Advancing Wind Power in Illinois Conference 2011

Hans Detweiler

Clean Line Energy Partners

Transmission Expansion for Wind Energy
Breakout Session

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Clean Line Energy

Hans Detweiler, Director of Development

Illinois Wind Working Group

Illinois Institute of Technology
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CLEAN LINE ENERGY PARTNERS

Introduction to Clean Line Energy Partners

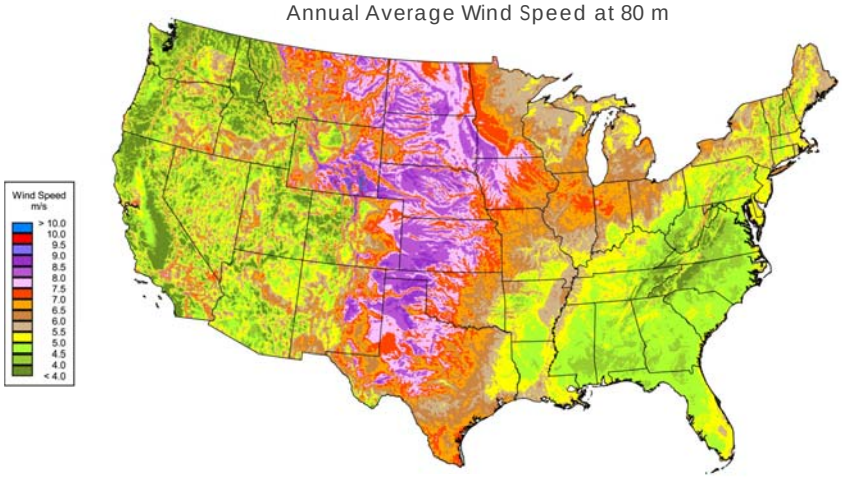
Connecting Renewable Energy to Demand

- Connecting the best renewable resources in the country with consumers
- Developing, owning, and operating long-distance, high voltage direct current (HVDC) transmission lines across the United States
- Solely focusing on building transmission lines.

Integrating large clean energy sources with demand centers

Best U.S. onshore wind resources are distant from population centers

Annual Average Wind Speed at 80 m

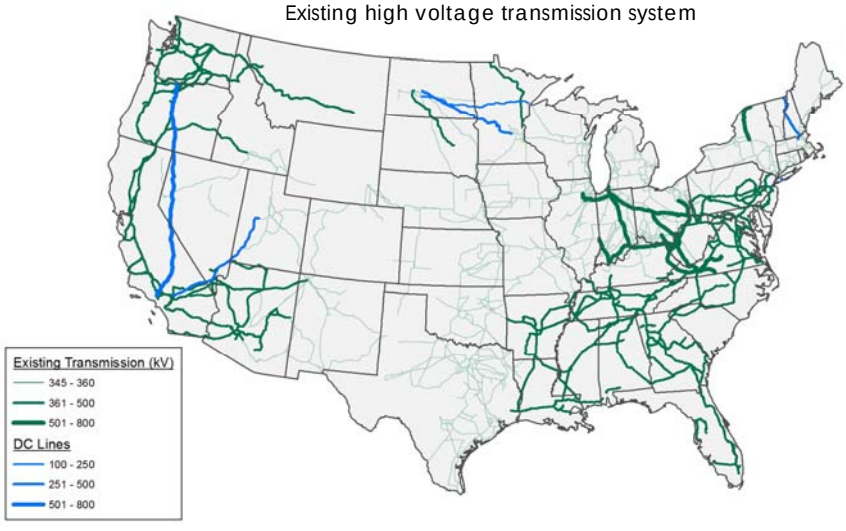


AWS Truewind

NREL National Renewable Energy Laboratory

Best onshore wind resources are located in areas with the weakest transmission systems

Existing high voltage transmission system



Clean Line's four projects have similar rationales – to connect the best renewable resources to market centers

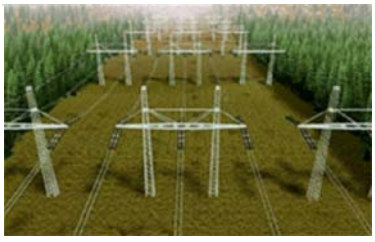
HVDC compliments the AC Grid and brings economic, policy and electric reliability benefits

Large initial investment – HVDC classic requires $250 million converter stations to connect it to the existing grid, generally cost effective over ~300-350+ miles.

Efficient – Over long distances, DC transfers more power with lower line loss and less infrastructure than comparable AC lines—and with a smaller footprint.

Improved Reliability – Gives operator complete control over power flow and facilitates the integration of wind from different resource areas.

AC **3000-4000 MW Capacity** **DC**

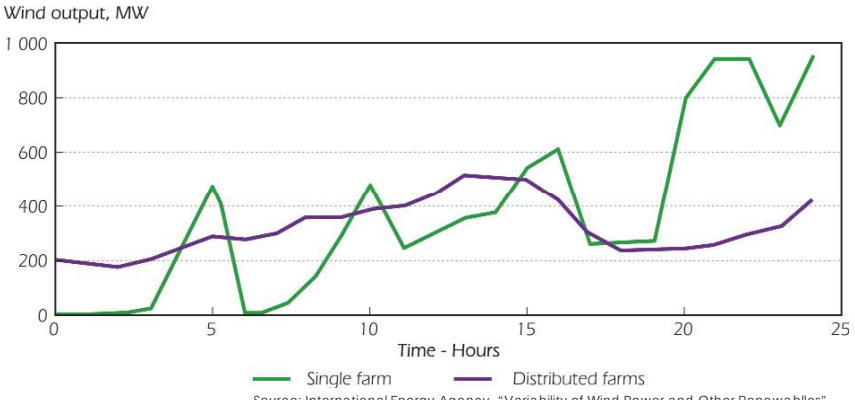


Three 500 kV lines

One ± 500kV bipole

Improved reliability: transmission helps address wind integration challenges

- As more wind farms are interconnected over great distances, wind speed correlation among sites decreases—wind is more likely to be blowing somewhere when more areas are interconnected.



Source: International Energy Agency, "Variability of Wind Power and Other Renewablles"

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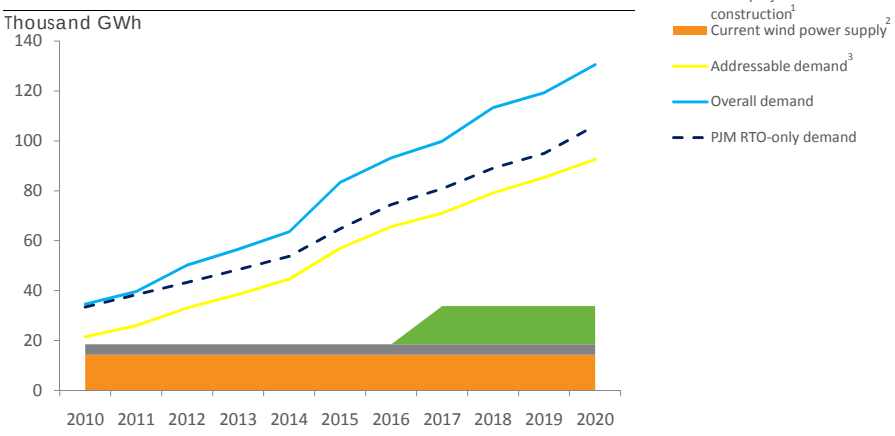
Rock Island could help address the projected shortfall in renewable power supply in the PJM states

Renewable electricity supply and demand in PJM RTO states



1. Wind projects currently under construction within the PJM states
2. Power from existing wind projects within the PJM states
3. Demand for renewable power that can be addressed by Rock Island Express

Source: EIA; DSIRE; AWEA

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Hans Detweiler
hdetweiler@cleanlineenergy.com

www.cleanlineenergy.com