



# Mississippi Wind Energy Opportunities

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# About

- The Southern Wind Energy Association (SWEA) is an industry-led initiative that promotes responsible use and development of wind energy in the South.
- Our vision is for wind energy to become a leading source of energy in the South
- SWEA's geographic region covers eleven Southeastern states

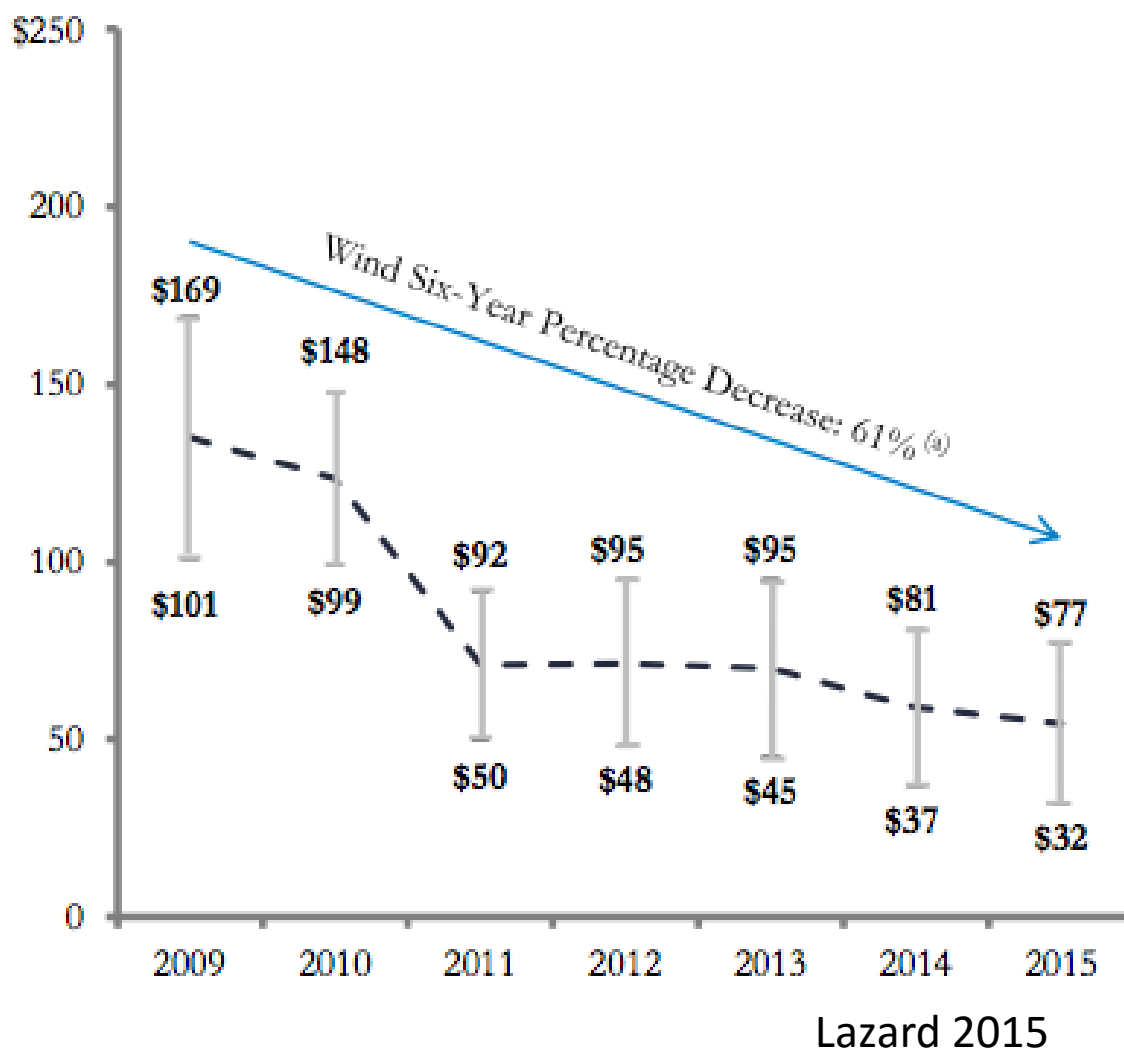


# Overview

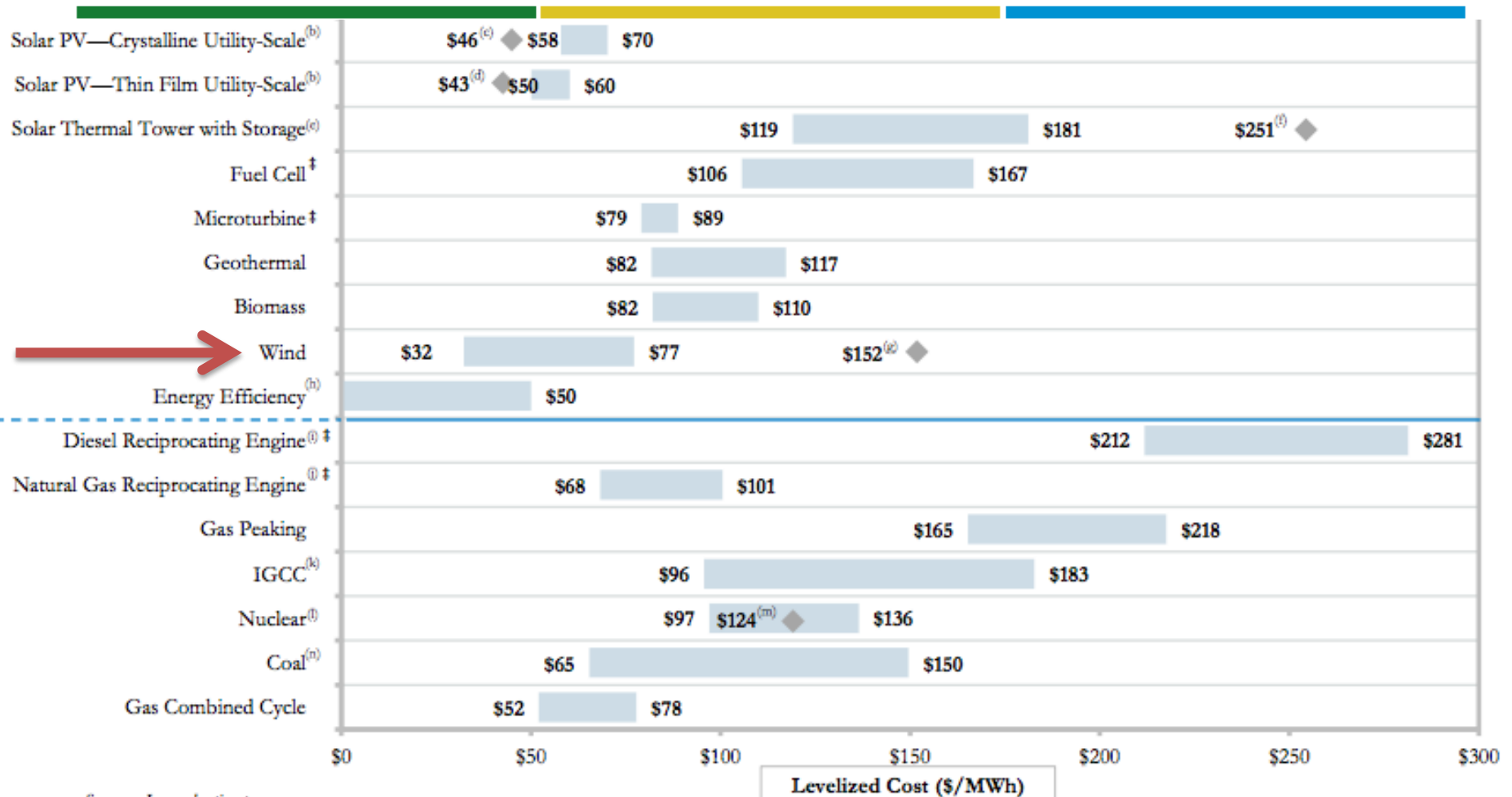
- Pricing Trends
- Existing Activity
- Opportunities
- Utility Planning
- Next Steps



# Wind Prices have Declined



# Recent Price Trends



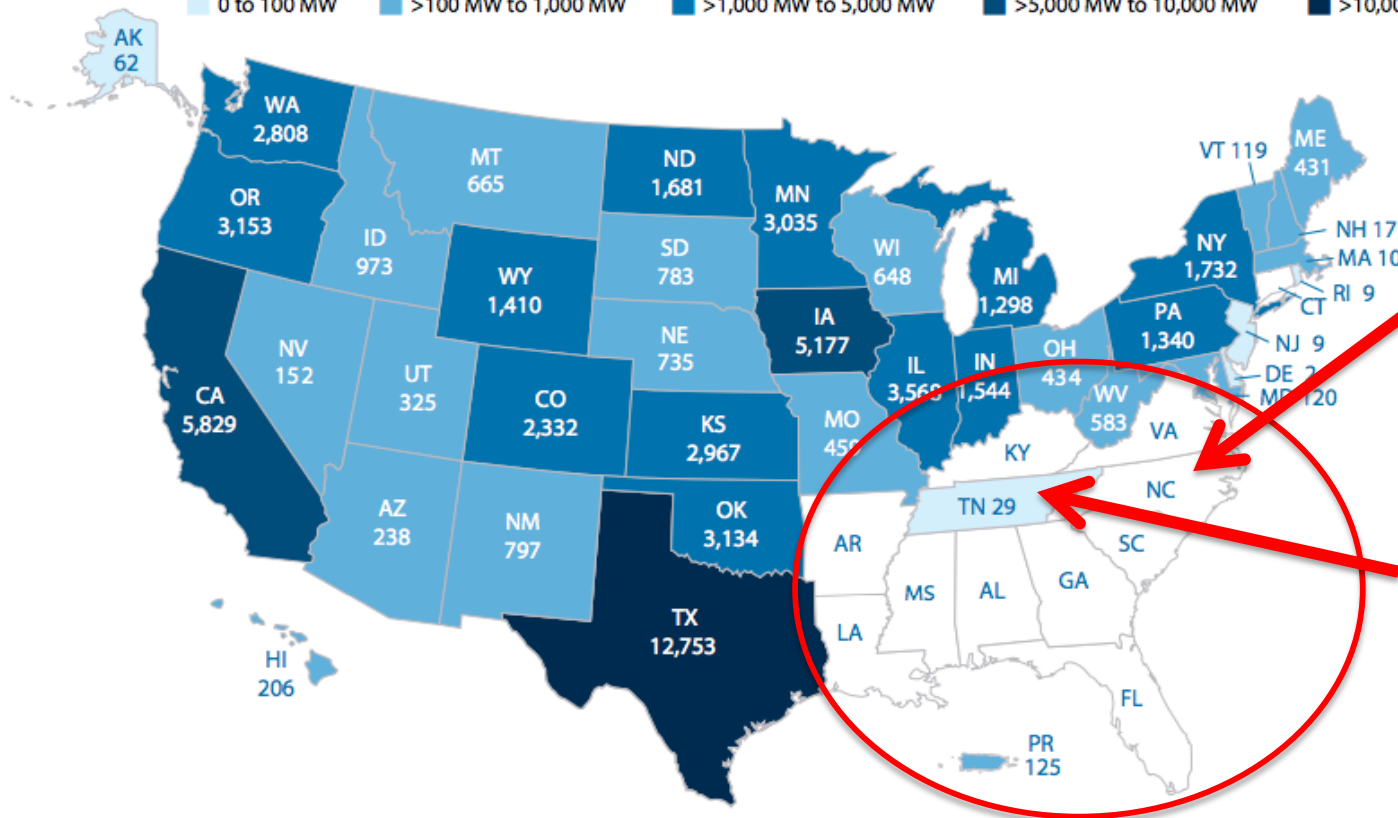
Source: Lazard estimates.

Wind energy is capable of being the lowest cost energy resource, even unsubsidized.

Lazard 2015

# Southern Wind Farms

0 to 100 MW    >100 MW to 1,000 MW    >1,000 MW to 5,000 MW    >5,000 MW to 10,000 MW    >10,000 MW



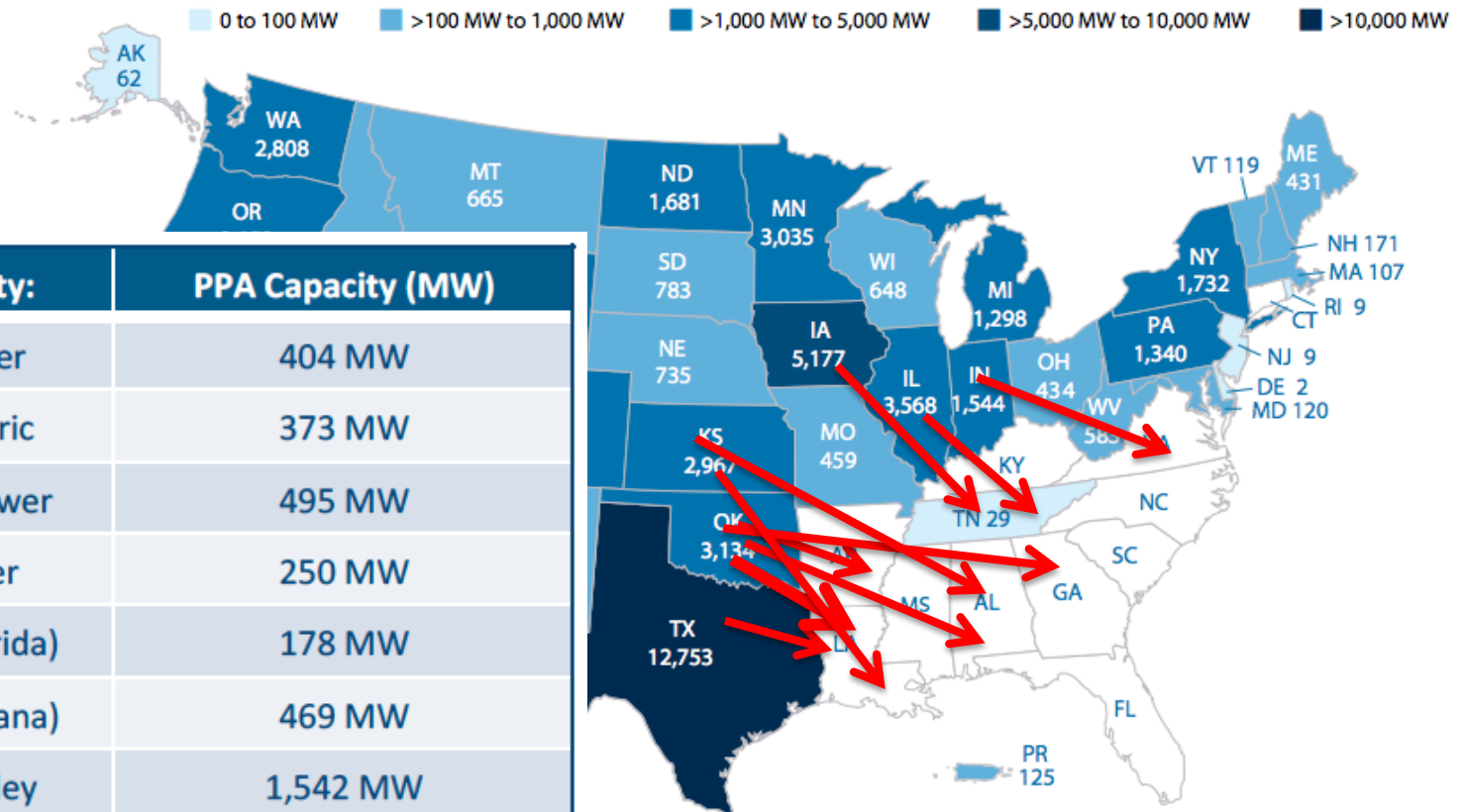
➤ Amazon Wind Farm: NC—

➤ Will be first modern large-scale project in South

➤ Buffalo Mountain Wind Farm—near Oak Ridge, Tennessee

➤ Powers 3,400 homes a year

# Southern Wind Energy Contracts



Southern Utility:	PPA Capacity (MW)
Alabama Power	404 MW
Arkansas Electric	373 MW
Appalachian Power	495 MW
Georgia Power	250 MW
Gulf Power (Florida)	178 MW
SWEPCO (Louisiana)	469 MW
Tennessee Valley Authority	1,542 MW
<b>Total:</b>	<b>3,711 MW</b>



# Utility Perception of Wind Energy



"Wind power is a **clean and limitless source** of energy that directly enhances TVA's mission of environmental stewardship."

"Adding wind energy to our generation mix underscores our commitment to a diverse portfolio that offers **clean, safe, reliable, sustainable and low-cost electricity for years to come.**"



A SOUTHERN COMPANY

"...[W]e were in a good position to pursue additional renewable resources at **a good price for customers.**"

"These agreements are good for our customers for one very basic reason, and that is, **they save our customers money.**"





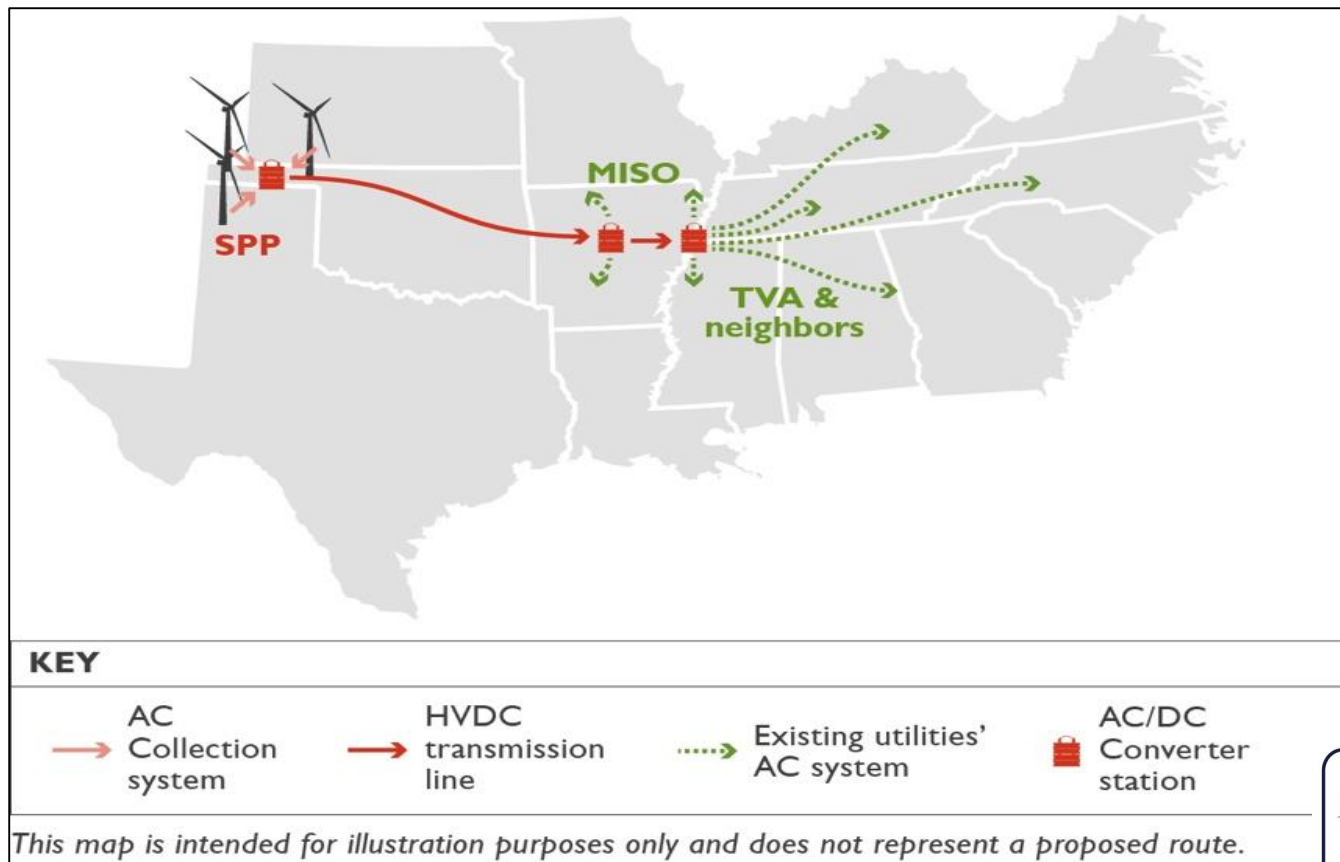
# Wind Energy Opportunities

- **Import via SPP/MISO**
  - High Capacity Factor (45-50%+)
  - Low Cost (\$20s/MWh)
  - Variable Transmission Charges
- **HVDC Transmission**
  - High Capacity Factor (55%+)
  - Low Cost (\$20s/MWh)
  - Improved Capacity (Oversubscription)
  - Fixed Transmission Charge
- **In-State Resources**
  - Lower Capacity Factors (30-40%+)
  - Higher Cost
  - Little/No Transmission
  - In-State Econ. Benefits



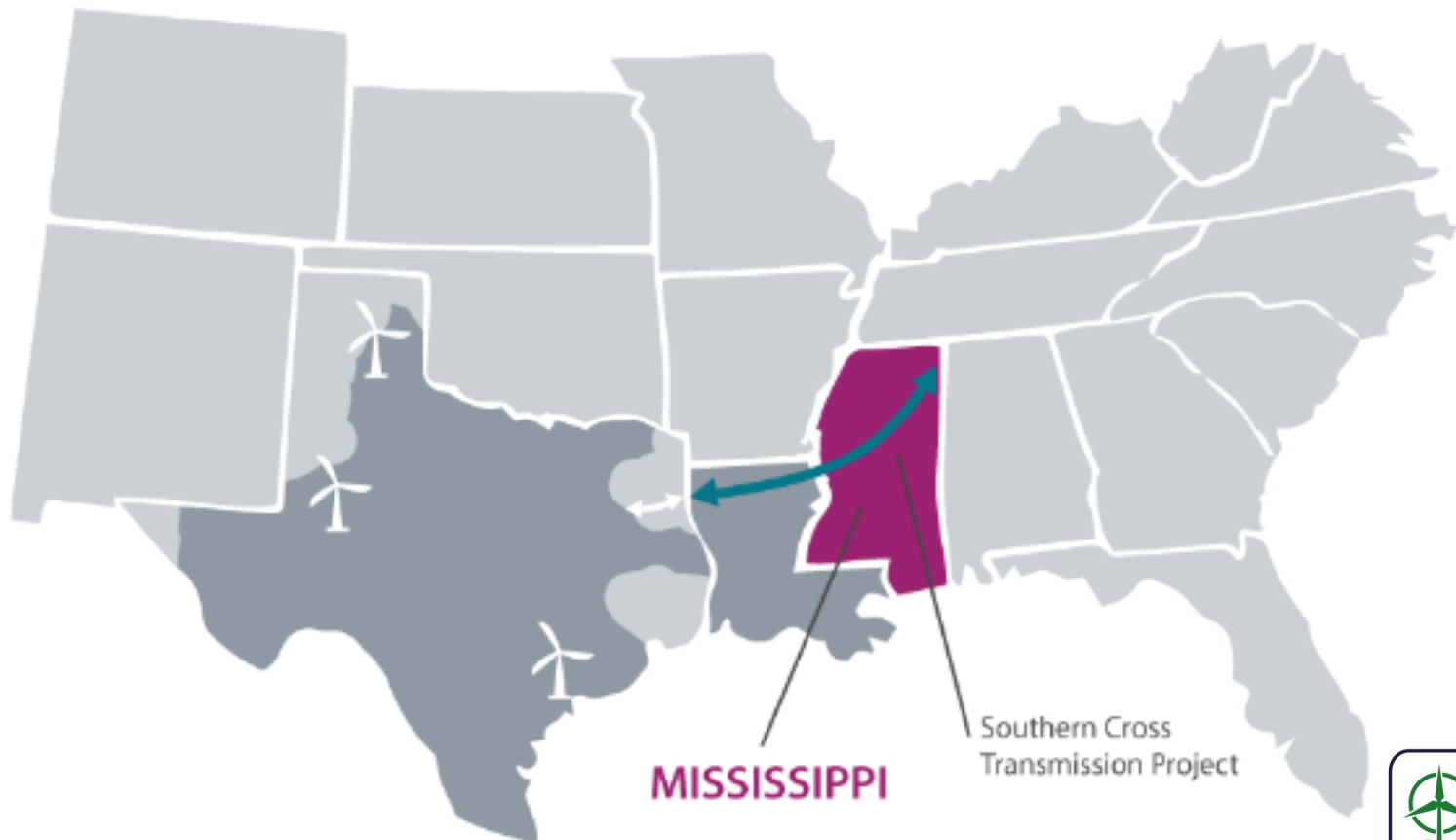
# HVDC Transmission

Plains and Eastern Clean Line – 4,000 MW of wind energy



# HVDC Transmission

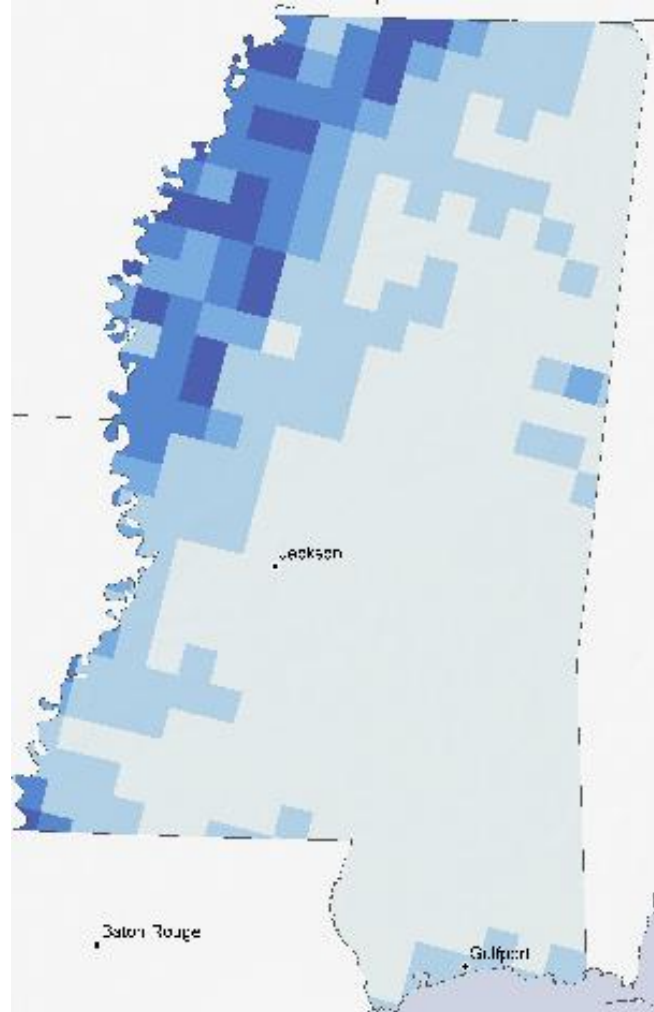
Pattern Energy Southern Cross – 2,000 MW of wind energy



# In-State Resources

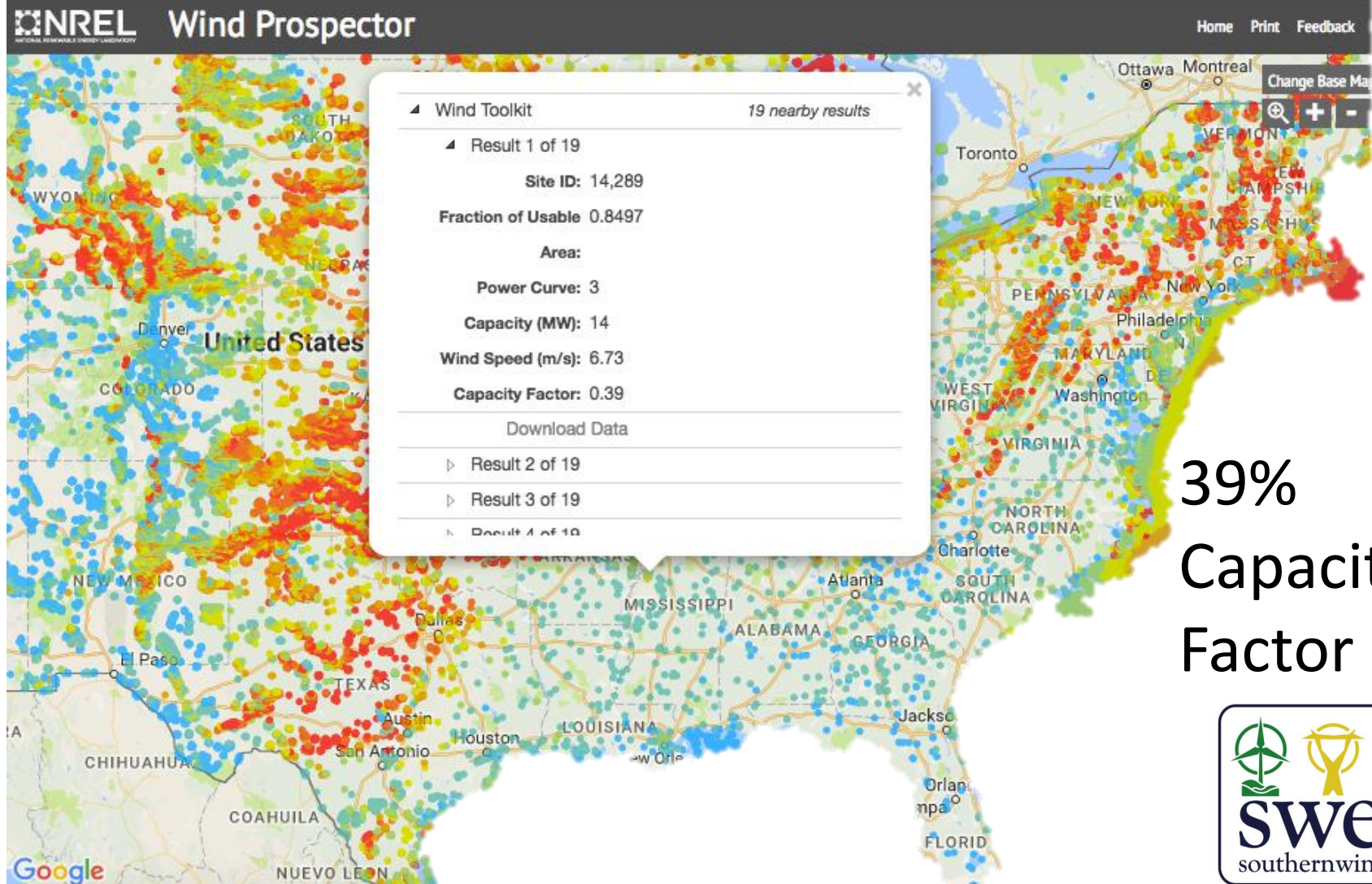
2008 Technology: 0 GW  
2014 Technology: 43.5 GW  
Near Future Tech: 188.2 GW

Gross Capacity Factors 35%+  
Area Shaded by Land Area Potential





# In-State Resources

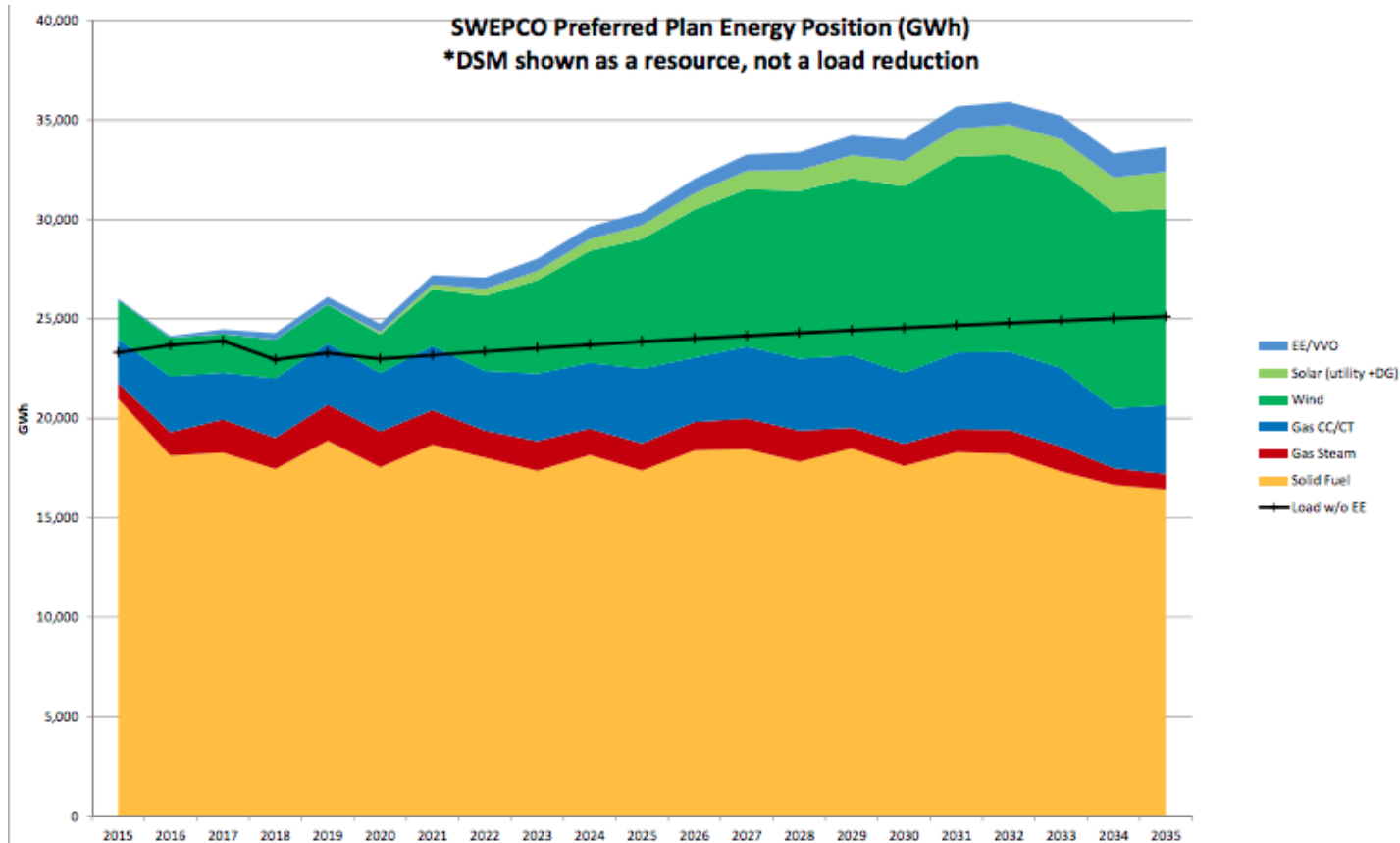


# SWEPCO IRP Inputs

	Tranche 1	Tranche 2	Tranche 3
Capacity Factors	56%	50%	45%
Prices	\$47/MWh	\$55/MWh	\$60/MWh

# SWEPSCO IRP Results

Adds  
1,200 MW  
of wind



SWEPSCO Final 2015 IRP

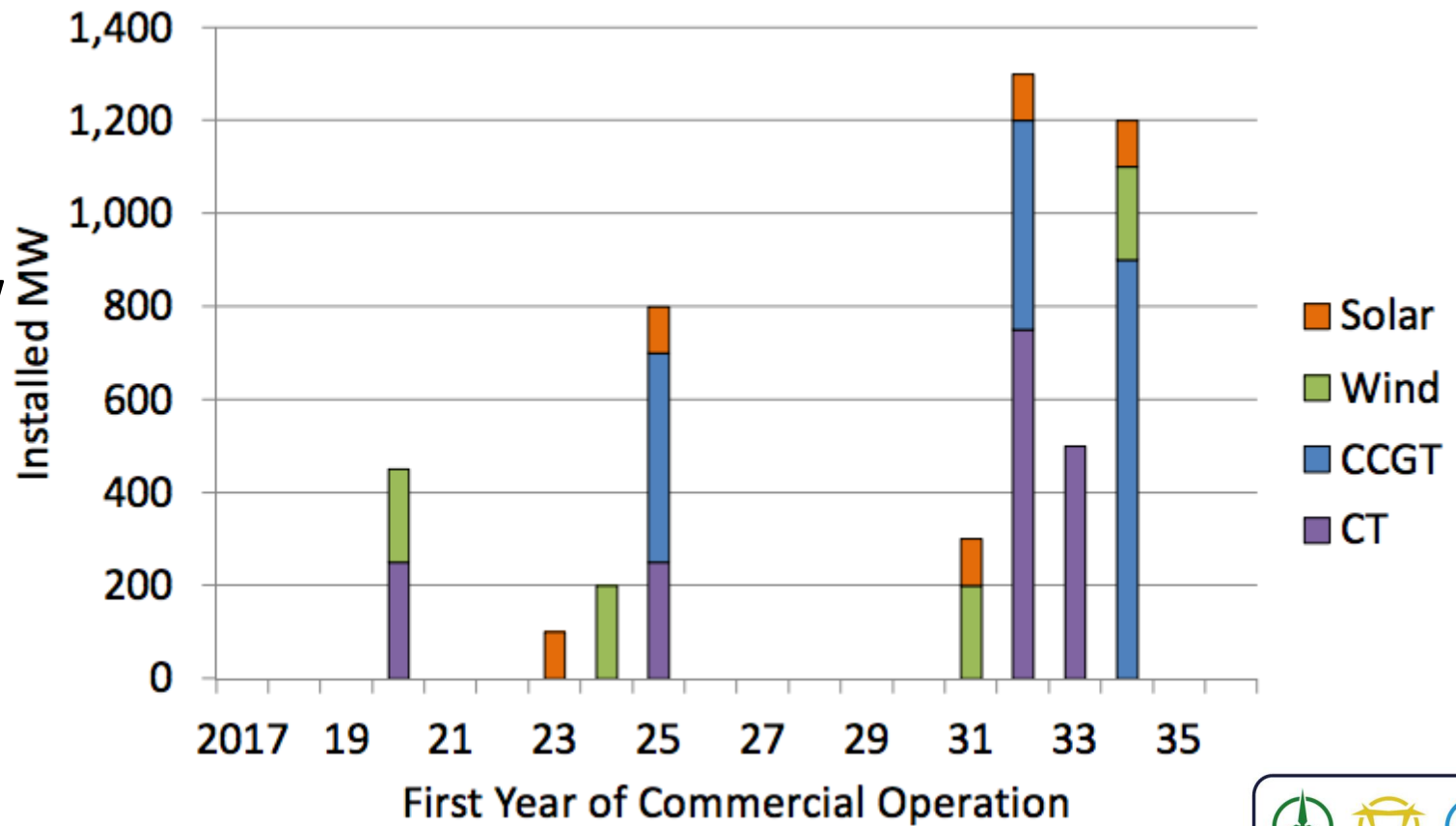


# Entergy Arkansas IRP Inputs

Capacity Factor	Price
48%	\$54/MWh

# Entergy Arkansas IRP Results

Adds  
800 MW  
of wind



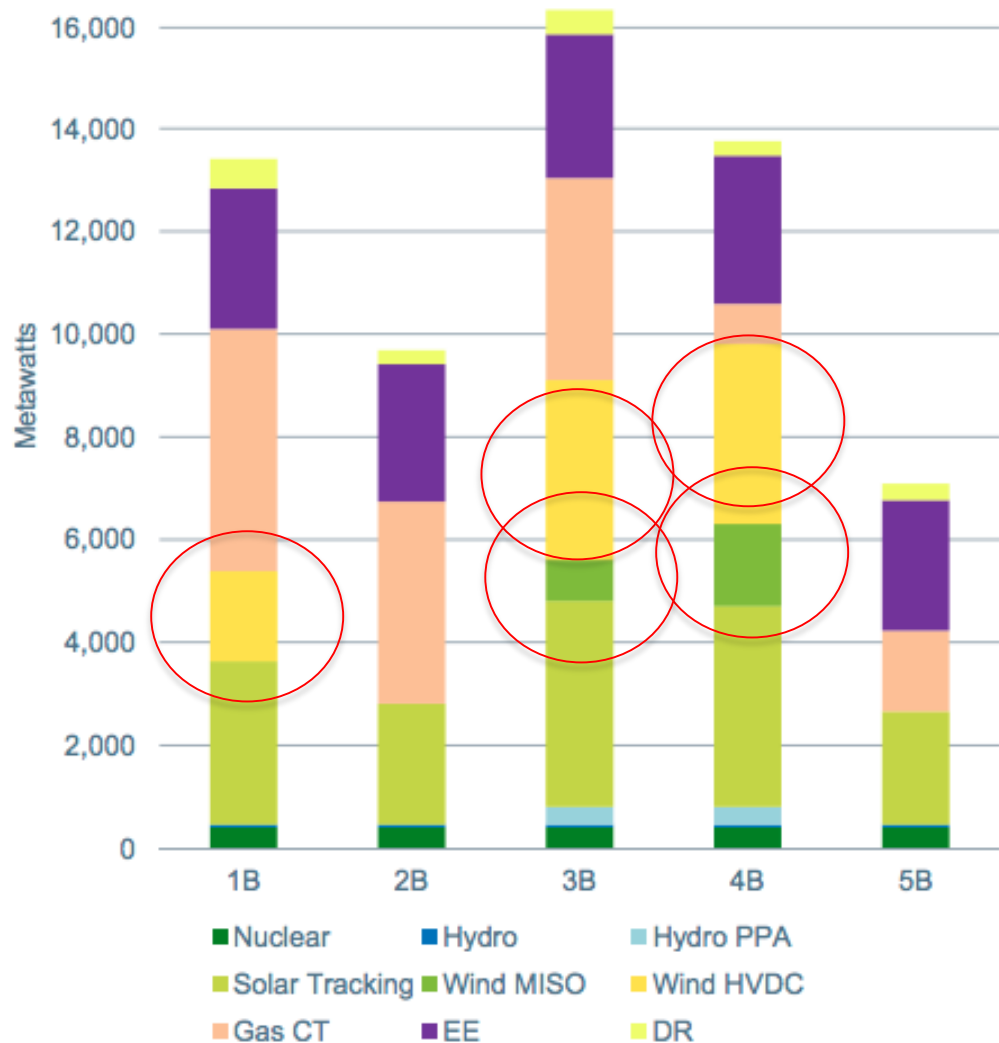
Entergy Arkansas 2015 IRP



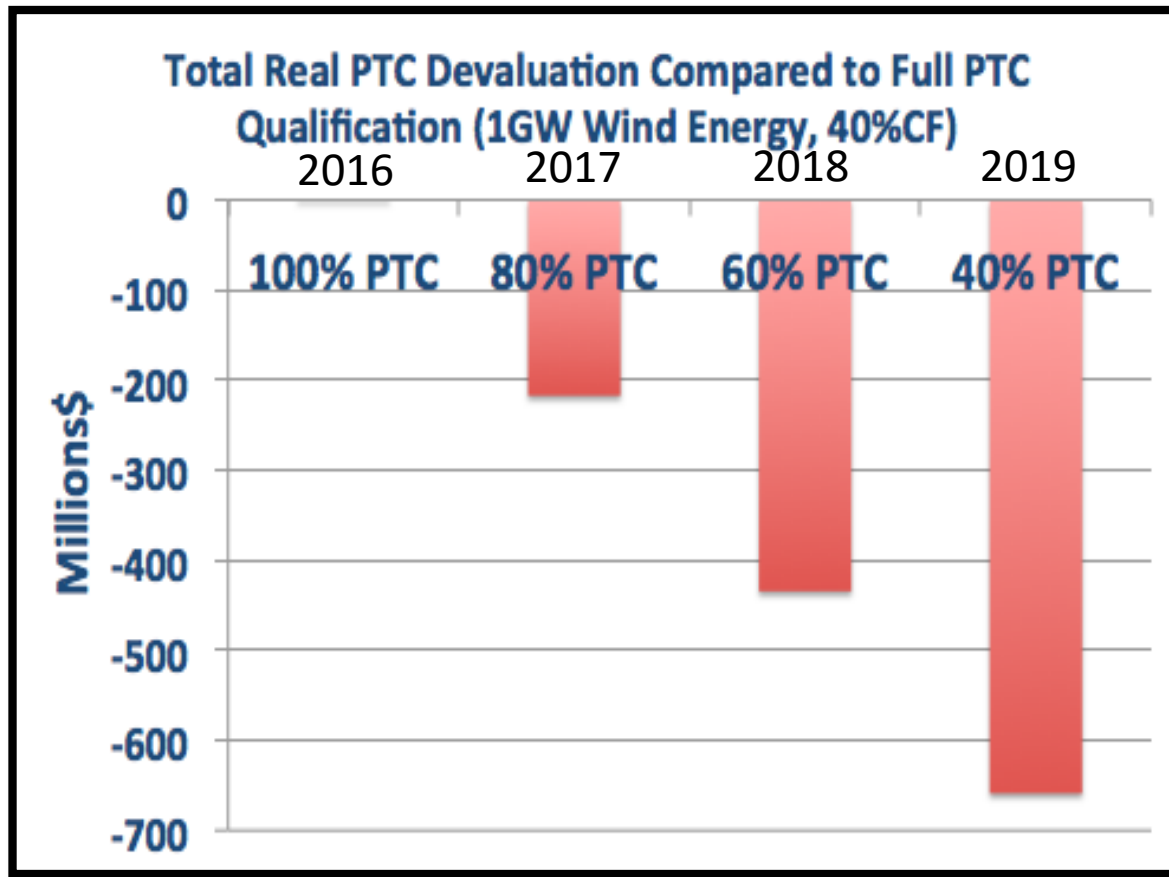
# TVA IRP Results

~1,800-2,800 MW  
HVDC Wind

~800-1,600 MW  
MISO Wind



# Tax Credit Phase-out



Utilities could lose at least **\$217 million** on 1,000 MW of wind energy by waiting a year.

*Adapted from Mark Bolinger, "An Analysis of the Costs, Benefits, and Implications of Different Approaches to Capturing the Value of Renewable Energy Tax Incentives", Lawrence Berkeley National Lab 2014*

# Next Steps

- Conduct Bilateral Negotiations for Unsolicited Proposals
- Issue RFI/RFP for specific and up-to-date wind energy resource information
- Evaluate Integrated Resource Planning options
- Track Clean Energy Incentive Program activities



# Contact

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