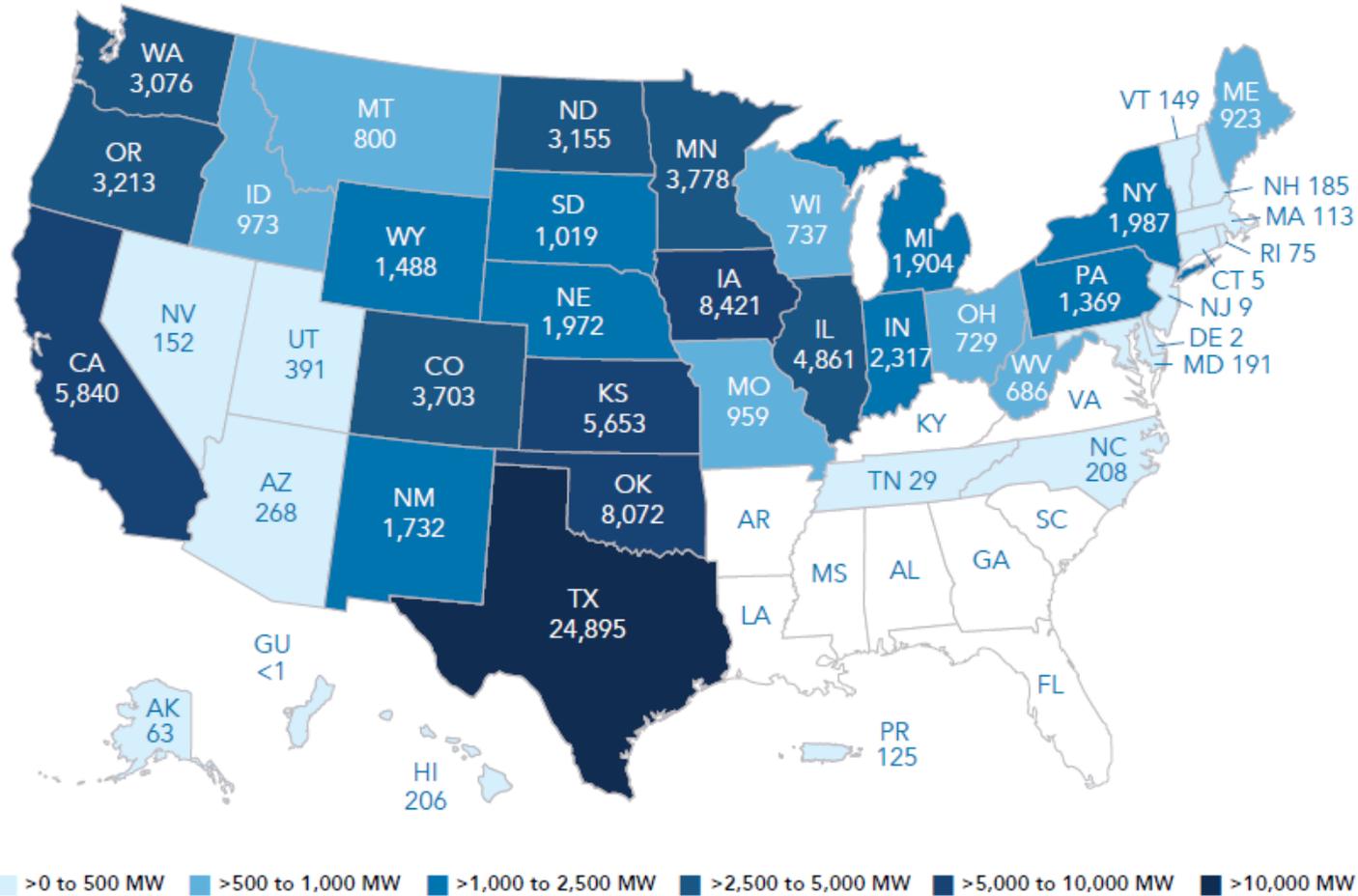


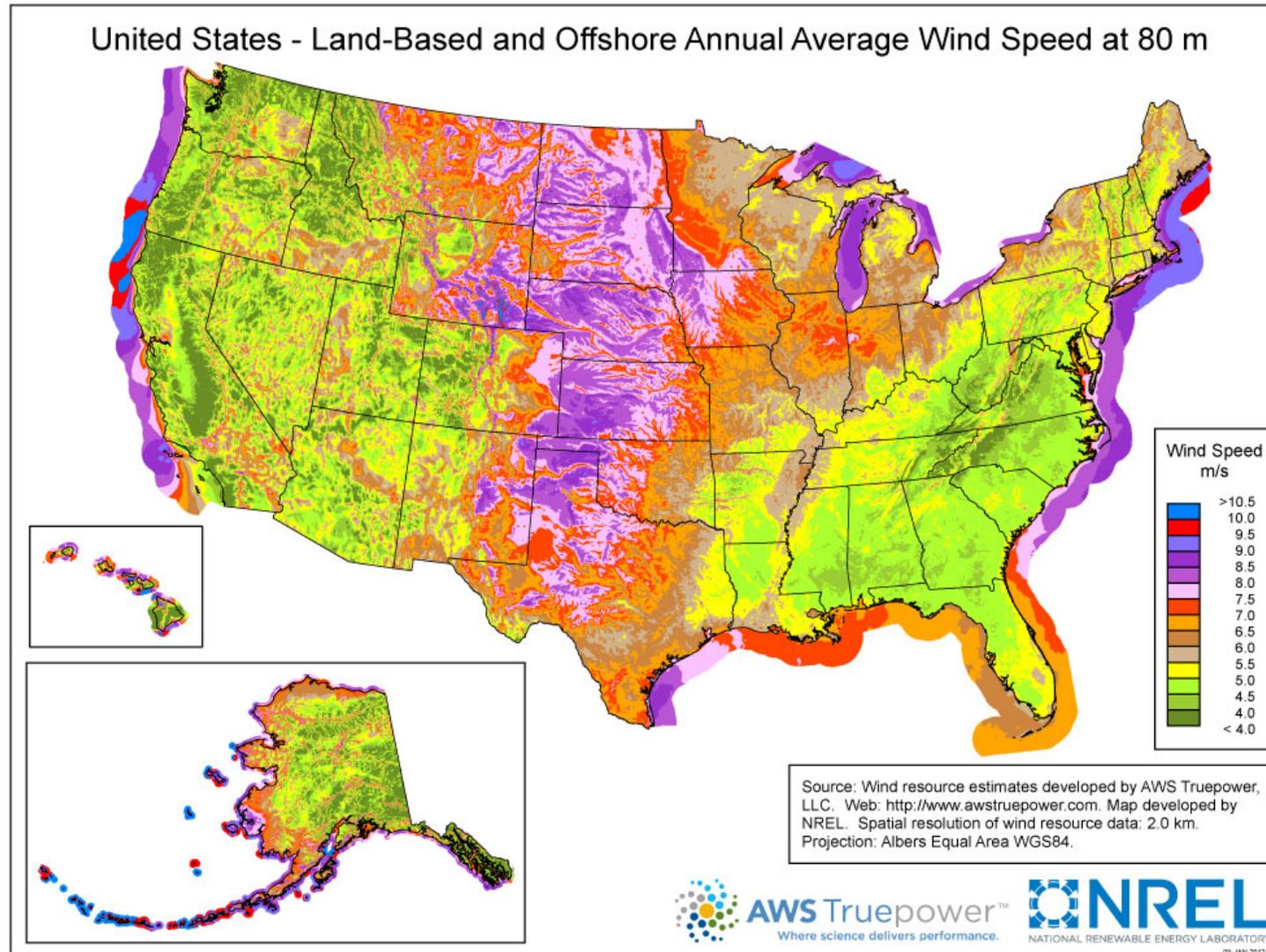
Wind Deployment

Figure 27
U.S. Wind Power Capacity, by State



Source: AWEA 2018 Annual Market Report

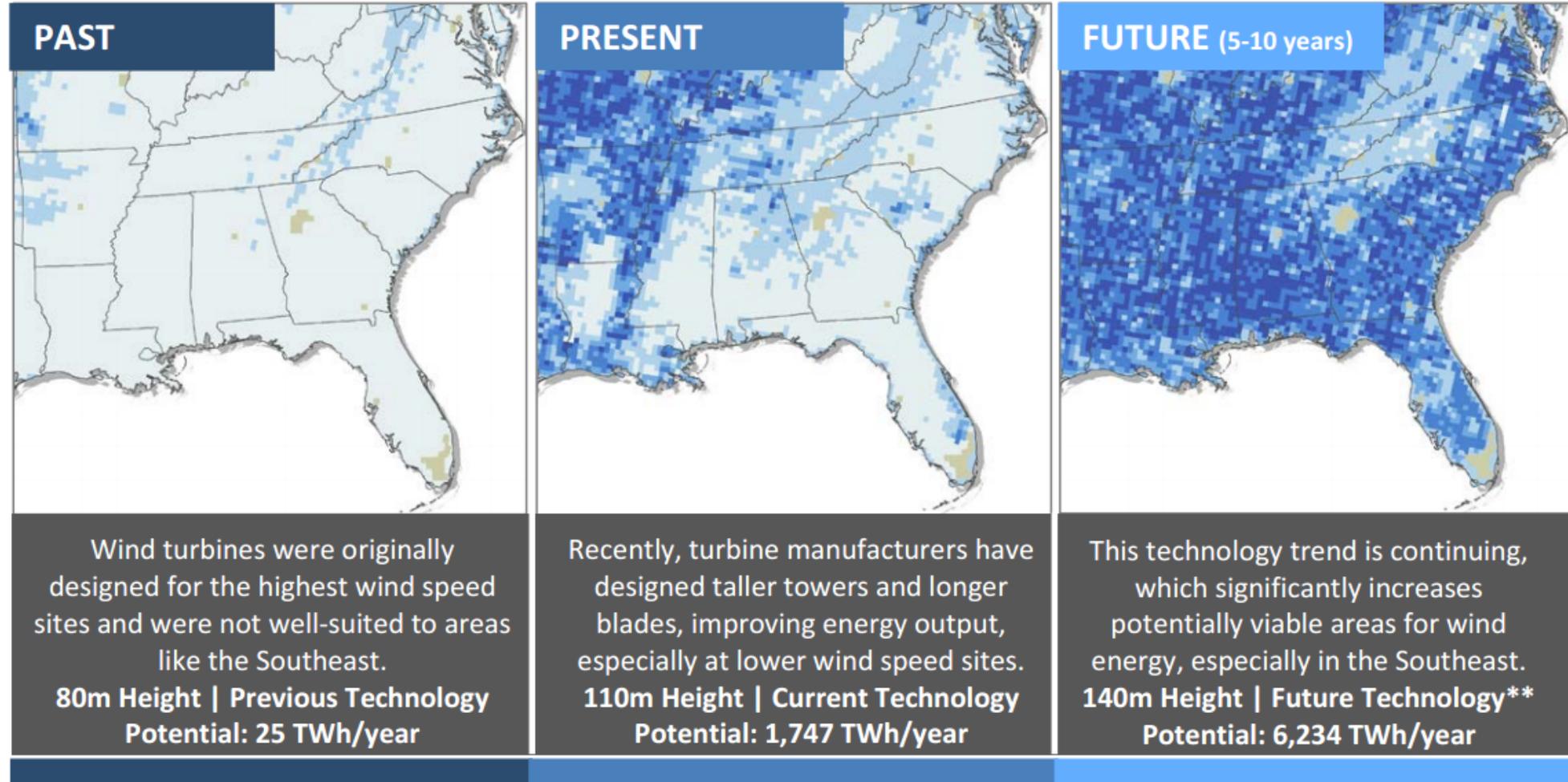
Wind Resource at 80 meters



Technology Changes Open Up the Southeast

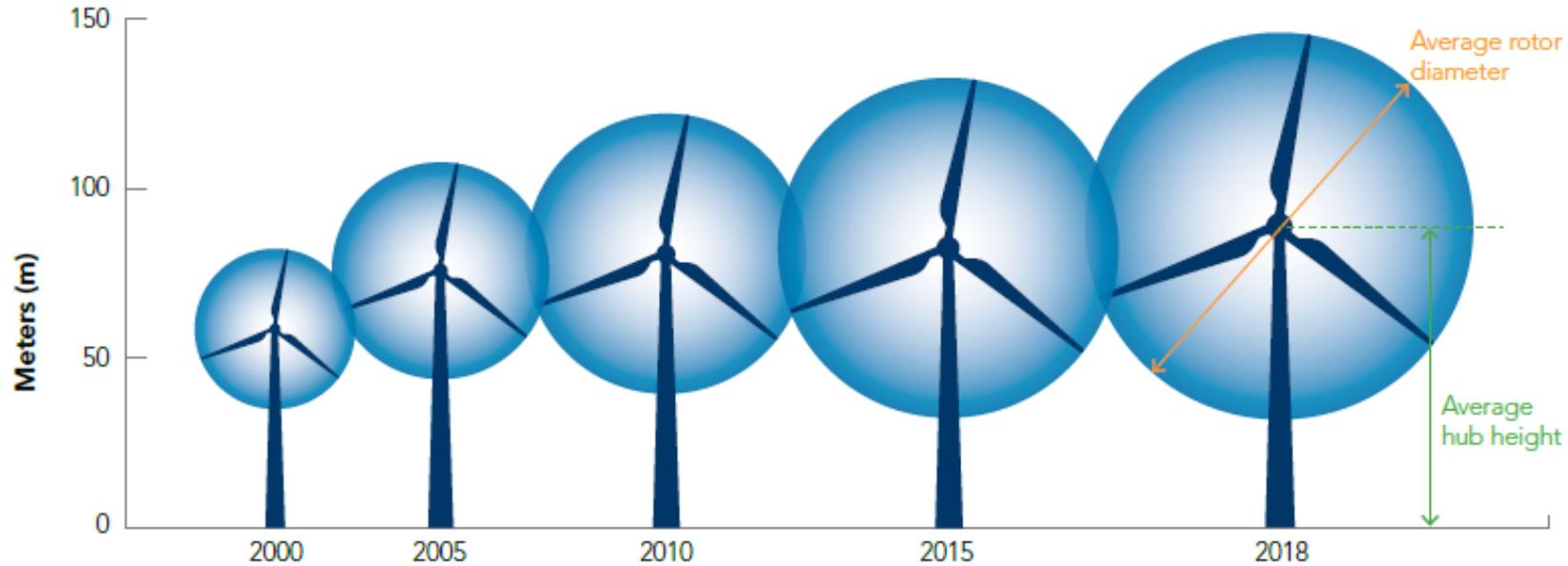
Resource Potential

Maps below estimate areas where wind energy could be economically viable* when using available turbine technology. Not all areas shown can be developed.



Evolution of the Utility-Scale Turbine

Figure 84
Evolution of the "Average" Utility-Scale Turbine



Year	Average Hub Height (m)	Average Rotor Diameter (m)
2000	58	48
2005	75	65
2010	80	84

Year	Average Hub Height (m)	Average Rotor Diameter (m)
2015	82	102
2018	88	116

Source: AWEA 2018 Annual Market Report

Department of Energy Wind Efforts

- June 2018: DOE selects NY State Energy Research and Development Authority (NYSERDA) for \$20.5M grant to administer a national offshore wind R&D consortium aimed at addressing technical barriers and lowering costs and risks of offshore wind in the US.
 - NYSERDA matched grant funding bringing total to \$41M
 - First award issued Sep '19: \$300k to NREL for 'Shared Mooring Systems for Deep Floating Wind Farms'
- 2019 Wind awards at \$6.8M
 - 4 projects at \$2.8M for smart curtailment strategies related to environmental impact to bats
 - 3 projects at \$1.4M to advance commercial readiness of bat deterrent technologies
 - 3 projects at \$2.5 for offshore monitoring and mitigation issues with bats, right whales, and birds

Offshore Wind Benefits for Coastal Communities



- Supply Chain
 - Special Initiative on Offshore Wind - \$70 billion for 18 GW
- Tourism
 - URI – 19% occupancy and \$3500 rental income increases from Block Island
 - U. of Del – 13 million tourists
- Jobs
 - E2 – 352 MW = 4,950 jobs
- Port Revitalization
 - Diversification
 - Infrastructure
 - Baystate Wind & Connecticut - \$93 million partnership

Wind Energy Policy

● Virginia State Policy

- SB 966 deemed 5,500 MW of in-state wind and solar in the public interest creating a cost recovery path for the offshore wind demonstration project and necessary grid upgrades
- RPS has not been a strong driver for wind along the East Coast. Land-based wind driven by corporate demand. Offshore wind driven by state requirements with economic development and clean energy

● Federal Policy

- Production Tax Credit in phase out with 2019 being the last year available for the credit (\$23/MWh generated for 10 years)
- Projects that demonstrate 5% of total capital cost for the project has been spent in a given calendar year, and completed within four years, will receive the proportion of the full PTC consistent with the phase out
- '17 = 80%, '18 = 60%, '19 = 40%, '20 = 0%