Wind Energy and Transmission Infrastructure

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Clean Line develops market-based infrastructure projects to deliver low-cost energy to market.
Wind energy cost is very attractive compared with other sources of new generation

Levelized Cost of Energy

$ / MWh

- High capacity factor wind
- Renewable generation source
- Non-renewable generation source

1. Cost of generation based on mid-point of Lazard’s LCOE estimates. Unless noted, costs shown are unsubsidized.
2. High capacity factor wind cost uses low-end Lazard estimates for which the capacity factor is 55% and capital cost is $1,250/kW.
3. Assumes $3.45/MMBtu gas price.
4. Assumes 100% PTC value

Source: Lazard’s 2016 Levelized Cost of Energy Analysis
Transmission expansion has met regional renewables demand; a need for interregional transmission remains.

SPP Priority Projects
3-5 GW capacity

MISO MVP Projects
15 GW capacity

CAISO Tehachapi Projects
4.5 GW capacity

ERCOT CREZ Projects
18.5 GW capacity

Studies point to need for more inter-regional projects to increase wind energy in a cost effective way.

Joint Coordinated System Plan (2008)

20% Wind Energy by 2030 (2008)

National Electric Transmission Congestion Study (2009)

Eastern Interconnection Planning Collaborative (2012)
Utilities and states are already reliably integrating wind at high penetration levels.

Adding wind to the resource mix offers reliability benefits for utilities. Wind has increased system reliability during extreme weather events in Texas and PJM.
Significant congestion in western SPP could see some relief from Clean Line projects

Two Clean Line projects originate in the “wind alley” – Plains & Eastern in western Oklahoma and Grain Belt Express in western Kansas – providing up to 8,000+ MW of transmission capacity that could be used to relieve congestion in the region.

SPP Rolling 12-month Wind Weighted LMPs

1. SPP aggregate wind production weighted average of hourly nodal SPP LMPs from 5/1/2016 - 4/30/2017