Challenges

• Most projects require up to 24 oversized heavy haul loads per day to a single wind turbine site 5 or 6 days a week for several months.

• Deliveries are required to be sequenced for offload and storage at a wind turbine pad site. Site staging areas are very limited. Approved/safe parking near the sites is difficult to find.

• Site impacted by weather issues which backs up deliveries and fills all staging areas for miles and loads may need to hold at origin.

• Floods, rain, rail stoppage, barges stranded, trucks unable to reach destination.
  • Unplanned trucking required because rail routes were closed due to flooding.

• Construction everywhere, all year round. Some planned some unexpected.
  • Rerouting, new permits, missed deadlines.

• Police support is limited in some areas due to other obligations.

• Larger components require additional infrastructure improvements.
What went well

- Planning meetings with state DOT’s and other agencies to make them aware of upcoming projects, volumes, sizes and schedules.
  - Willingness to work with carriers to determine best route.
  - Very supportive to work through new routes if required to support site deliveries.
  - Great support working around flooding and weather issues.
- Continued focus on safety. Carrier safety background checks. Monthly safety calls for all active carriers. Lesson learned meetings. Focus on special safety topics. Safety Seminar with all carriers meeting in our Orlando Training Center. Carriers were safe with no major incidents.
- Working closely with customers and local authorities to try to limit impact on local community.
  - Adhering to curfews and other local regulations.
- Strong carrier partnerships.
- More states working on Wind Specific routes.
Components and Movements

- **Nacelle**: Weight 159000 to 246000 lbs. - Length 34’ to 41’ - Height 14’ to 17’1” - Width 12’ to 14’

- **Drive Train**: Weight 148000 lbs. - Length 21’ - Height 10’ – Width 10’
Components and Movements - Continued

- Hub: Weight 57000 to 88000 lbs.- Length 12’ to 23’ - Height 12’ to 14’ - Width 13’ to 14’

- Shell: Weight 4600 lbs.- Length 16’ - Height 14’ - Width 9’
Components and Movements - Continued

- Tower: Weight 86000 to 184000 lbs.- Length 56’ to 91’- Diameter 11’ to 16’
Components and Movements – Continued

- **Blade:** Weight 21000 to 47000 lbs. - Length 156’ to 214’, future standard is 236’ up to 275’ - Height 9’ to 14’ - Width 11’ to 14’ Future over 14’

- **Transport Component Damages, Causes, Solutions**
  - Bridge contact, Signal Lights, Street Signs, Trees and Branches, Vehicles, Vandalism, Leaving Road, Rollovers.
  - Escorts and Rear Steer-men staying attentive. Verify Height of Load before proceeding. Parking and Staging in well lit areas. Staying to Permitted Routes.
Wind Resources and Transmission Lines

The remaining states use data from the 1987 "Wind Energy Atlas of the United States".

Wind Power Classification

<table>
<thead>
<tr>
<th>Wind Power Classification</th>
<th>Resource Potential</th>
<th>Wind Power Density at 50 m</th>
<th>Wind Speed at 50 m</th>
<th>Wind Speed at 50 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Marginal</td>
<td>200 - 300</td>
<td>5.6 - 6.4</td>
<td>12.5 - 14.3</td>
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<tr>
<td>3 Fair</td>
<td>300 - 600</td>
<td>6.4 - 7.0</td>
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<tr>
<td>4 Good</td>
<td>400 - 600</td>
<td>7.0 - 7.5</td>
<td>15.7 - 16.9</td>
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<tr>
<td>5 Excellent</td>
<td>500 - 820</td>
<td>7.5 - 8.0</td>
<td>16.8 - 17.9</td>
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<tr>
<td>6 Outstanding</td>
<td>800 - 1500</td>
<td>8.0 - 8.8</td>
<td>17.9 - 16.7</td>
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<tr>
<td>7 Superb</td>
<td>1600 - 2000</td>
<td>8.8 - 11.1</td>
<td>19.7 - 24.8</td>
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</table>

Wind speeds are based on a Weibull value of 2.0.

Source: POWERmap, powermap.pnl.gov.com, 2007 Platts, a division of the McGraw-Hill Companies

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STATES ACTIVELY ENGAGED IN OFFSHORE WIND

5.4 GW OFFSHORE WIND

Maine, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, North Carolina, South Carolina, Ohio, Oregon, California, Hawaii
Thank you!