

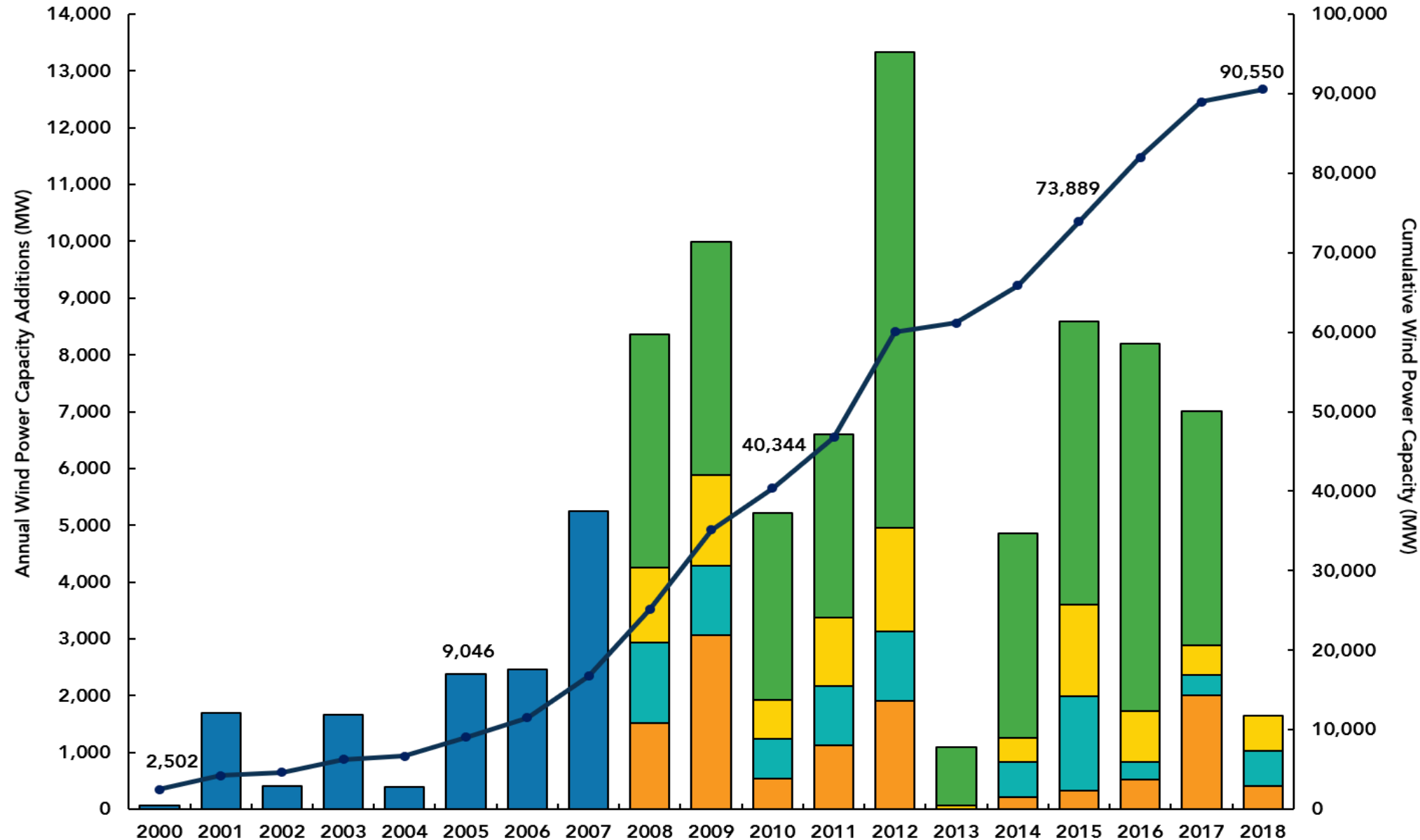
# U.S. Wind Energy Industry

John Hensley  
American Wind Energy Association





# U.S. Annual and Cumulative Wind Capacity Growth

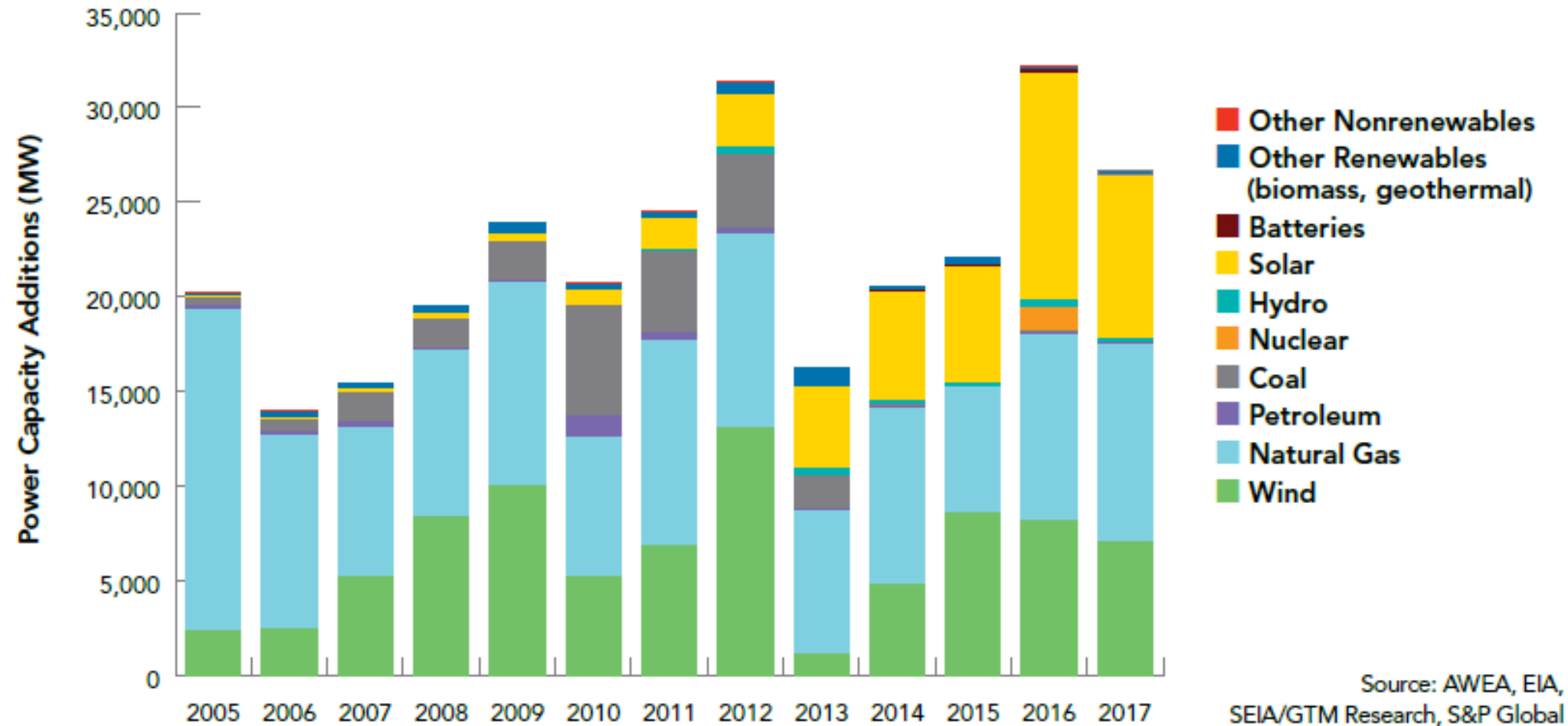


- 90,550 MW of wind power at the end of 3Q 2018
- Over 54,000 wind turbines across the U.S.
- U.S. wind power capacity has more than tripled since 2008
- Wind is #1 renewable energy capacity source in U.S.
- Total installed wind capacity can power 27 million American homes



# Wind Energy Provided 26% of Capacity Additions in 2017

Annual Power Capacity Additions

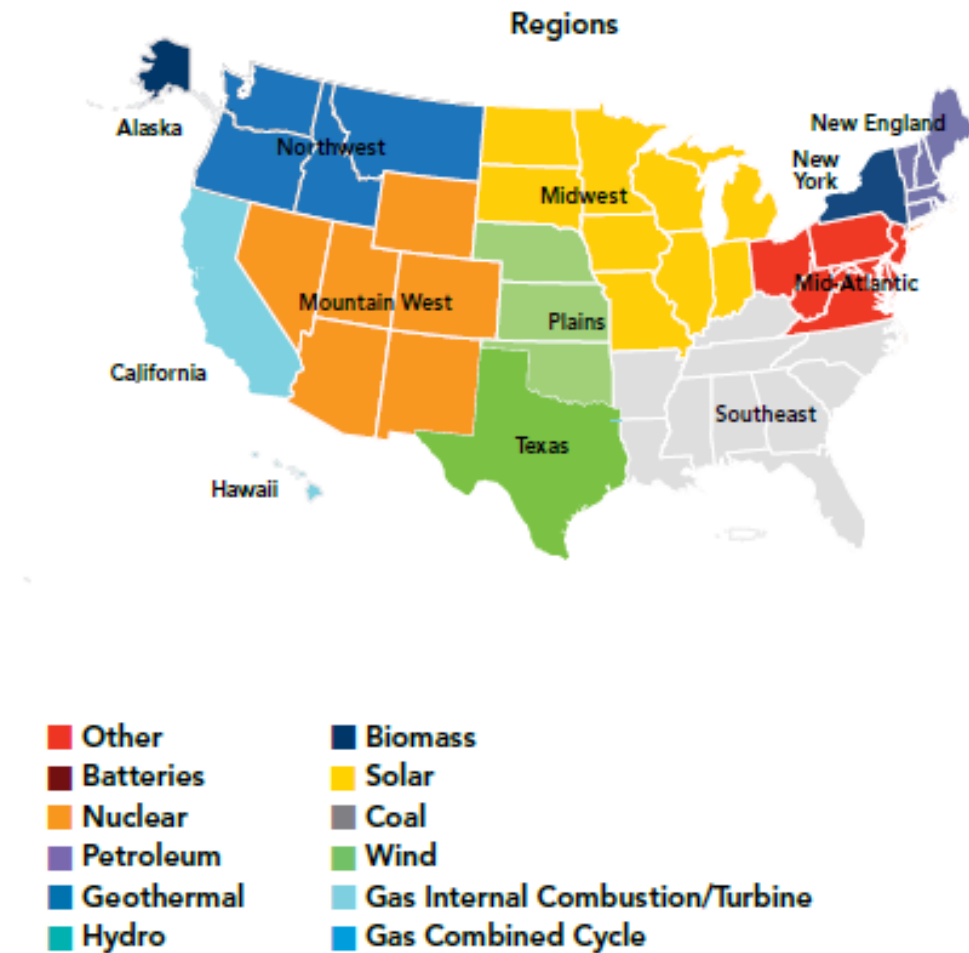
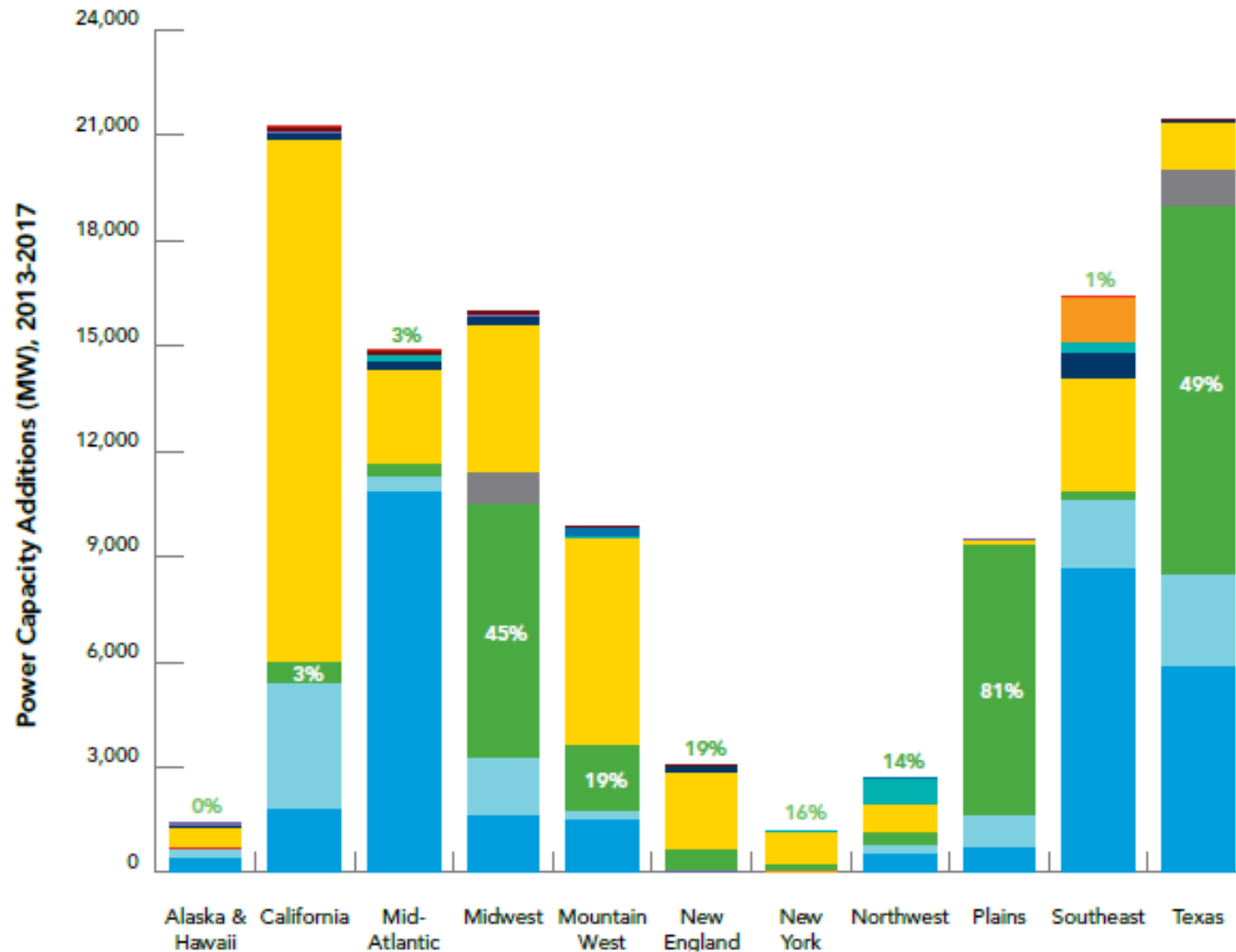


Source: AWEA, EIA, SEIA/GTM Research, S&P Global

- U.S. electric sector added 26,716 MW of new electricity generating capacity in 2017
  - Natural gas: 10,502 MW
  - Solar: 8,576 MW
  - Wind: 7,017 MW
- All renewable energy sources captured 60% of new capacity additions over the last five years.
- Wind accounted for 25% of capacity additions over last 5 years, and 31% over last 10 years

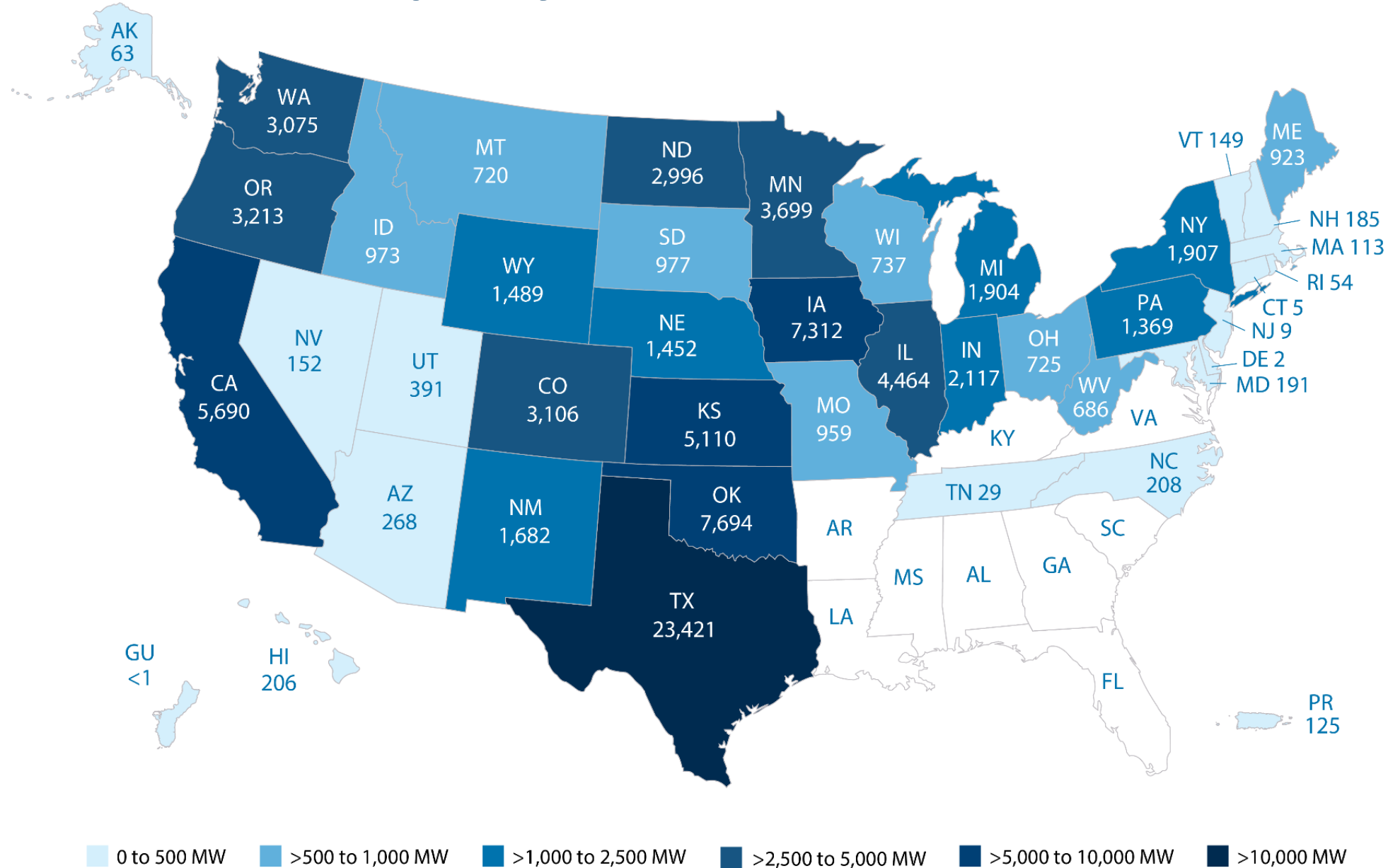


## Wind #1 source of new capacity in Midwest, Plains, & Texas





# Wind Power Capacity in 41 States, Guam, and Puerto Rico



Top 10 Wind States	
Texas	23,421 MW
Oklahoma	7,694 MW
Iowa	7,312 MW
California	5,690 MW
Kansas	5,110 MW
Illinois	4,464 MW
Minnesota	3,699 MW
Oregon	3,213 MW
Colorado	3,106 MW
Washington	3,075 MW

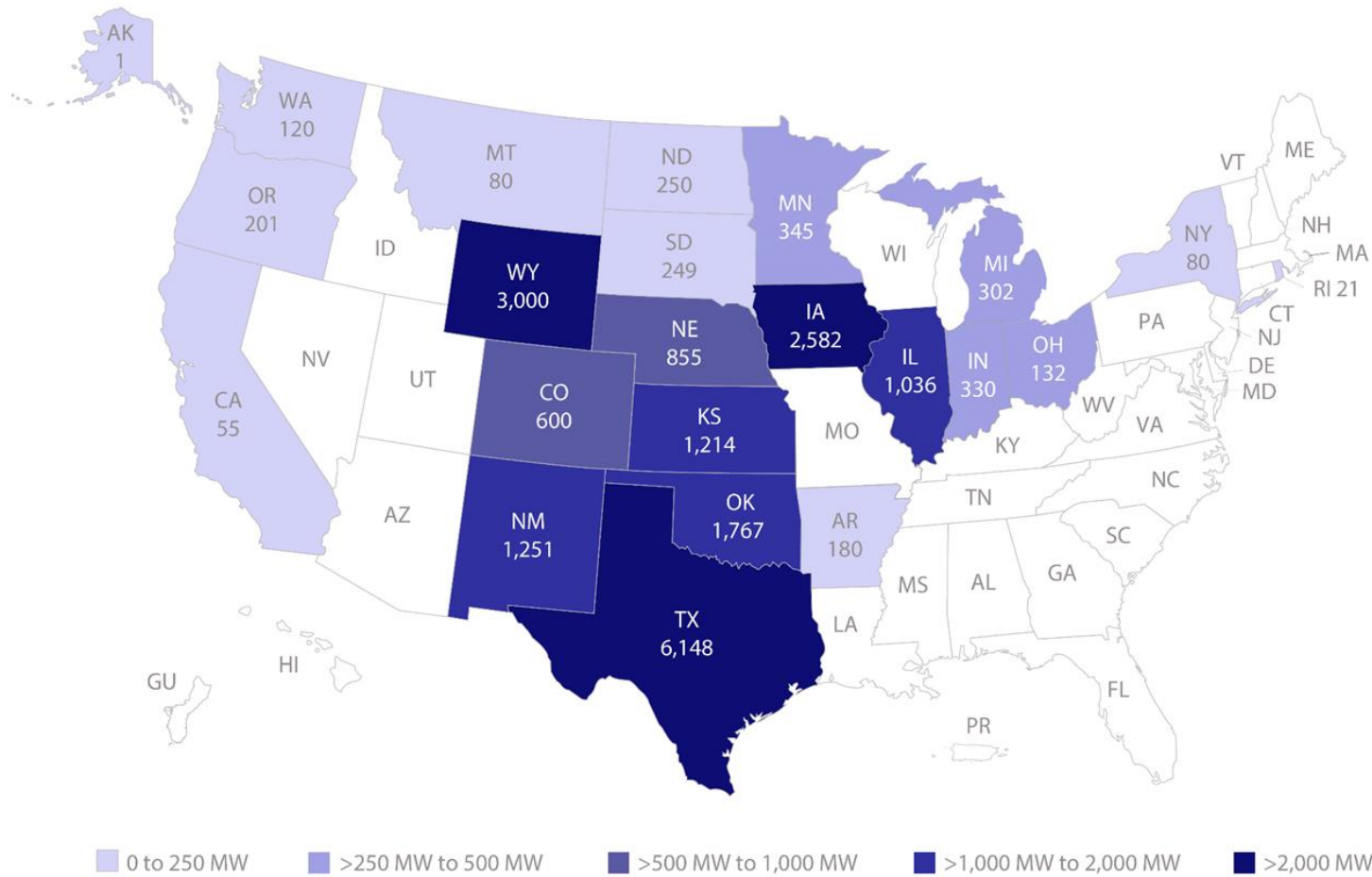
■ 0 to 500 MW   
 ■ >500 to 1,000 MW   
 ■ >1,000 to 2,500 MW   
 ■ >2,500 to 5,000 MW   
 ■ >5,000 to 10,000 MW   
 ■ >10,000 MW





# 37,965 MW Under Construction or in Advanced Development

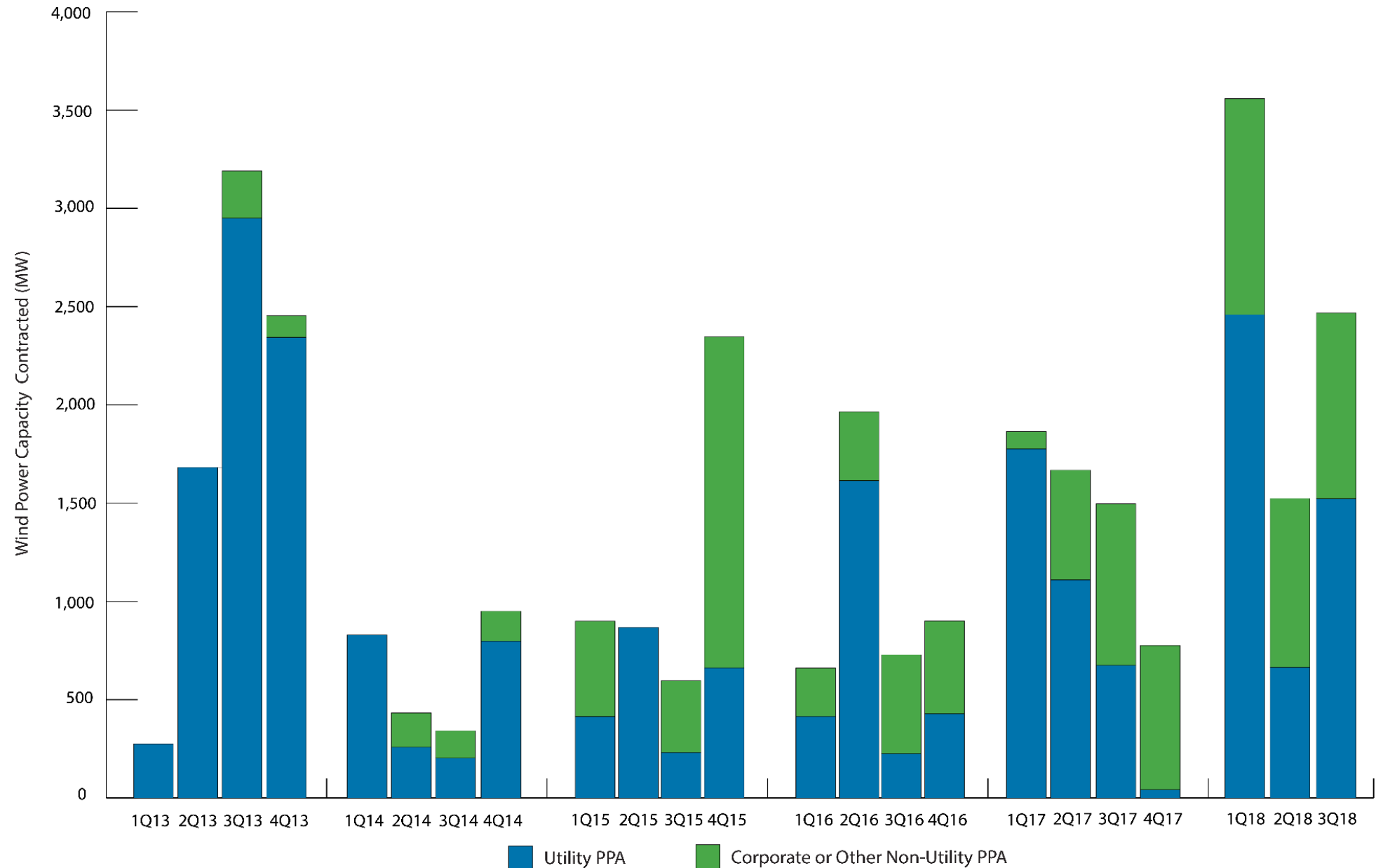
## Capacity Under Construction





# PPA activity highlights strong wind demand from utilities and corporates

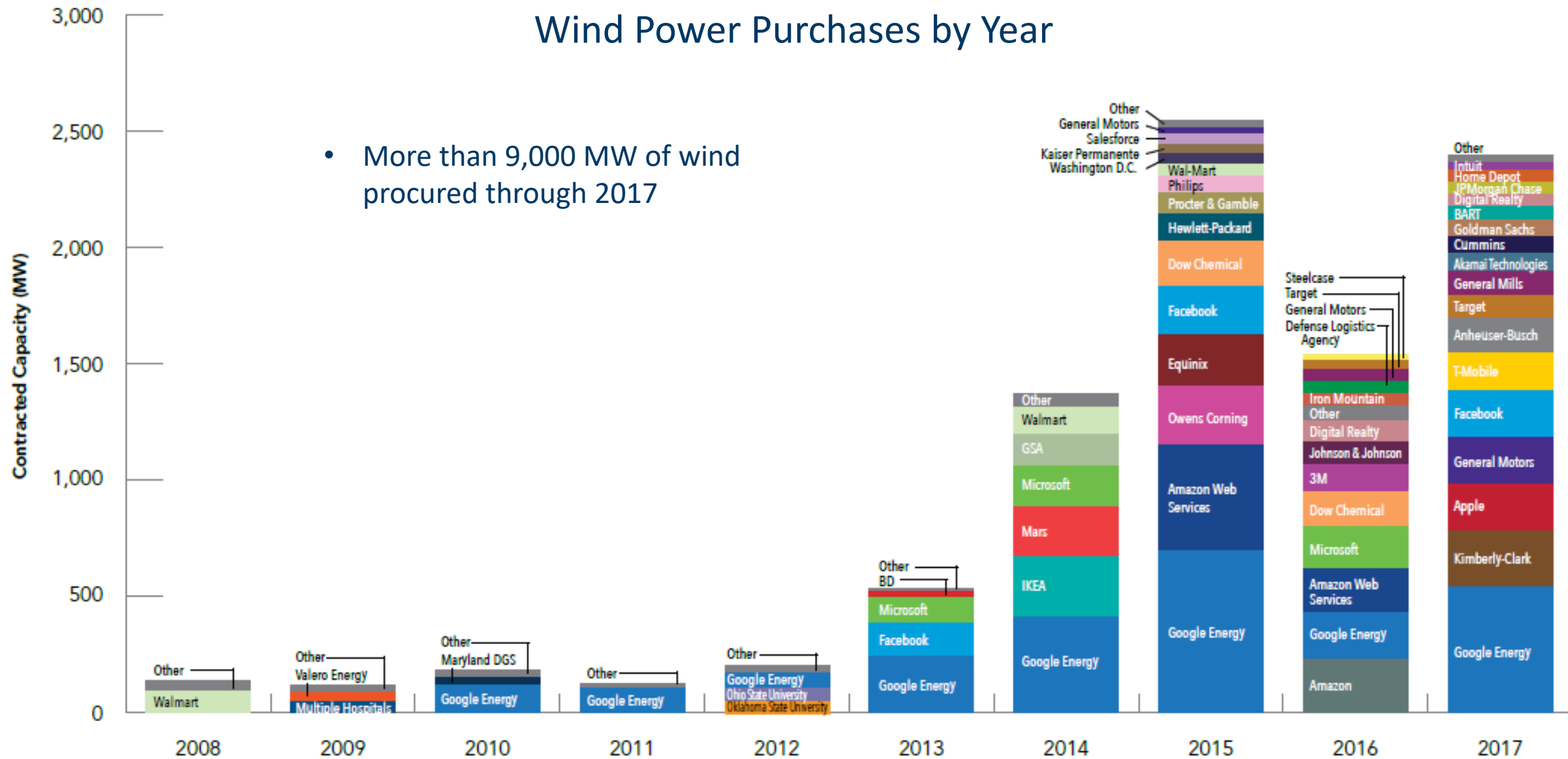
- Developers signed 2,467 MW of PPAs in 3Q, contributing to 7,550 MW for the year
- 2018 is already a record year for corporate procurement of wind power, with companies signing PPAs totaling 2,904 MW through 3Q
- Offshore entered the mix with Vineyard Wind executing a PPA for 800 MW with Massachusetts utilities







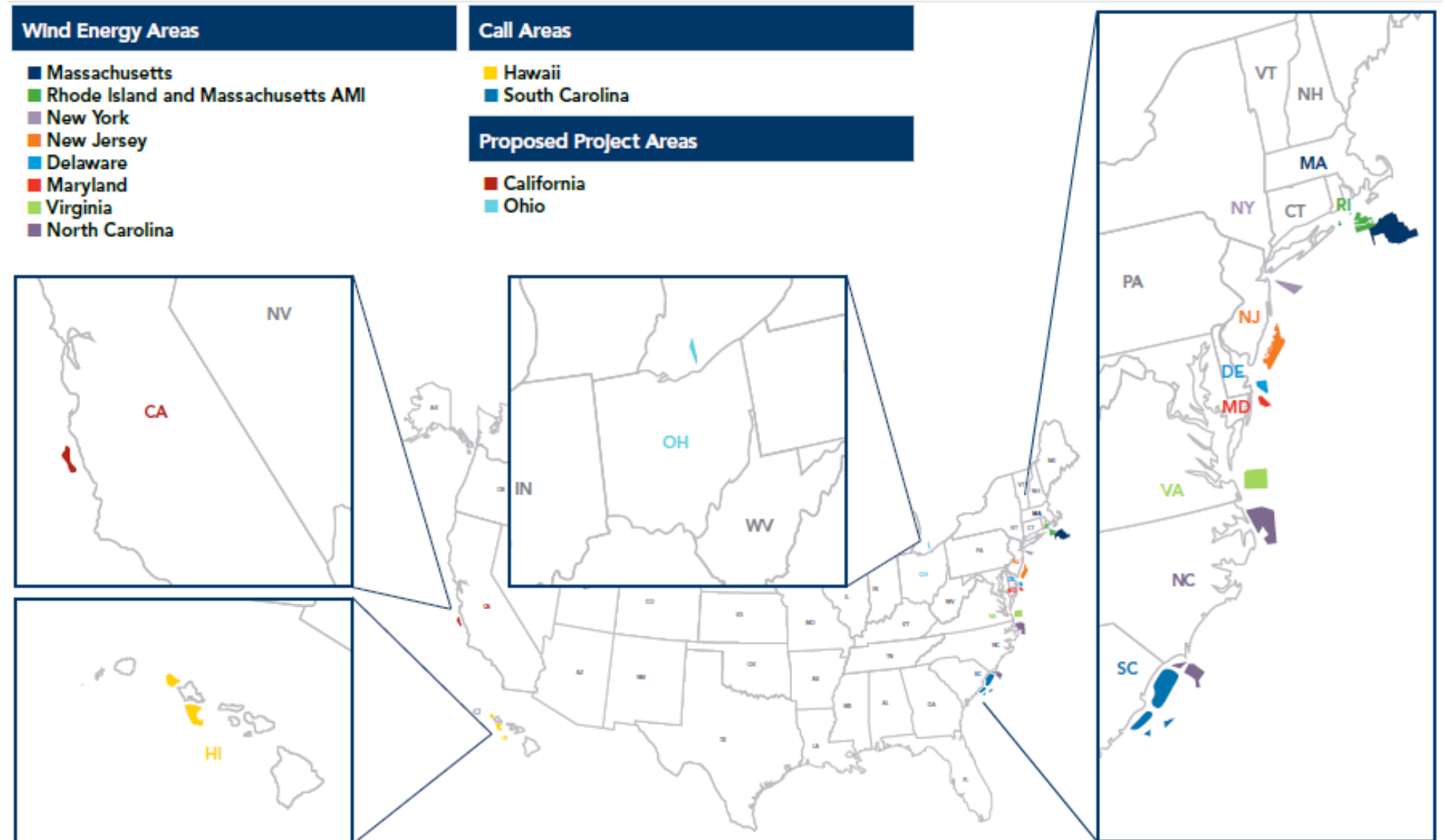
# U.S. Wind Power Purchasers: Corporate and Non-Utility Customers





# U.S. Offshore Wind Energy

- First U.S. offshore wind project online in December 2016
  - 30 MW Block Island Wind Farm
- 14 proposed offshore wind projects spanning 10 states at the end of 2017
- 5 projects with PPAs or ORECs
- Proposed projects represent over 12,500 MW of potential offshore wind development
- Project sizes range from 12 MW up to 2,000 MW

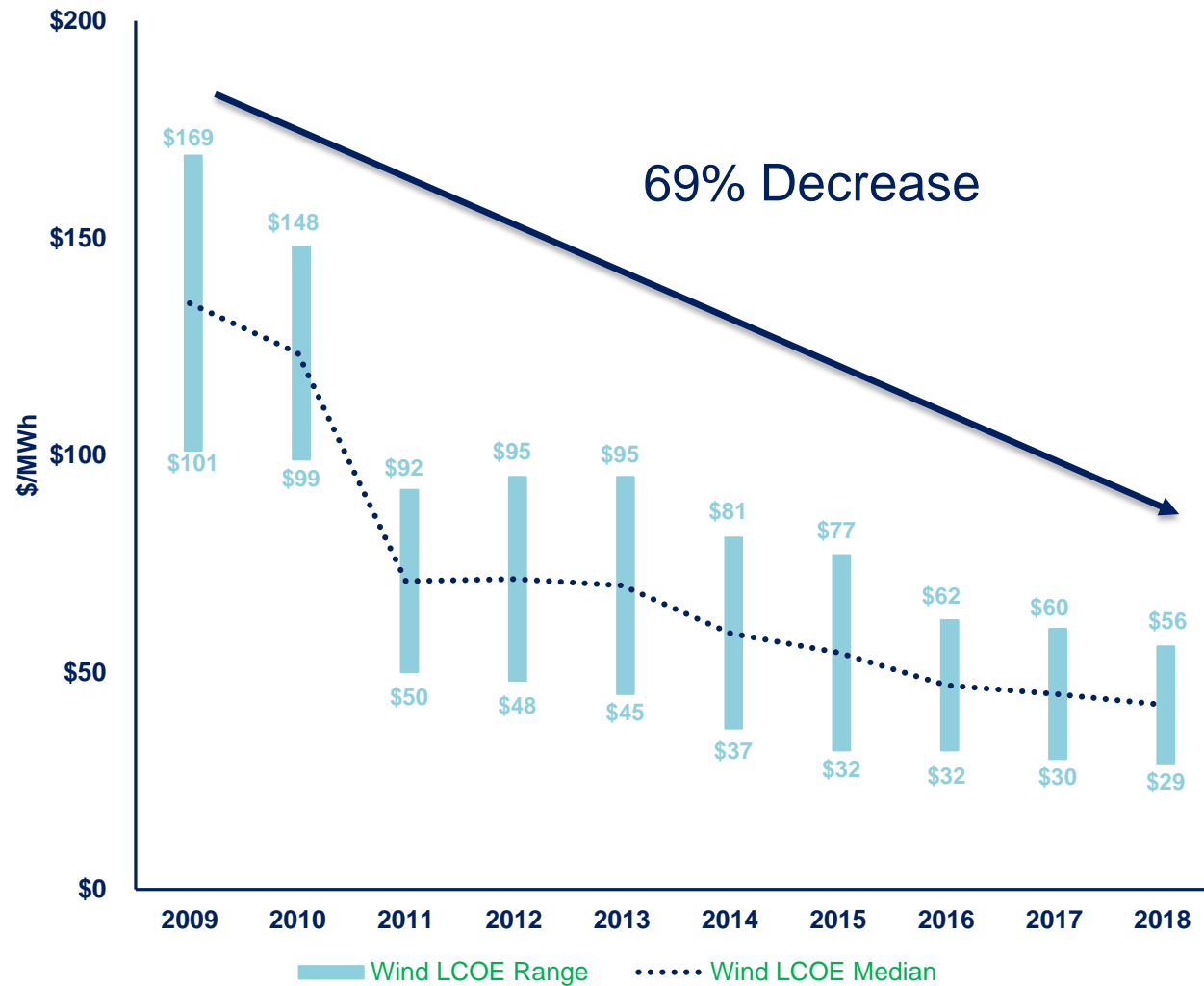




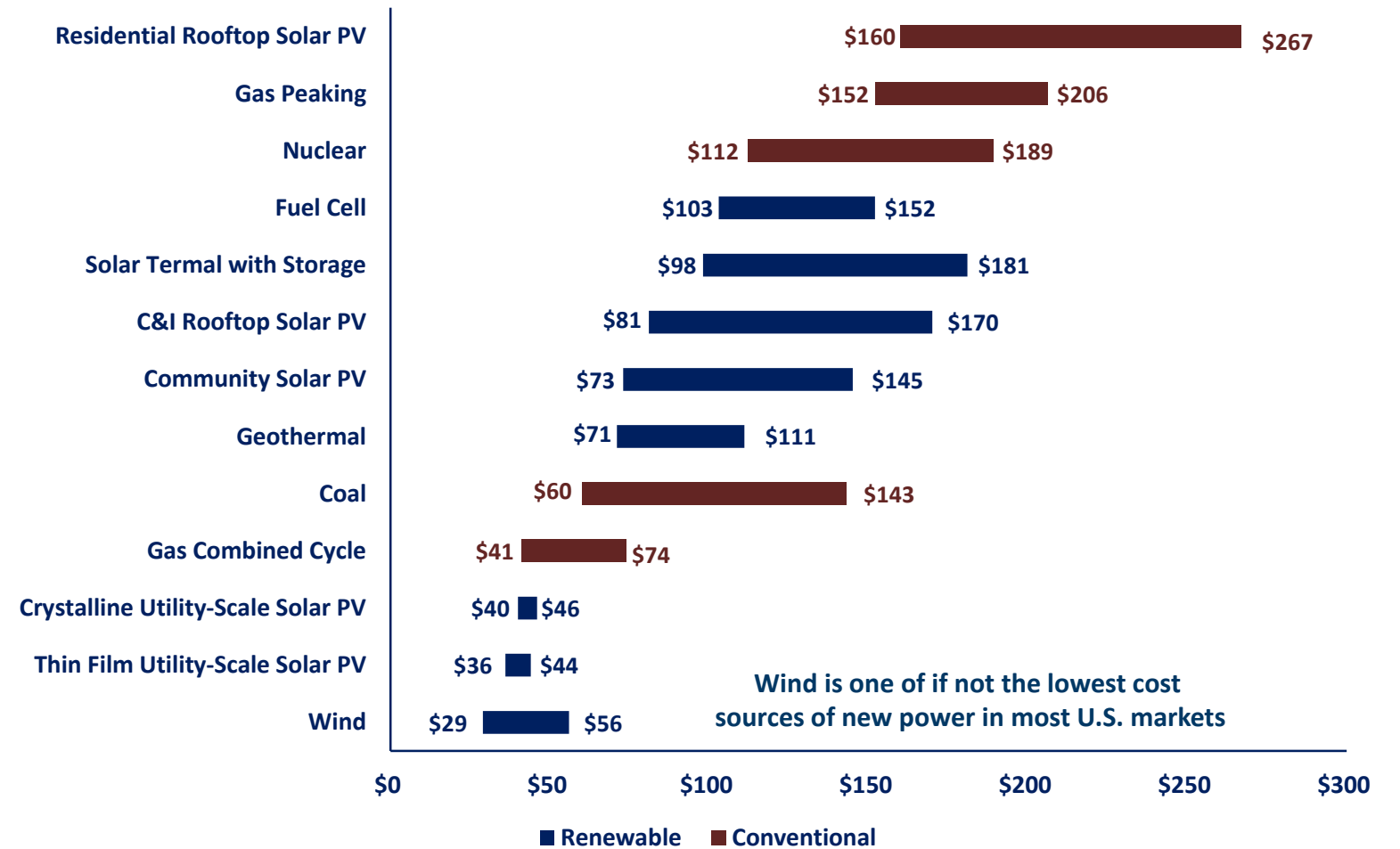


# Market Drivers: Cost Reductions

## Unsubsidized Wind LCOE

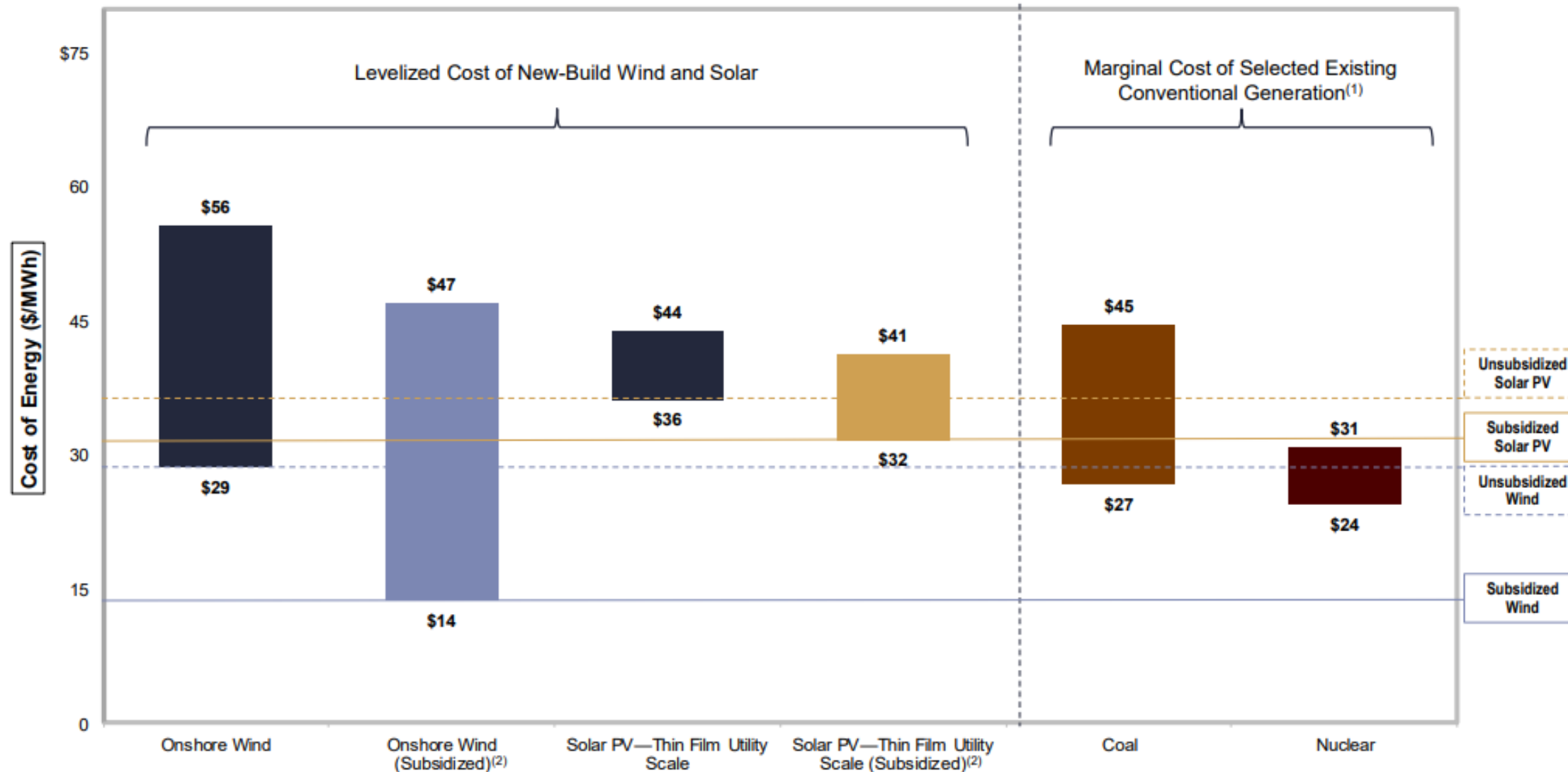


## LCOE Comparison





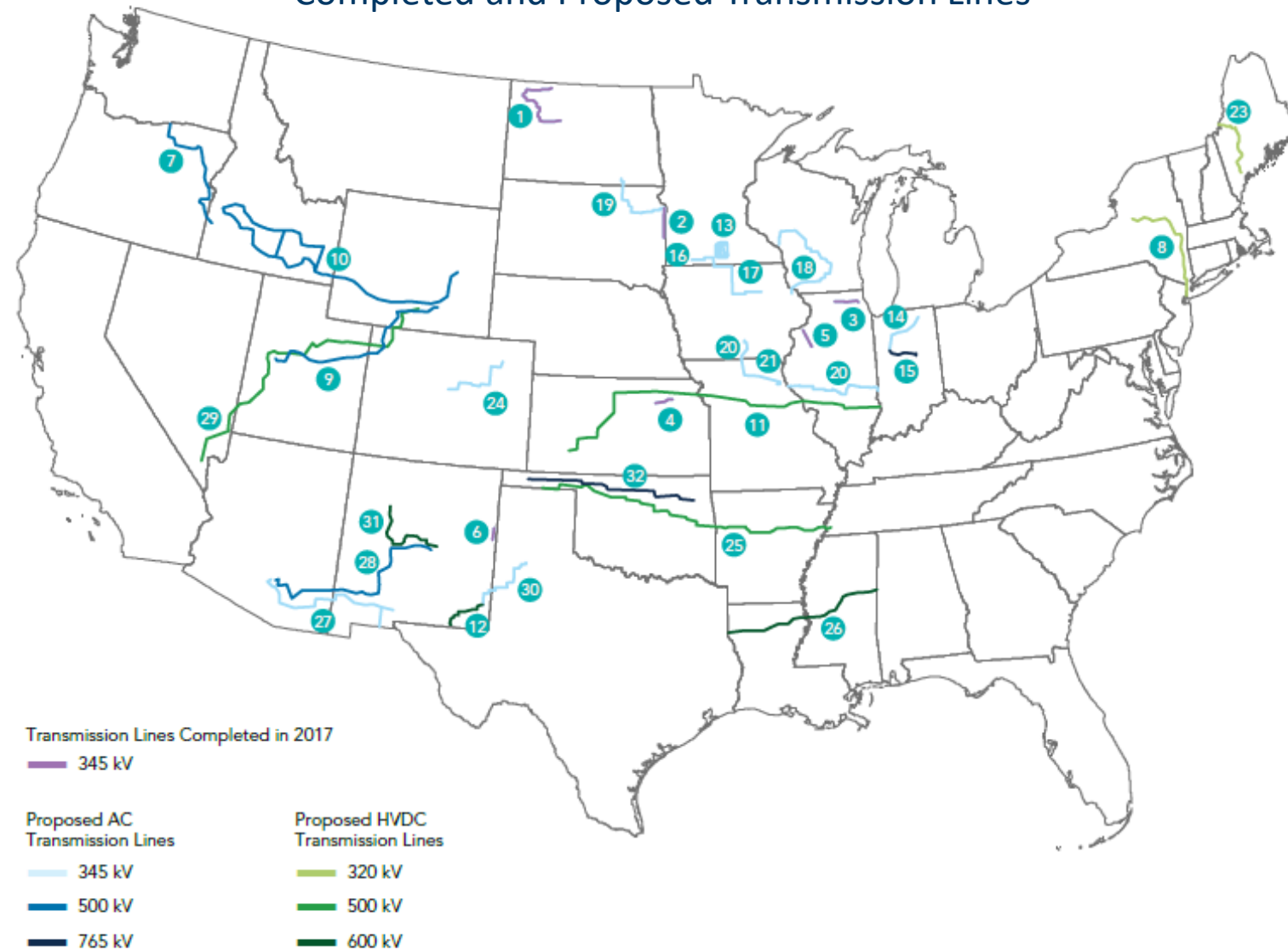
# Wind increasingly competitive with existing generation





# Drivers: Investment in Transmission Remains Critical

Completed and Proposed Transmission Lines



- Transmission needed to transport wind energy from remote areas to load centers
- Critical to approve and build transmission projects currently in development
- Near-term transmission projects in development could support tens of thousands of additional wind MWs



**Thank You!**