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

swea
southernwind.org
Wind Prices have Declined

Wind Six-Year Percentage Decrease: 61% (a)

Lazard 2015
Wind energy is capable of being the lowest cost energy resource, even unsubsidized.
Southern Wind Farms

- 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

<table>
<thead>
<tr>
<th>Southern Utility:</th>
<th>PPA Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama Power</td>
<td>404 MW</td>
</tr>
<tr>
<td>Arkansas Electric</td>
<td>373 MW</td>
</tr>
<tr>
<td>Appalachian Power</td>
<td>495 MW</td>
</tr>
<tr>
<td>Georgia Power</td>
<td>250 MW</td>
</tr>
<tr>
<td>Gulf Power (Florida)</td>
<td>178 MW</td>
</tr>
<tr>
<td>SWEPCO (Louisiana)</td>
<td>469 MW</td>
</tr>
<tr>
<td>Tennessee Valley Authority</td>
<td>1,542 MW</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>3,711 MW</strong></td>
</tr>
</tbody>
</table>
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."

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

“…[W]e were in a good position to pursue additional renewable resources at a good price for customers.”
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

This map is intended for illustration purposes only and does not represent a proposed route.
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

39% Capacity Factor
## SWEPCO IRP Inputs

<table>
<thead>
<tr>
<th>Capacity Factors</th>
<th>Tranche 1</th>
<th>Tranche 2</th>
<th>Tranche 3</th>
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</thead>
<tbody>
<tr>
<td>Capacity Factors</td>
<td>56%</td>
<td>50%</td>
<td>45%</td>
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<tr>
<td>Prices</td>
<td>$47/MWh</td>
<td>$55/MWh</td>
<td>$60/MWh</td>
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SWEPCO Draft 2015 IRP
SWEPCO IRP Results

Adds 1,200 MW of wind
# Entergy Arkansas IRP Inputs

<table>
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<th>Capacity Factor</th>
<th>Price</th>
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<tbody>
<tr>
<td>48%</td>
<td>$54/MWh</td>
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Entergy Arkansas 2015 IRP
Entergy Arkansas 2015 IRP

Adds 800 MW of wind
TVA IRP Results

~1,800-2,800 MW HVDC Wind

~800-1,600 MW MISO Wind
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
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