Lakewood Park Woman's Club Pavilion

U.S. Department of Energy
U.S. Army Corps of Engineers
U.S. Coast Guard

INFORMATIONAL OPEN HOUSE

September 6, 2017
4:00 pm to 7:00 pm

PUBLIC REVIEW AND COMMENT FOR THE DRAFT ENVIRONMENTAL ASSESSMENT FOR

PROJECT ICEBREAKER

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Federal Agency Roles

U.S. Department of Energy

is considering providing funding in support of the proposed project.

U.S. Army Corps of Engineers

is reviewing permit applications.

U.S. Coast Guard

is responsible for conducting a navigational risk assessment.

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National Environmental Policy Act (NEPA)
What Is the NEPA Process & How Can You Be Involved?

NEPA is the federal law that requires federal agencies to evaluate potential environmental impacts of proposed actions and to inform and involve the public in the decision-making process.

- **Please ask questions:**

DOE, USACE, USCG, and LEEDCo representatives are here to answer questions and accept your written comments on the issues and resources that have been evaluated in the draft Environmental Assessment.

- **Stay involved:**

The draft Environmental Assessment is now available for public review and comment. Your input is welcome during the public comment period, which ends on **October 10, 2017**.

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Key Steps in the DOE NEPA Process

Internal Scoping

- DOE identifies preliminary issues and resources to be analyzed in the draft Environmental Assessment (EA)
- DOE identifies stakeholders and develops public participation plan
- DOE identifies Cooperating agencies

Public Scoping Period

- Written comments accepted from the public on issues and resources that should be considered in the EA

Public Involvement Opportunity

Develop Draft EA

- Draft EA is developed to analyze impacts of the proposed action
- DOE initiates Endangered Species Act and National Historic Preservation Act consultation

Public Comment Period

- Draft EA is posted for public review
- Written comments accepted from the public on the content of the draft EA

Public Involvement Opportunity

Develop Final EA

- Complete Endangered Species Act and National Historic Preservation Act consultation
- Address public comments received and revise EA as appropriate

Final EA and Decision Issued

- Final EA is issued
- Depending on the findings in the EA:
  - DOE prepares a "Finding of No Significant Impact" – ***OR*** –
  - Determines that an Environmental Impact Statement (EIS) is required

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DOE Offshore Wind Demonstration Projects

Demonstrate offshore wind innovations at multi-megawatt scale to reduce the cost of energy and address regional challenges and opportunities, expediting development of the US offshore wind industry

- Allow for learning and real data collection on a demonstration scale
- Innovative technology lessons learned will help drive down the cost of offshore wind
- Highly instrumented platforms provide insight into how to improve future deployments

National Offshore Wind Strategy Themes and Action Areas

Reducing Technology Costs & Risks	1 Offshore Wind Power Resource & **Site Characterization** 2 Offshore Wind **Plant Technology Advancement** 3 Installation, Operation & Maintenance, and **Supply Chain** Solutions
Supporting Effective Stewardship	4 Ensuring Efficiency, Consistency & Clarity in the **Regulatory Process** 5 Managing Key **Environmental & Human Use** Concerns
Improving Understanding of the Benefits of Offshore Wind	6 Offshore Wind **Electricity Delivery & Grid Integration** 7 **Quantifying/Communicating** the Costs & Benefits of Offshore Wind

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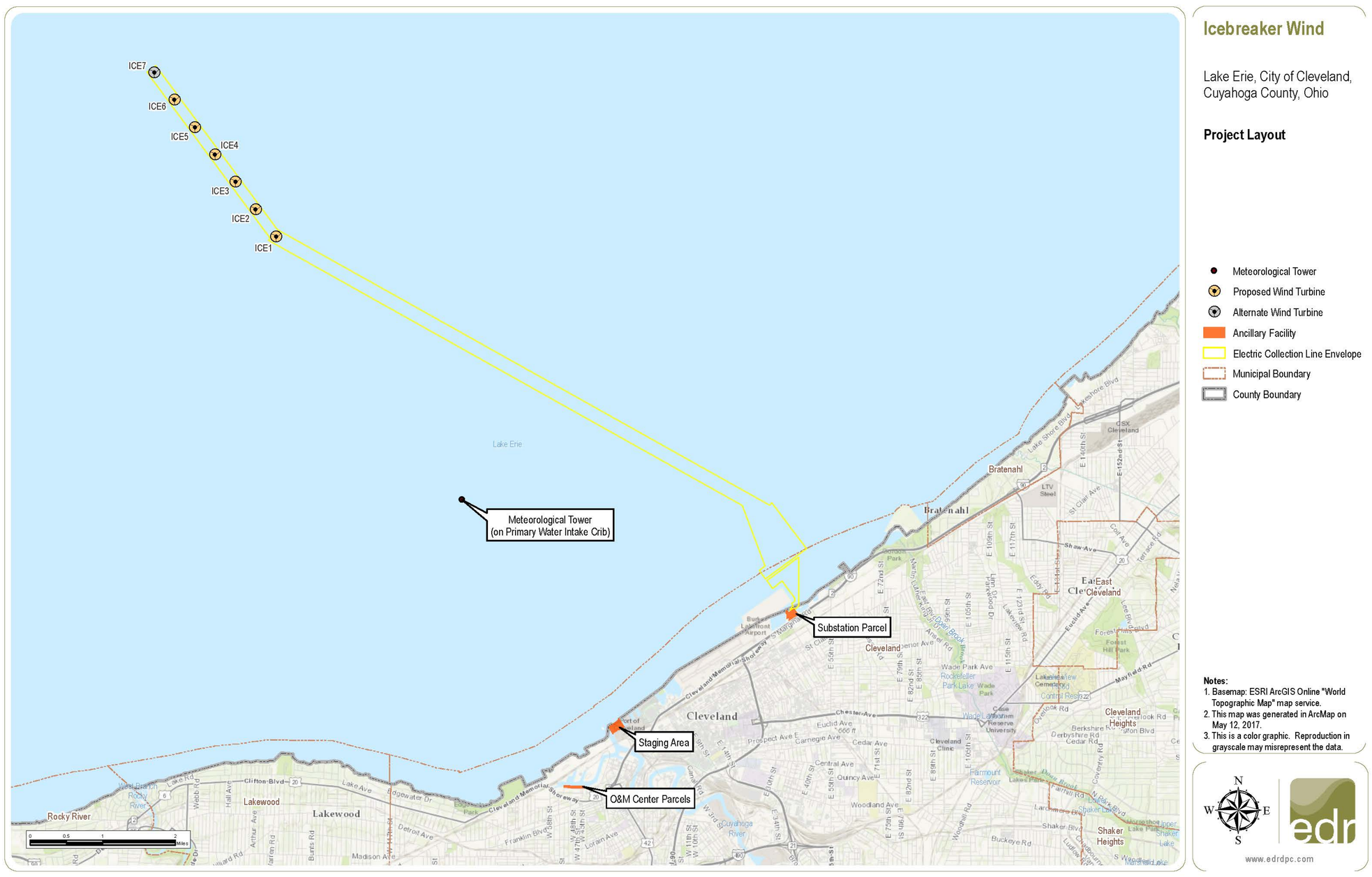
Project Icebreaker (also known as Icebreaker Wind) would be a demonstration-scale offshore wind facility located approximately 8 miles off the shore of Cleveland, Ohio

- One of the first offshore wind projects in the United States.
- Six 3.45 MW wind turbines.
- Buried and shielded submarine cables (inter-array cables) interconnecting the turbines.
- Buried and shielded submarine cable (export cable) connecting the turbines to the Project Substation in Cleveland.
- Generation capacity of approximately 21 MW of renewable electricity (enough to power approximately 7,000 homes).



Proposed Project Icebreaker Layout

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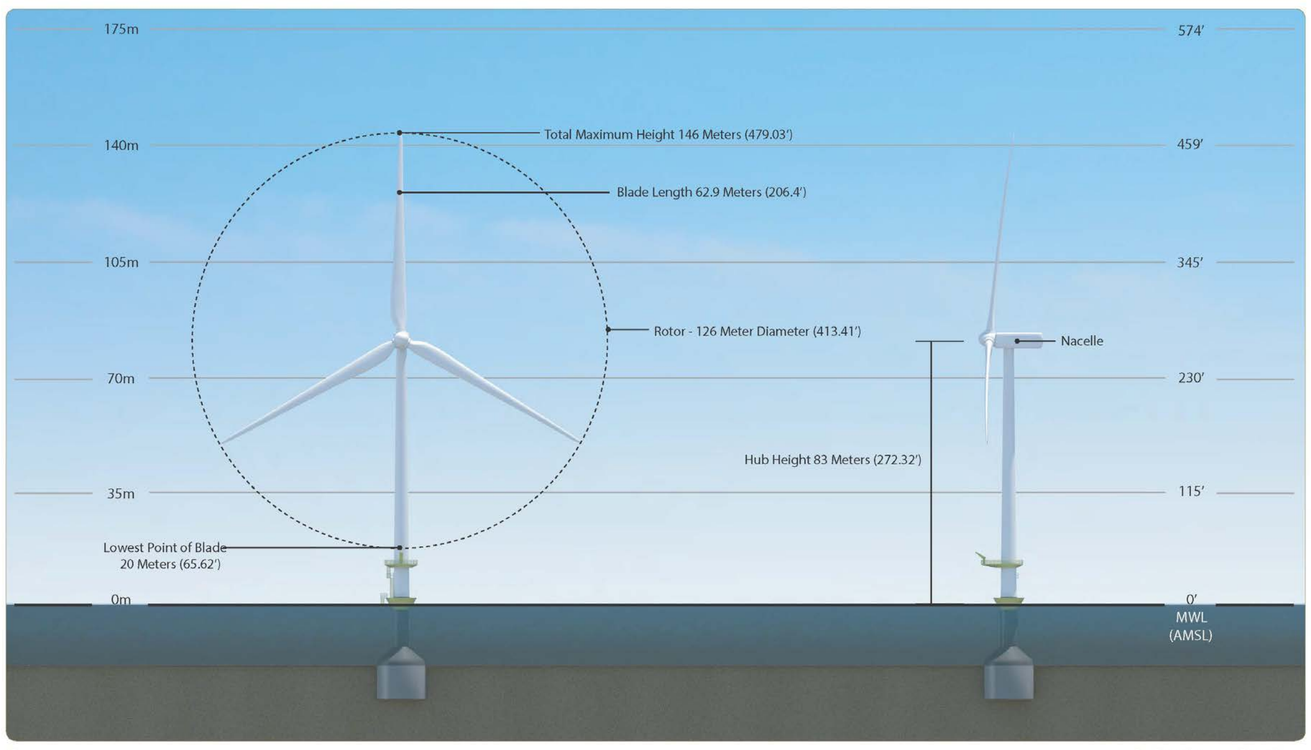
Turbines and Foundations

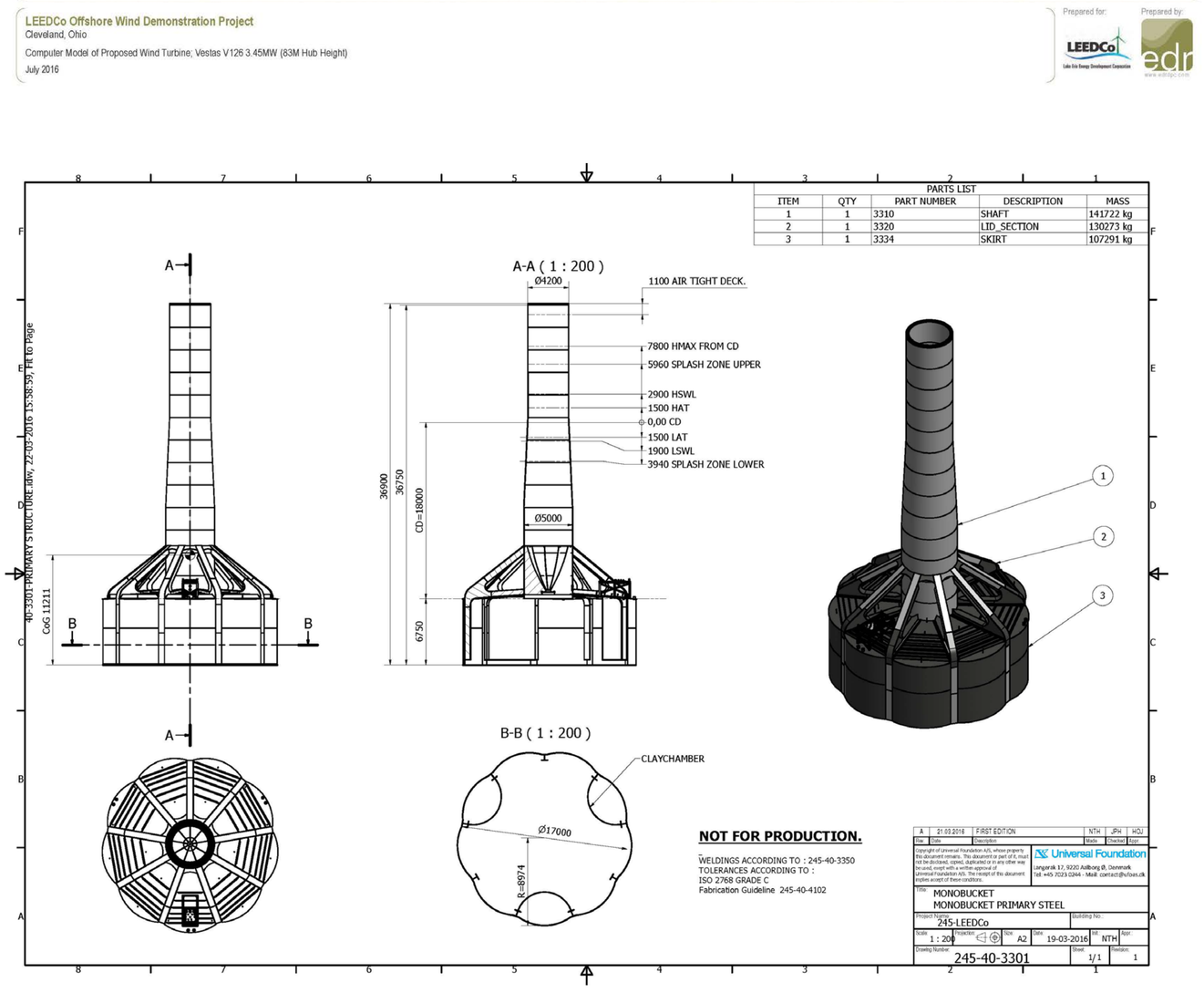
Turbines (Tower, Nacelle and Rotors):

- Approximate Blade Length: 206 feet
- Approximate Turbine Hub Height: 272 feet
- Maximum Blade Height: 479 feet
- Approximate Tower Height: 233 feet above water line
- Tower Material: Multiple sections of conical steel structures
- Tower, nacelle, and rotors would be painted a light gray



Mono-Bucket Foundation:

- Suction Installed Caisson
- Foundation Material: Steel
- Approximate Bucket Diameter: 56 feet
- Approximate Shaft Diameter: 15 feet
- Approximate Overall Height: 121 feet
- Painted yellow above the water line up to the attachment point of the tower



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Avian and Bat Studies

Studies were completed between 2008 and 2017

Birds

- **NEXRAD radar analyses** (Diehl et al. 2003, WEST 2017)

  Region-wide analysis of next-generation radar (NEXRAD) of nocturnal bird migration patterns.

- **Aerial Surveys** (Ohio Department of Natural Resources 2011)

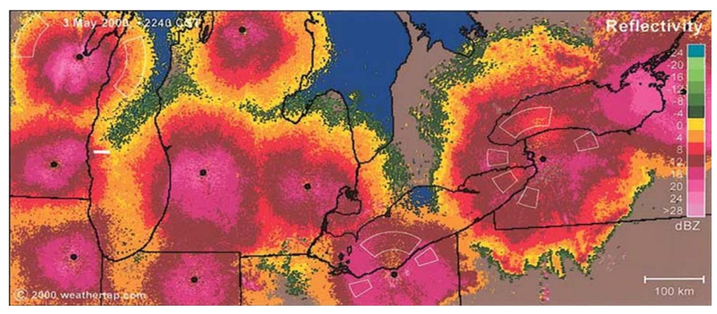
  Weekly flights, in total, 725,785 individual bird observations recorded, representing 51 species.

- **Boat Surveys** (Tetra Tech 2010)

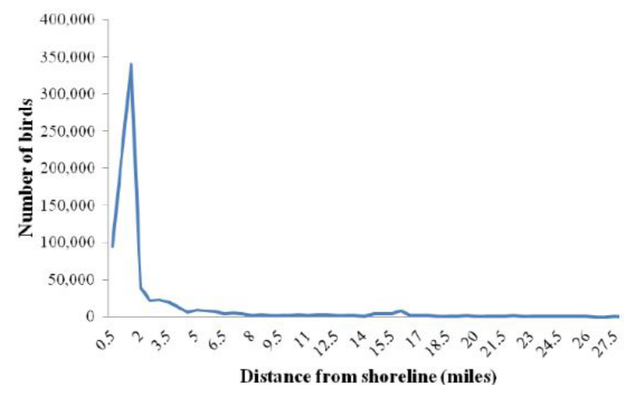
  Morning, evening, and night observations along saw-tooth transect covering 11.1 square km offshore area around the Cleveland Water Intake Crib.

- **Risk Assessment** (WEST 2016)

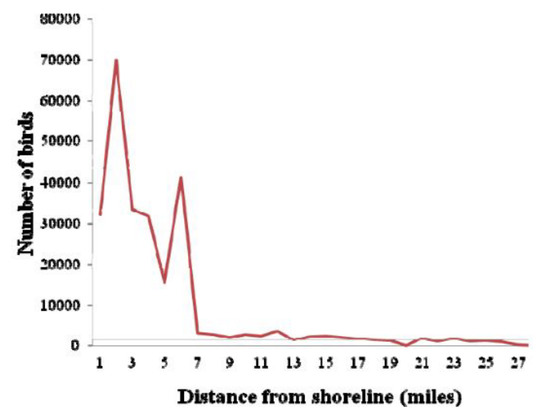
  Identified relevant resources and evaluated the level of risk to birds posed by the Project.



Example of NEXRAD radar results



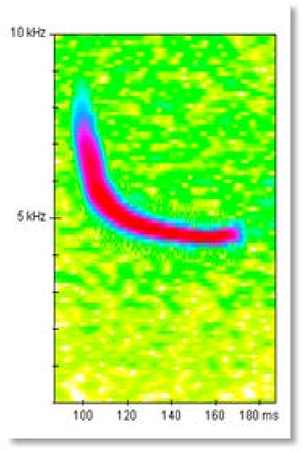
Total bird observations in relation to distance from Lake Erie shoreline from fall 2009 to spring 2010



Total bird observations in relation to distance from Lake Erie shoreline from fall 2010 to spring 2011

Bats

- **Acoustic Monitoring** (Tetra Tech 2010)
  Ultrasound detectors at land-based and offshore locations.
- **Risk Assessment** (WEST 2016)
  Identified relevant resources and evaluated the level of risk to bats posed by the Project.



Example of bat ultrasound spectrogram results

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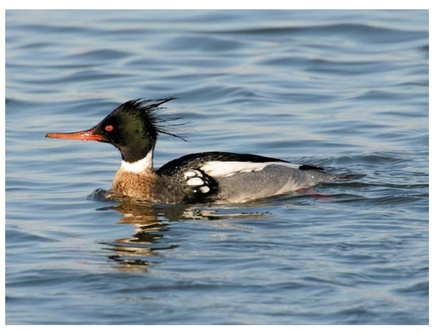
Potential Impacts to Avian and Bat Species

Potential impacts include:

- Displacement
- Behavioral Avoidance/Attraction
- Collision




http://www.audubon.org/field-guide/bird/



https://commons.wikimedia.org/wiki/ and https://en.wikipedia.org/wiki/

Endangered Species

Consultation with US Fish and Wildlife Service has been initiated. The Biological Assessment concludes that the project is not likely to adversely affect any threatened or endangered bird or bat species.

Committed Measures to Monitor, Avoid and Minimize Impacts:

- Use flashing red obstruction lights on nacelles.
- Feather turbine blades up to manufacturer's cut in speed (6.7 mph) during late summer peak of bat activity.
- Follow approved MOU monitoring plan – multifaceted impact monitoring program (before, during and post-construction).
- Develop a Bird and Bat Conservation Strategy, including conducting post-construction monitoring and undertaking adaptive management measures and mitigation if impacts exceed expectations.

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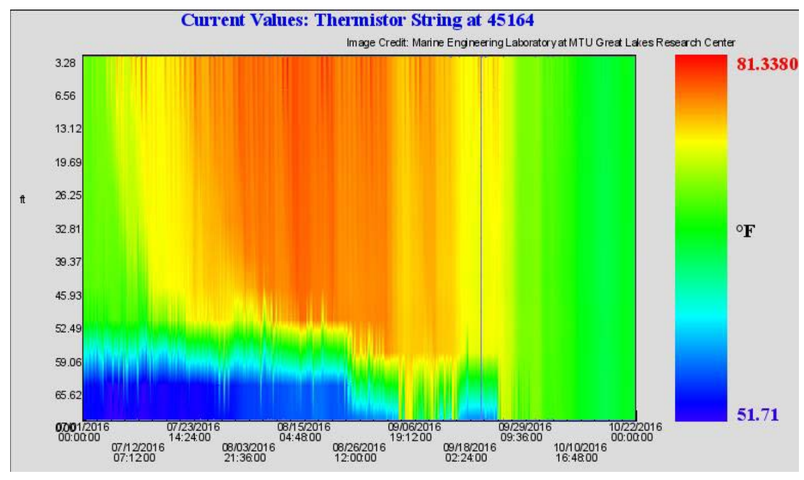
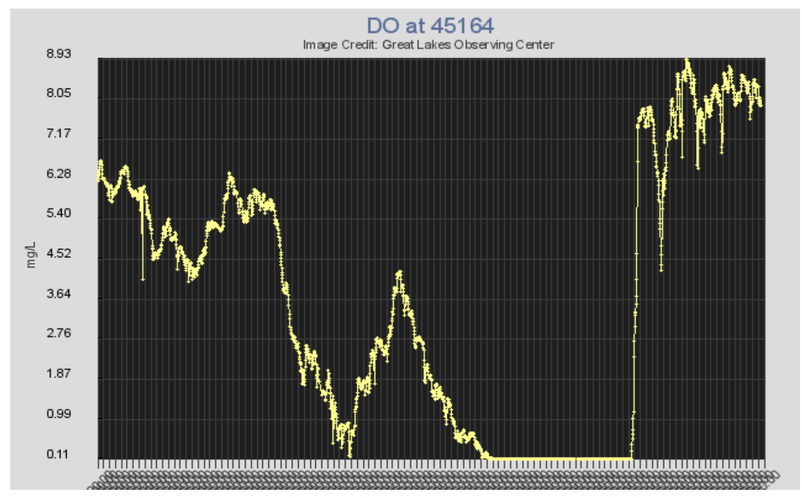
Water Quality and Sediment Studies

Preconstruction Water Quality Surveys

- Boat-based surveys conducted from May to October 2016
  - Water quality – dissolved oxygen and temperature
  - Water chemistry – phosphorus, nitrogen, chlorophyll a
  - Light extinction and water clarity
  - Profiles of temperature, dissolved oxygen, pH, conductivity, turbidity
- Continuous water chemistry sensors
  - Water temperature
  - Dissolved oxygen
  - Underwater light levels
- Real-time weather buoy



Sample Temperature Profile



Sample Dissolved Oxygen Profile

Real-Time Weather Buoy

Preparing for Monthly Sampling

Lakebed Sediment Analysis

- Grain size and sediment contaminants measured in 4 samples from the Proposed Project Area to determine the existing sediment quality.
- Results were compared to ecological sediment quality guidelines following Ohio EPA's *Guidance on Evaluating Sediment Contaminant Results*.

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Potential Impacts to Water Quality

Potential impacts include:

- Short-term and localized increases in suspended sediment/turbidity (similar to or less than what occurs in this part of Lake Erie).
  - Cleveland Water intakes are located approximately 1.8 miles from the closest point of the export cable route and approximately 4.2 miles from the closed proposed turbine site.
  - The Cleveland Water treatment plant is designed to remove short term variations in turbidity.
- Mobilization of potentially contaminated sediments - results indicate existing sediment quality would pose low potential for toxicity to aquatic organisms.
- Inadvertent release of horizontal directional drilling (HDD) fluid may cause temporary, local increase in turbidity as bentonite clay becomes suspended in the lake in close proximity to HDD activities.
- Potential for fluid release (oil, hydraulic, etc.) from vessels and operation of turbines.

Aerial Image from June 2, 2017 on Lake Erie Showing Sediment Disturbance from Passing Ships

Committed Measures to Avoid and Minimize Impacts:

- Vessels would comply with USCG requirements for management of onboard fluids, including maintaining and implementing spill prevention, control and countermeasure plan.
- Inadvertent Return Contingency Plan would be prepared.
- Turbines would be designed for three levels of containment to minimize any risk of fluid discharges.

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Fish and Aquatic Resources

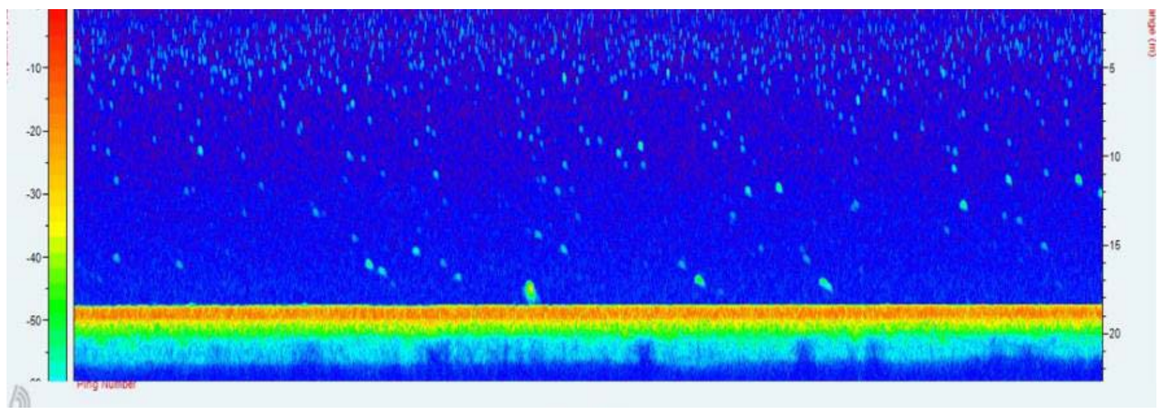
Studies conducted

- Benthic Macroinvertebrate samples were collected at 3 locations in May and October 2016. Density of benthos was consistent across locations and events.
- Larval fish surveys were conducted once monthly in May, June, and July of 2016 at two proposed turbine locations and one reference site. Across 29 trawls, only five larval fish were collected.
- Juvenile fish sampling was conducted in May, August and October 2016 at the same locations as the larval fish surveys. Species collected were consistent with Ohio Department of Natural Resources yearly trawls and were dominated by white perch, yellow perch and rainbow smelt. Hypoxic conditions in August resulted in extremely low numbers of fish collected in the August sampling.
- Acoustic monitoring results showed decrease in fish density in August-September consistent with juvenile fish results and seasonal low dissolved oxygen exhibited in the summer.

Photo of benthos samples collected in May 2016

Photo of larval fish monitoring using neuston net

Photo of juvenile fish trawling



Sample of Mobile Hydro Acoustic Data

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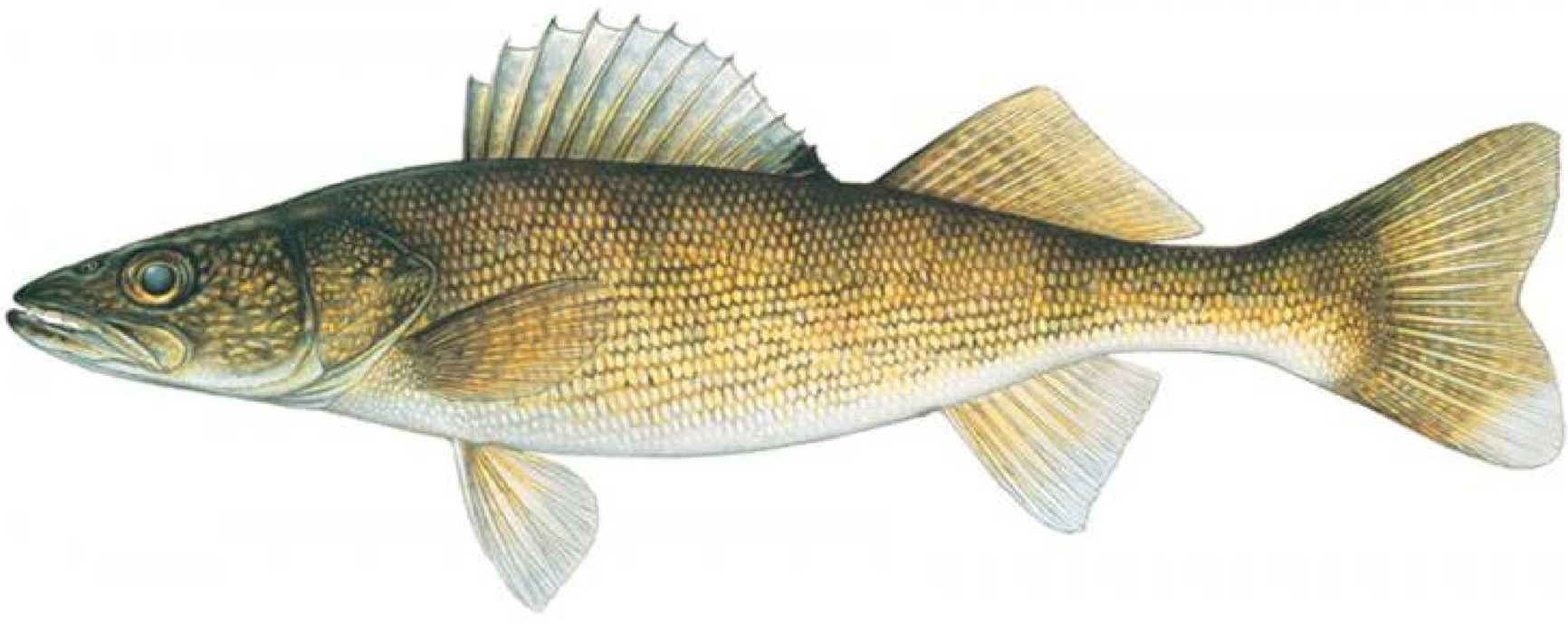
Potential Impacts to Fish and Aquatic Resources

Potential Impacts

- Habitat disturbance during construction.
- Temporary indirect impacts from elevated suspended sediment during construction.
- Artificial reef effect from presence of turbine foundations.
- Operational noise at high wind speeds may have minimal impact.
- Electric and magnetic fields (EMF) are not expected to impact fish.
- Temporary displacement of fishing during construction.



Committed Measures to Monitor, Avoid and Minimize Impacts:

- Follow approved MOU monitoring plan for aquatic and fish sampling - MOU outlines testing and analyses to be conducted before, during and post-construction.

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Visual and Cultural Resources

Visual Impact Assessment

- 10-Mile Radius Study Area.
- Turbine visibility generally restricted to shoreline areas.
- Project is generally screened from inland areas by buildings and trees.
- Nearest distance to turbines is 7.1 miles.
- Factors that minimize visual effect:
  - Small number of turbines
  - Distance from shore
  - Turbines occupy small portion of the horizon

Visual Simulation from Viewpoint 7: USS Cod

Cultural Resources

Visual effects on historic properties

- 23 properties/districts listed on National Register of Historic Places.
- 186 properties listed in Ohio Historic Inventory.
- Maritime setting contributes to significance of some historic properties.
- Long-term, but relatively minor impact on historic properties.

Archaeological survey

- Underwater - No potentially significant sites in area of potential effect.
- Land-based - No archaeological resources were identified within the area of potential effect for direct effects.

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Additional Studies

Additional environmental studies have been completed including:

- **Geotechnical and Geophysical Studies**

  Surveys to determine the geological characteristics of the lakebed.

- **Ice Characterization Report**

  Review and analysis of data for sheet ice thickness, frequency of ridges and keels, maximum thickness of consolidated ice, and estimated dynamic ice forces.

- **Recreational Boat Survey**

  Aerial survey to monitor use by recreational boaters and study to count and classify recreational boat slips in harbors, marinas and yacht clubs.

- **Navigational Risk Assessment**

  Assesses current and future navigational safety conditions and evaluates navigational risk due to construction and operation.

- **Ambient Noise Level Study**

  Underwater sound recorders monitored background noise levels.

- **Socioeconomic Report**

  Review of past and current demographic and economic characteristics and trends and analysis of potential impacts.

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Draft EA Summary

Preliminary Analysis of Potential Adverse Impacts

Resource Area	Level of Expected Environmental Impact
Physical Resources	
Lake-Based Geology and Sediments	No Impact
Land-Based Geology and Soils	No Impact
Water Resources	
Lake Water Quality	Minor, Short-term Adverse Impact
Drinking Water Supply and Quality	No Impact
Biological Resources	
Benthos	Moderate, Short-term Adverse Impact
Fish Resources	Minor, Short-term Adverse impact
Insects (Butterflies)	Negligible, Short-term Adverse Impacts
Birds and Bats	Minor, Short-term and Long-term Adverse Impacts
Aquatic and Terrestrial Protected Species	Negligible, Short-term Adverse Impact
Health and Safety	
Waste Management	Negligible Impact
Hazardous Materials	Negligible Impact
Public Health and Safety	Minor, Short-term Adverse Impact
Air Quality	Minor, Short-term Adverse Impact
Climate Change	Negligible Impact
Lake Use	Minor, Short-term Adverse Impact
Traffic and Transportation	Minor, Short-term Adverse Impact
Cultural Resources	Minor, Long-term Adverse Impact
Aesthetic and Visual Resources	Minor, Long-term Adverse Impact
Noise	Minor, Short-term Adverse Impact
Economic and Socioeconomics	Negligible
Environmental Justice	No impact

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Project Icebreaker and the U.S. Army Corps of Engineers (Corps) Permitting Process

- The Corps regulatory responsibility for the proposed off-shore wind energy demonstration project fall under the following authorities:
    - Section 10 of the *Rivers and Harbors Act*
    - Section 404 of the *Clean Water Act*
- Project Icebreaker will involve structures, fill material, and utility lines which will require Corps permits under one or both of the above authorities.
- In order to provide strong protection of the Nation's aquatic resources, the Corps must consider an array of public interest factors (e.g. fish & wildlife, navigation, etc.) and balance favorable impacts against detrimental ones.
- The Corps is working as a cooperative agency with the Department of Energy and the U.S. Coast Guard in the review and evaluation of the proposal. The Corps will also continue to work with interested and involved local, state and federal agencies throughout the permit process.
- Upon receipt by the Corps, of a complete Section 404/10 Application, a 30-day Public Notice period will be initiated to obtain public input on those aspects of the project which apply to the Corps' authorities.

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