WELCOME

Icebreaker Windpower LLC
Lake Erie Energy Development Corporation
Fred. Olsen Renewables USA Inc.

ICEBREAKER WIND
SUPPLY CHAIN
OPEN HOUSE EVENT

December 8th, 2016
4:00 PM to 7:00 PM
With Presentations at 4:30 PM and 6:00 PM

Responsible for Icebreaker Wind

Our Supply Chain Development Partners
Project Overview

Icebreaker Wind

6 Vestas V126-3.45 turbines
8 – 10 miles offshore
Water depth = 60 feet
20.7 MW capacity
Power for 7,000 homes
Mono Bucket foundations
Grid connection at CPP
Lake Road substation
Port of Cleveland staging & assembly site
Construction planned to begin in 2018

Build an Offshore Wind Industry in Northeast Ohio to Create Jobs and Generate Clean Energy Locally

• Community-driven initiative dating back to 2004
• LEEDCo formed in 2009 to accomplish the vision
  - 1st step ⇒ build a demonstration project
  - Blaze the trail to attract the private sector
    - Significant support from City of Cleveland – Ashtabula, Cuyahoga, Erie (PA), Lake, Lorain Counties – Cleveland Foundation – DOE – Ohio Congressional Members – national environmental groups – labor – lakefront communities – universities – maritime industries
• Achieved significant progress in development of Icebreaker Wind with local sources as well as DOE funding
• Attracted the investment of Fred. Olsen Renewables
• Transitioning development and construction to Fred. Olsen Renewables USA
  - Transition to be completed January 2017
MHI Vestas Offshore Wind

- Turbine engineering, supply, delivery, support of installation, and commissioning
- Staging and pre-assembly at the Port of Cleveland prior to installation on site

Approximate Specifications

- Rotor diameter: 413 ft (126 m)
  - Blade weight: 13.67 tons (12.6 tonnes)
- Hub height (above water): 272 ft (83 m)
  - Nacelle weight: 134.2 tons (121.7 tonnes)
- Overall height (above water): 479 ft (146 m)
  - Tower weight: 220.5 tons (200 tonnes)

Local Opportunities for:

- Logistics support
- Skilled labor
- Accommodations
- Transport services
- Guard services
- Inspection services
Foundations Contract

Universal Foundation

• Mono Bucket: one-piece “suction bucket” steel structure
• Engineering, fabrication, delivery, support of installation, and commissioning
• Foundations will be fabricated in US
  - Fabrication subcontract will be awarded based on a competitive bid process

Approximate Specifications

- 490 tons
- 15 ft. shaft diameter – 55 ft. bucket diameter
- 120 ft. overall length – 30 ft. skirt length

Local Opportunities for:

Material & equipment supply
  Fabrication services
  Fabrication support
  Inspection services
  Skilled labor
  Engineering support
Barges, vessels & cranes
Lifting gear
Guard services
Submarine Cable Contract

Prime Contractor:
- to be selected through competitive bid process
  • Engineering, supply, delivery, installation, and commissioning of the submarine cable
  • Horizontal drilling (HDD) under harbor from Lake Road substation to north of Breakwater
  • Cable laying and burial; pull-in operation at substation and turbines

Local Opportunities for:
  Logistics support
  Marine operations & installation services
  Fabrication services
  Horizontal drilling of conduit
  Diving and/or ROV services
  Equipment supply
  Accommodation
  Transport services
  Guard services
Onshore Substation and Grid Connection Contract

Prime Contractor:
- to be selected through competitive bid process

• Supply and construction of new Icebreaker Wind onshore substation and grid connection at CPP’s Lake Road Substation
• Design, supply of equipment, civil works including removal of abandoned structures, installation, testing, commissioning and start-up

Approximate Specifications
- 34.5 kV export cable (wind farm)
- 138 kV substation interconnect
- 20 MW substation

Local Opportunities for:
- Engineering support
- Material & Equipment supply
- Civil works
- Demolition of abandoned structures
- Installation support
- Skilled labor
- Guard services
Marine Operations and Logistics Contract

Fred. Olsen Windcarrier

• All marine operations including provision of vessels, barges, cranes, storage facilities, etc.
• Port of Cleveland will be the staging port for turbine components and potentially for assembly & completion of foundations

Local Opportunities for:

- Logistics support
- Inspection services
- Stevedore
- Barges, tugs & guard vessels
- Crew transfer vessels
- Fabrication of grillage & seafastening
- Lifting gear
- Tooling
- Forklifts, trucks etc.
- Skilled labor
- Accommodation
- Transport services
- Civil works
Local Opportunities

- Icebreaker Wind will include local content and MBE/FBE/SBE requirements in the five main contracts
- The five main contractors will be the main source of local and MBE/FBE/SBE opportunities

5 main contracts planned for construction of Icebreaker Wind
Lump Sum EPC(IC) basis: Contractor will be responsible for Engineering, Procurement, Construction, Installation and Commissioning

Icebreaker Windpower Inc.

Wind Turbines
- MHI Vestas Offshore Wind
  - Logistics support
  - Skilled labor
  - Accommodations
  - Transport services
  - Guard services
  - Inspection services

Foundations
- Universal Foundation
  - Material & equipment supply
  - Fabrication services
  - Fabrication support Inspection services
  - Skilled labor
  - Engineering support
  - Barges, vessels & cranes
  - Lifting gear
  - Guard services

Submarine Cable
- [selection pending a bid process]
  - Logistics support
  - Marine operations & installation services
  - Fabrication services
  - Horizontal drilling of conduit
  - Diving and/or ROV services
  - Equipment supply
  - Accommodation
  - Transport services
  - Guard services

Onshore Substation & Grid Connection
- [selection pending a bid process]
  - Engineering support
  - Material & Equipment supply
  - Civil works
  - Demolition of abandoned structures
  - Installation support
  - Skilled labor
  - Guard services

Marine Operations & Logistics
- Fred. Olsen Windcarrier
  - Logistics support
  - Inspection services
  - Stevedore
  - Barges, tugs & guard vessels
  - Crew transfer vessels
  - Fabrication of grillage & seafastening
  - Lifting gear
  - Tooling
  - Forklifts, trucks etc.
  - Skilled labor
  - Accommodation
  - Transport services
  - Civil works

Opportunities are at multiple levels of the supply chain
Getting Involved

How do you participate?

1. You must get listed in the Directory
   - Visit [www.leedco.org](http://www.leedco.org) or [www.glwn.org](http://www.glwn.org)
   - We’ll keep you informed throughout the contracting process
   - If you have any questions along the way, engage with us
     
     **GLWN**: Dee Holody, [dee@glwn.org](mailto:dee@glwn.org), (216) 920-1959
     
     **Emerald Cities**: SeMia Bray, [sbray@emeraldcities.org](mailto:sbray@emeraldcities.org), (216) 682-5349
   - Please spread the word to other local companies

2. We will include MBE/FBE/SBE and local requirements in the bid packages and main contracts
   - Local directory will be provided to bidders/main contractors
   - If you’re not in the directory – they may not find you

3. You will be contacted by main contractors/bidders
   - You will have to be qualified by them

4. You must respond promptly and adequately to requests from the main contractors/bidders
   - We can provide some assistance to help you respond

**TIMING:** 1st and 2nd Quarter 2017, depending on the contract