Deirdre K. Hirner

Midwest State Policy Director, AWEA
Air & Waste Management Association,
Midwest Section Conference, February 28, 2017

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History – The Wind Industry

- Senator Chuck Grassley, Iowa
  - Energy Policy Act 1992
    - Production Tax Credit
      - Reauthorized with a 5-year Phase-out
        - FY16 Omnibus Bill: December 18, 2015

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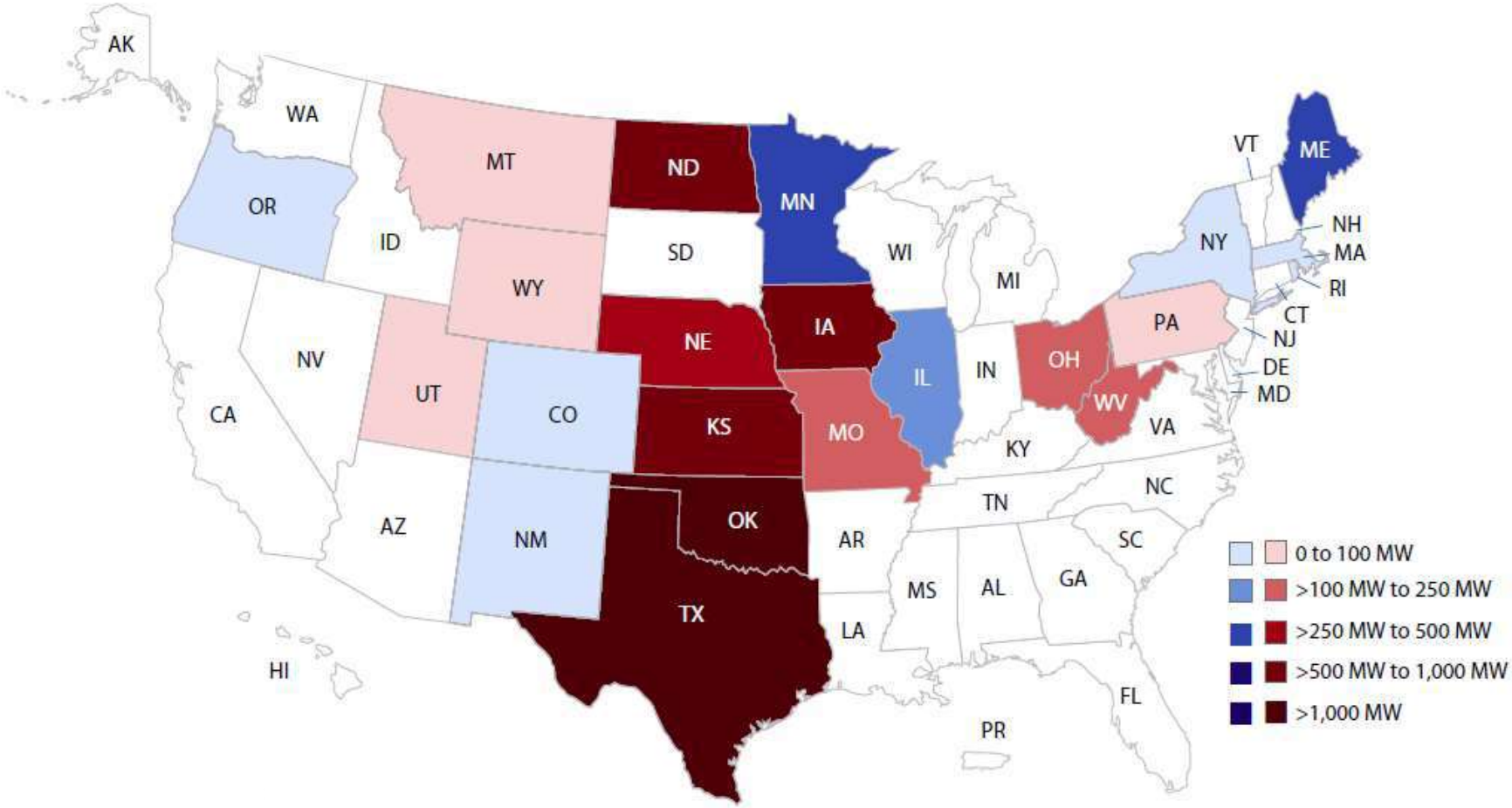
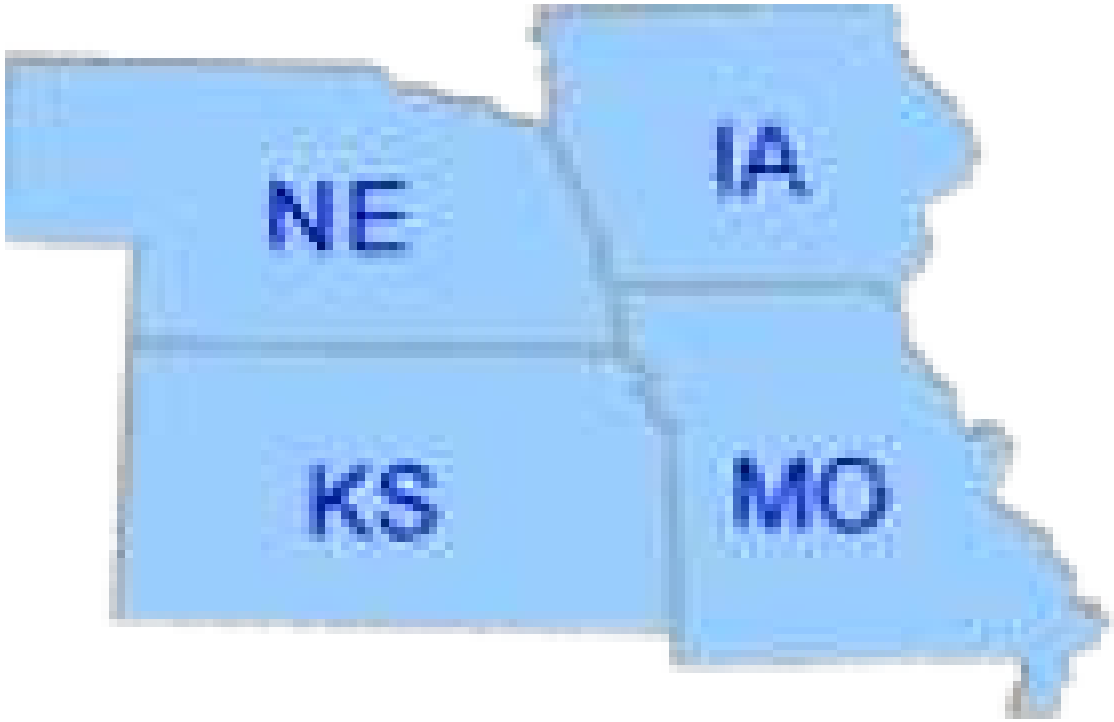
Midwest Region: IA, IL, MI, MN, MO, IN, ND, SD, WI, KS, NE, OK



Air and Waste Management Association, Midwest Section

Overlap: 4 states



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Wind power popular in rural communities – with good reason

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Wind farms pay taxes that contribute new revenue to local communities, benefiting

- **schools,**
- **county & local services,**
- **libraries,**
- **hospitals, and**
- **public safety facilities**

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Wind Energy in Rural America

- The overwhelming majority of U.S. wind farms today operate in rural areas.
- U.S. wind farms now pay $245 million a year to rural landowners.
- More than $171 million goes to landowners in counties with below average incomes.

"The wind farm allowed us to be able to keep our family farm." We had come to a point where it no longer made financial sense to keep the property even with its vast sentimental value. The wind farm balanced the financial viability with the sentimental value, allowing the family farm to continue to be passed on to the next generation."

Jason Wilson, Calhan, Colorado

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Wind Works for America:
Creating Jobs & Boosting our Economy

MISSOURI

- 2016 direct and indirect jobs supported: 1,001 to 2000
- Total capital investment: $960 million
- Annual land lease payments: $1 - $5 million
- Number of active manufacturing facilities: 11

KANSAS

- 2016 direct and indirect jobs supported: 5,001 to 6,000
- Total capital investment: $7 billion
- Annual land lease payments: $10 to $15 million
- Number of active manufacturing facilities: 5

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Wind Works for America:
Creating Jobs & Boosting our Economy

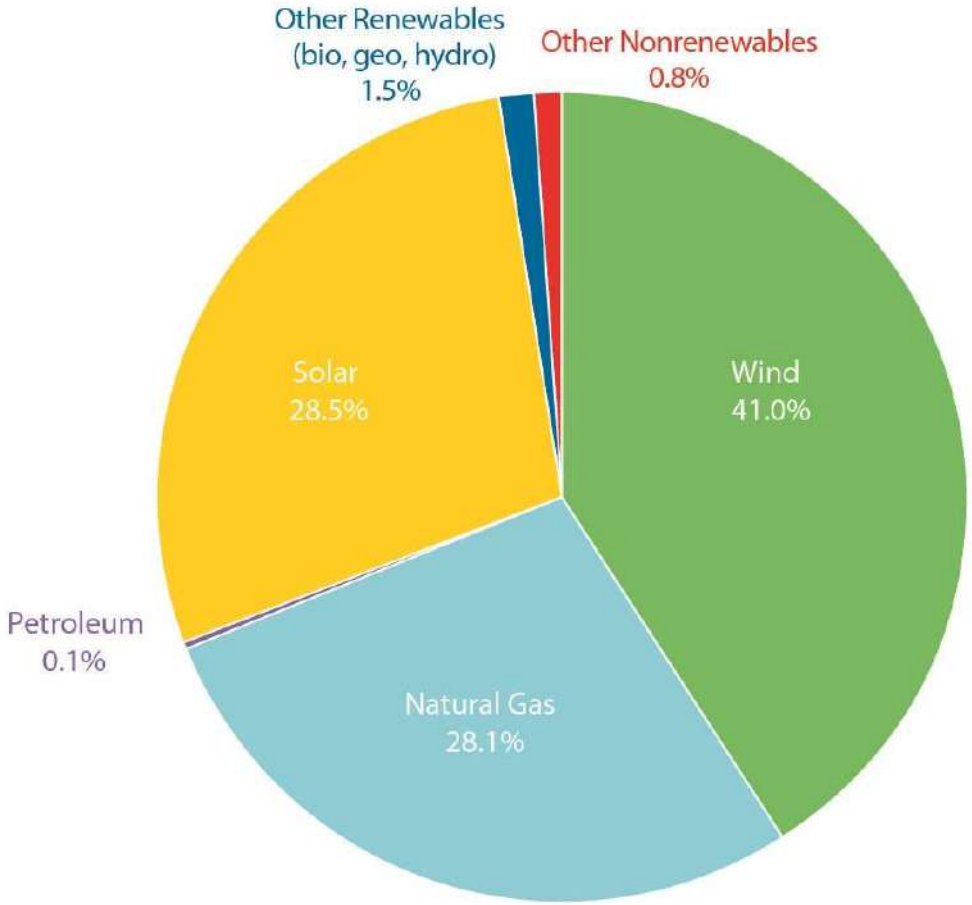
IOWA

- 2016 direct and indirect jobs supported: 8,001 to 9000
- Total capital investment: $11.8 billion
- Annual land lease payments: $10 - $20 million
- Number of active manufacturing facilities: 11

NEBRASKA

- 2016 direct and indirect jobs supported: 3,001 to 4,000
- Total capital investment: $1.7 billion
- Annual land lease payments: $1 to $5 million
- Number of active manufacturing facilities: 1

Wind was biggest source of new U.S. electric power in 2015



Source: *AWEA U.S. Wind Industry Annual Market Report Year Ending 2015*

Enough U.S. wind power for 24 million homes, led by Texas

Most wind power

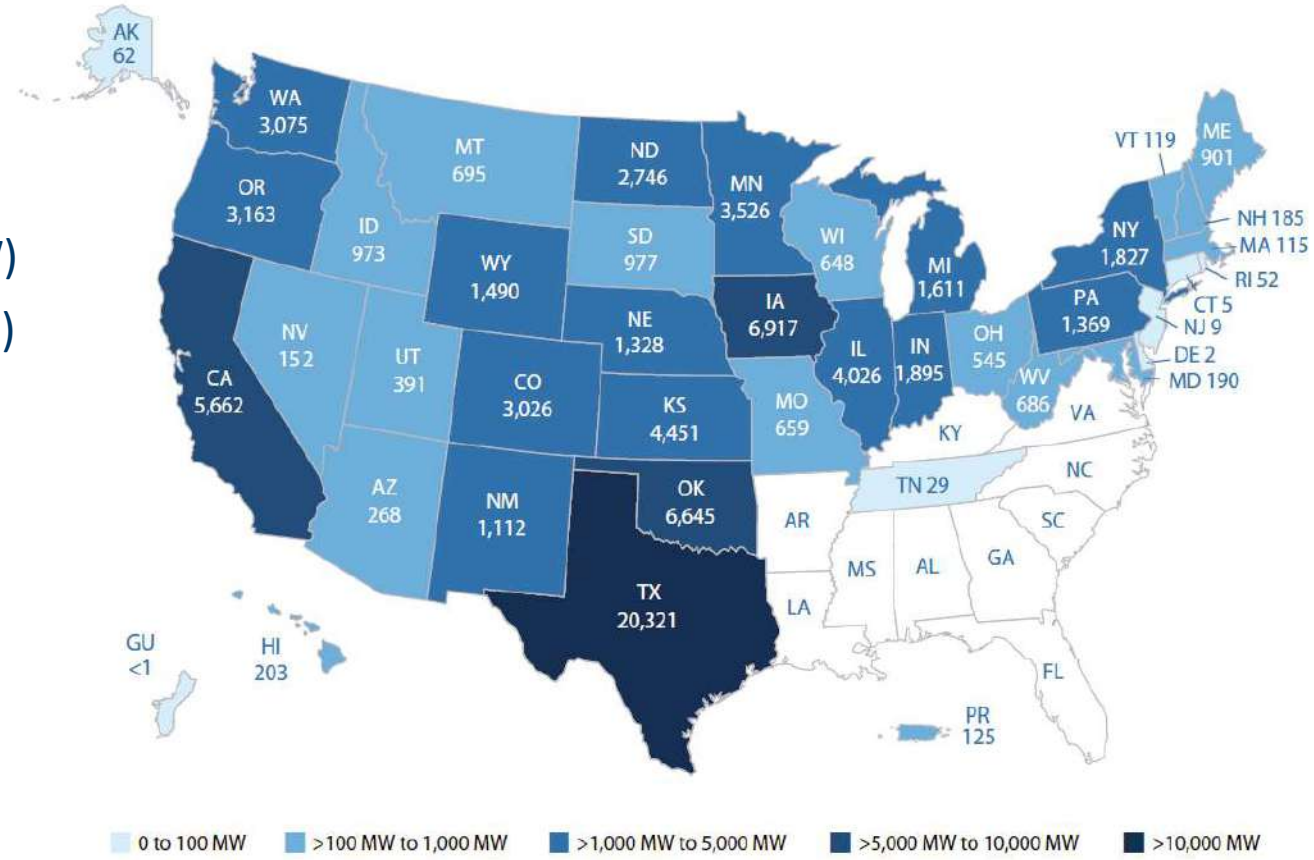
Texas (20,321 MW)

Iowa (6,917 MW)

Oklahoma (6,645 MW)

California (5,662 MW)

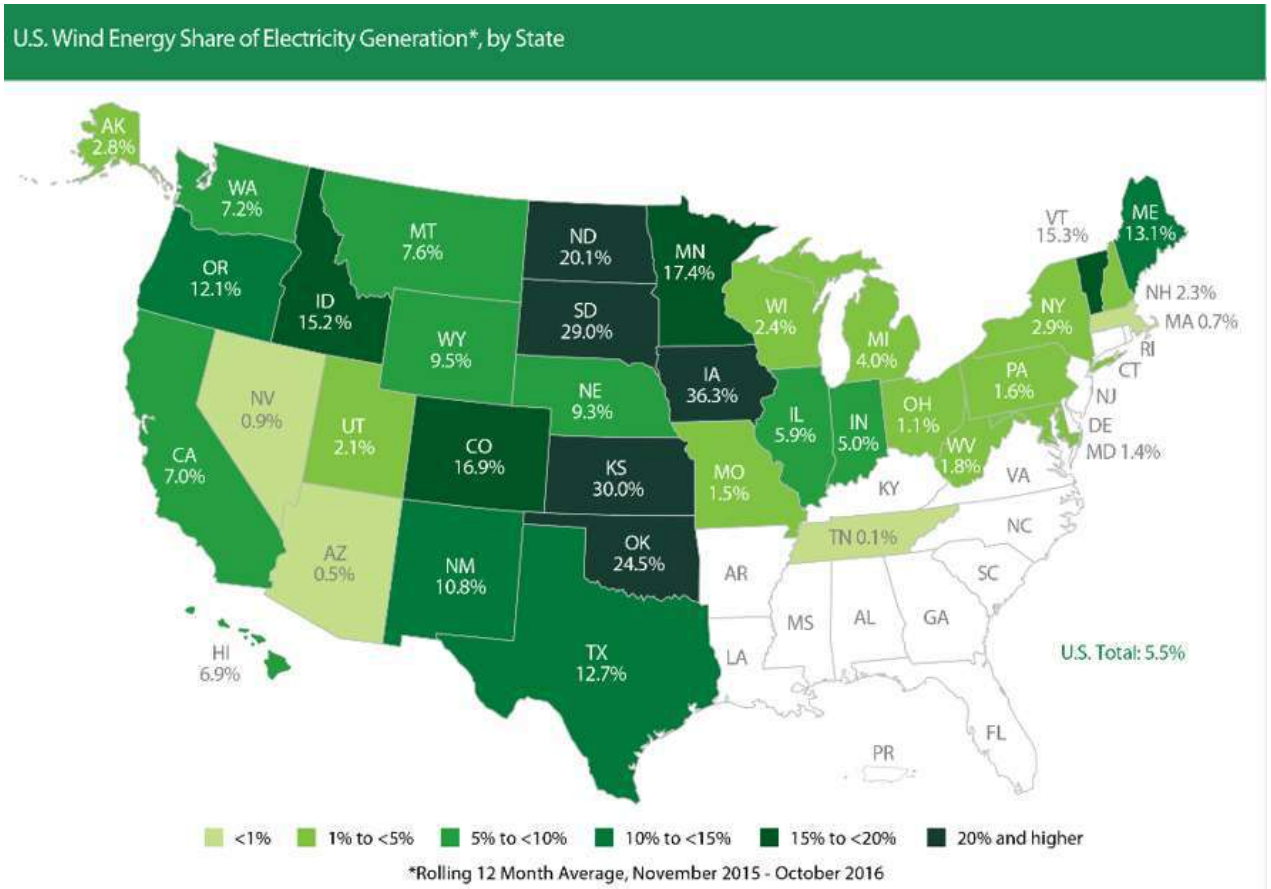
Kansas (4,451 MW)



Source: *AWEA U.S. Wind Industry Fourth Quarter 2016 Market Report*

Increasing contribution to the grid, *reliably* integrated

- Iowa now generates over 35% of its electricity produced in-state from wind
- 13 states produced over 10% of their in-state electricity from wind



Source: *AWEA*

Wind energy is on sale: Costs have fallen 66%

Source: Lazard, Version 10.0, 2016

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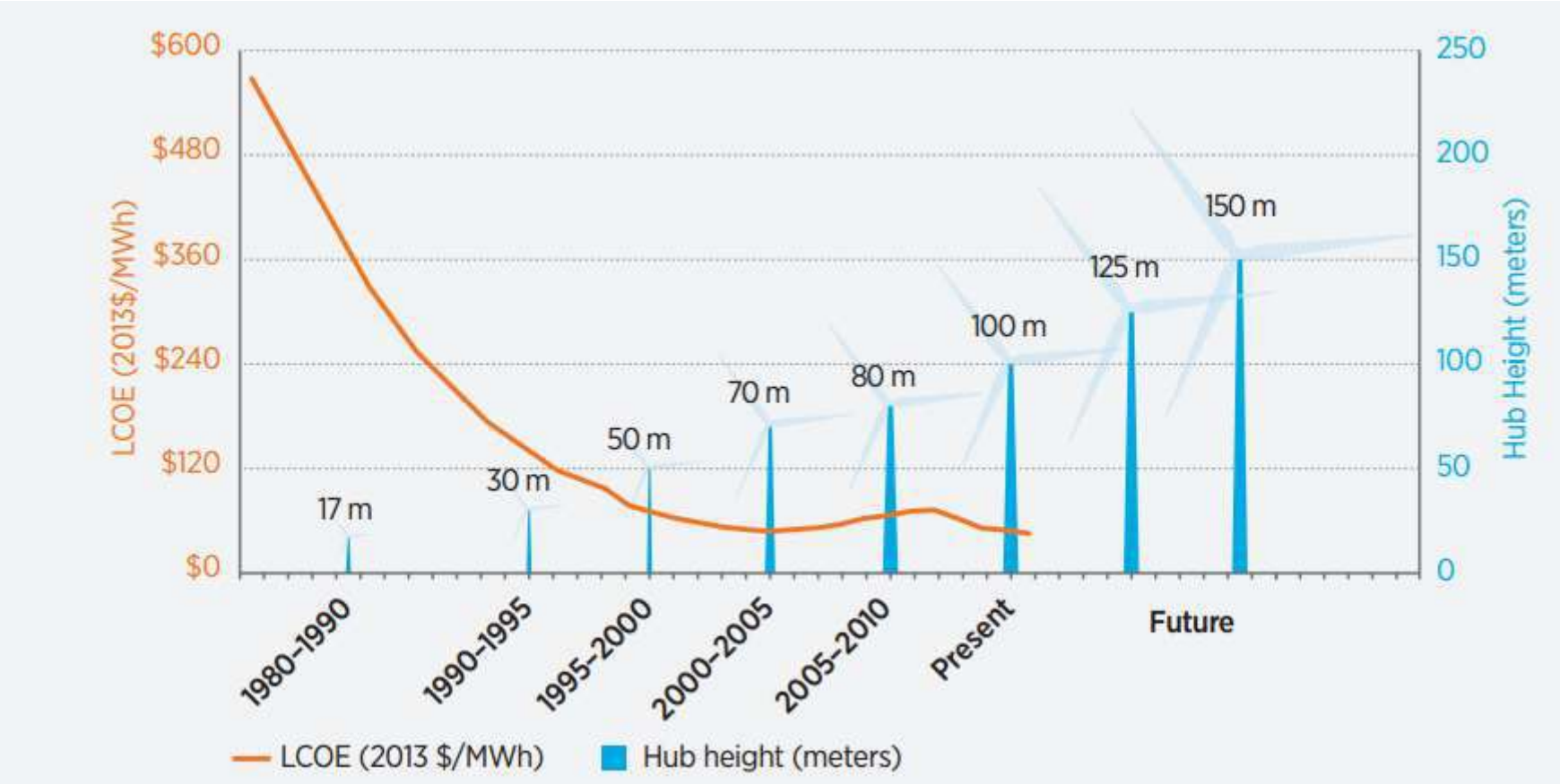
Reasons for falling wind costs include

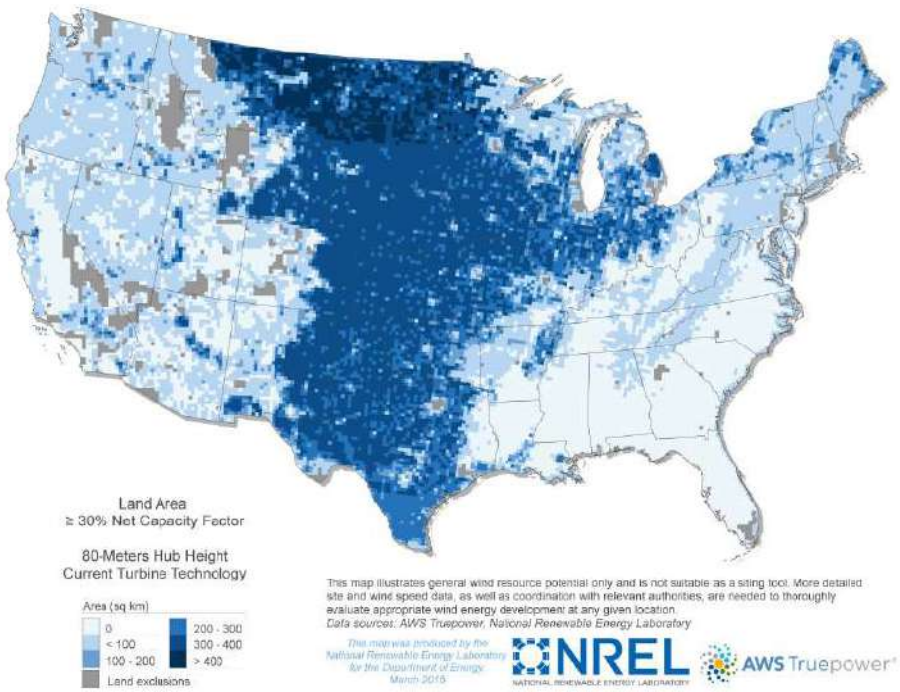
- Economies of scale (turbines, companies)
- Technology accessing higher winds
- Optimized siting
- Predictive O&M
- More transmission
- U.S. manufacturing
- Policies more predictable

Cost falling with economies of scale

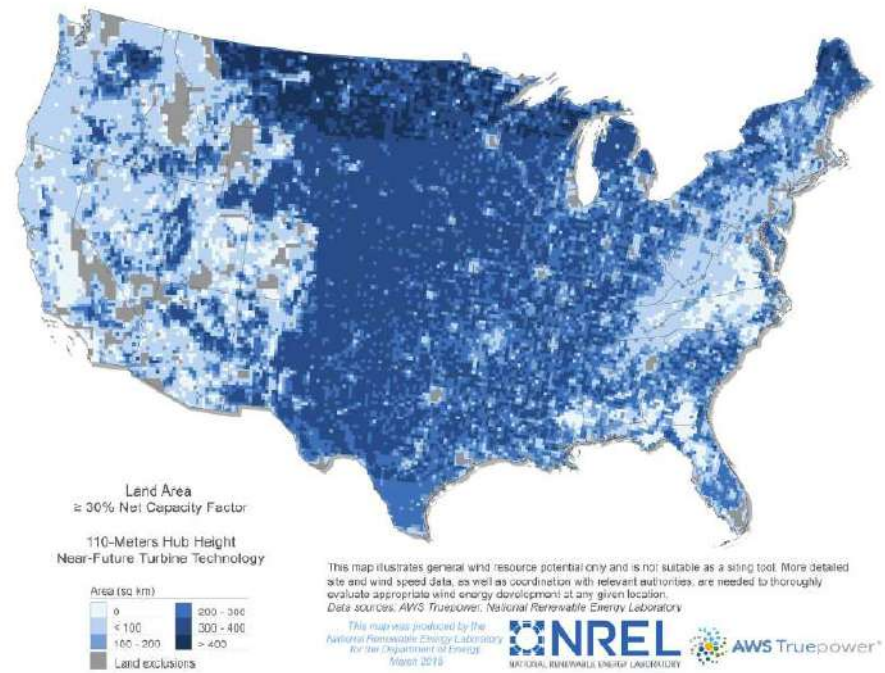


Source: LBNL

New technology reaches higher winds, allows projects in more regions

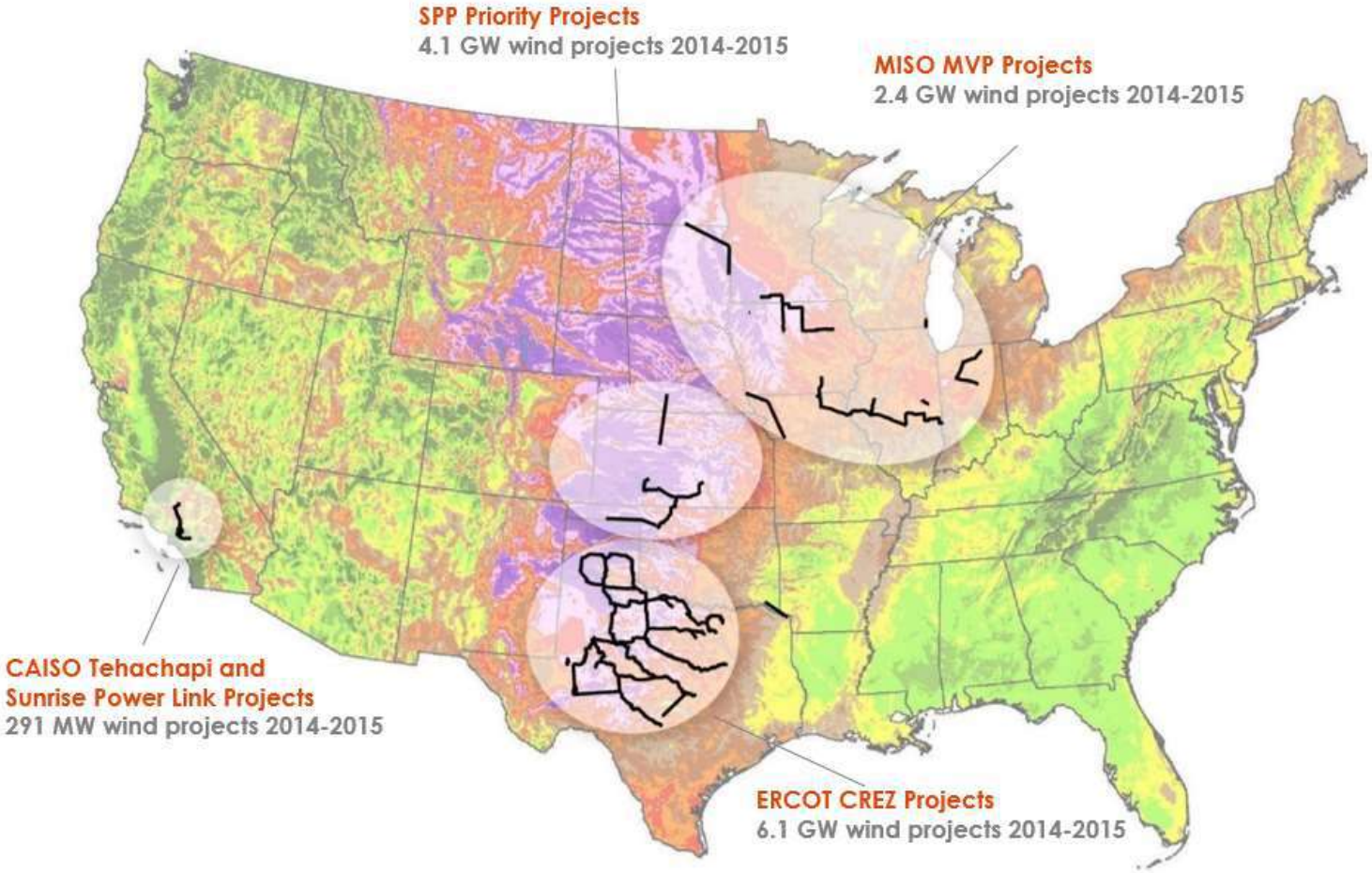


Wind resource at *80-meter* turbine hub height



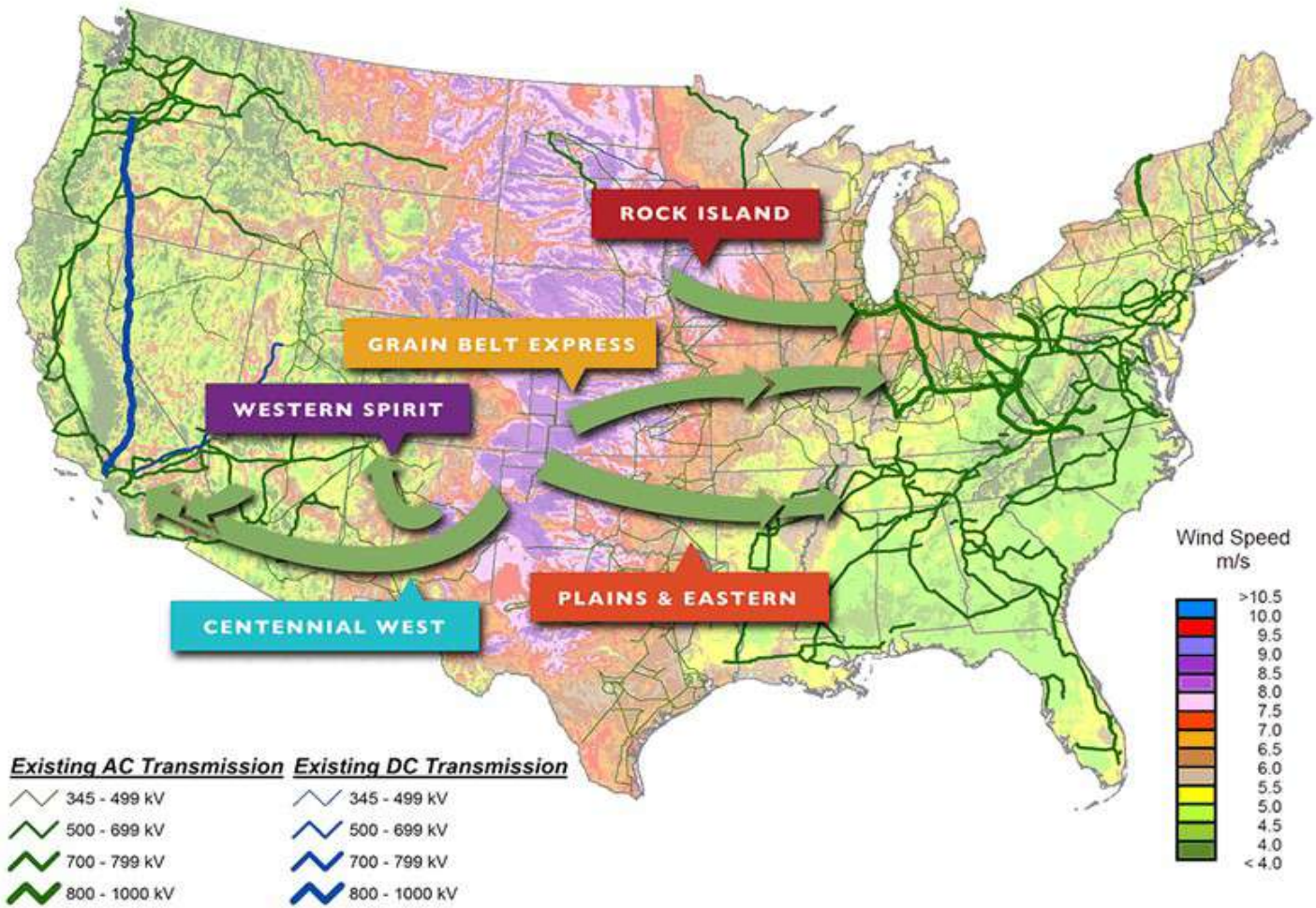
Wind resource at *110 meters*

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



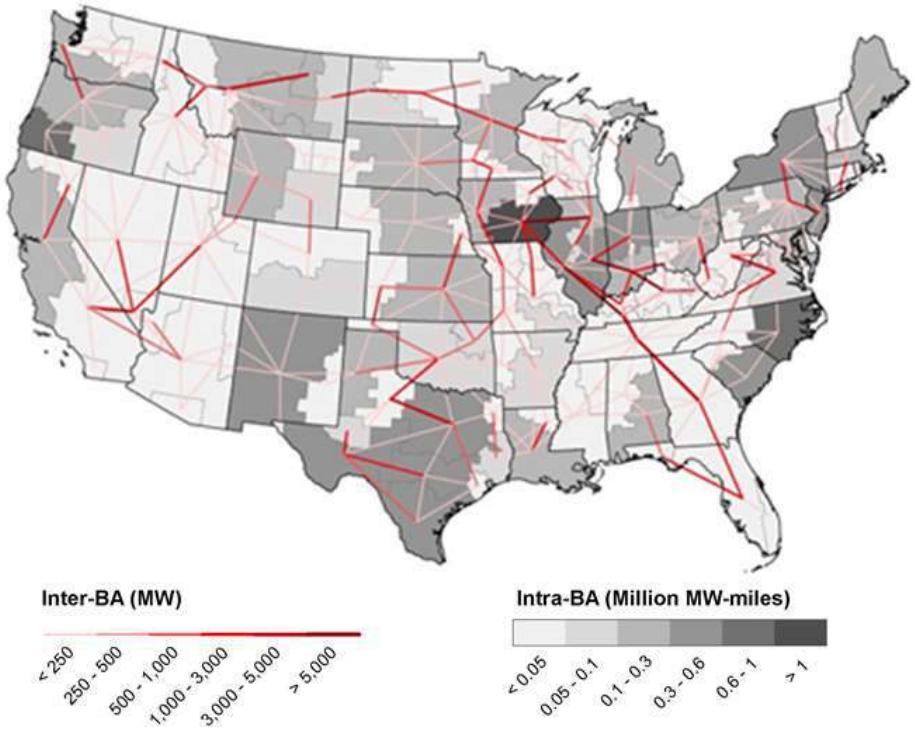
Source: AWEA 2015 Annual Report. Wind project capacity includes projects under construction.

High-voltage DC lines coming

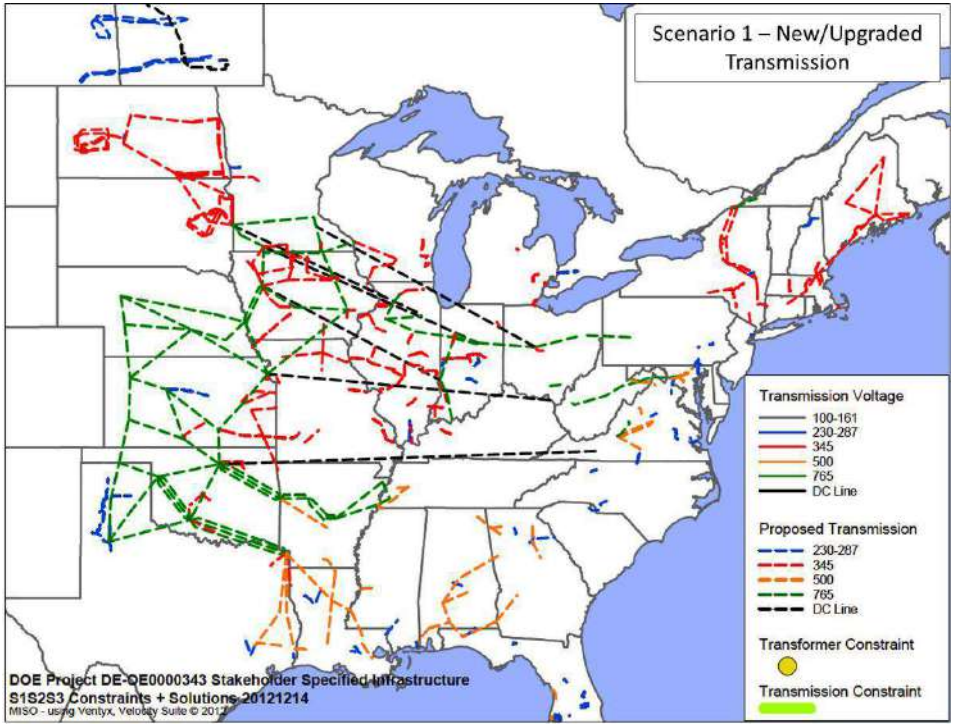


Source: E&E

Much more transmission is needed



WindVision 2050 case



Eastern Interconnect Planning Collaborative

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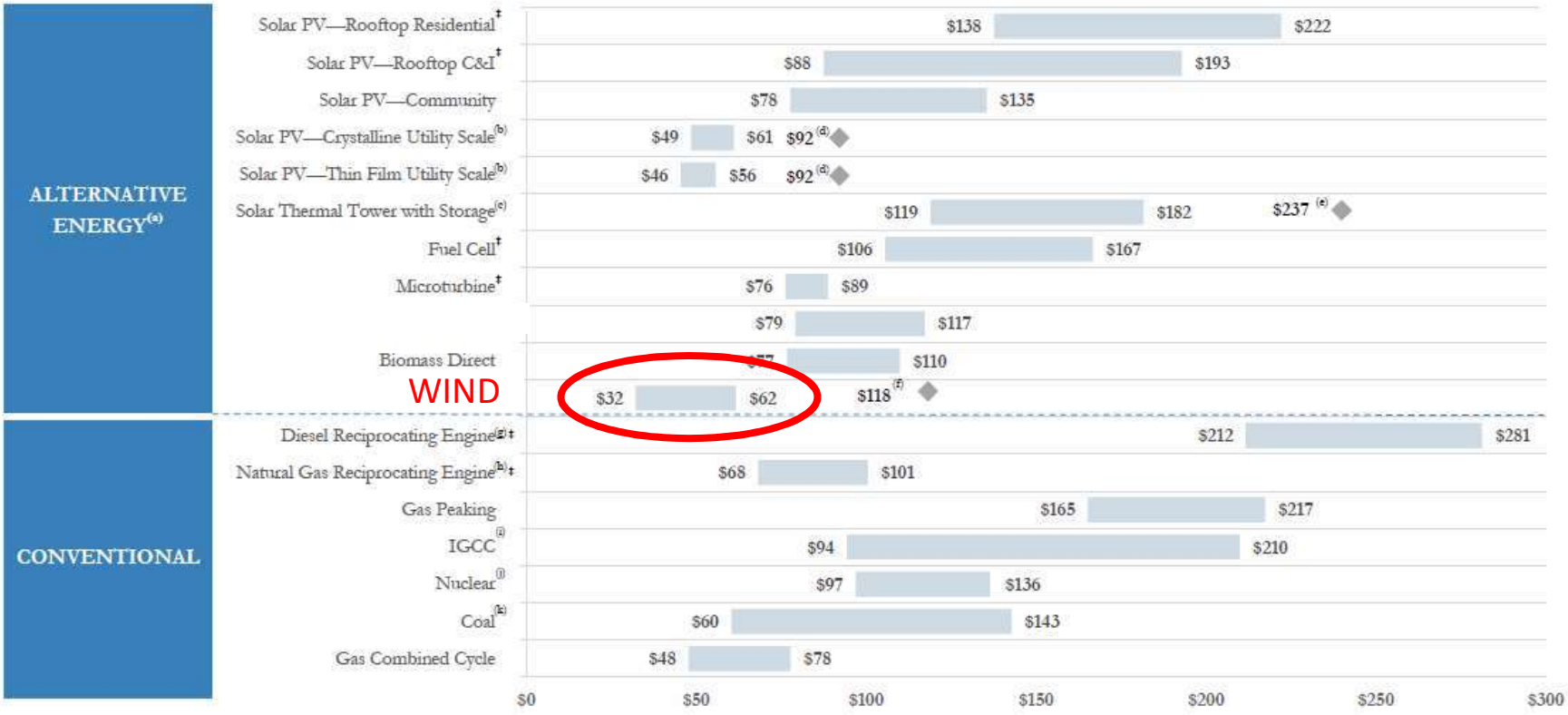
Wind power is increasingly cost-competitive

2016 Unsubsidized Levelized Cost of Energy ($/MWh)



Source: Lazard, Version 10.0, 2016

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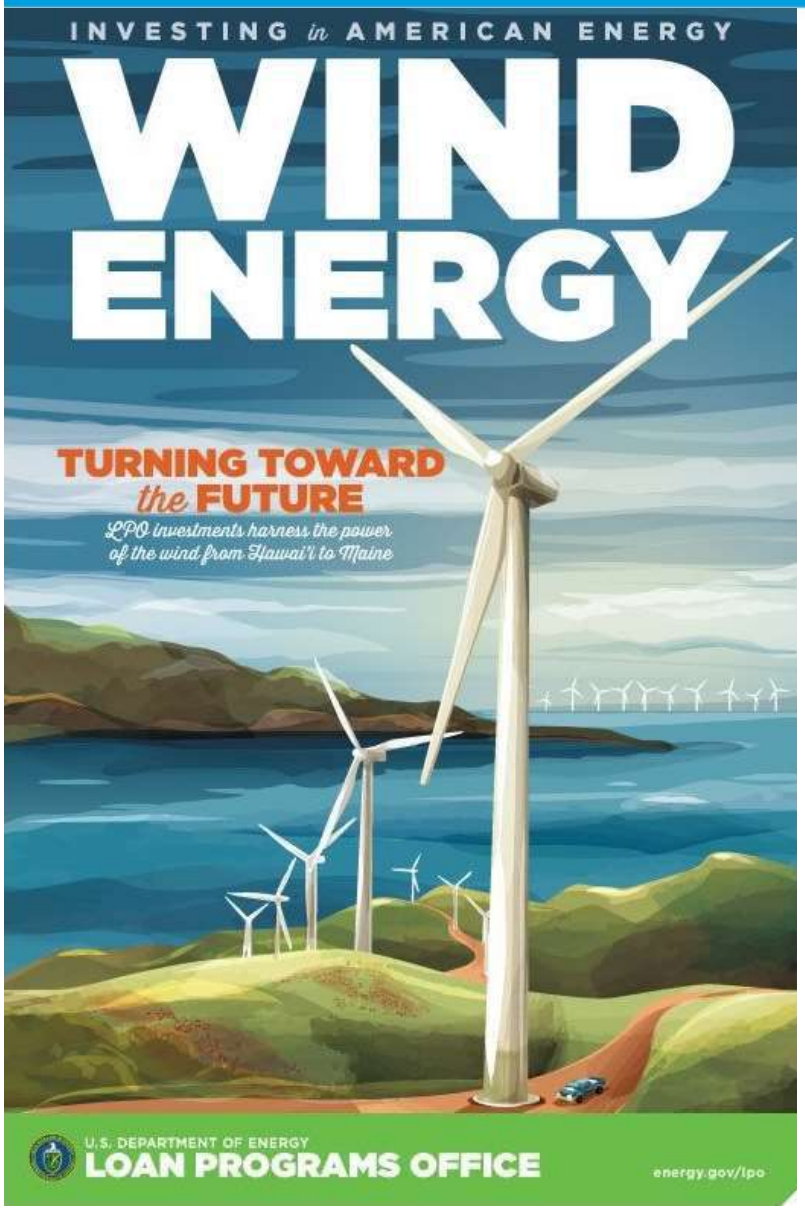


Coal Plant Retirements

Reduced Carbon Emissions

Renewable Portfolio Standards

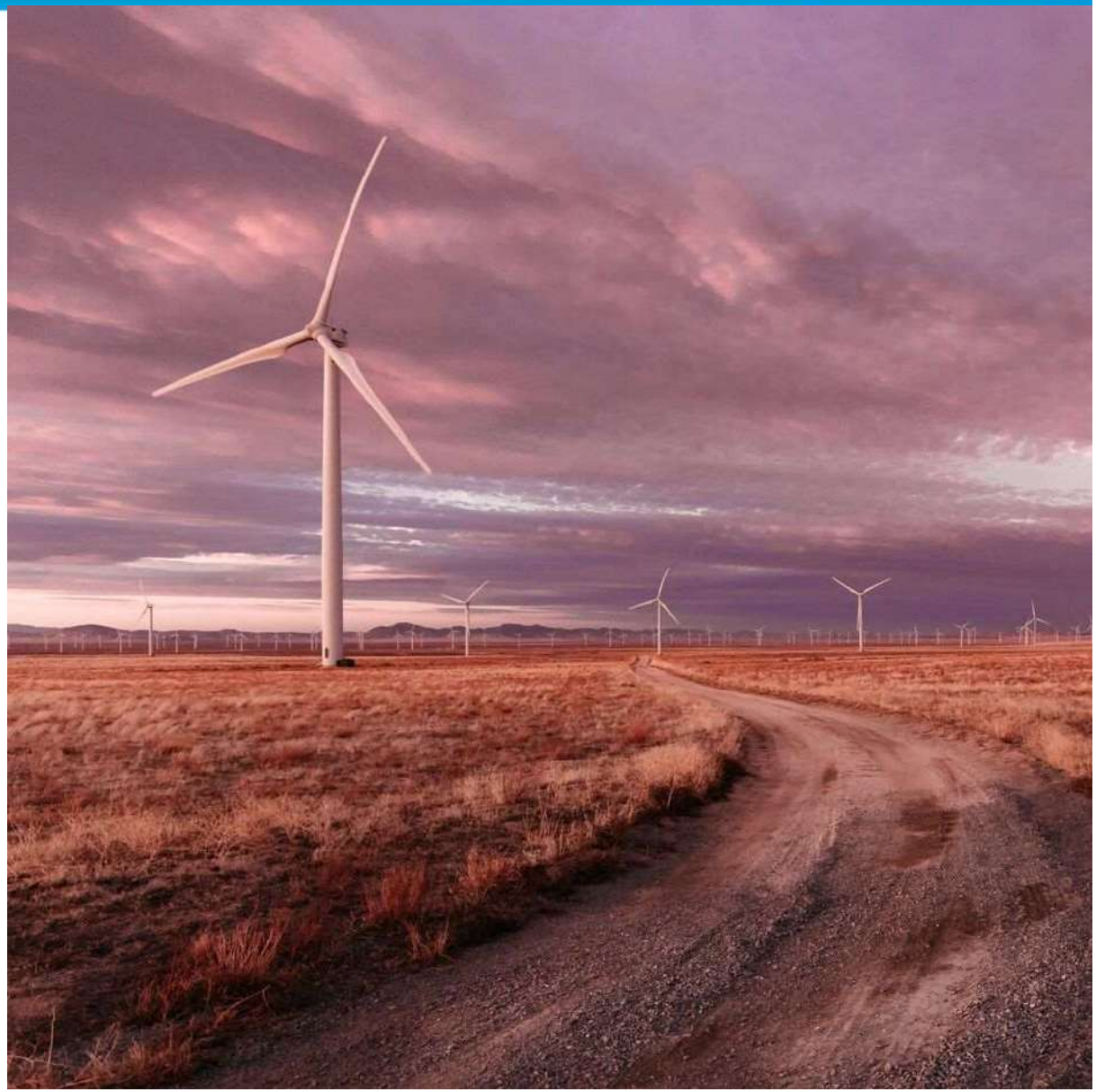
Portfolio Diversity

Commercial and Industrial Users

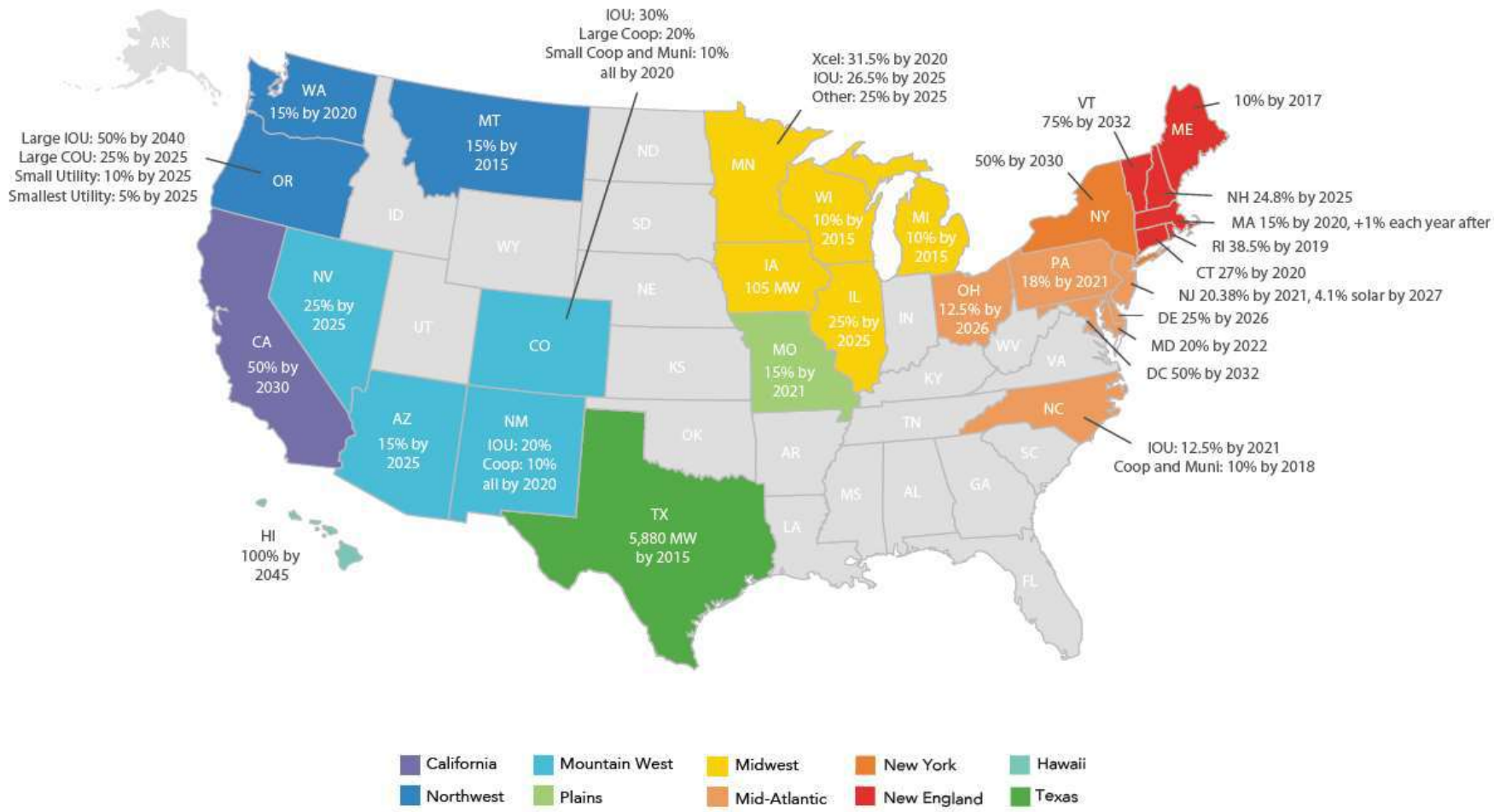
Source: DOE

Midcontinent Independent System Operator (MISO)

Even if the CPP were not to go into effect, the trend among utilities, the 26 GW of renewables in MISO's queue, the forecasted demand for renewable energy by residential, commercial and industrial customers, and EIA's projections all indicate that the U.S. generation fleet will continue to trend toward lower carbon emissions.

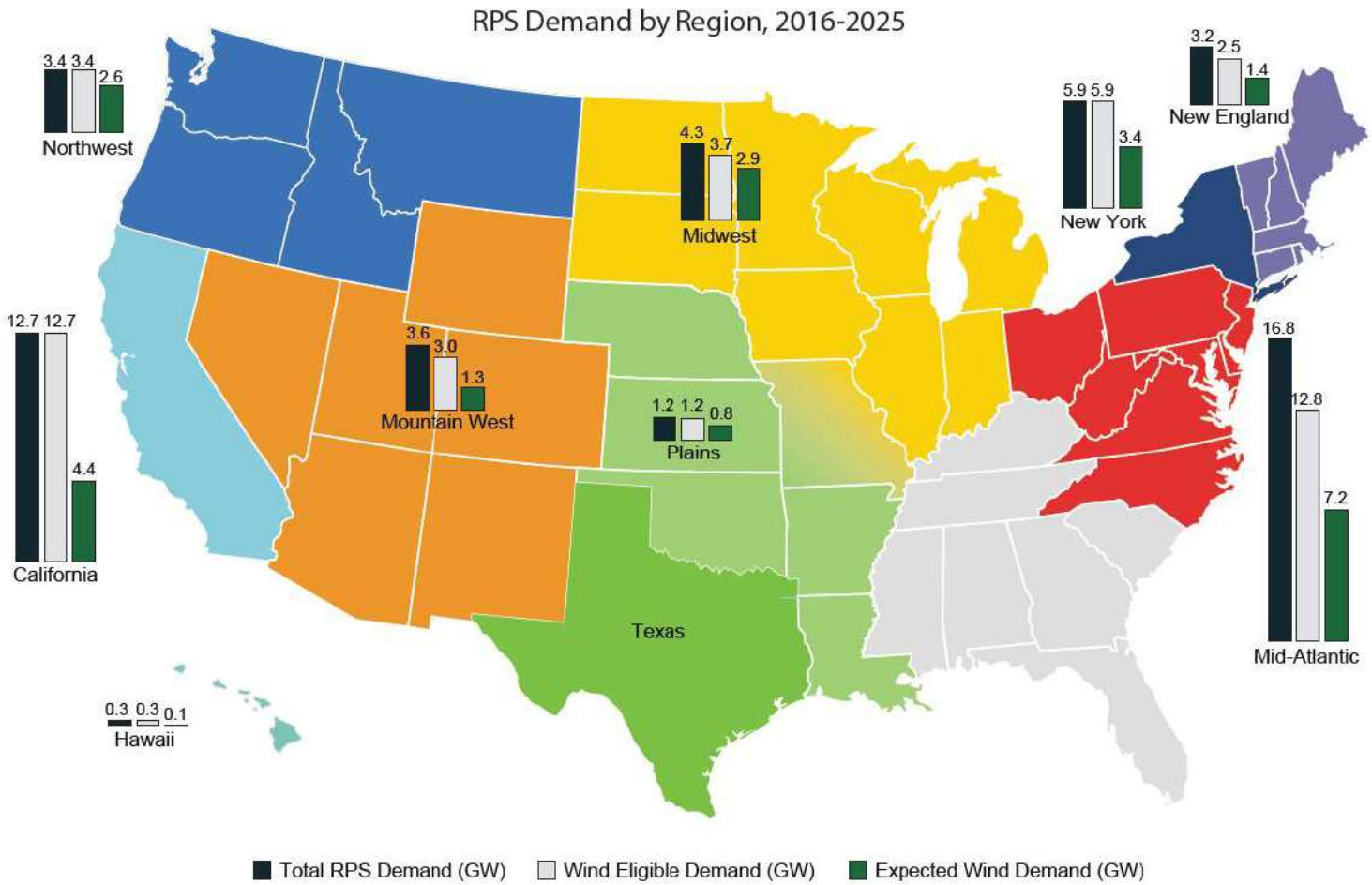


State renewable standards keep generating demand



Source: *AWEA State RPS Market Assessment 2016*

RPS demand for wind (projected GW)



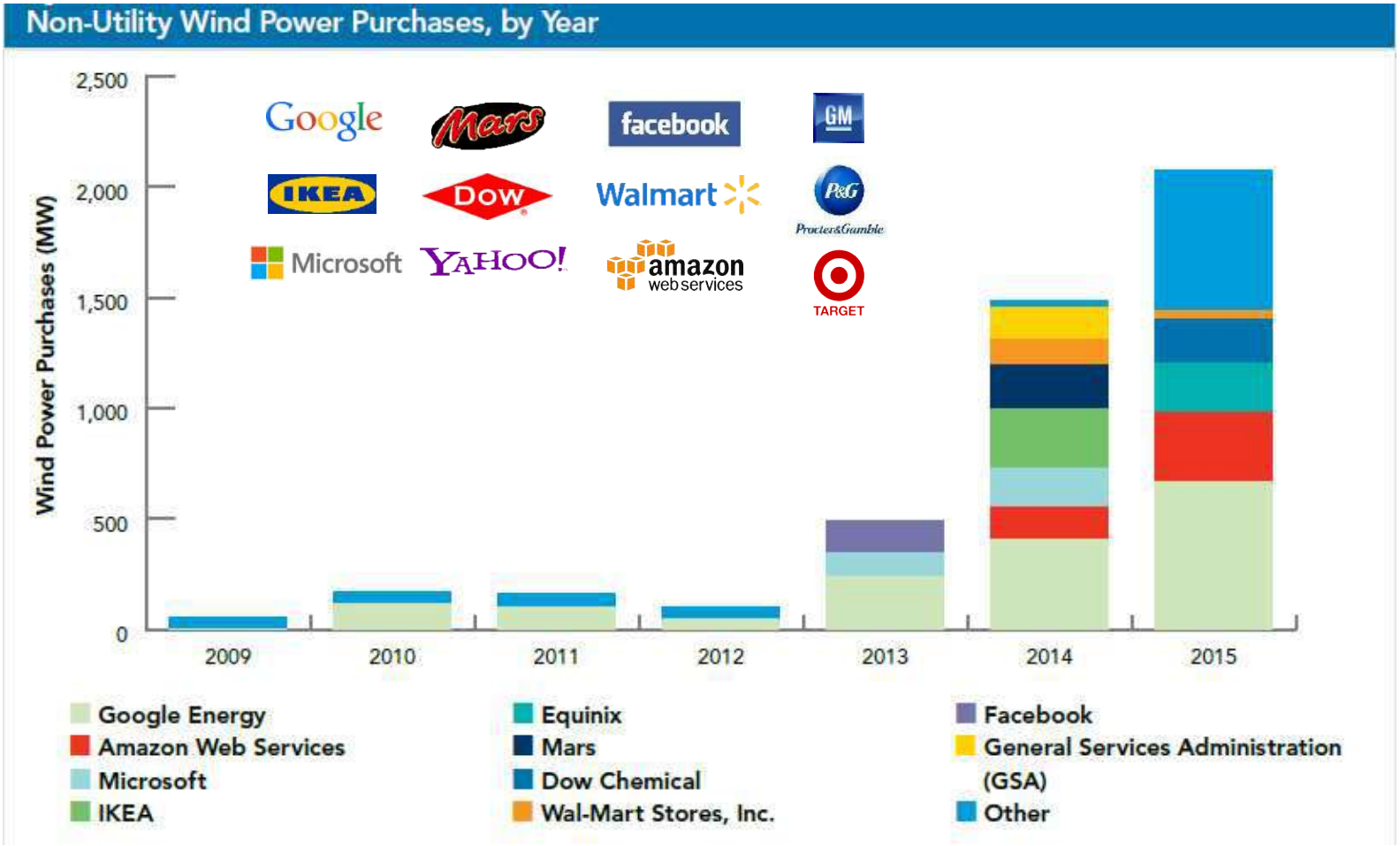
Source: *AWEA State RPS Market Assessment 2016*

Southern Company

Most think of Southern as a big coal customer. But, in announcing their third quarterly results they said they're switching into wind.

Southern plans to spend $1 billion a year for the next five years just on wind. So that's 650 MW a year of wind right there. They said they'll spend an additional half a billion a year on plants that combine solar, natural gas, and more wind.

Trend: Major brands cutting costs & pollution with wind



Source: *AWEA U.S. Wind Industry Annual Market Report Year Ending 2015*. MW counted as of public announcement of contract

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."

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WIND WORKS for AMERICA!

Thank you, and I will be pleased to answer questions.

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(I know it is a D.C. number, but I live in and work out of Jefferson City, MO)