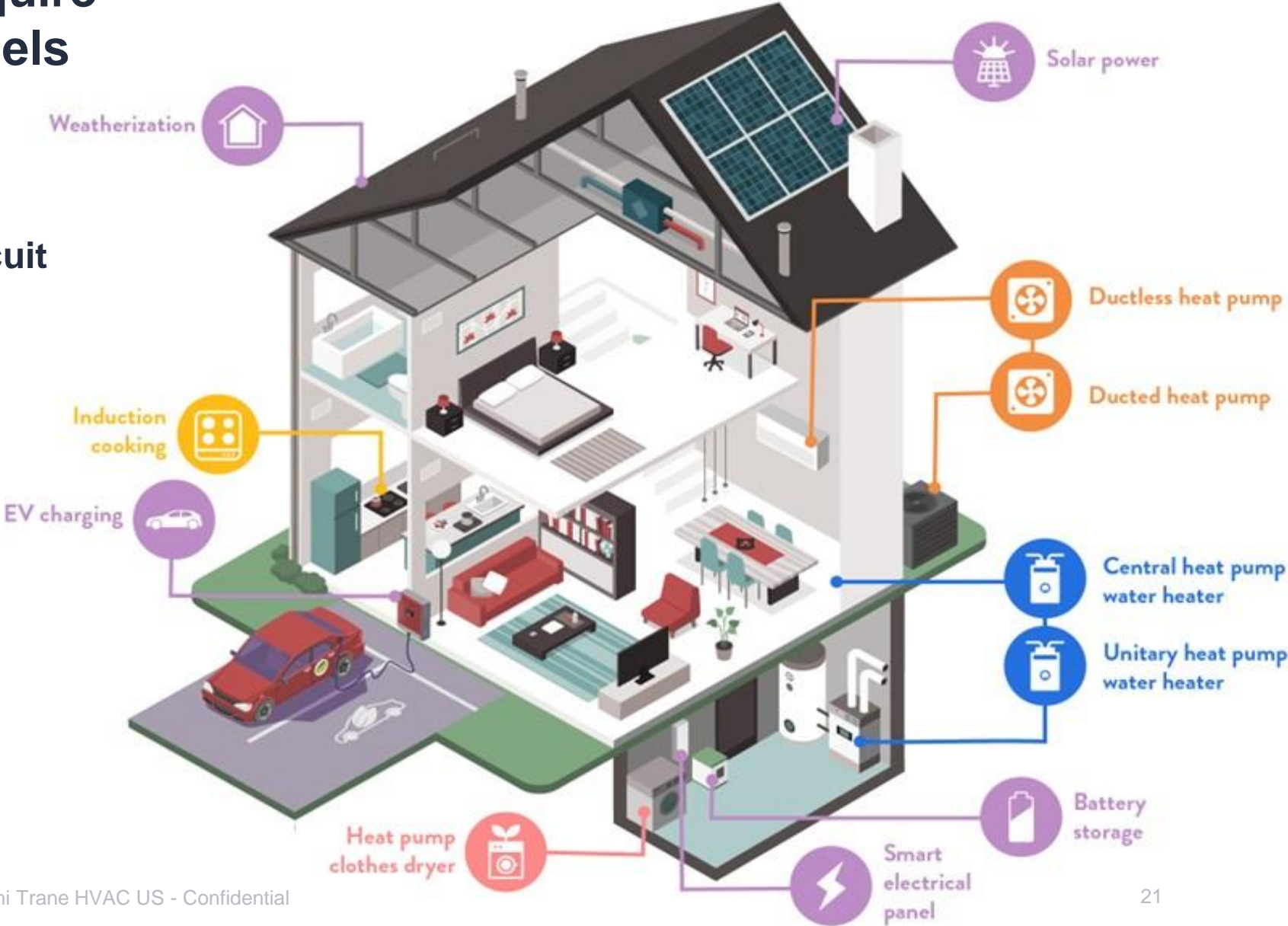
Traditional Split System

- (1) AC circuit
- (1) Furnace air-handler circuit
- (1) Heat pump ready circuit

for New Construction in CA

Conventional Heat Pump

- (1) Outdoor heat pump circuit
- (1) In-door air-handler circuit
- (1) Strip heat circuit



Myth: Heat pumps & electrification will crash the grid

Busted:
The grid is just fine.

The grid is complicated.

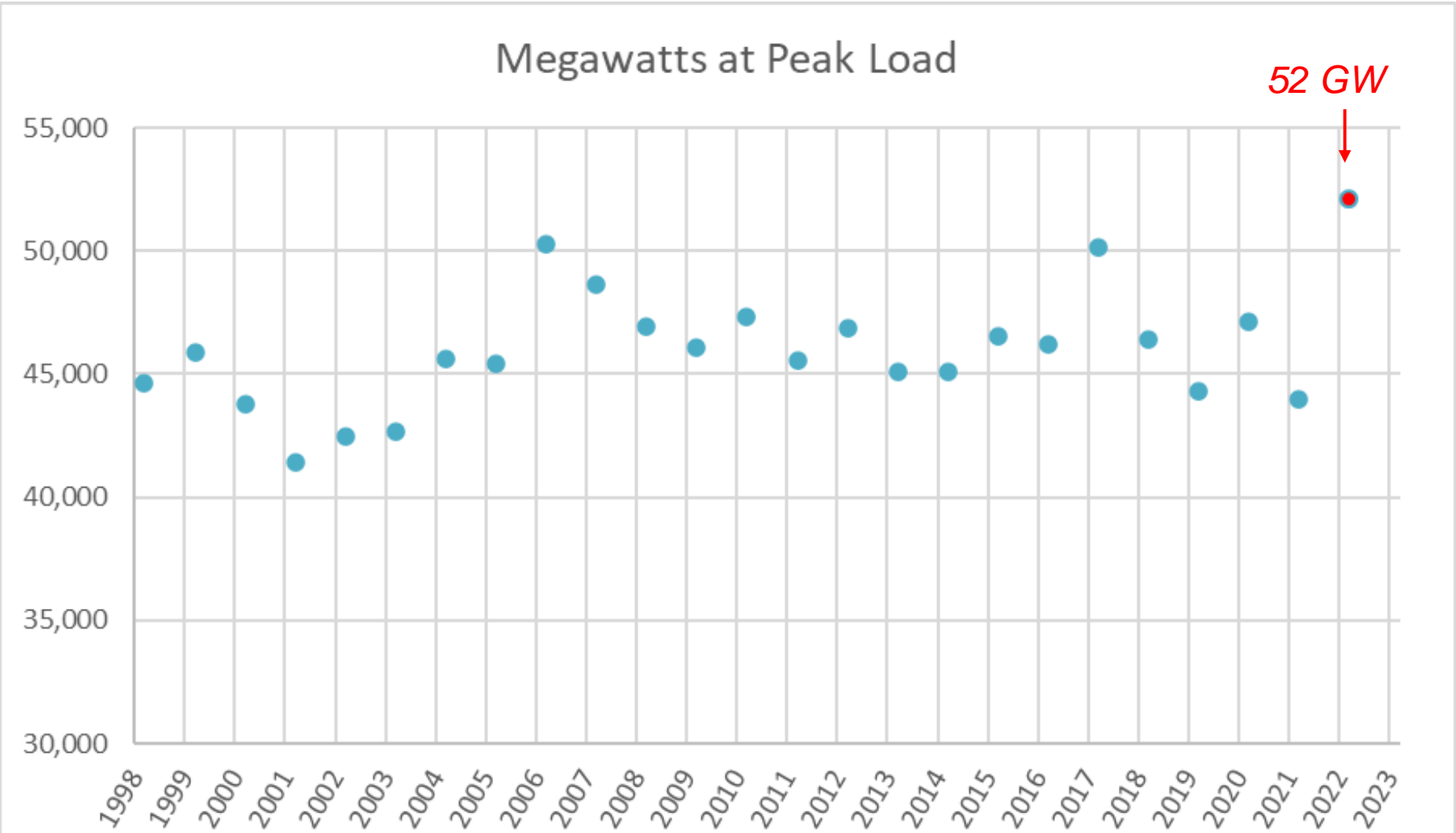
But it is not a fixed asset → it has been growing with our demand since we started building it.

The screenshot shows a web browser displaying a Vox article. The URL is https://www.vox.com/climate/23893057/power-electricity-grid-heat-wave-record-blackout-outage-climate. The article title is "The US power grid quietly survived its most brutal summer yet". The byline is "By Umair Irfan | Sep 28, 2023, 8:00am EDT". There are social media share icons for Facebook, Twitter, and a general share button. Below the text is a large image of a power transmission tower at sunset. To the right of the main article is a sidebar with a BDO advertisement and a "Most Read" section containing five numbered items. At the bottom of the article, there is a bio for Umair Irfan and a highlighted quote: "With little acknowledgment and no applause, the power grid across the continental United States this summer quietly pulled off what may have been its most impressive feat ever." Below that is another highlighted quote: "On July 27, the US grid served nearly 15 million megawatt-hours of electricity across the lower 48 states, about 1.6 times the electricity produced by every nuclear power plant in the world on a given day. It kept lights, fans, and air conditioners running in every home, office, factory..."



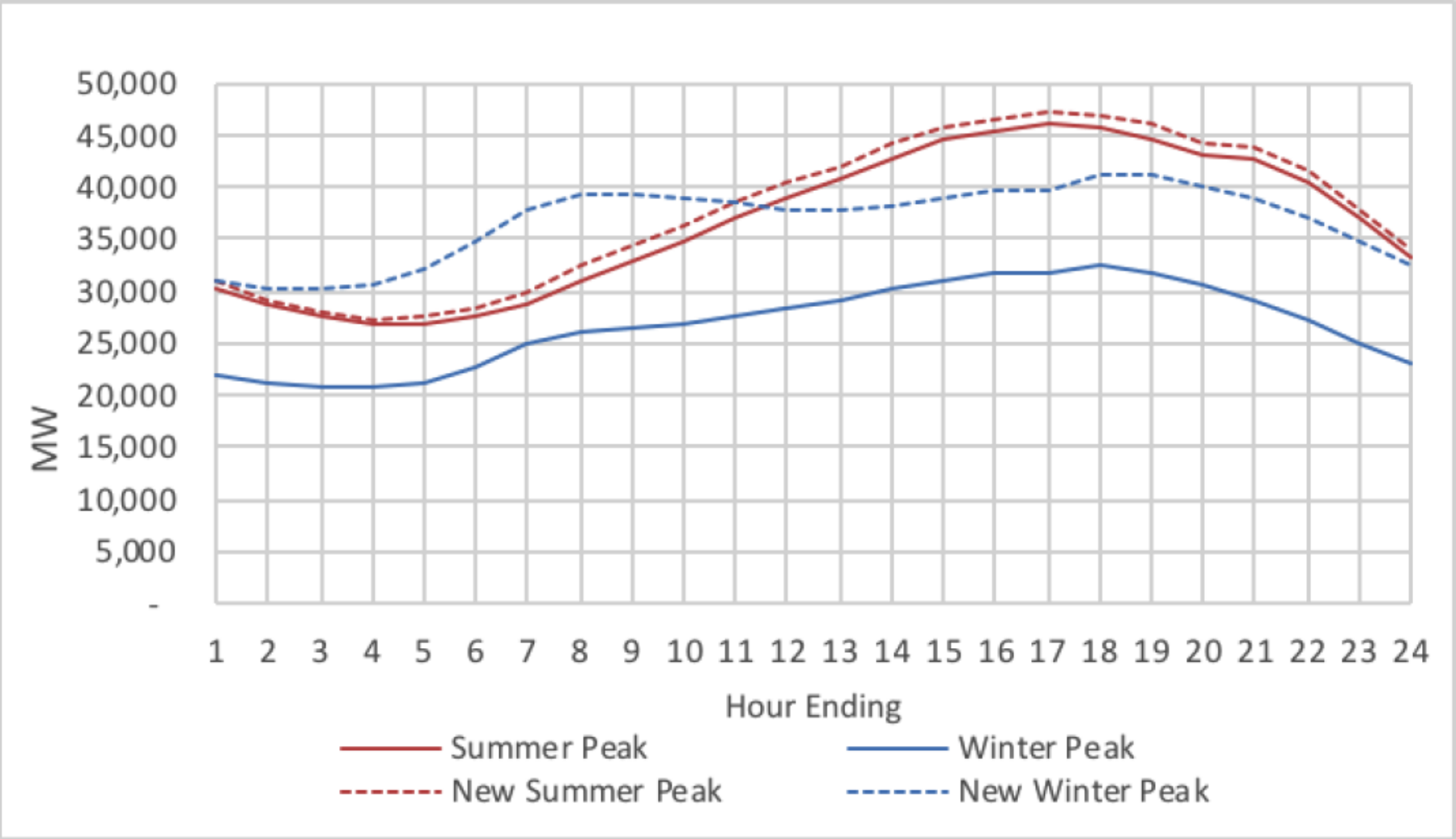
Myth: Heat pumps & electrification will crash the grid

California Grid Peak Demand



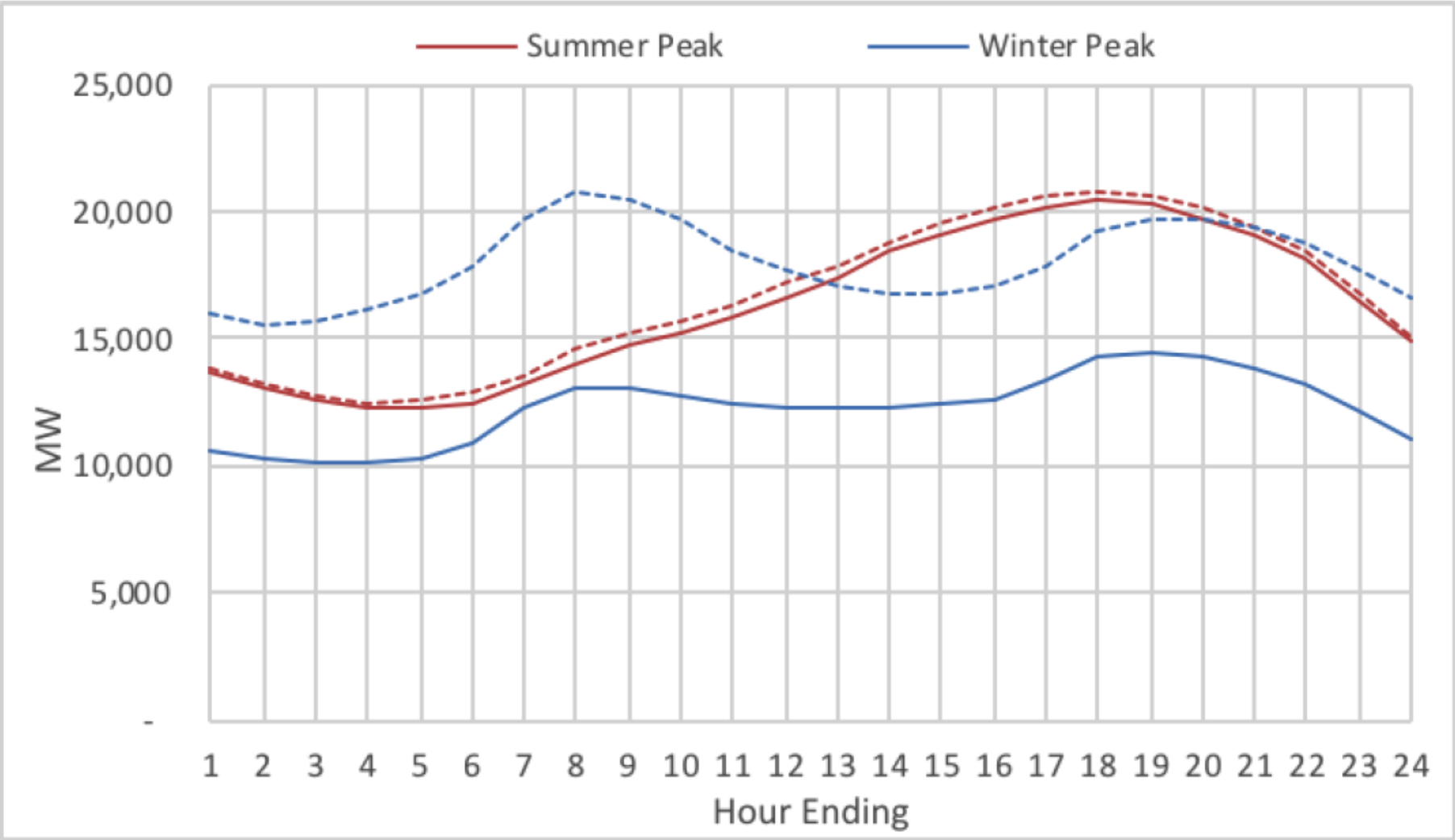
Myth: Heat pumps & electrification will crash the grid

Projected California Grid Peak Demand – 50% adoption scenario



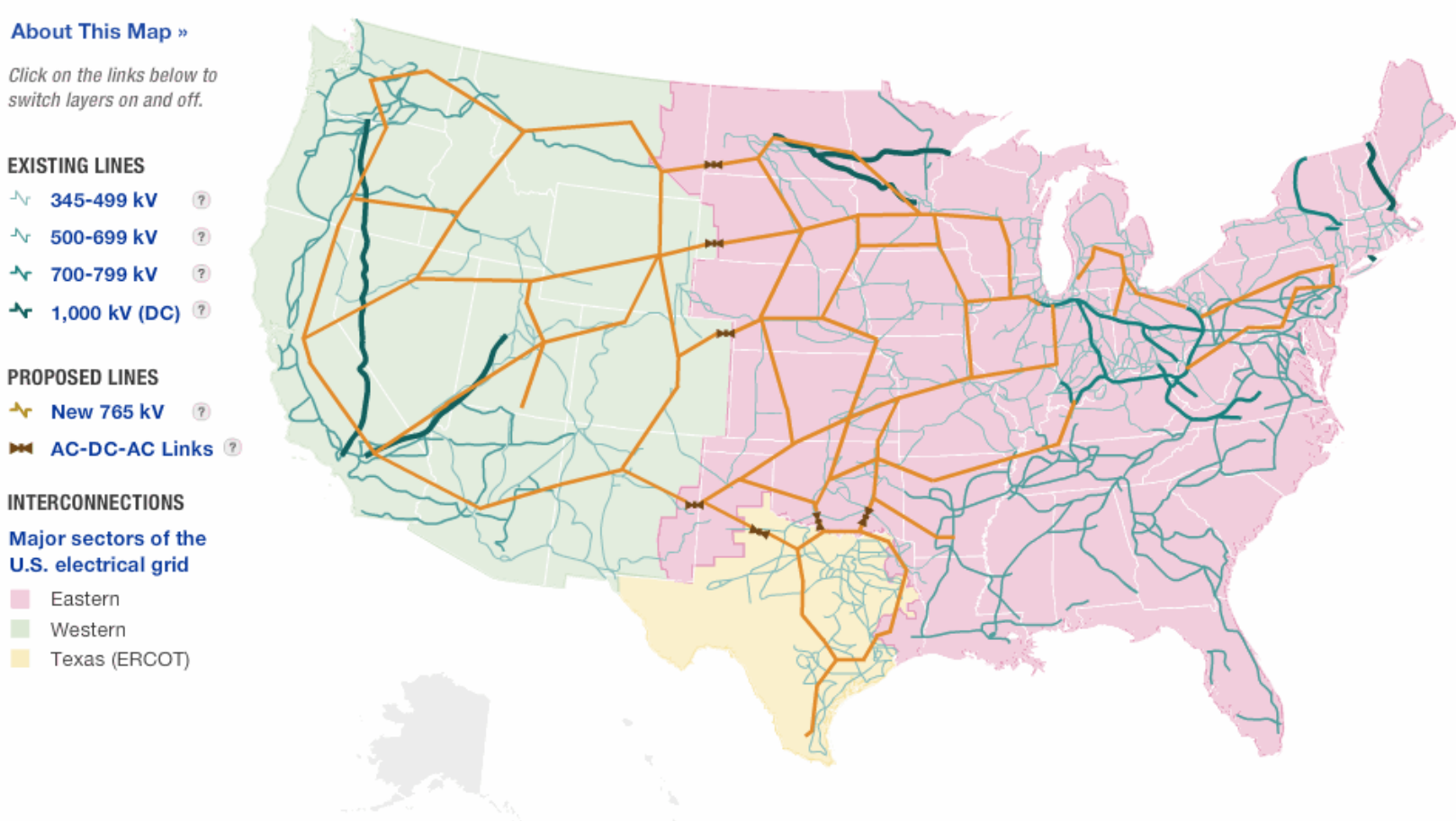
Myth: Heat pumps & electrification will crash the grid

Projected PG&E Grid Peak Demand – 50% adoption scenario



Myth: Heat pumps & electrification will crash the grid

1950
334 M
kWh
delivered



1995
3,353 M
kWh
delivered

https://www.eia.gov/totalenergy/data/monthly/pdf/sec7_5.pdf