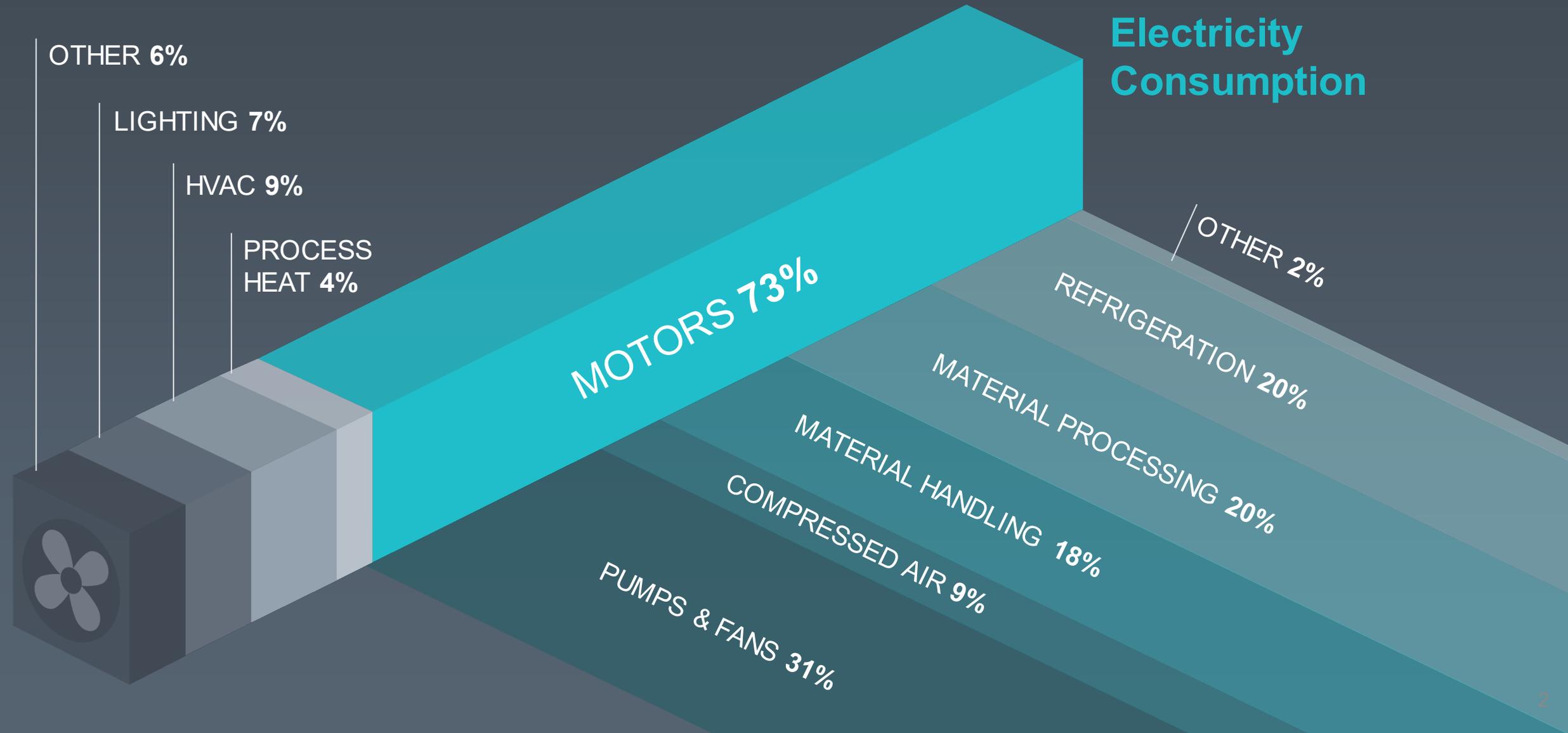


INDUSTRIAL PUMPS, FANS & ASDs

BPA Market Research Team, AUGUST 18, 2022

Standalone pumps and fans are **huge energy consumers** in the Industrial sector

2021 Plan Industrial Electricity Consumption



The Hydraulic Institute logo is a red gear shape with a white square in the center containing the text.

Hydraulic Institute

PUMPS

The National Electric Manufacturers Association logo is a cyan gear shape with a white square in the center containing the text.

**National Electric
Manufacturers
Association**

MOTORS

The Energy Efficiency logo is a large, dark grey gear shape with a white square in the center containing the text.

**ENERGY
EFFICIENCY**

The Air Movement and Control Association logo is a yellow-green gear shape with a white square in the center containing the text.

**Air Movement and
Control Association**

FANS

The Department of Energy logo is a light grey gear shape with a white square in the center containing the text.

Department of Energy

GOVERNMENT



The Adjustable Speed Drive is the **biggest energy saving opportunity** for these equipment

Equipment Efficiency

1 – 5%

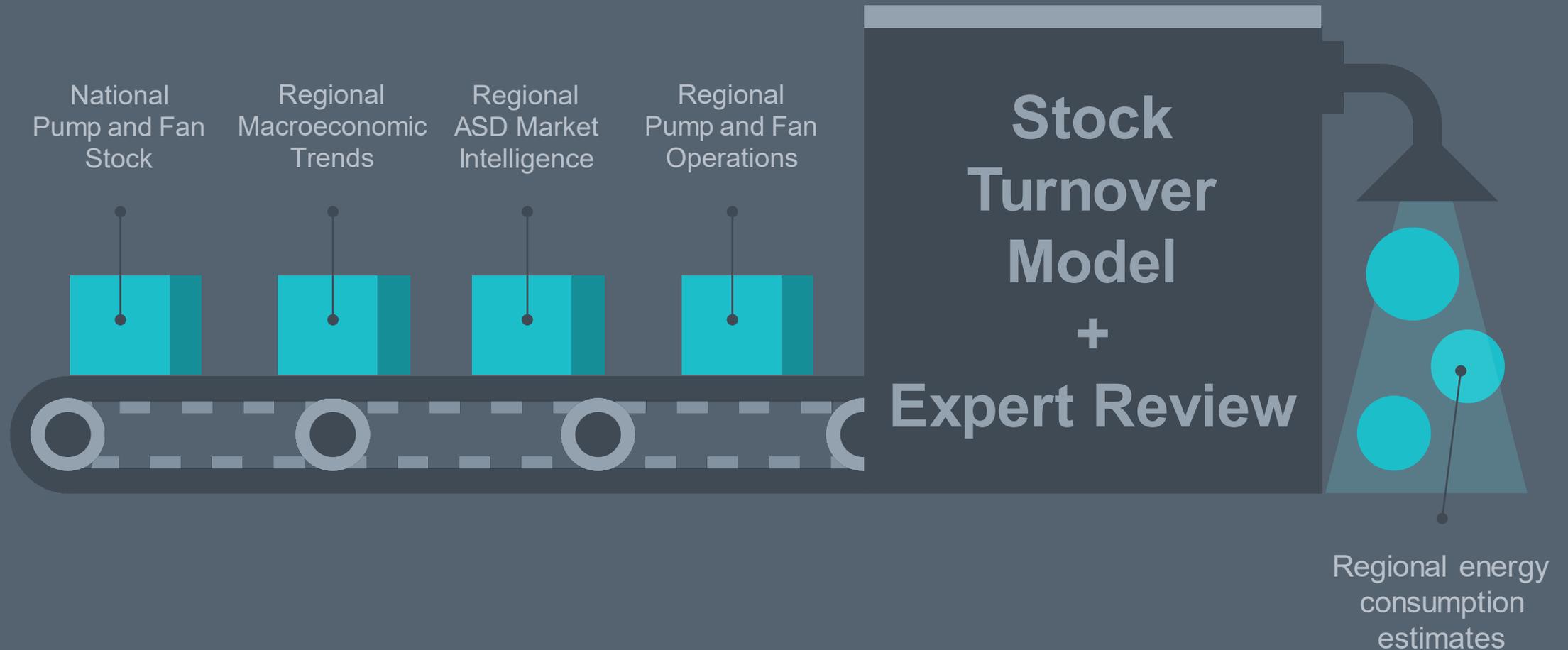
Motor Efficiency

1 – 4%

ASDs

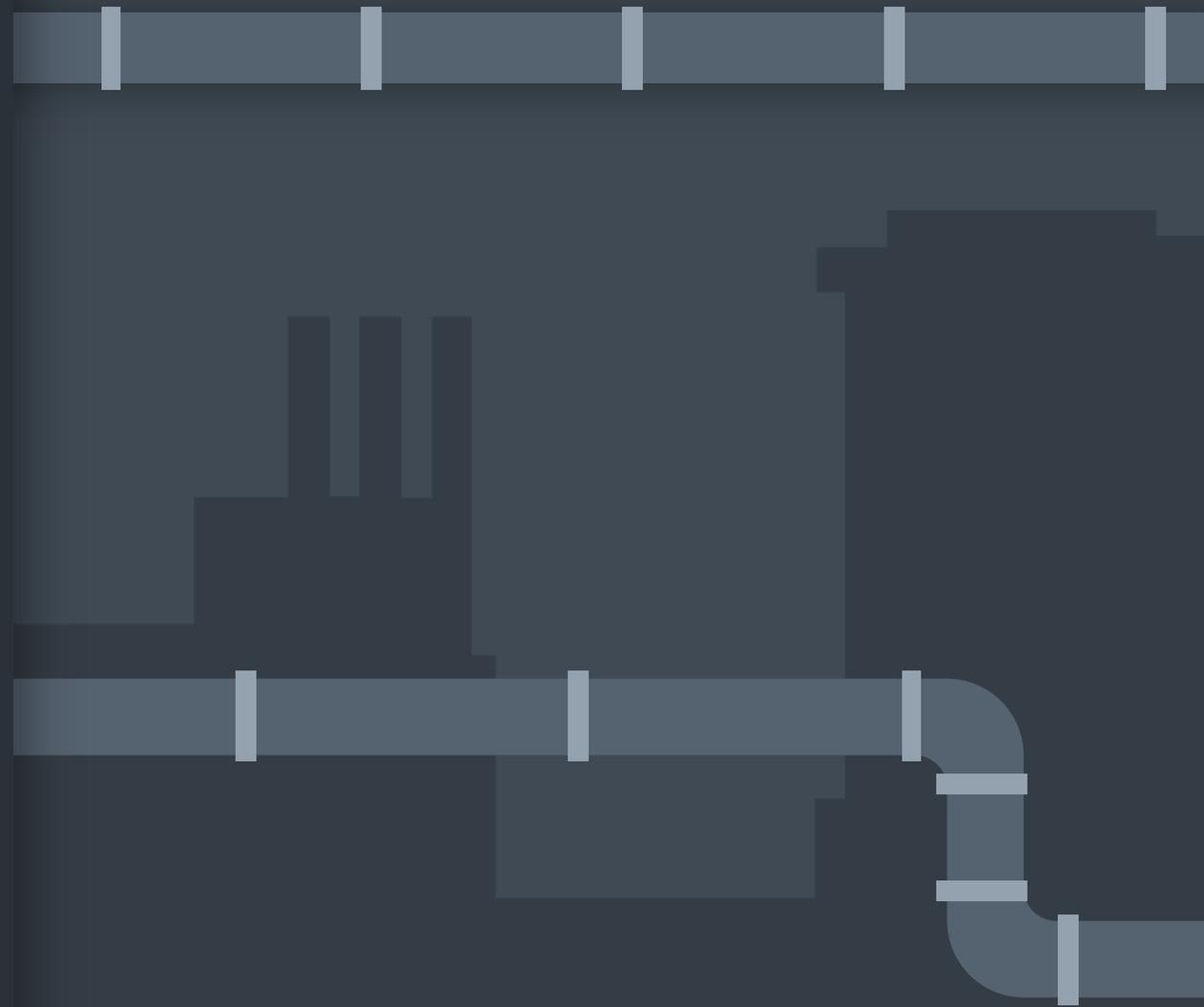
up to 43%

Built **quantitative model** with best available data





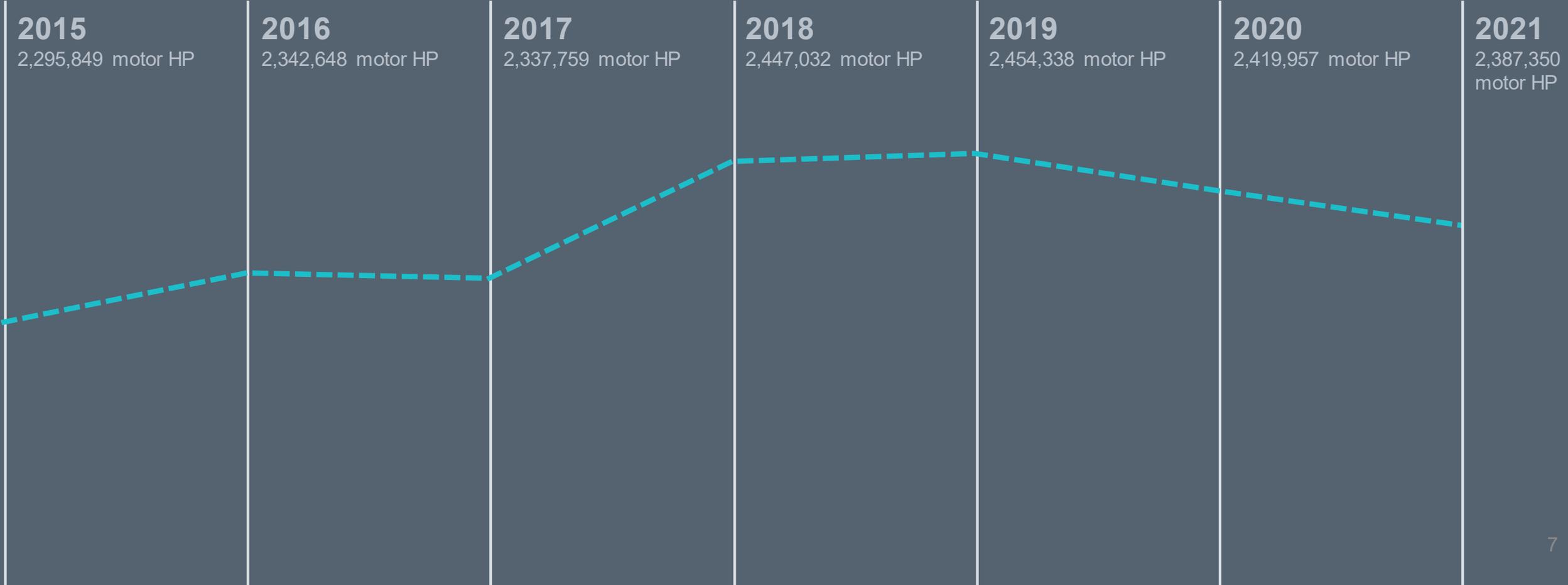
**What did we
learn about
the market?**





Industrial pump and fan stock **grew consistently** from 2016 to 2021

----- In-service motor HP, pumps & fans



Average pump size **increased** over the past 6 years

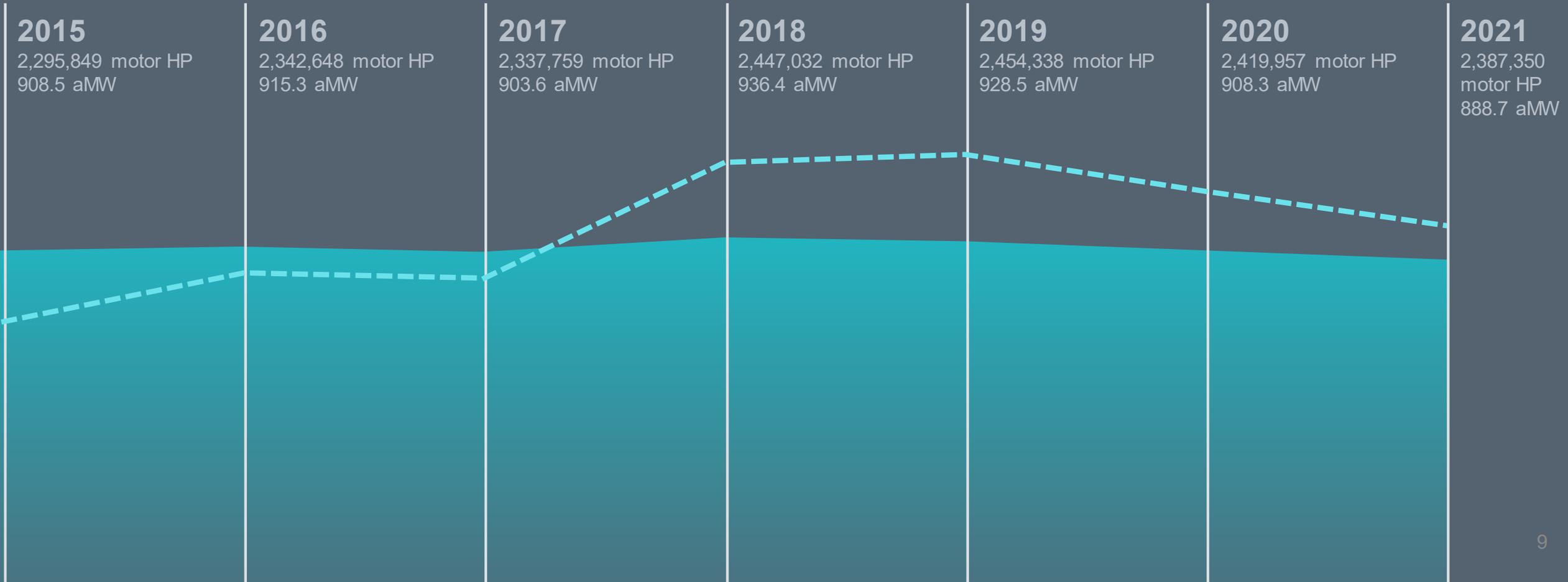


This is because industries with larger average motor sizes are increasing in the region.



While stock **grew**, the overall energy consumption **stayed flat**

-  Energy consumption, pumps & fans
-  In-service motor HP, pumps & fans

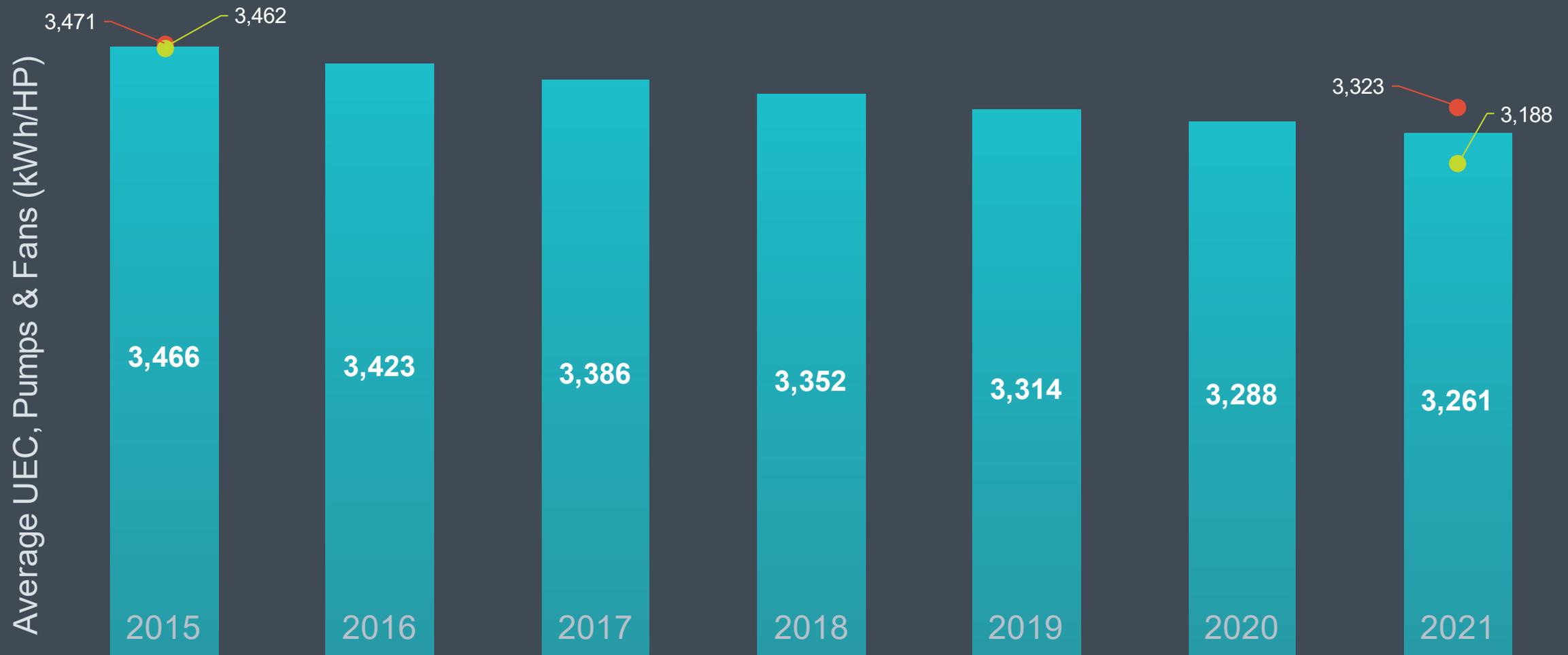




Energy consumption per motor HP **decreased** over time

Pumps: ▾ 148 kWh/HP

Fans: ▾ 274 kWh/HP

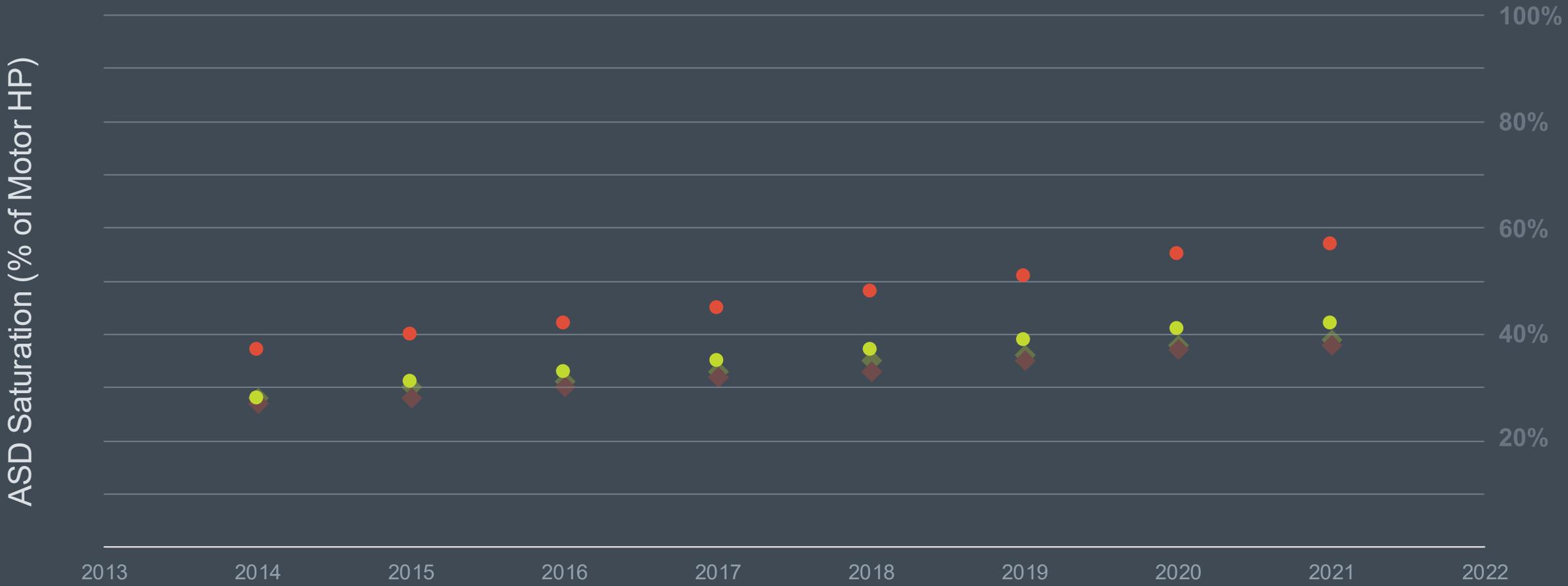




ASD Saturation has **increased a lot** in the past 6 years

...Especially in the Pacific Northwest

- Pumps, Regional
- Fans, Regional
- ◆ Pumps, National
- ◆ Fans, National

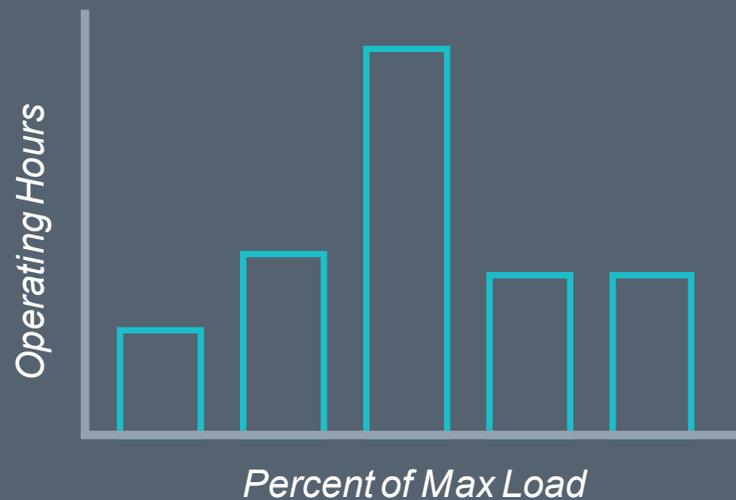


That increase helped keep industrial pump and fan **energy consumption down**

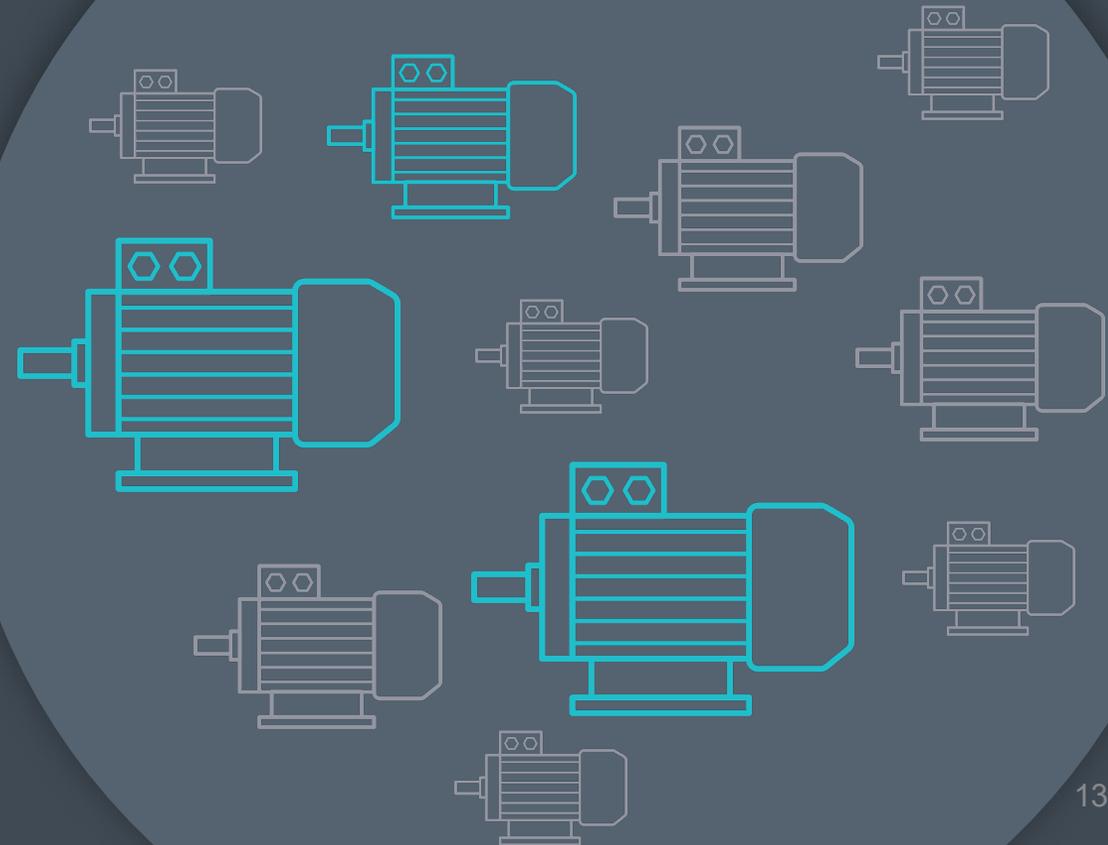


What kinds of **equipment** are getting ASDs?

Variable Load Systems



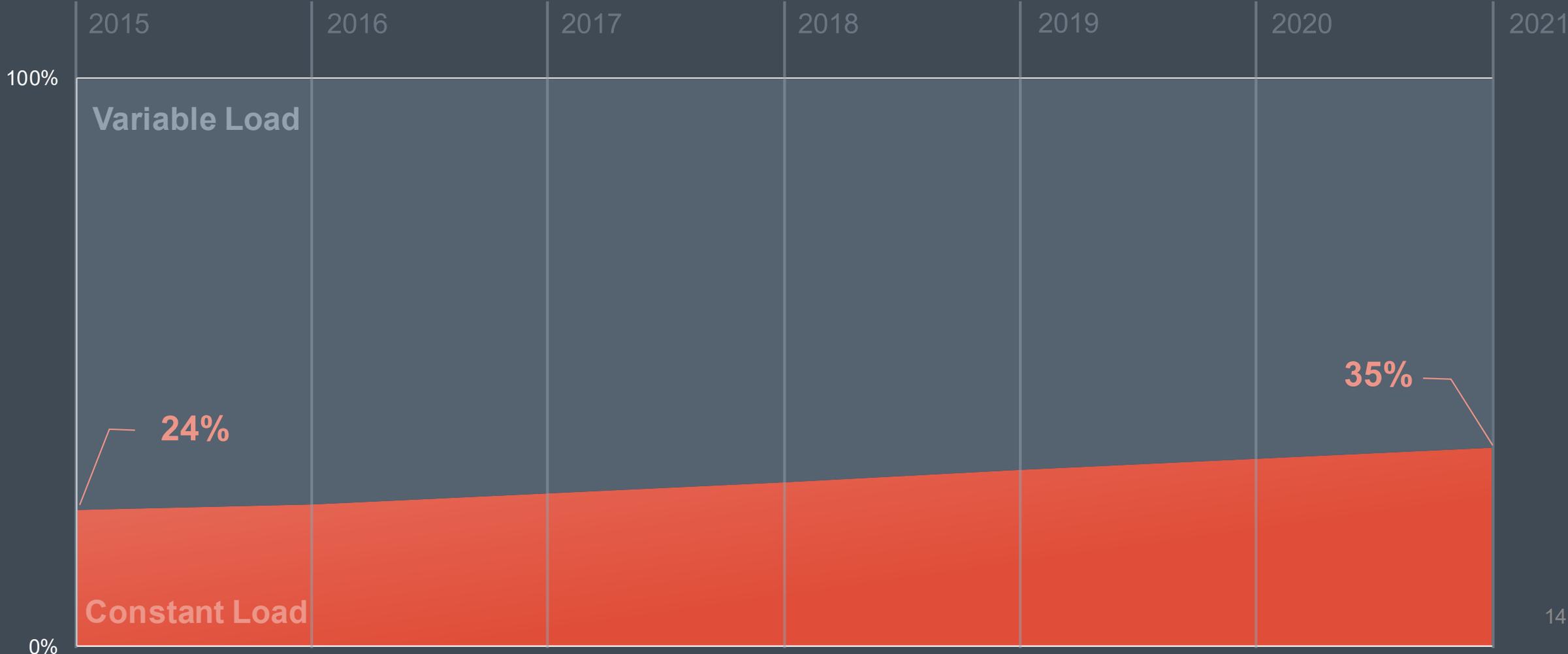
Large motors





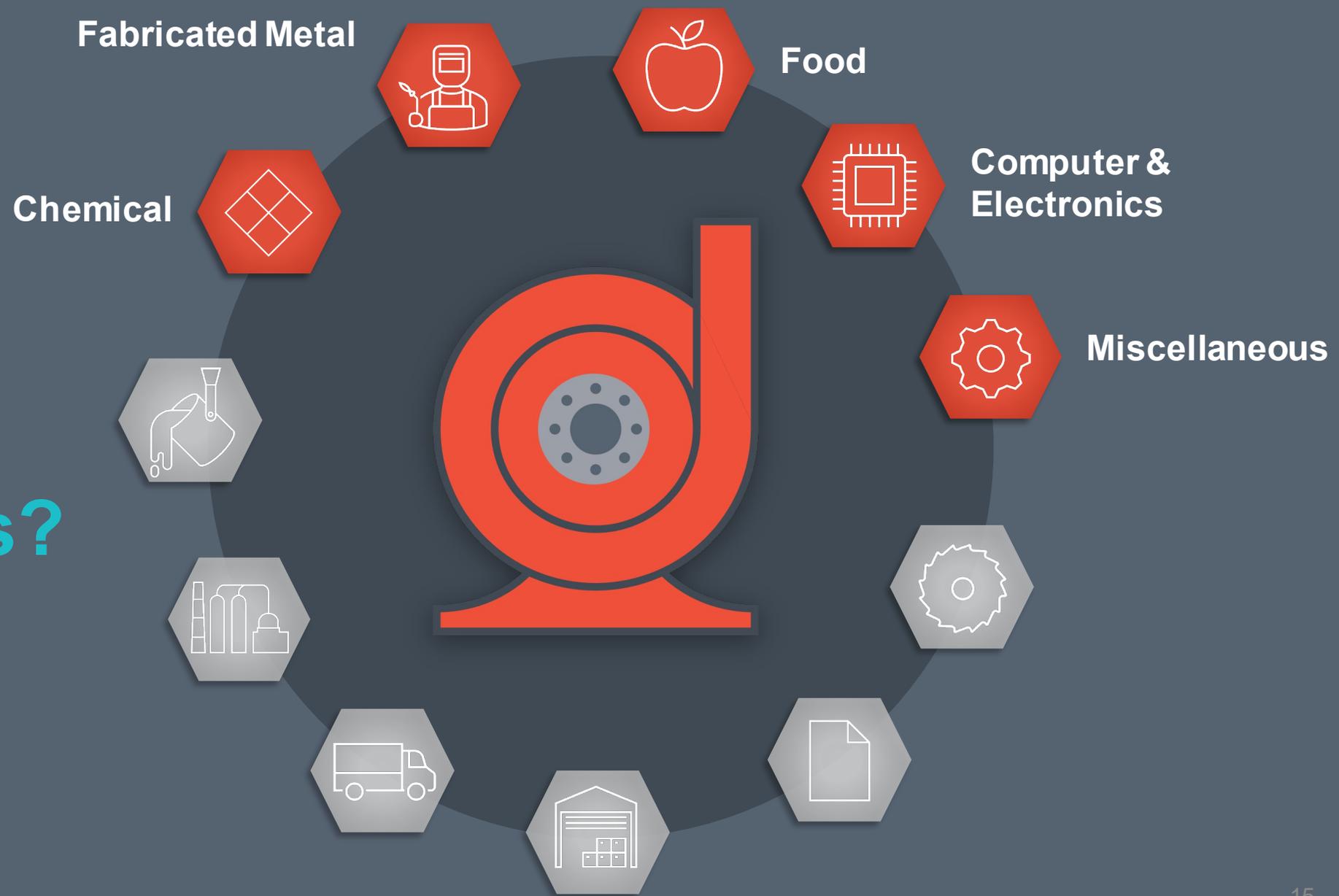
ASDs are starting to appear on more **constant load pumps**

ASD-equipped Pump Motor HP





What about
different
facility types?





What about different facility types?





Regional custom programs **go deep** to understand ASD savings





Custom programs also concentrate in certain facility types



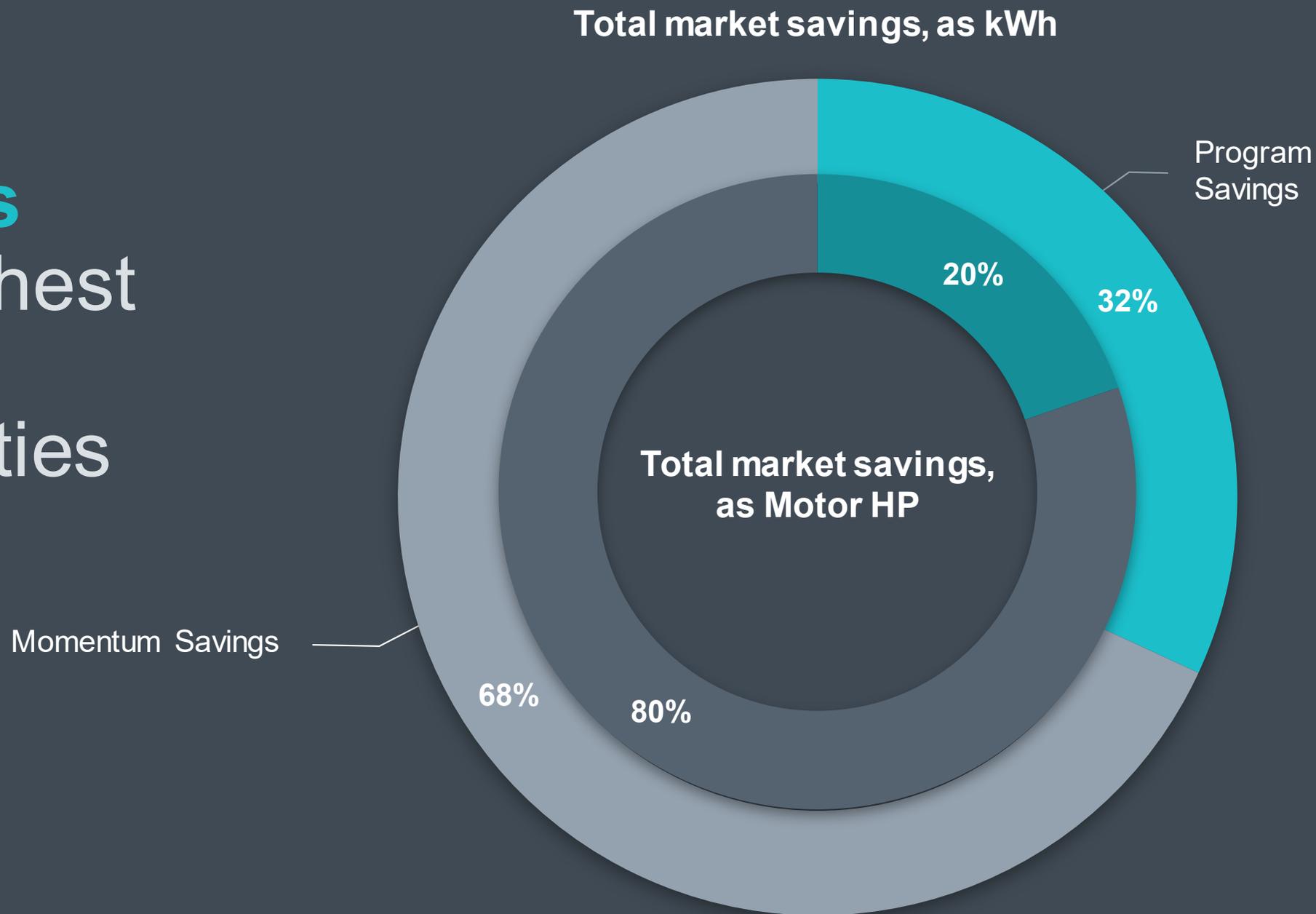


Custom programs also concentrate in certain facility types





Custom programs
target highest savings opportunities



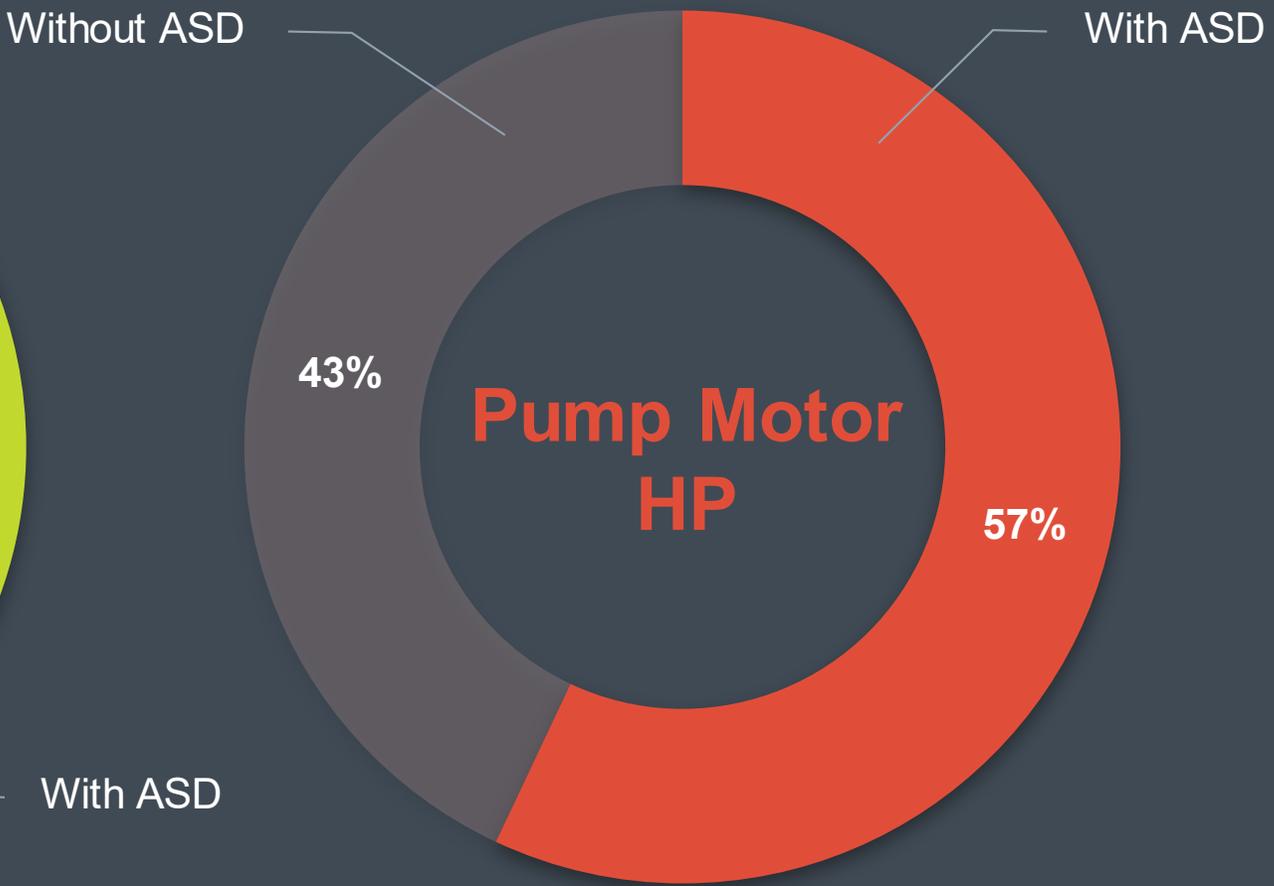
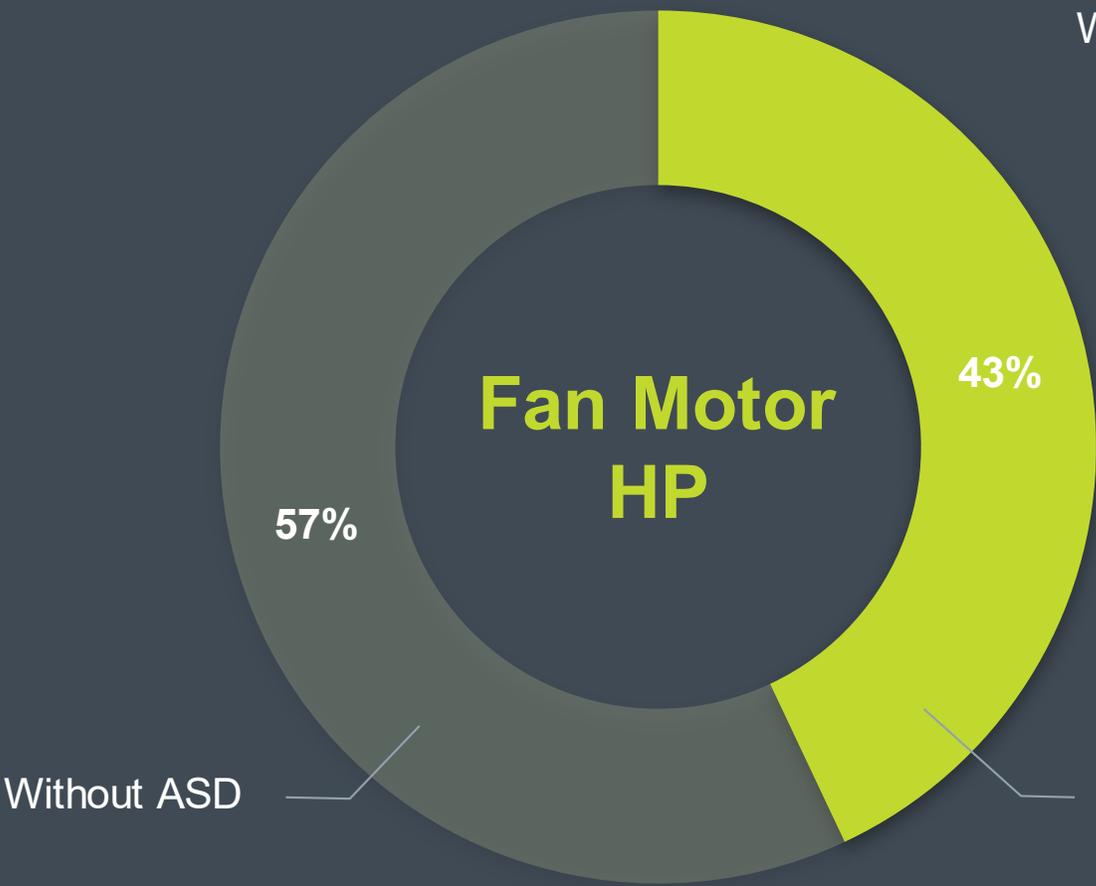


**Where do we
go from here?**

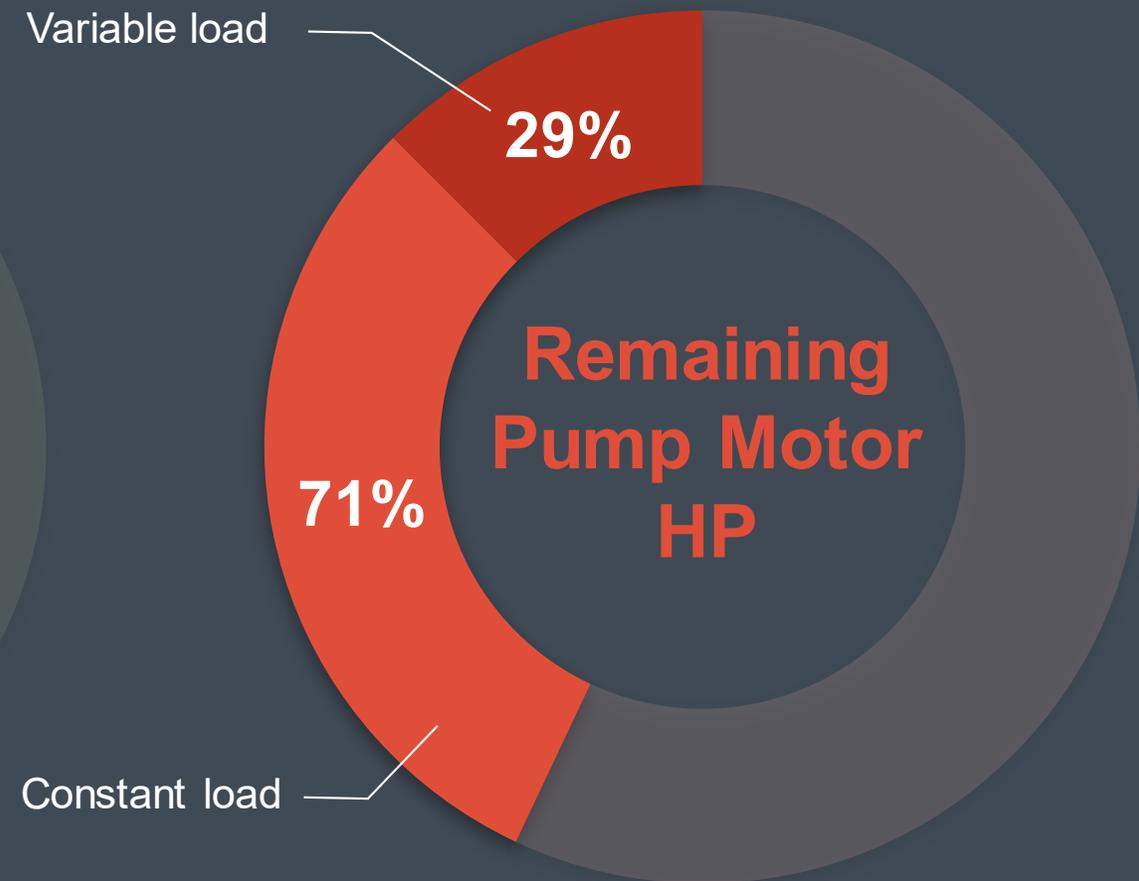
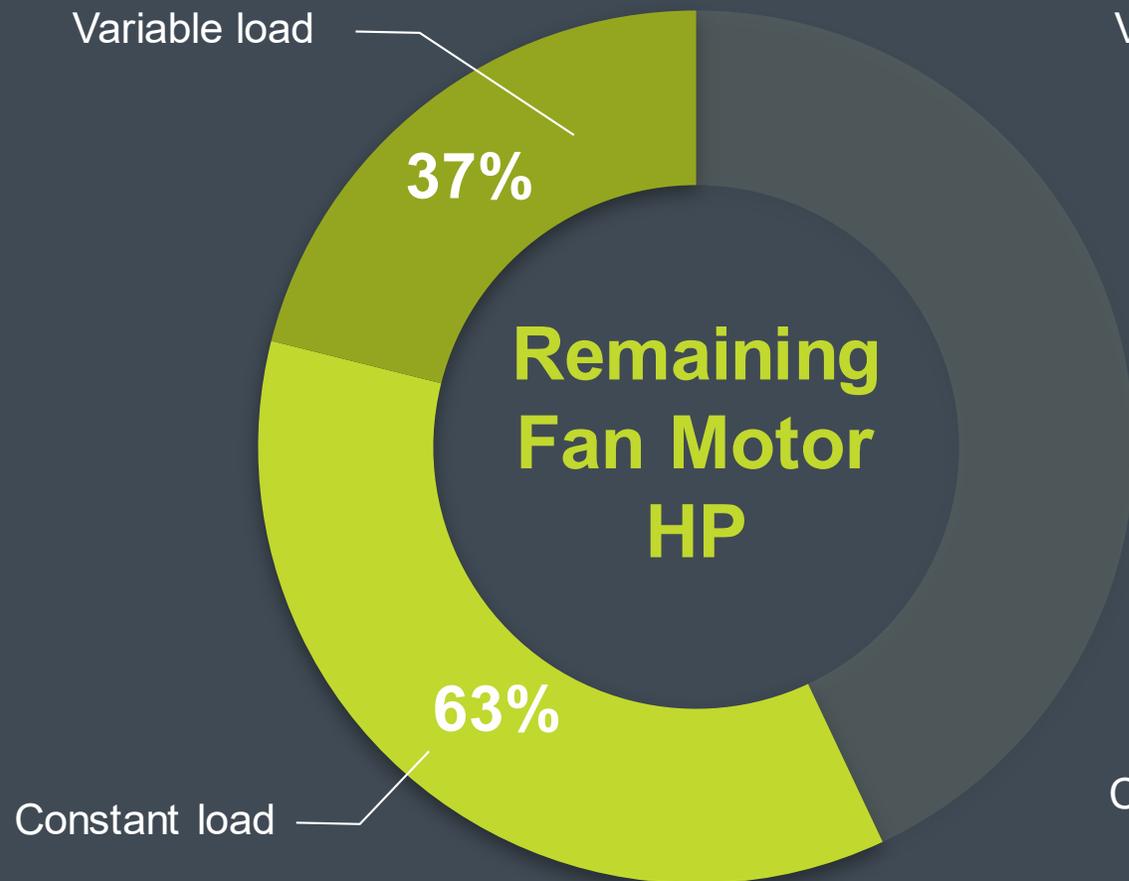




There are still a lot of pumps and fans **without** ASDs



Those without ASDs are mostly **constant load systems**





80% of remaining potential reside in **5 facility types**

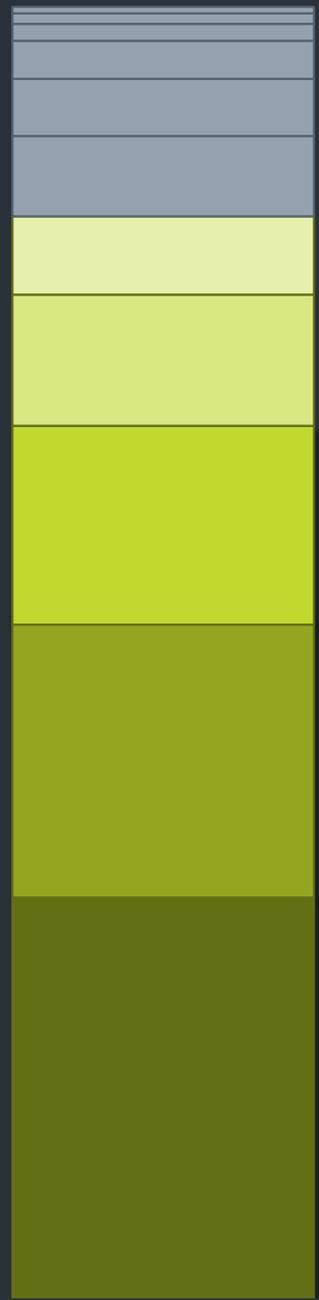
MISCELLANEOUS
6%

WAREHOUSING
10%

PAPER
15%

PRIMARY METAL
21%

WOOD PRODUCTS
31%



Fans



FOOD
5%

WOOD
7%

PRIMARY METAL
10%

PAPER
29%

REFINERY
36%

Pumps



The world is recognizing the benefits of ASDs, including and **beyond utility programs.**



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

Load Profile

ASD Saturation

Motor Stock Assessment



CONTACT

For more information, visit

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

Questions? Contact

Joan Wang

jjwang@bpa.gov

Bonneville
POWER ADMINISTRATION

