

### Wind Energy Enabled by HVDC

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# Administration Goals

- The United States will need to use a variety of clean energy resources to meet the Biden-Harris Administration's climate goals.
- Wind energy—both offshore and landbased—has an especially important role to play in decarbonizing the grid and achieving a robust U.S. clean energy economy.
- To achieve a fully decarbonized power sector by 2035, the pace of wind energy deployment must significantly increase by the end of the decade.



# The State of the Wind Industry

- U.S. Wind Industry is strong and growing.
- More than <u>144 GW</u> of wind energy is installed across 42 U.S. States and Puerto Rico, enough electricity to power more than 43 million households.
- Wind power prices are competitive with other sources of energy, like natural gas.
- A record 125,580 Americans now work in domestic wind-related jobs.
- Wind turbine service technicians are the second fastest growing U.S. job of the decade.
- The Wind Energy Supply Chain is rooted throughout communities across the U.S., not just in wind-favorable areas.
- Clean power improves air quality, with important health benefits, and contributes to reduced emissions of greenhouse gases.

# Land-Based Wind Energy

- Wind energy is the largest source of renewable power in the United States.
- Wind energy provides more than 60% of power in Iowa, and over 30% of power in Nebraska, New Mexico, North Dakota, Oklahoma, Kansas, and South Dakota.
- Wind power accounted for 22% of new electricity installed in the United States in 2022, representing \$12 billion in capital investment.



# **Offshore Wind**

- Offshore wind has the potential to deliver large amounts of clean, renewable energy to fulfill the electricity needs of cities along U.S. coastlines.
- Critical to decarbonization in places like the northeastern United States, the mid-Atlantic and California.
- Projects in the U.S. offshore wind development pipeline boasted a combined potential capacity of 52 gigawatts.
- In 2022, the domestic offshore wind industry invested \$2.7 billion in ports, vessels, supply chain, and transmission.
- The Biden-Harris Administration has expanded offshore wind lease areas to multiple coastlines in support of the goal to reach 30GW of OSW by 2030.

# Wind Energy Technologies Office Priorities



Reduce the cost of wind energy



Properly site and operate wind turbines to increase environmental and economic benefits for communities



Address transmission constraints and build a resilient grid



Develop and foster a wind energy workforce



#### **The Study: Interregional Topology**

- Seven new cables, interlinking 11 platforms
- 14 GW interregional capacity
- Designed using price differentials from initial grid modeling
- Benefit to Cost Ratio of 2.9 when compared the Radial Topology

Atlantic Offshore Wind Transmission Study Interregional Topology, 2050



U.S. DEPARTMENT OF ENERGY OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY

## **The Action Plan**

**OFFSHORE WIND TRANSMISSION COMPONENTS** HVDC EXPORT CABLE AN ACTION PLAN FOR **OFFSHORE WIND** TRANSMISSION WIND TURBINES TRANSMISSION DC/AC AC/DC CONVERTER CONVERTER DEVELOPMENT STATION STATION IN THE U.S. - ONSHORE HVDC EXPORT CABLE ATLANTIC CABLE LANDING LOCATION REGION INTER-ARRAY HVDC EXPORT CABLE CABLES Near-Term Actions for 2025–2030 BOEM U.S. DEPARTMENT OF Interregional Offshore Topology Planning **HVDC Standards Development** T& 5 1 1 Federal Preferred Routes for Transmission in the Outer Continental Shelf S&P Mid-Term Actions for 2030–2040 Multi-Terminal HVDC Test and Certification Center  $\star \star$ + T & S \* \* **Regulated Interregional Joint Planning Processes** P&O \* \* Interregional Transfer Capacity Minimums P&O FINAL VERSION PUBLISHED MARCH 2024 Assignment of Offshore Cables and Substations for Continued Use as \* \* UPDATED FOLLOWING THE COMPLETION OF THE ATLANTIC S & P Shared Infrastructure OFFSHORE WIND TRANSMISSION STUDY Enhancement of Existing Market Monitoring Roles P & O

**U.S. DEPARTMENT OF ENERGY OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY**  BUSINESSES

Reference

Section

2.2.1

3.2.1

5.1.1

Reference

Section

3.2.2

2.2.2

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## HVDC Enables Future OSW Deployment

- WETO investments in HVDC:
  - BIL FOA: Address Key Deployment Challenges for Offshore, Land-Based, and Distributed Wind – Topic Area 1
  - IDEAL HVDC FOA
- We see the need for HVDC to enable
  OSW deployment and kickstart a supply chain in the US
- We are committed to taking further actions to realize our vision for an integrated, efficient, cost-effective, and equitable offshore grid
- We need your help to inform those actions for DCCB development

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#### Thank you!

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