WIND PROJECT REPOWERING DUE DILIGENCE SUMMIT

August 28-29, 2019
EUCI Office Building
Conference Center
Denver, CO

“A well thought out program that covered the major factors.”
Director of Preconstruction, Rosendin Electric
OVERVIEW

The U.S. wind industry is continuing a historic growth phase this decade, with current projects hurrying to meet development deadlines to qualify for the maximum tax credit incentives, prior to depreciation and expiration. These tax credits have always been available for new wind projects, but they also are available for existing projects that undergo a repowering process. Wind repowering is a growing trend where an older wind farm takes advantage of new technology to replace older turbines – and other components – to improve power capacity, performance and profitability of the project.

The National Renewable Energy Laboratory has estimated that U.S. wind repowering investments could reach $25 billion a year by 2030. Repowering is increasingly becoming an attractive option for developers, owners and investors to profit off tax credits and technical advancements in the wind industry, skipping the additional work and costs often associated in building a greenfield project. Moreover, repowering wind farms is a viable solution to manage increasing O&M costs, all the while improving capacity and revenues. However, although repower projects holds big potential, special attention is needed to successfully navigate the repower process and the major challenges that can be involved. Each repower process is unique and will require a critical due diligence review of considerations specific to a site.

This specialized symposium is designed to provide expert insight on the wind repower development market, providing holistic coverage of the financial, technical, and legal due diligence items involved in repowering wind farms, and insight on evaluating what constitutes as a bankable repower project. This instructional symposium will be relevant to both industry veterans and those new to the business.

LEARNING OUTCOMES

- Identify key trends in U.S. wind repower market and the role of the growing repowering movement
- Evaluate how repowering can increase the overall profitability of a wind project
- Assess key technical, financial, and legal due diligence items related to wind project repowering
- Assess tax issues and qualification for wind repower projects for PTC and ITC
- Review IRS guidelines for repower projects and qualification for project development timelines
- Assess key legal considerations, construction contract provisions, and insurance issues for wind repowers
- Review wind repower economics and what constitutes a bankable repower project
- Discuss project developers case studies who are undergoing or have completed a wind repower project
- Assess the interconnection process for repowering wind farms
- Analyze technical due diligence for wind energy assessment for repowering valuation
- Identify methodology for conducting a comprehensive independent engineering (IE) review for wind repower projects
- Review the important role of analyzing wind turbine foundations in a repower project
- Evaluate the direct experience of OEM's constructing and installing repower projects

“Great meeting. As an engineer focused on technical aspects of due diligence, the conference was a learning opportunity for other topics such as tax/financial issues.”

Senior Energy Consultant, Sargent & Lundy

“Great sessions, great speakers, looking forward for the next one.”

Senior Principal, Terracon
# AGENDA

**WEDNESDAY, AUGUST 28, 2019**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>8:00 – 8:30 am</td>
<td>Continental Breakfast &amp; Registration</td>
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| 8:30 – 10:00 am| Opening Panel: Update on Wind Repower Market Landscape & Due Diligence Overview/Bankable Project Opportunities  
  - Major trends in the wind project repower market  
  - Types of repowering  
    - Full vs. partial repower  
    - Variances of partial repowering  
  - Benefits of repowering  
  - Project economics  
    - Analyzing whether the site is appropriate for repowering  
    - Logistics of considering whether a site can be repowered  
  - Overview of due diligence for repowering projects  
    - Identifying key issues, questions and features  
  - Wind repower & retrofit due diligence – key questions  
  **Moderator:** Brenda Colella, Partner, Barclay Damon  
  **Carter Atlamazoglou,** Senior Director - Global Clean Energy, FTI Consulting  
  **Ravi Bantu,** Director - Transmission, Americas, RES Americas  
  **Jarek Stopczyk,** Manager, Long Term Operations, E.ON North America |
| 10:00 – 10:15 am| Morning Break                                                           |
| 10:15 – 11:30 am| Tax Issues & Qualification for Wind Repower Projects  
  - Tax issues and qualification for wind repower projects  
    - Understanding IRS guidelines for combining old and new assets  
    - How to qualify for project development timelines  
  - Understanding depreciation for project development timelines  
    - Production Tax Credit (PTC)  
    - Investment Tax Credit (ITC)  
  - Making sure your repower project qualifies for development deadlines  
  **Jim Duffy,** Partner, Nixon Peabody LLP |
| 11:30 am – 12:15 pm| Financial Modeling for Wind Repowering Analysis  
  - Financial due diligence for potential wind repower projects  
    - Grid interconnection  
    - Balance of plant  
    - Tax credit qualification  
    - Pre-installation of balance of plant  
    - Transmission rights and PPAs  
  - Acquiring older facilities at a discount  
  - Capitalizing on good existing wind sites  
  - Using existing infrastructure  
  - What investors are looking for in a repower project  
  **Fernando Sosa,** Director – Valuation & Advisory, Cushman & Wakefield |
| 12:15 – 1:15 pm| Group Luncheon                                                          |
AGENDA

WEDNESDAY, AUGUST 28, 2019 (CONTINUED)

1:15 – 2:00 pm  Environmental, Land Use and Permitting Considerations
- Types of permits required for repower projects
- Permitting and design challenges associated with replacing and upgrading turbines
- Timelines for obtaining approvals
- Zoning and entitlement
  - States vs. local permitting
- NEPA/CEQA
- Community issues
- Wildlife studies and government agency (local and federal) interactions
- Water use and wetlands
- Cultural resources
- Native American consultation
- Special issues
  
  *Eric Hansen, Director- Environmental Services, Westwood*

2:00 – 2:15 pm  Afternoon Break

2:15 – 3:45 pm  Legal, Regulatory and M&A Issues with Wind Repower Projects
- Key regulatory issues for wind repowering
  - Nuances of state and local regulations
  - Determining if a repower project requires PUC approval
  - Navigating multiple state goals/mandates for renewables and emissions
- Key legal considerations for wind repowering
  - Larger or taller equipment issues
  - Wind resource
  - Contract restrictions
  - Community response
  - Decommissioning
- Legal contract structuring for repowering agreements
  - Operating agreement review (O&M, PPA, Interconnection)
  - Contracting for new vs. existing equipment
  - Ensuring that key provisions of development contracts work together
- Managing real property tax issues
- Land use, environmental and permitting requirements for wind repower projects
- Legal due diligence for wind repower M&A transactions
  
  *Brenda Colella, Partner, Barclay Damon*

3:45 – 4:30 pm  Developer Perspective: Lessons Learned on Wind Project Repowering
- Evaluating repowering as an option to increase profitability of wind farm assets
- E.ON North America’s wind project repowering process
  - Overview of developmental aspects & due diligence
  - Going to board for approval
  - Project construction process
- Overall lessons learned
- Pitfalls and challenge areas
  
  *Jarek Stopczyk, Manager, Long Term Operations, E.ON North America*
AGENDA

WEDNESDAY, AUGUST 28, 2019 (CONTINUED)

4:30 – 5:15 pm    Developer Perspective: Analyzing Project Potential & Interconnection Aspects of Repower Projects
  • Evaluating the developer’s changing role in the repower
  • Key construction and engineering aspects of wind project repowering
  • Analyzing if a wind asset is bankable for a repower and resale
  • Maximizing the value of wind generation capacity with existing ground assets
  • Interconnection process for repowering wind
    o How it varies from a typical interconnection process
    o What ISO’s and RTO’s are doing for repower interconnection

Ravi Bantu, Director - Transmission, Americas, RES Americas

THURSDAY, AUGUST 29, 2019

8:00 – 8:30 am    Continental Breakfast

8:30 – 9:45 am    Energy Assessment & Independent Engineering (IE) Review for Wind Projects
  This session will discuss key technical and engineering considerations for wind repowering farms, evaluating how to determine if turbines on a wind farm will work and are certified to work. It will review seven key areas that owners, investors, lenders and engineers should analyze to maintain ongoing operations and plan for successful repowering:
  • Wind turbine foundations
  • Electrical balance-of-plant
    o Reactive compensation
    o Projected expected life
    o Ampacity overload analysis
    o Harmonics/sub synchronous resonance (SSR)
    o Interconnection Agreement (IA)
  • Wind turbine towers
    o Mechanical loads analysis
    o Protective coating maintenance
    o Anchor bolt maintenance
  • Wind resource assessment
  • Wind turbine technology and site suitability review
  • Commercial and permitting review
  • Operations and Maintenance (O&M) cost assessment

Representative, Sargent & Lundy
Jessica O’Connor, Consulting Engineer & Data Analyst, ArcVera Renewables

9:45 – 10:00 am    Morning Break

“Great program!”
Executive Director, E3 Consulting

REGISTER TODAY! CALL 303-770-8800 OR VISIT WWW.EUCI.COM
THURSDAY, AUGUST 29, 2019 (CONTINUED)

10:00 – 11:00 am  Wind Turbine Foundations Analysis - Deep Dive  
The integrity and capacity of the existing foundations are the most critical considerations for the long-term success of a repowering effort. Specifically, owners and tax-equity investors have demanded a thorough, detailed, and comprehensive review of existing foundations, including strength, serviceability, and fatigue analysis. This session will discuss key discoveries and outcomes from extensive modeling research conducted on a variety of wind turbine foundation designs, and key methodology steps needed to assess the risk of foundation failure:
• Determining the risk of wind turbine foundation failure
• Reviewing original foundation design
• Analyzing design consideration for fatigue loading
• Assessing condition of exposed (above ground) portion of foundations
• Below-ground foundation inspection
• Cracked versus uncracked properties
• Skewed wind load test
• Site specific design loads
• Exposed foundation inspection findings
• Project’s quality assurance and quality control (QAQC) documentation to assess quality of workmanship and adherence to wind turbine and foundation design specifications from initial construction

David Harwood, Senior Vice President – Business Sectors, Terracon

11:00 – 11:45 am  The OEM Perspective on Wind Repower Projects
• Construction and installation experiences for repower projects – lessons learned
• Analyzing long term integrity of existing towers and foundations
• Conducting a thorough engineering analysis of changes in force and load
• Methodology for engineering solutions of repower options
  o Part replacements
  o Equipment sizing
• Risk management
  o Warranties
  o Third party certification
  o Back end services to consider

Larry Tajiri, Manager, General Electric (GE) Renewable Energy

11:45 am  Symposium Adjourns

“Excellent program overall.”

Environmental Review Manager, Minnesota Department of Commerce
REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

INSTRUCTIONAL METHODS

Case studies, Power Point presentations and classroom exercises will be used in this symposium.

EVENT LOCATION

EUCI Office Building Conference Center
4601 DTC Blvd, B-100
Denver, CO 80237

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EUCI is authorized by IACET to offer 1.0 CEUs for this symposium.
PLEASE SELECT

- WIND PROJECT REPOWERING DUE DILIGENCE SUMMIT
  
  AUGUST 28-29, 2019: US $1395
  Early bird on or before August 9, 2019: US $1195

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

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Company ___________________________

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OR Enclosed is a check for $ ___________________________ to cover ___________________________ registrations.

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Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before July 26, 2019 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. Subscribers also receive free downloadable presentations from our past events.

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