

# Issues in Generation and Transmission of Wind Power: Iowa

NARUC Energy Regulatory Partnership Program

The Public Services Regulatory Commission of Armenia  
and The Iowa Utilities Board



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# Iowa – One of the Top States for Wind Generation

- 17 to 20% - Iowa leads country in percentage of electricity generated from wind
- 3,670 MW wind power capacity in Iowa - existing projects
- 200 MW wind power capacity in Iowa - projects under construction
- Rank In U.S. (existing capacity) - #2
- Rank In U.S. (potential capacity) - #10



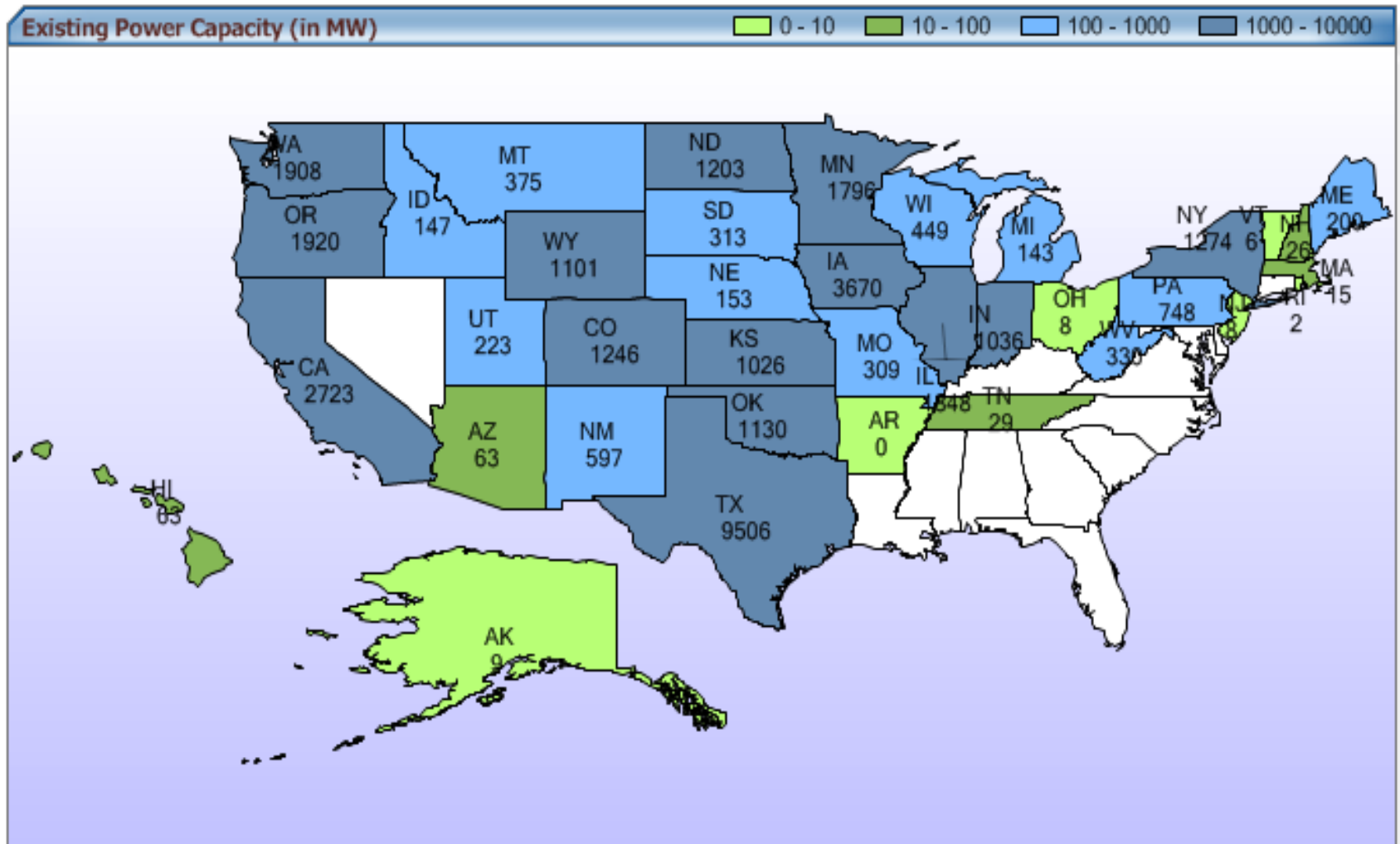
# Installed Wind Capacity

- The top five states in terms of installed capacity are:
  - Texas – 9,506 MW
  - Iowa – 3,670 MW
  - California, with 2,723 MW
  - Oregon – 1,920 MW
  - Washington , with 1,908 MW

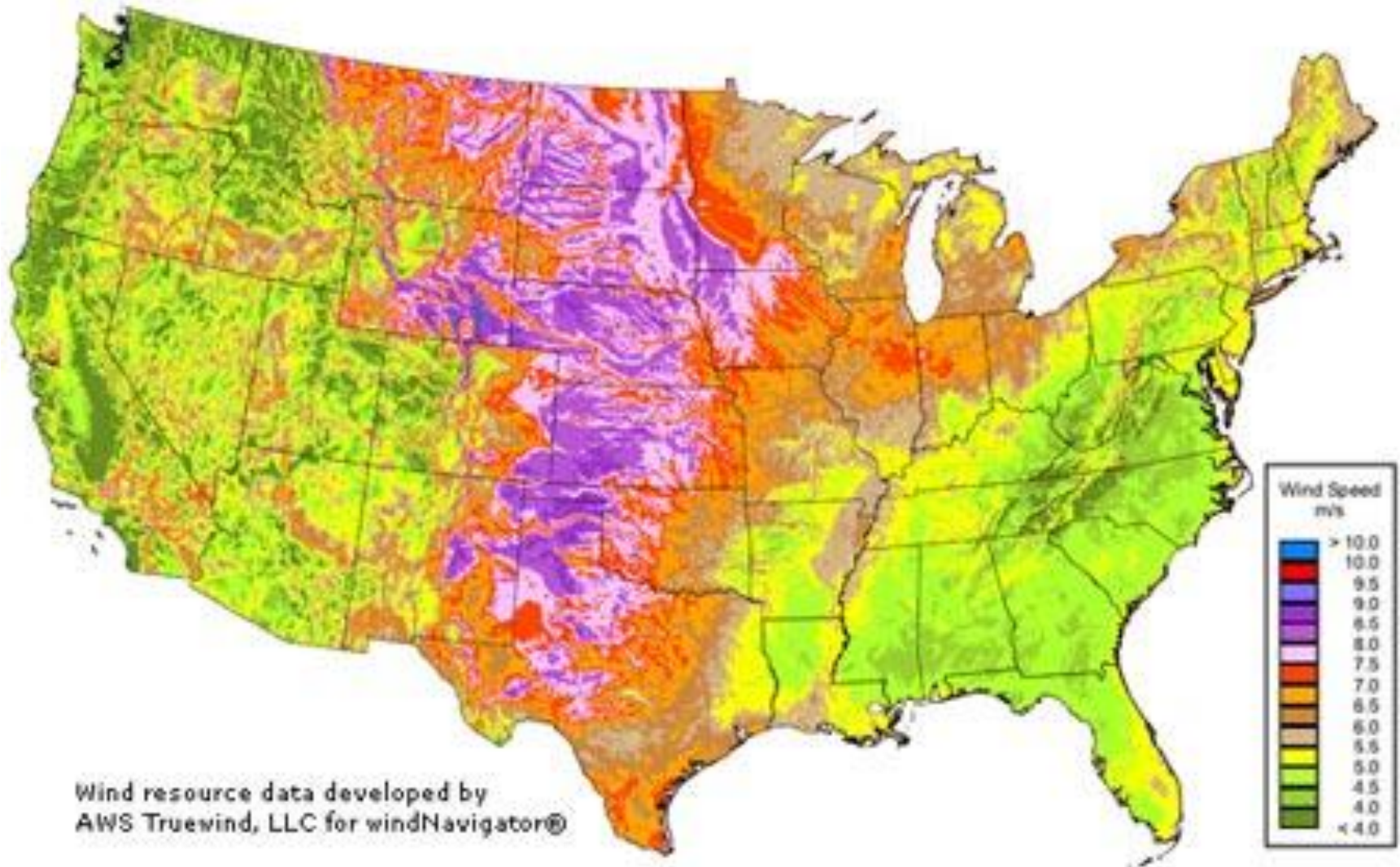


# U.S. Wind Capacity

Source – American Wind Energy Association



# U.S. Wind Potential



# Iowa's Success with Wind Generation

- High capacity wind resources
- Iowa is located near states that need to meet a Renewable Portfolio Standard
- State policy supporting wind component manufacturing
- Wind turbine design improved; turbine costs decreased in the 1990s
- Relatively low industrial electric rates in Iowa for manufacturing wind turbine components
- Productive workforce



# Iowa's Success with Wind Generation

- Relatively good existing transmission infrastructure to support wind development to date
- Access to energy markets through MISO provide greater opportunity to balance and integrate wind
- Regulatory incentives for utilities to build wind – advance ratemaking principles
- Regulatory exemption of requirement for wind projects to obtain a certificate to build generation
- Federal and state renewable energy tax credits





# Tax Credits and Renewable Energy Credits

- **Federal Production Tax Credit** – 2.1¢/kWh credit (adjusted annually for inflation) that projects can earn during the first ten years of production
- **Iowa Wind Energy Tax Credit Program (Iowa Code 476B)**
  - 1.0 ¢ per kWh (applies to energy sales and self-use)
  - Limited to wind facilities 2 MW or larger (0.75 MW or larger for schools and hospitals)
- **Iowa Renewable Energy Tax Credit Program (Iowa Code 476C)**
  - 1.5 ¢ per kWh (applies to energy sales only)
  - Targets smaller projects and specific ownership types





# Challenges of Wind Integration

- Intermittency
- Ability to dispatch
- Remote siting
- Ability to forecast wind patterns
- Land requirements
- Expensive
- Non-utility generation



# Challenges of Wind Integration Midwest ISO Region

- Limited, inadequate or constrained transmission capacity
- Uncertainty in timing of MISO queue/interconnection process
- Time to complete new interconnection upgrades – upgrade costs
- Lack of economical energy storage to provide back-up support for wind generation
- Learning curve for existing market and operational processes to incorporate wind resources



# Challenges of Wind Integration Midwest ISO Region

- Many wind stakeholders not used to working with MISO process
- Uncertainty of federal direction – federal transmission highway?
- Low load periods and must-run, must-offer coal
- Challenges by private wind developers to customer-supported IOU wind development



# Recommendations

- Work on operational issues
- Deal with supply surplus situations
- Resolve cost allocations issues
- Keep interconnection queue reform a priority
- Conduct educational and policy forums
- Resolve if must-run coal facilities can game market
- Forecast wind potential in shorter time increments



# Questions?



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