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U.S. IS WORLD'S #1 WIND ENERGY PRODUCER

U.S.
190.9
MILLION MWh



CHINA
185.1
MILLION MWh



GERMANY
84.6
MILLION MWh



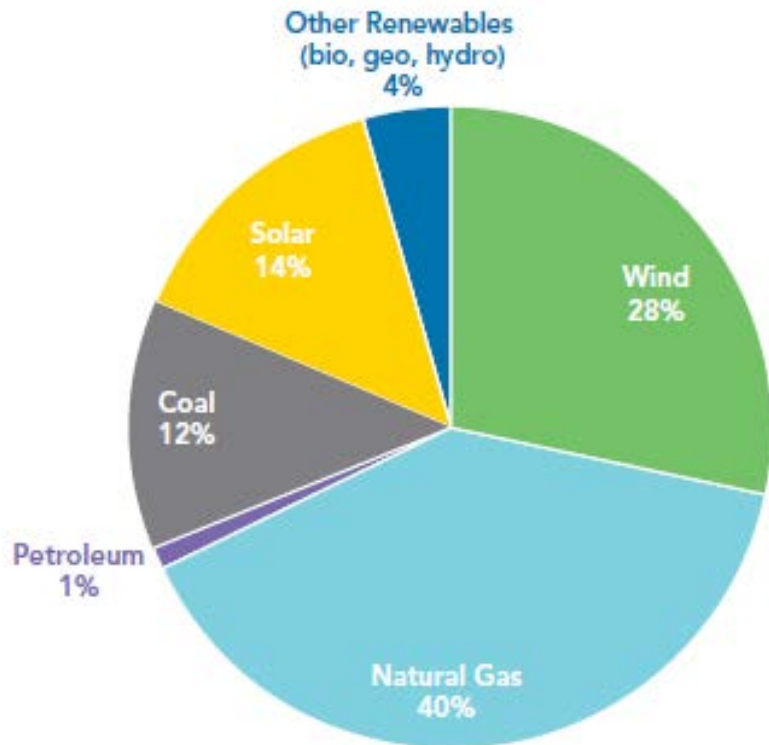
SPAIN
47.9
MILLION MWh





Recent additions to the U.S. power grid

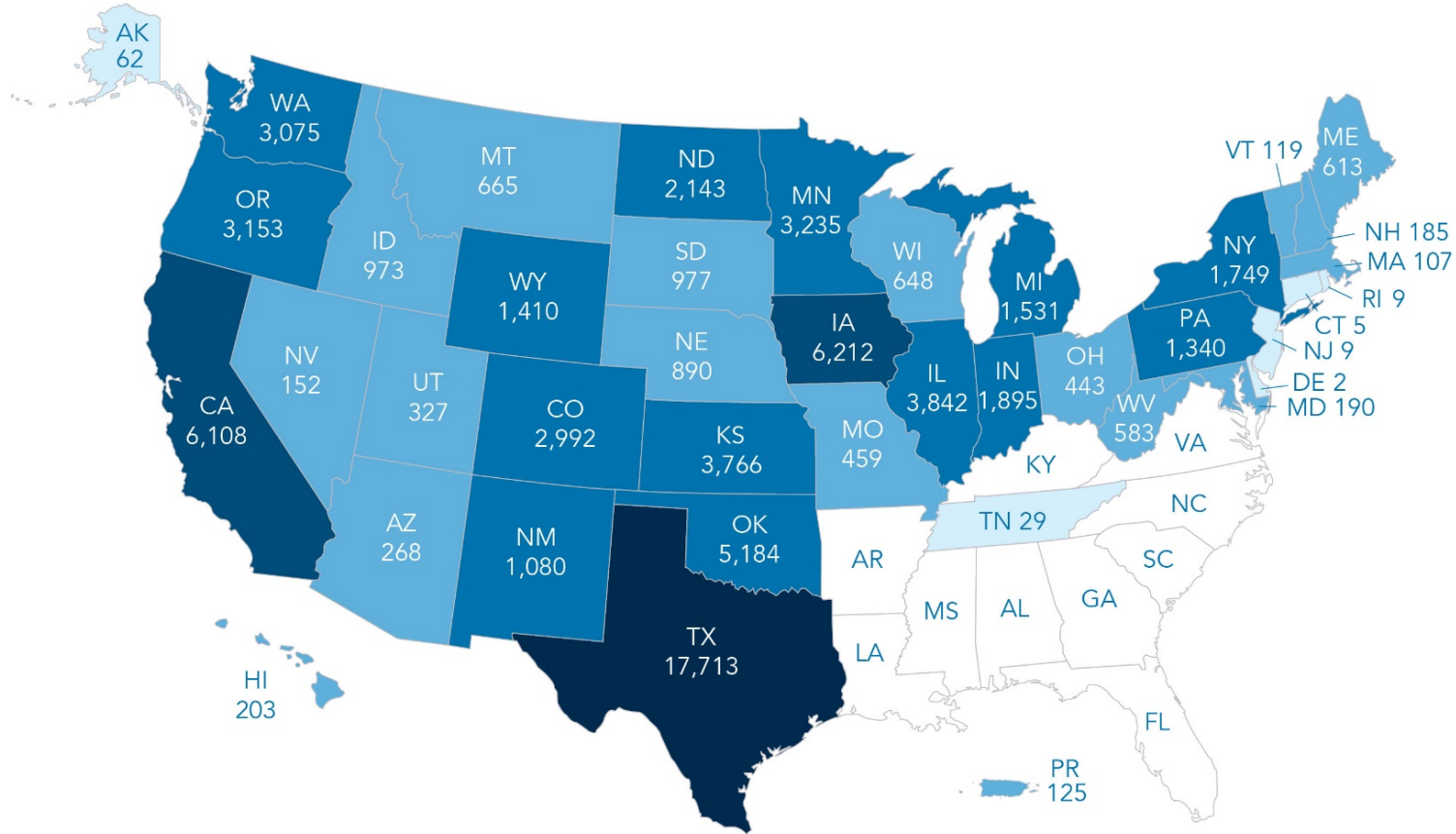
U.S. Annual Power Capacity Additions,
5-year Average



- **2010-2015:** Wind was 28% of all new electric generating capacity
- **2015:** Wind #1 with ~34%, Solar ~29%, Gas ~24%



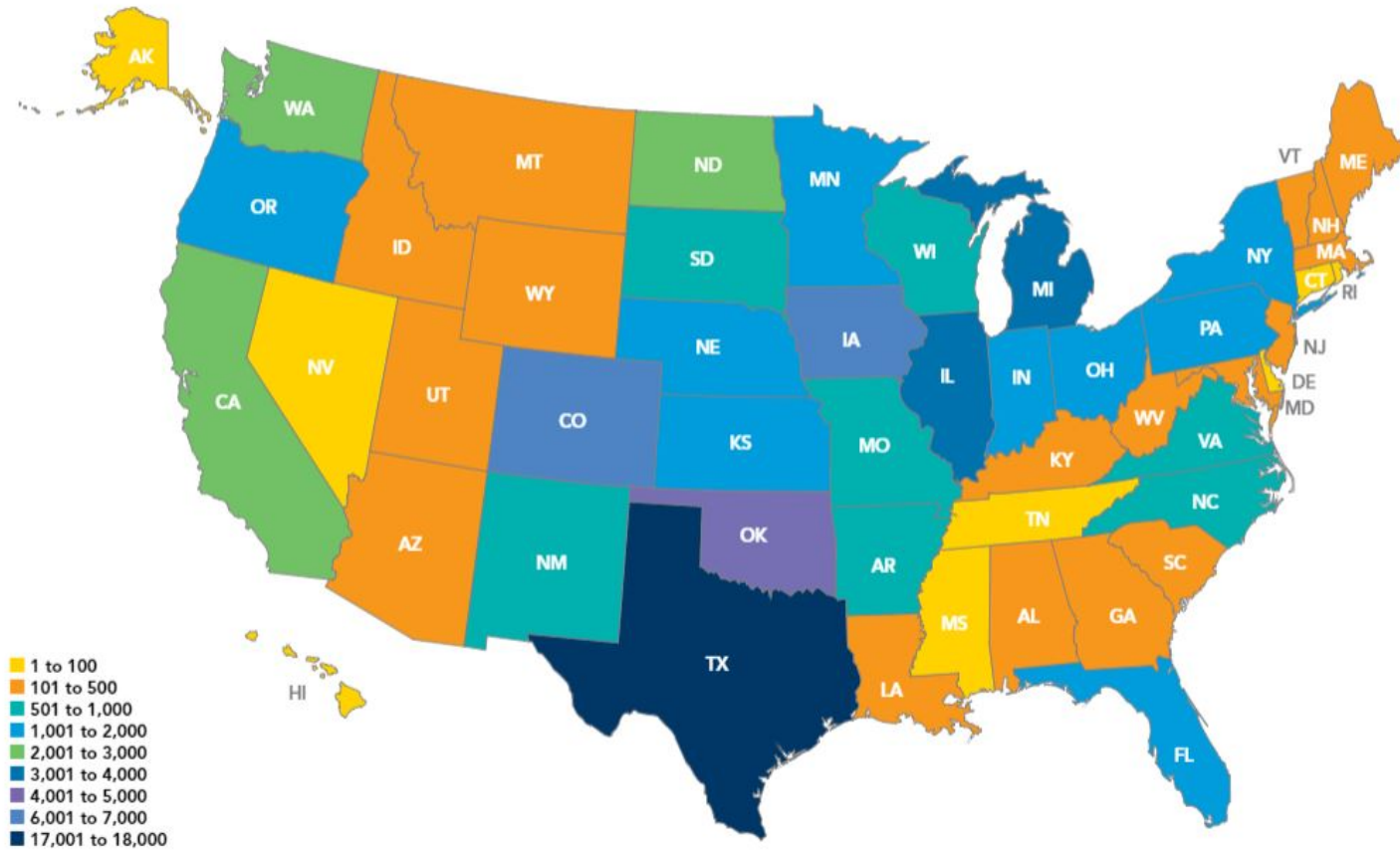
75 gigawatts of U.S. wind power, led by Texas



■ 0 to 100 MW
 ■ >100 MW to 1,000 MW
 ■ >1,000 MW to 5,000 MW
 ■ >5,000 MW to 10,000 MW
 ■ >10,000 MW

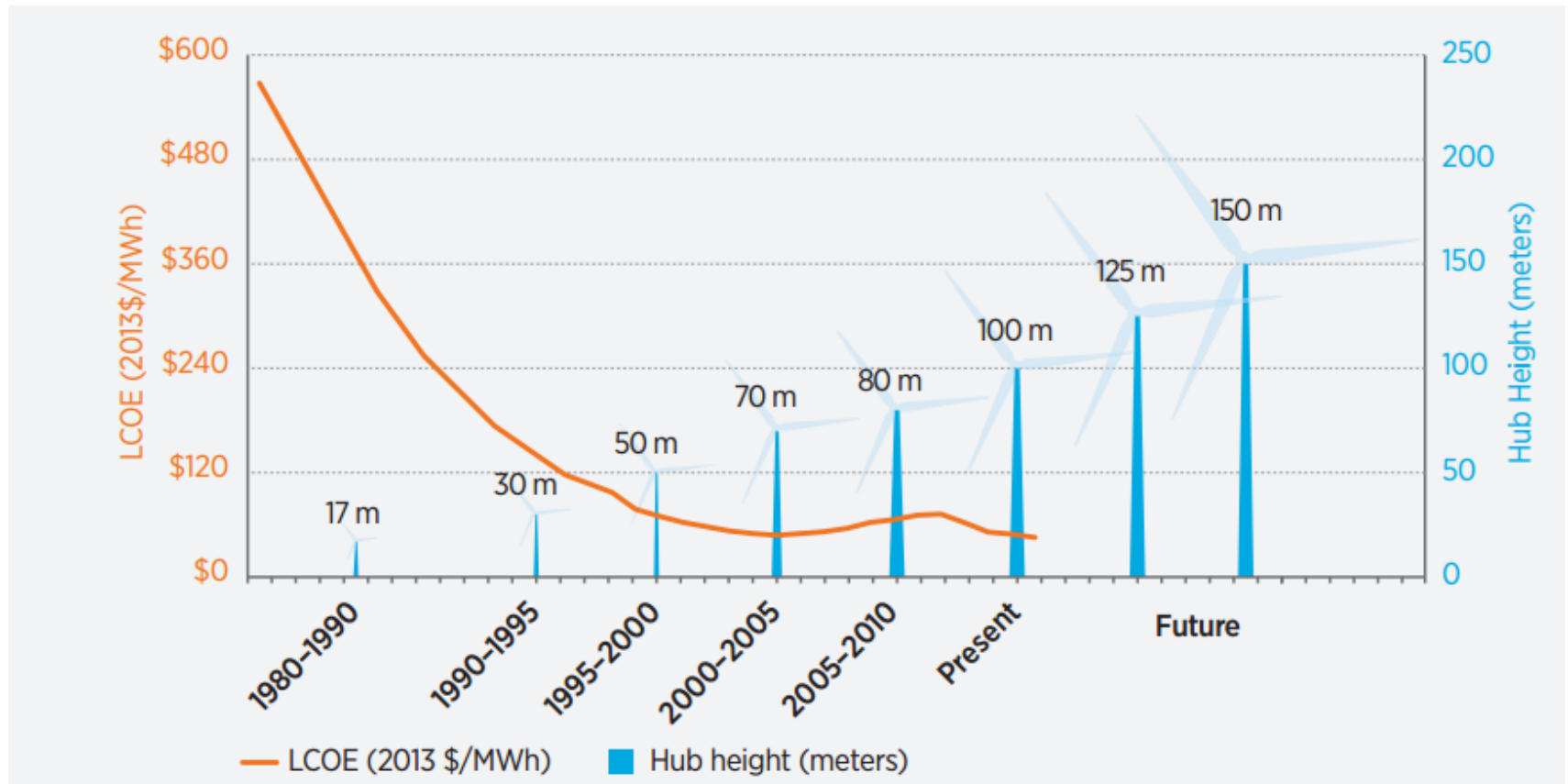


Jobs in wind power across America





Lower wind costs include economies of scale



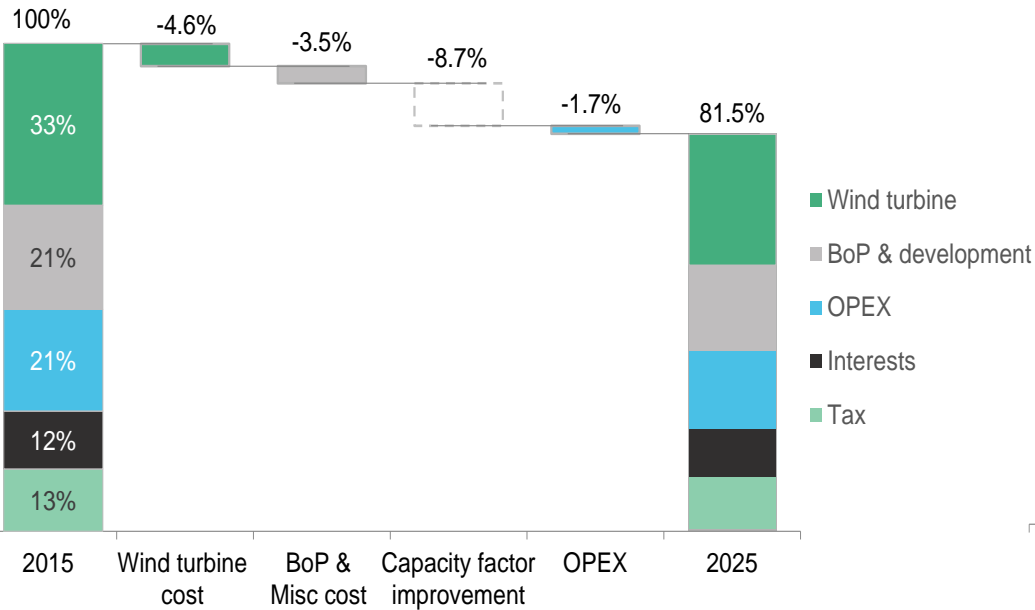


Reasons for falling wind costs

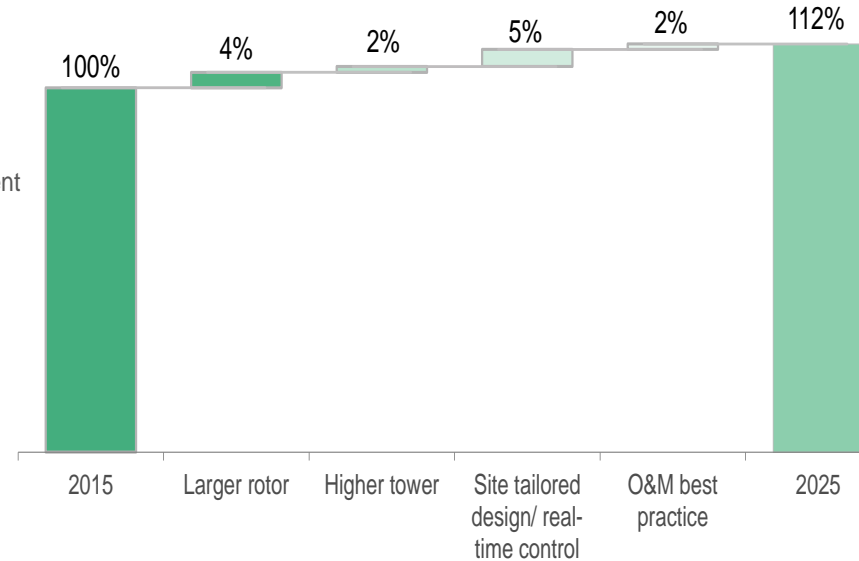
- Economies of scale (turbines, companies)
- Technology accessing higher winds
- Policies now predictable
- Optimized siting
- More transmission to cities
- Predictive O&M
- U.S. manufacturing



Wind energy costs still falling, capacity factors still rising



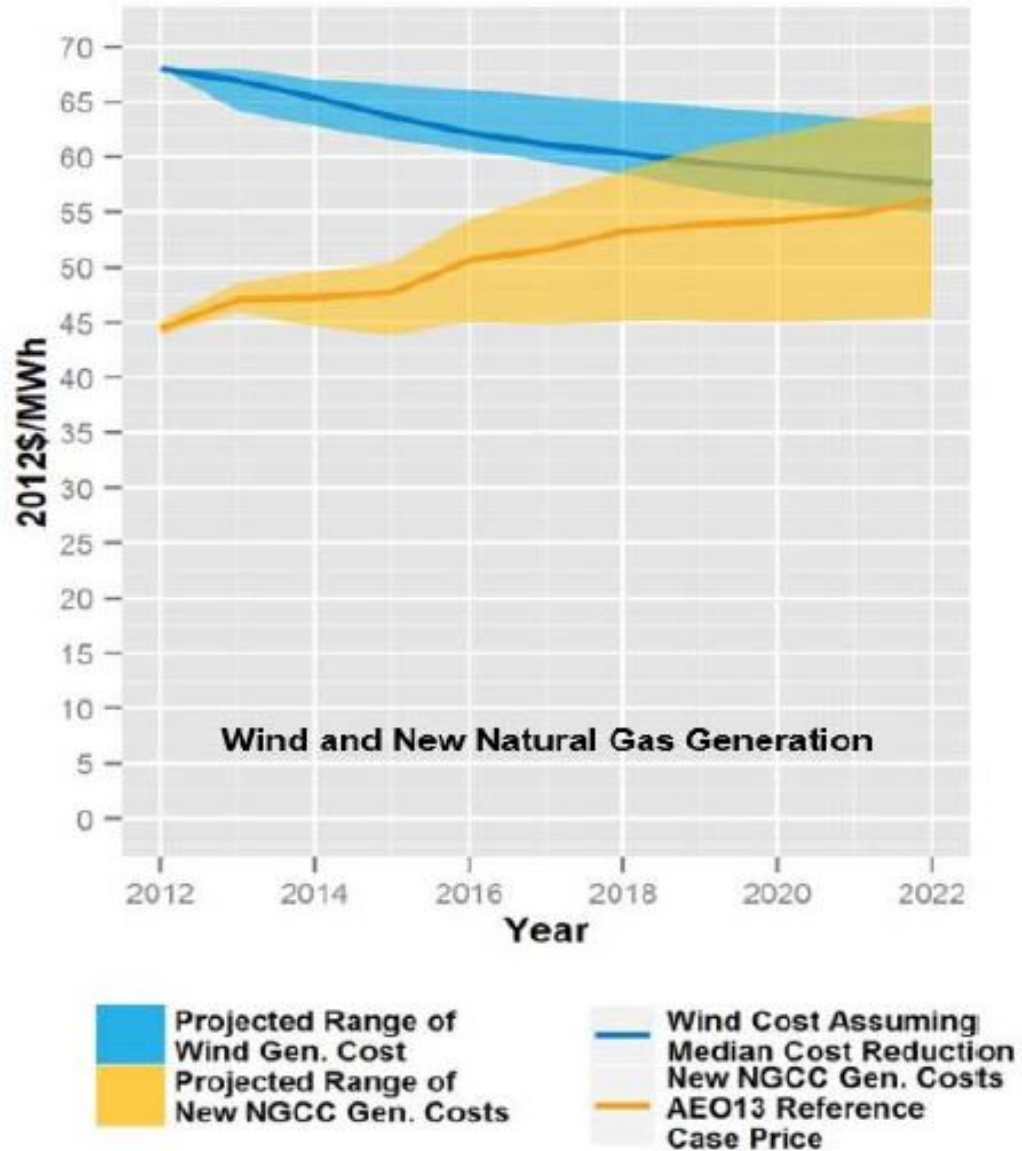
Impact on Levelized Cost of Energy of Assumed Factors (% Change)



Net Capacity Factor Improvement (% Change)

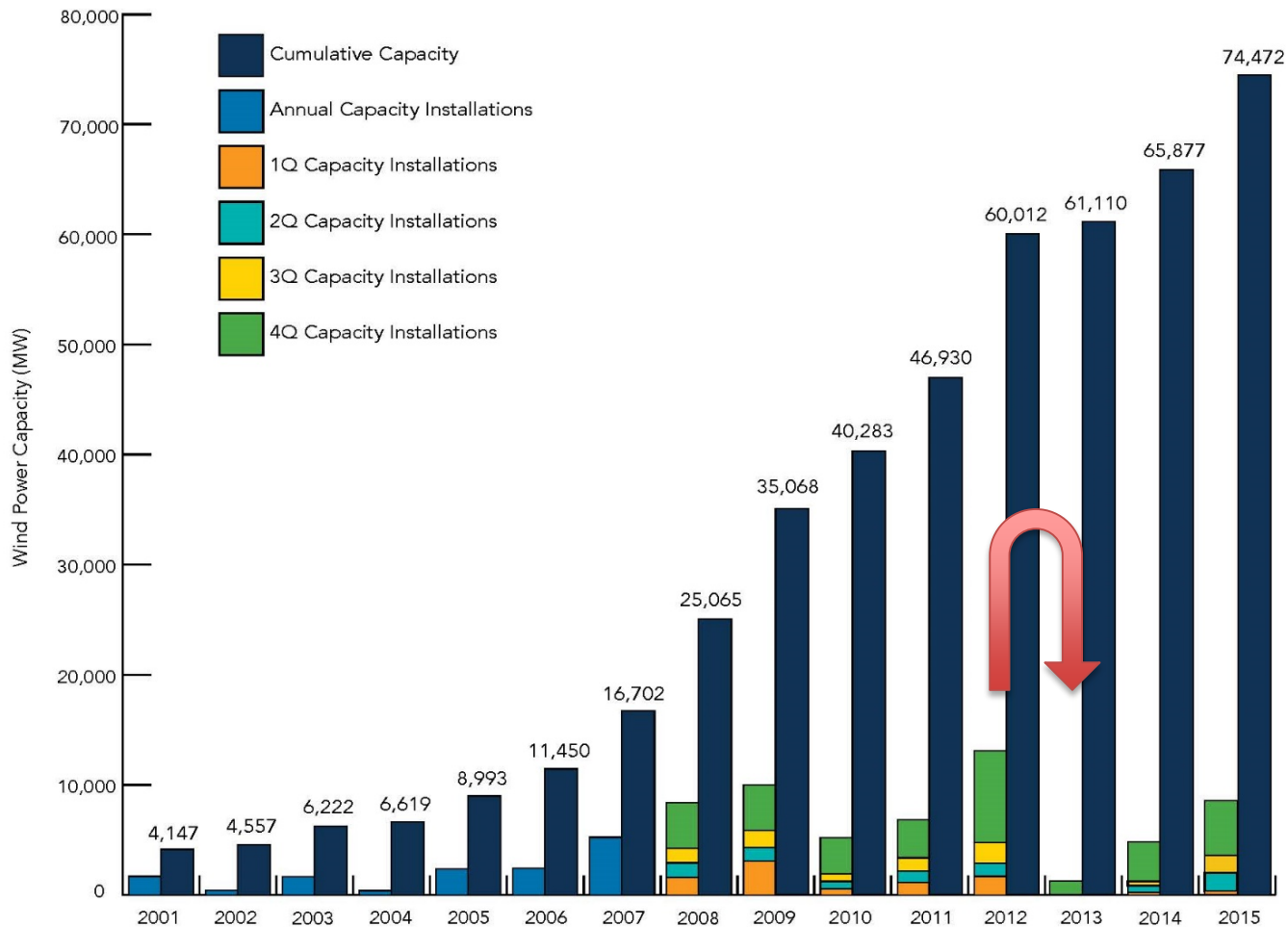


Wind cost vs. gas cost 2012-2022





Boom-bust cycle is over with 5-year PTC

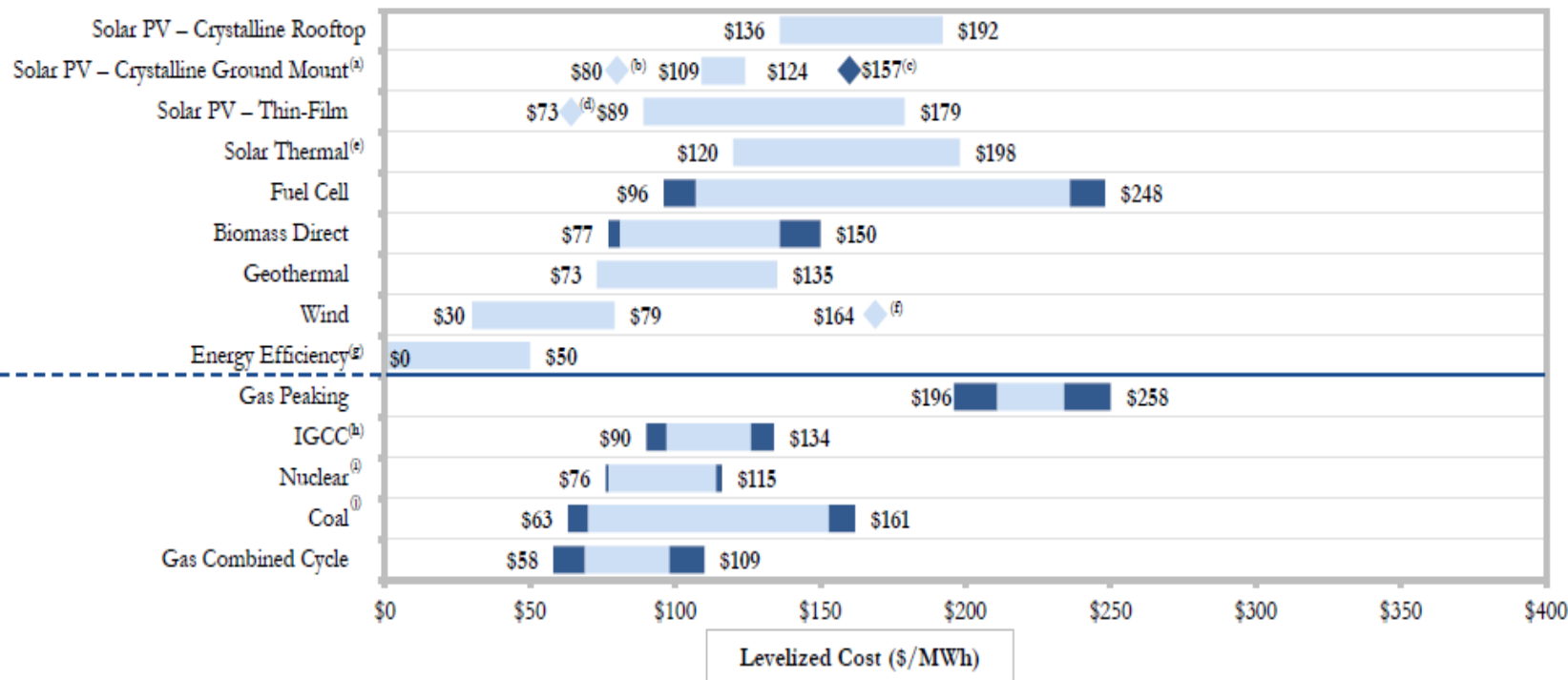




Wind power is increasingly cost-competitive

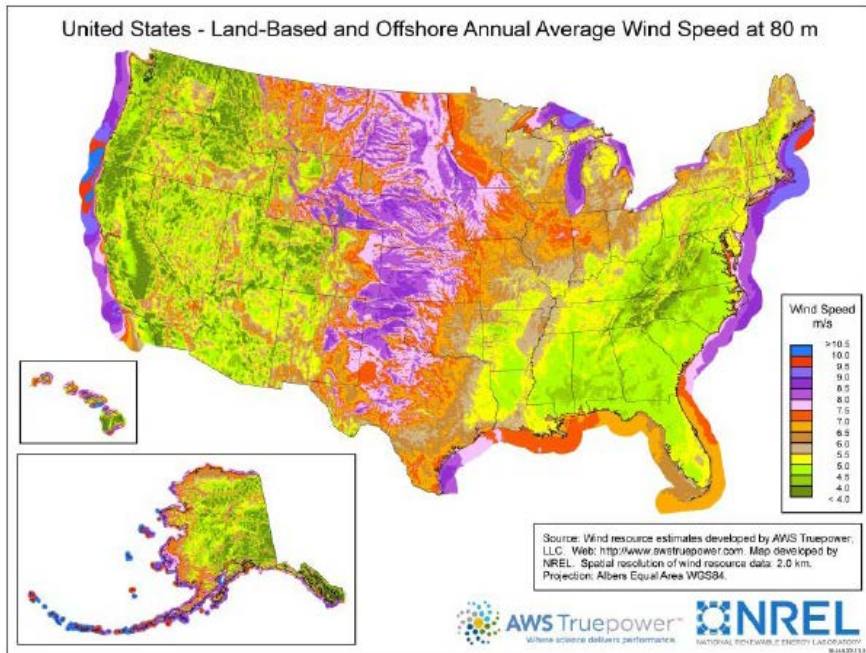
ALTERNATIVE
ENERGY

CONVENTIONAL



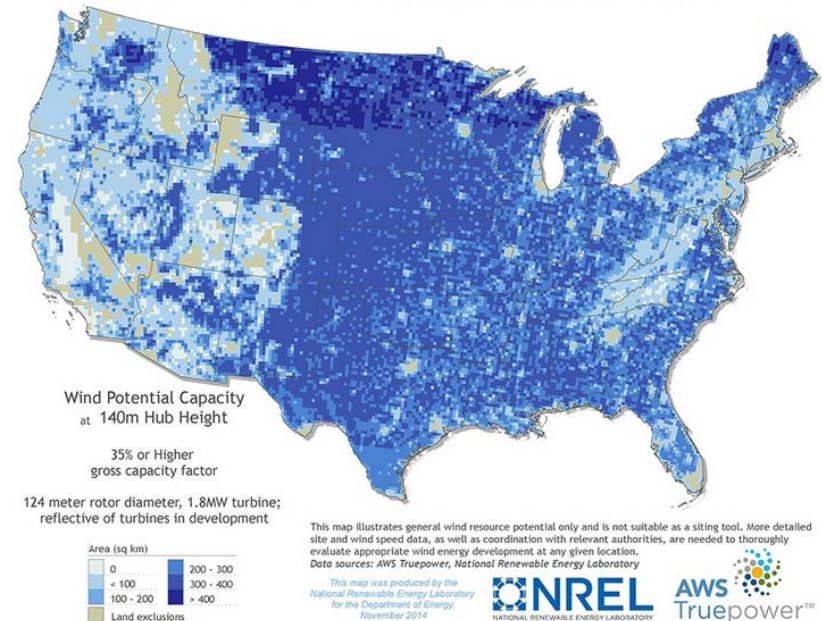


The U.S. wind resource



- Wind could power more than 13 times U.S. electricity needs

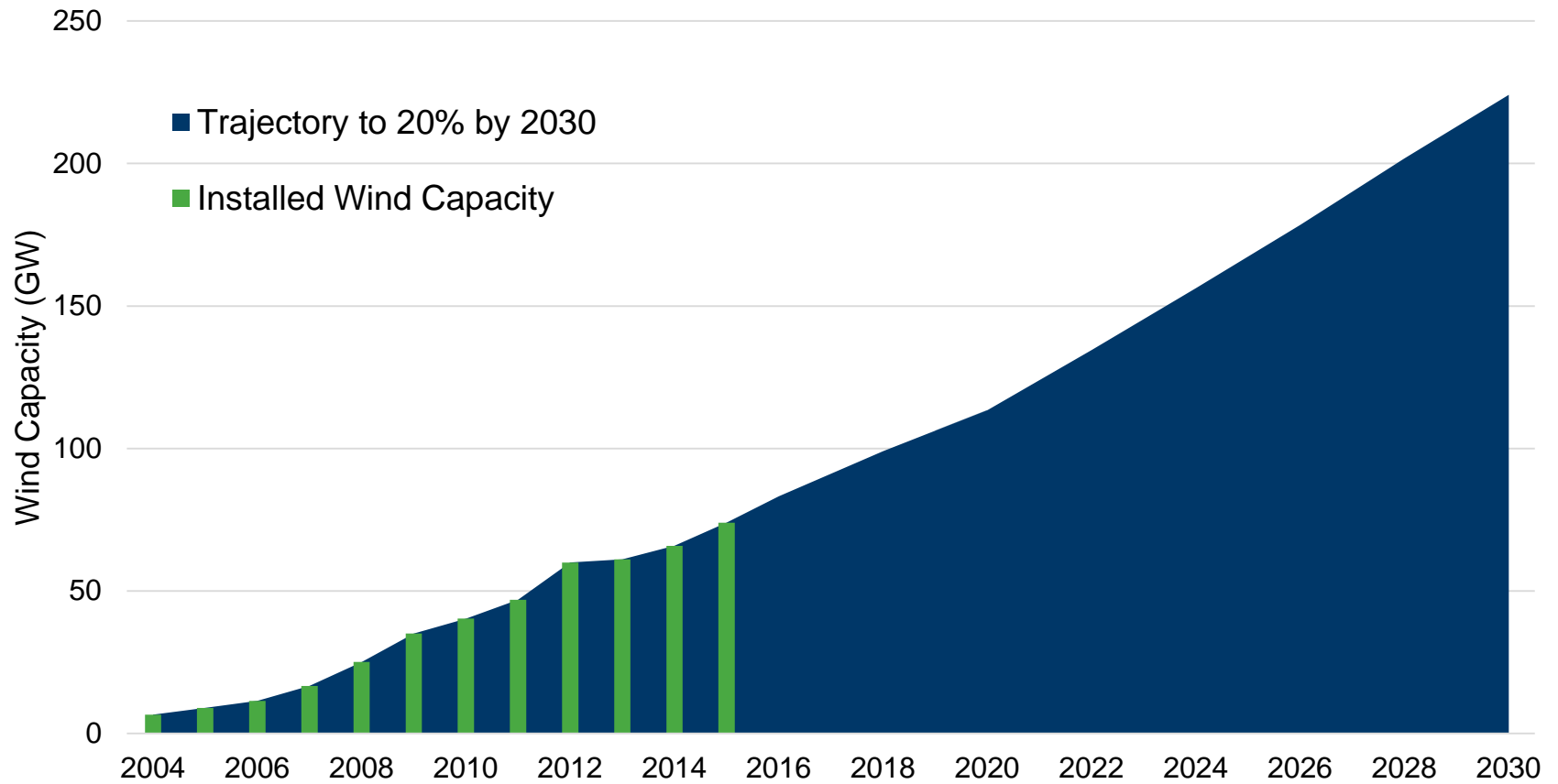
United States – Wind Potential Capacity at Turbine Hub Height of 140 m



- New technology is reaching higher winds, making wind energy possible in new regions of the country



Wind Vision: 10% by 2020; 20% by 2030





Major brands purchasing wind to cut costs & carbon

Google



Procter&Gamble



YAHOO!





Bipartisan support for wind energy holds firm

Gallup, *Annual Environment Poll*, March 5-8, 2015:

- **70%** say U.S. should put more emphasis on producing more domestic energy from wind; 14% say the same emphasis as now
- Among Republicans, **63%** want more emphasis on wind

Zogby, *U.S. Homeowners on Clean Energy*, March 2015

- **74%** support extending federal tax incentives for wind and solar
- **87%** think renewable energy is important to the country's future

Public Opinion Strategies, for *Pew Charitable Trusts*, March 2015

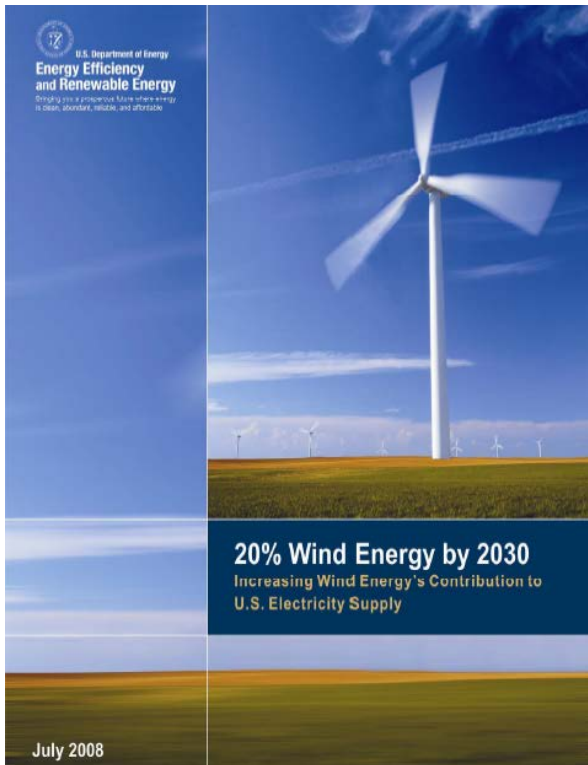
- **77%** support increasing the use of wind energy
- **75%** describe renewable energy as reliable
- **68%** support restoring wind energy PTC, 47% “strongly support”



Wind is America's energy future

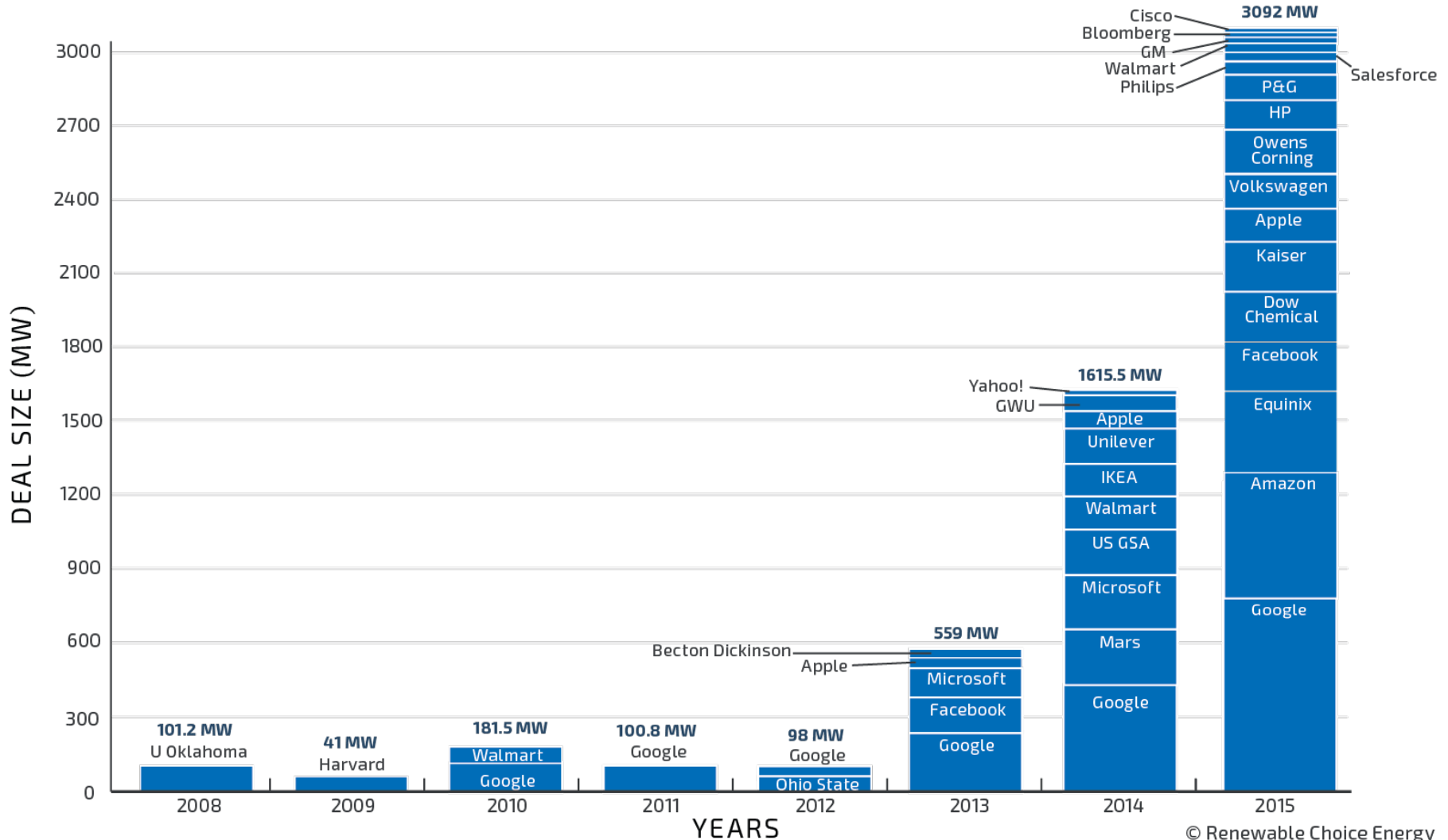
2008 DOE: Wind can supply 20% of U.S. electricity

2015 DOE: Wind can supply 35% of U.S. electricity





Corporate purchasing of wind power rising sharply



WHY COMPANIES ARE TURNING TO WIND POWER

GOOGLE

"Because energy is a large operating expense at Google, it is beneficial to power the data centers with low-cost wind power,"

DOW CHEMICAL

"Dow is always looking for win-win solutions – good for the environment and good for business. By entering into this agreement, Dow is taking a serious approach to our future energy needs in Texas and cost-competitive wind energy is a great opportunity."

IKEA

"The US has amazing wind and sun resources that will never run out. We are delighted to make this investment – it is great for jobs, great for energy security, and great for our business. Importantly, it's great for the future of our climate."

YAHOO!

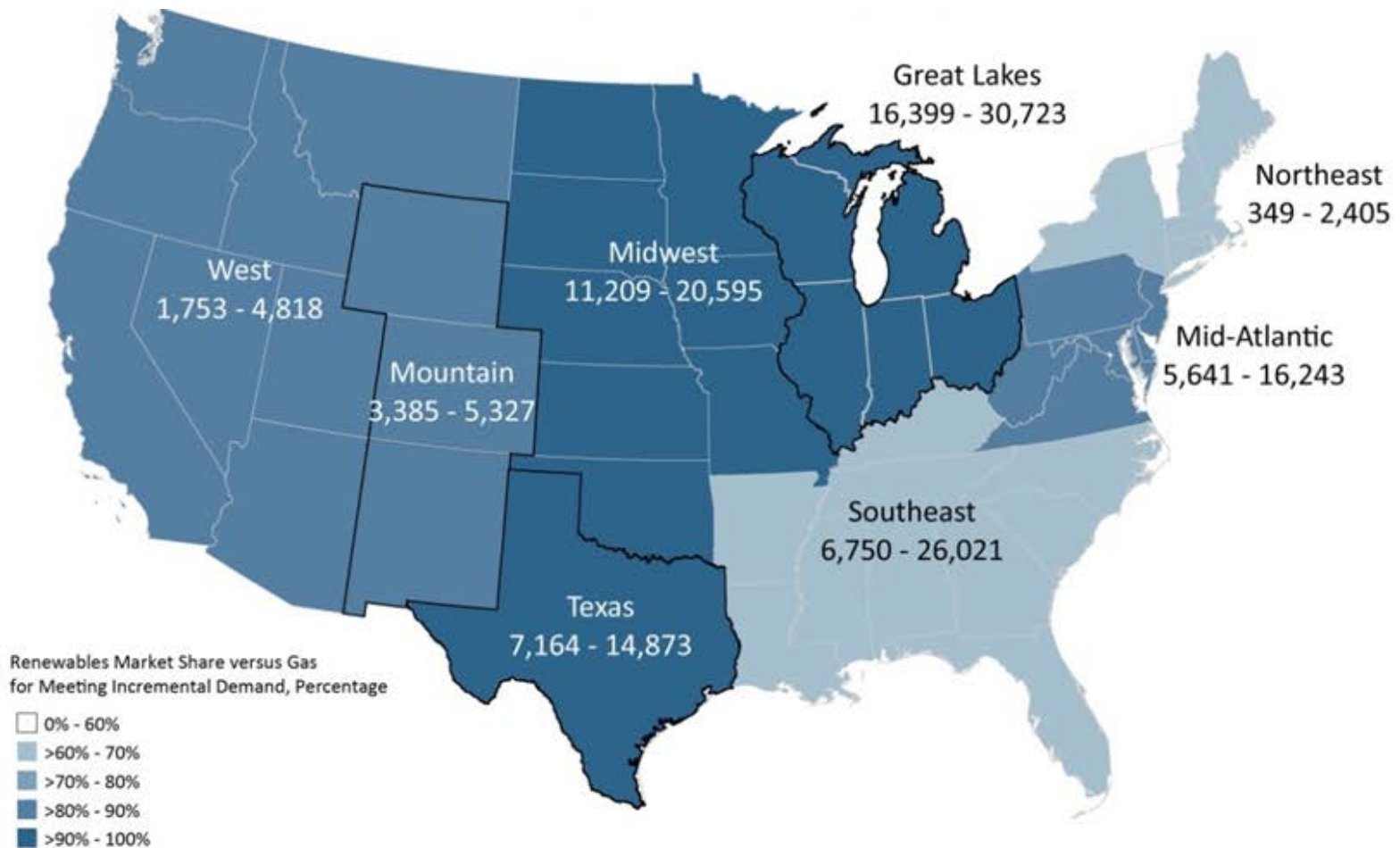
"At Yahoo, we're committed to being an environmentally responsible company...Driving the development of cleaner and renewable sources of power is an important piece of our sustainability strategy."

MICROSOFT

"The Pilot Hill Wind Project is important to Microsoft because it helps solidify our commitment to taking significant action to shape our energy future by developing clean, low-cost sources to meet our energy needs."



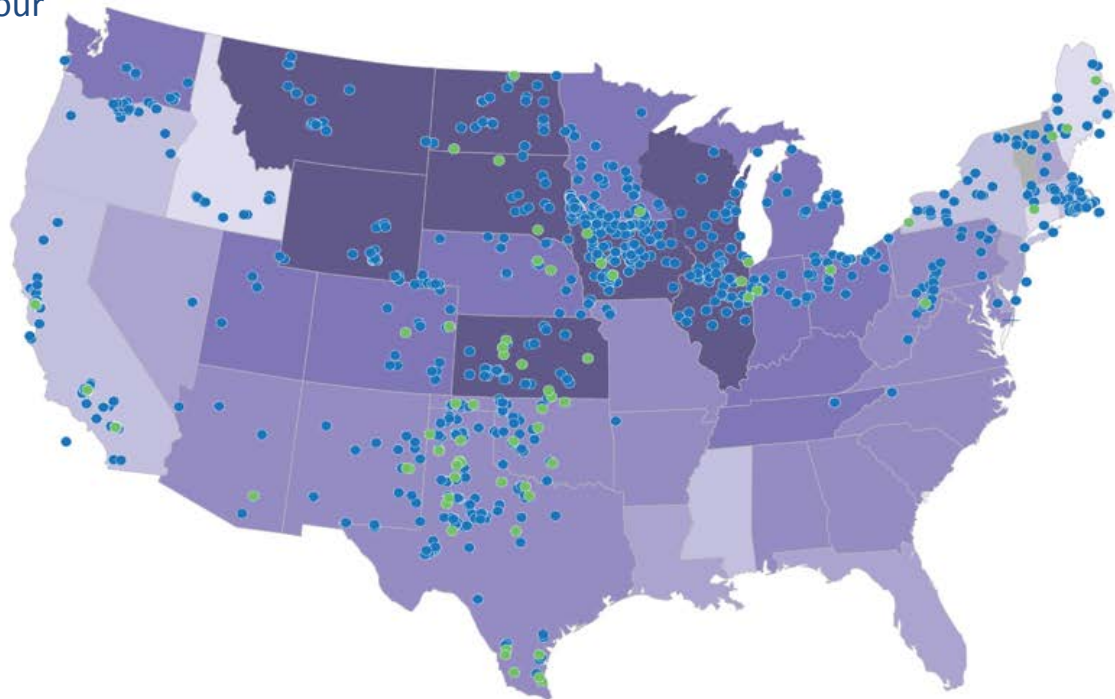
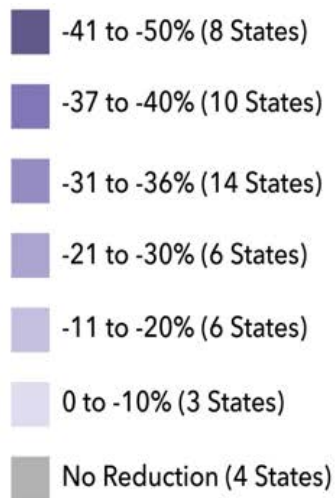
How much wind demand the Clean Power Plan will drive





Wind is key to Clean Power Plan compliance

Pounds per Megawatt-Hour



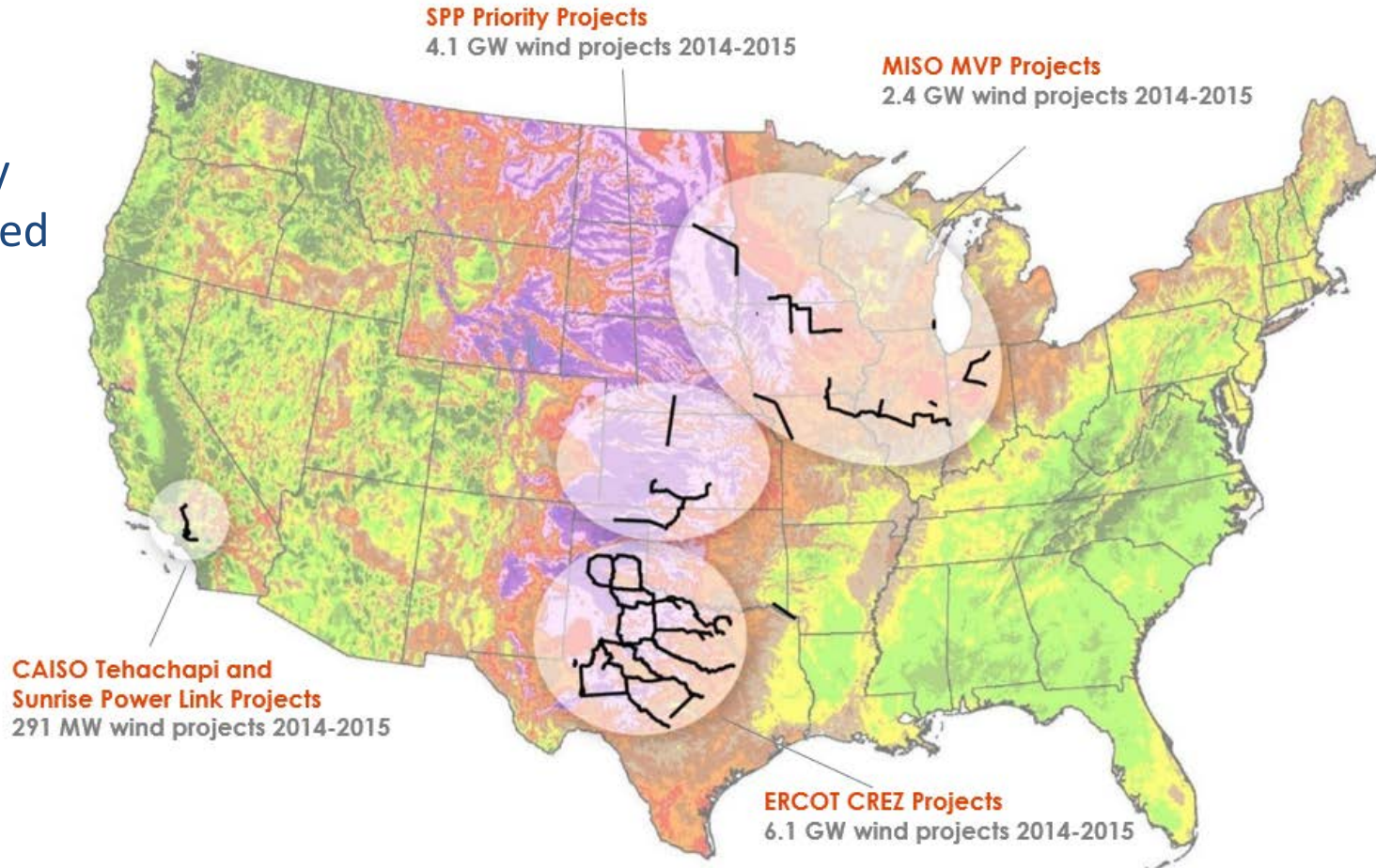
● Projects Completed Prior to 2015 ● Projects Completed in 2015

Reduction of CO₂ emissions rate from wind projects, 2012-2030



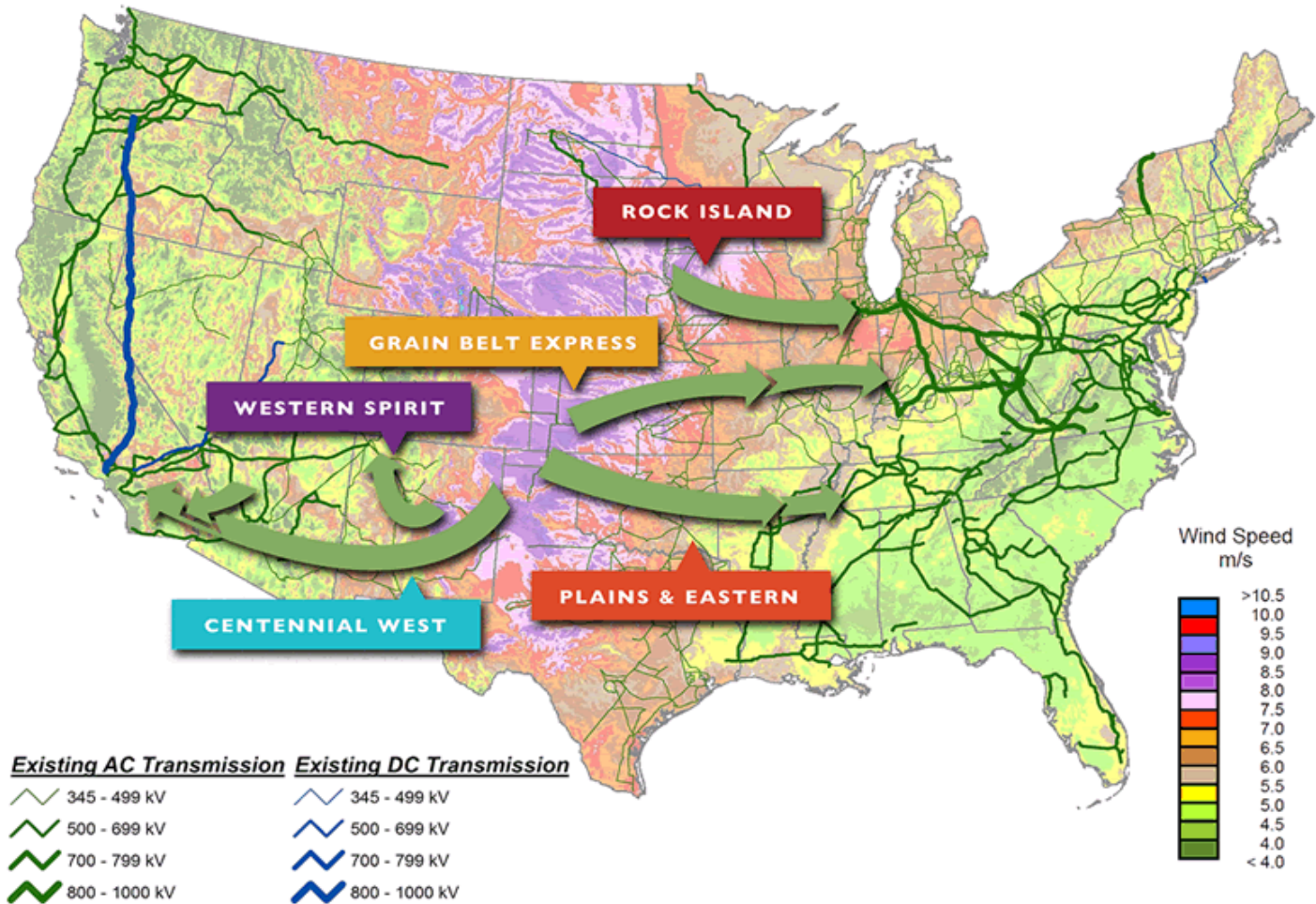
Trend: New lines access vast supply of low-cost, carbon-free wind

Recently developed lines





High-voltage DC lines coming





U.S. offshore: the next frontier



THANK YOU!

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