

LAKE ERIE WIND POWER PROJECT AVIAN & BAT STUDIES

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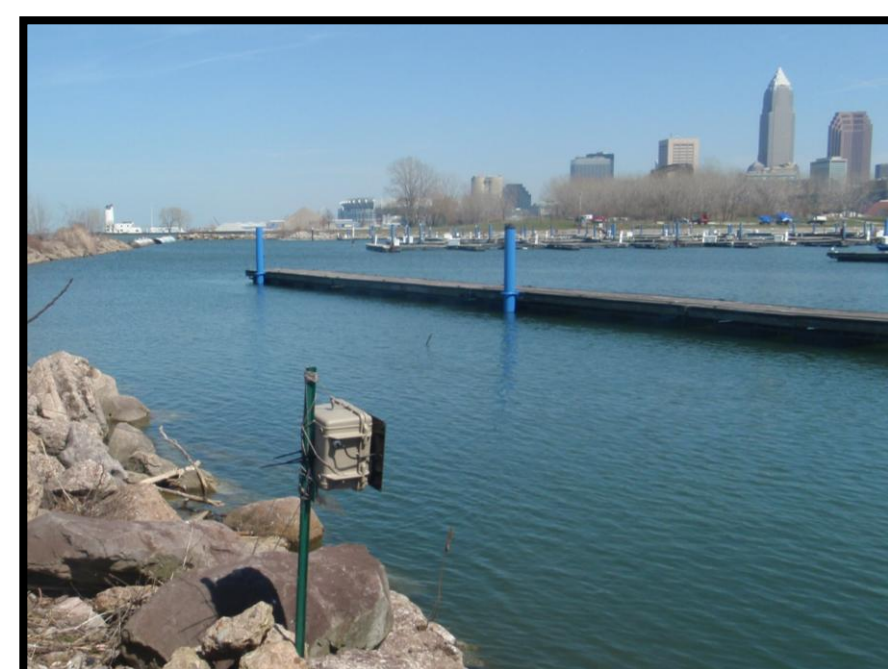
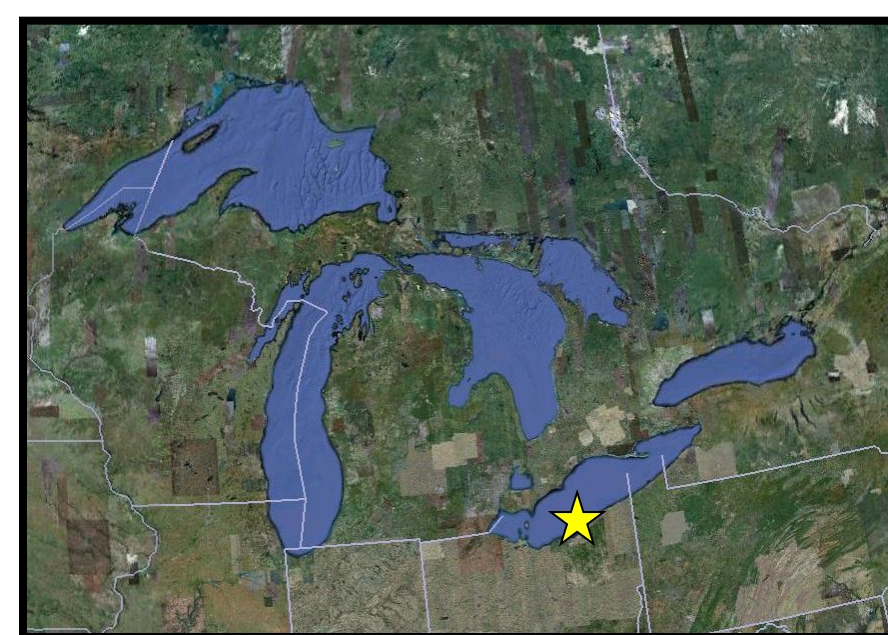
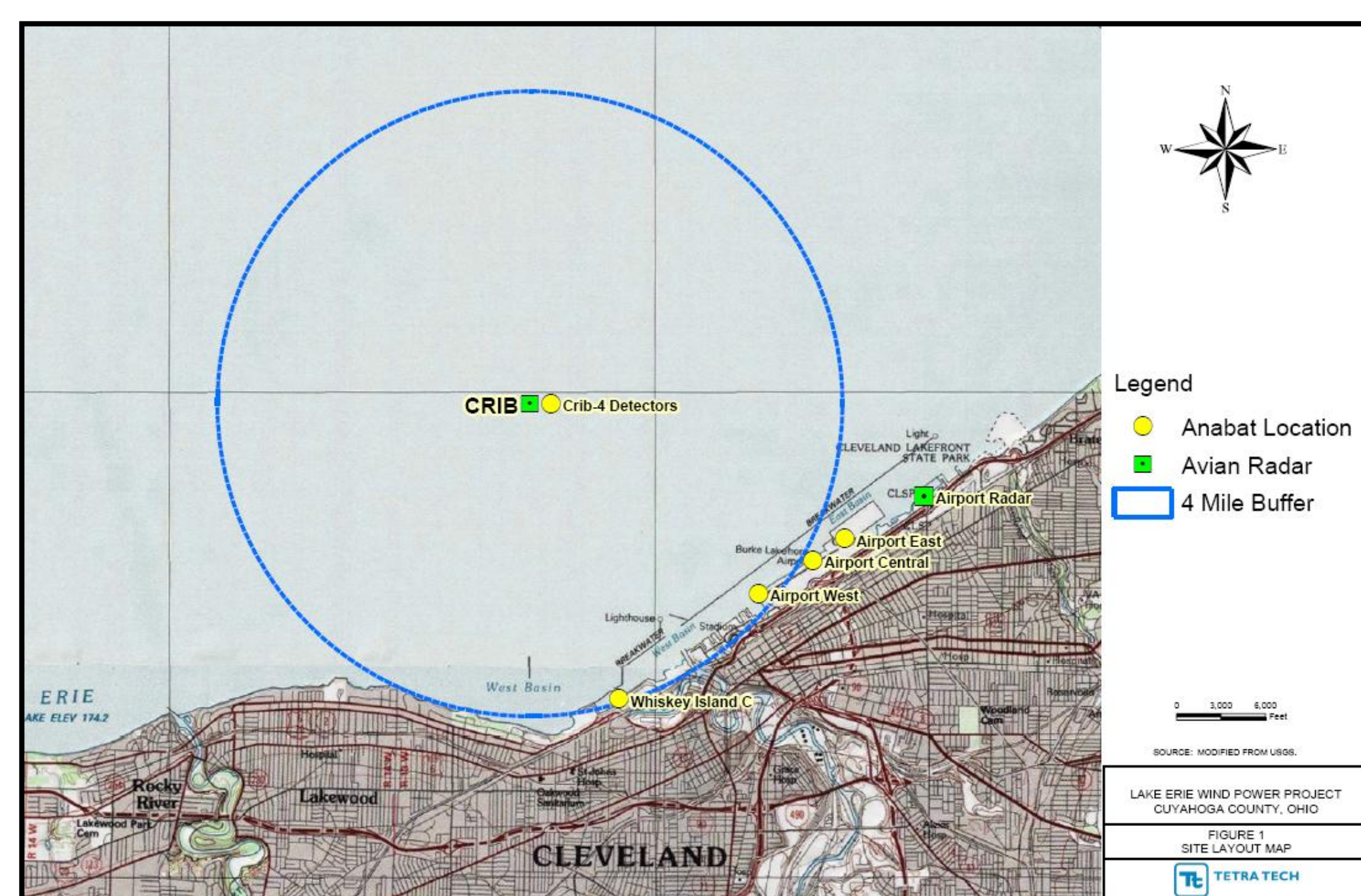
Key Contributors

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Learning Objectives

- To highlight the unique public/private partnerships that have come together with the goal of fostering offshore wind power development in the Great Lakes;
- To highlight the techniques utilized to collect data for the first offshore avian and bat studies project in the Great Lakes;
- To understand the multiple challenges that had to be overcome to collect data offshore; and
- To present preliminary findings from the studies.

Project Location



- Lakefront State Park
- City of Cleveland Water Intake Crib
- Cleveland Shoreline

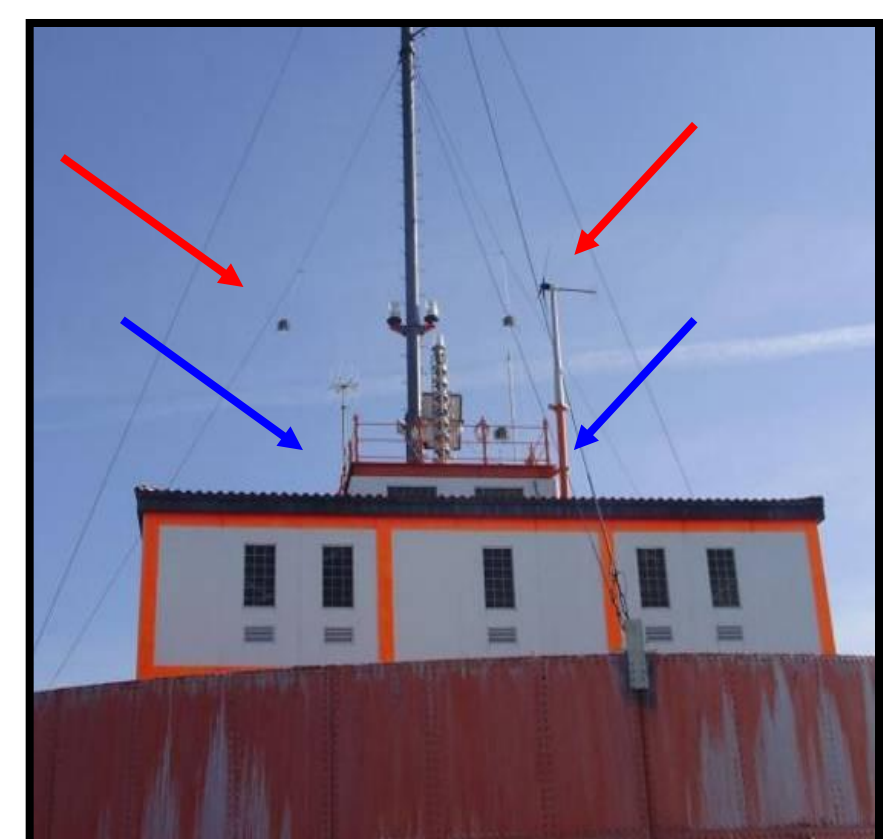
Acoustic Bat Monitoring Techniques

On-Shore

- 4 AnaBat SD-1 detectors were placed at locations along Lake Erie shoreline from 4/1/10 to 11/10/10

Off-Shore

- 2 AnaBat SD-1 detectors were placed at 35 m above the water on the railing of the Crib's crows nest from 4/1/10 to 11/10/10
- 2 AnaBat SD-1 detectors were placed at 50 m above the water on the guy wires of the Crib MET tower from 4/1/10 to 11/10/10



Challenges

- Coordination/communication with multiple agencies/entities
- Getting equipment to Crib
- Safety, Safety, and Safety
- No power at Crib, used B100 Biodiesel
- Weather and the quickly change conditions on Lake Erie
- Equipment maintenance and downtime



Project Background

Great Lakes Energy Development Task Force (Task Force)

- Formed in 2006 by Cuyahoga County, Ohio to generate a plan to promote advanced energy and spur economic development
- Have taken multiple steps to facilitate Offshore Wind in Lake Erie and throughout the Great Lakes, which included a 2009 Offshore Wind Feasibility Study

Lake Erie Energy Development Corporation (LEEDCo)

- Created by the Task force in 2009 as a regional public-private partnership to build a wind energy industry in Northern Ohio
- Collaboration of community leaders and local and state government policy makers with key industry stakeholders and wind industry advocates

Lake Erie Offshore Wind Energy Pilot Project

- An initial 20 MW wind pilot project off the shores of Cleveland, Ohio in Lake Erie
- General Electric to provide direct-drive wind turbines
- Freshwater Wind, LLC will construct, own, and operate the Lake Erie wind project

Expert Avian and Bat Studies Project

- As part of the 2009 Feasibility Study an initial avian risk assessment was conducted that utilized NEXRAD analysis
- Agencies identified need for additional site-specific data
- Study objectives included: documentation off-shore bird and bat species for composition, density, flight height/direction, passage rates, activity levels, temporal distribution patterns, and correlations with climatic or other factors

Avian Survey Techniques

Avian Radar

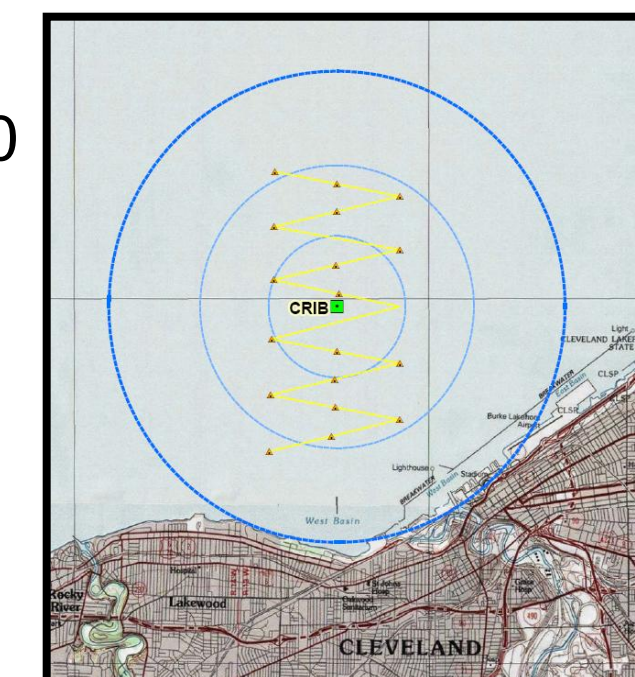
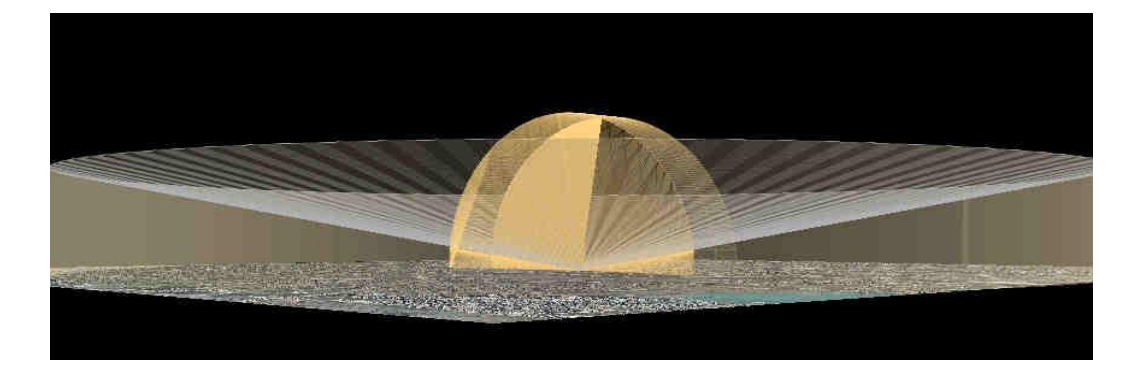
- Vertical and horizontal scanning for avian targets
- Onshore at Lakefront State Park from 3/31/10 to 4/20/10
- Offshore at the Crib from 4/29/10 to 6/2/10 & 8/16/10 to 10/12/10

Boat Based Visual Surveys

- Saw tooth pattern through out survey area to validate radar data
- 4 surveys (morning & evening) from 5/5/10 to 5/24/10
- 6 surveys (morning & evening) from 9/13/10 to 10/25/10

Avian Acoustics

- Song Meter SM-1
- Deployed on the Avian Radar System
- Recorder monitored for nocturnal passerine migrants



Preliminary Findings

- Avian species composition included primarily species common to the region (various gulls in both spring and fall). Final radar analysis is pending.
- Preliminary results indicated that avian migration occurred over the Project Area generally at heights above the rotor swept zone (RSZ). Final radar analysis is pending.
- Incidental avian observations indicate much higher species richness along waterfront.
- 60% (spring) and 90% (fall) of birds directly observed near the surface were flying below the RSZ.
- Avian use evenly distributed both spatially and temporarily.
- Acoustic data indicated that offshore bat activity levels were significantly less than onshore.
- Peak nights of spring bat activity onshore occurred during late April and early May (peak 5/1/10) and offshore in mid-May (peak 5/21/10).
- Peak nights of summer/fall bat onshore activity occurred during late July - early August (peak 8/2/10) and offshore in mid-to late August (peak 8/30/10).

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