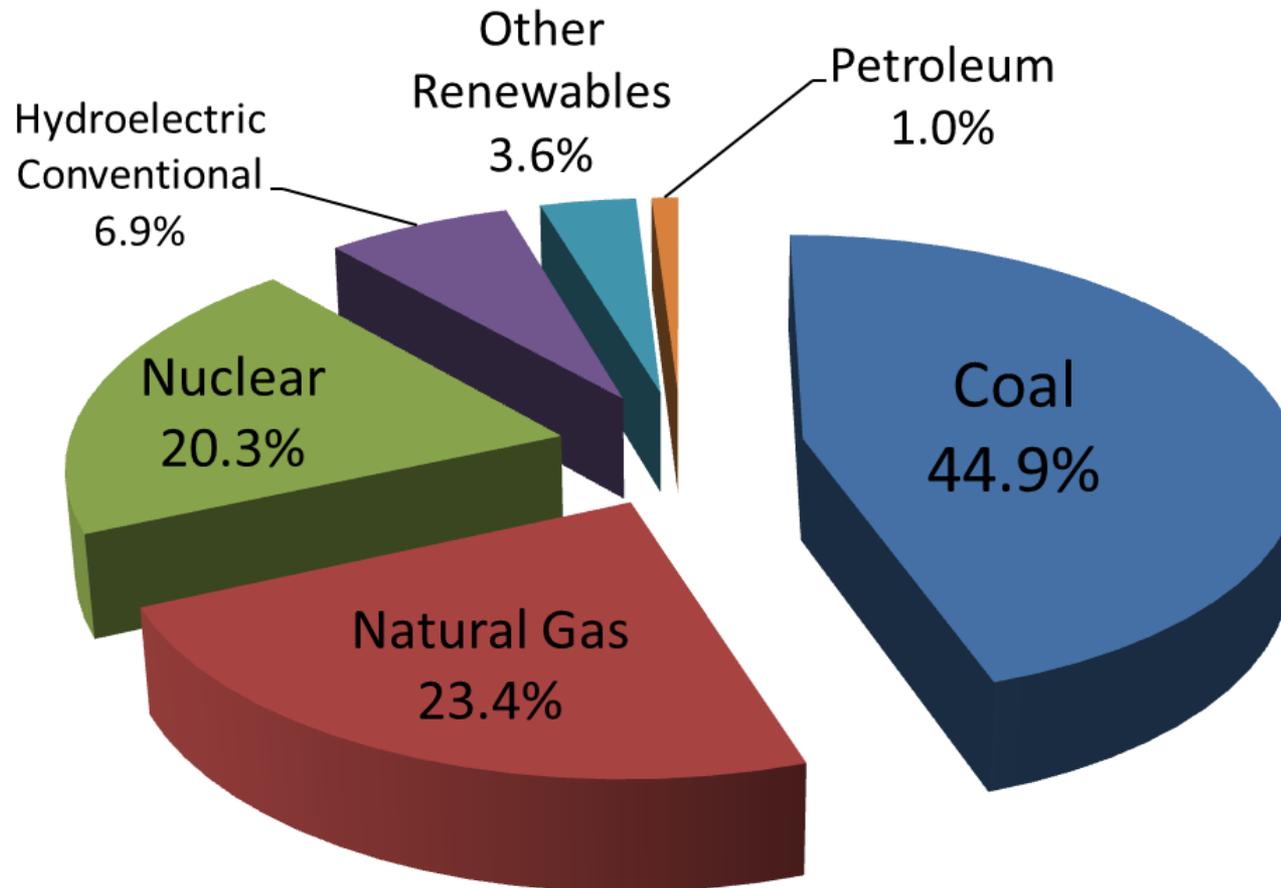


Powering Ohio's Economy with Offshore Wind



First in the Water, First in Jobs

2009 U.S. Electricity Generation by Source





Regional

Jobs

Public/Private

Offshore Epicenter

Private Investment

20 MW Pilot Project



Turbine Supplier

"Freshwater Wind"

Research Partners

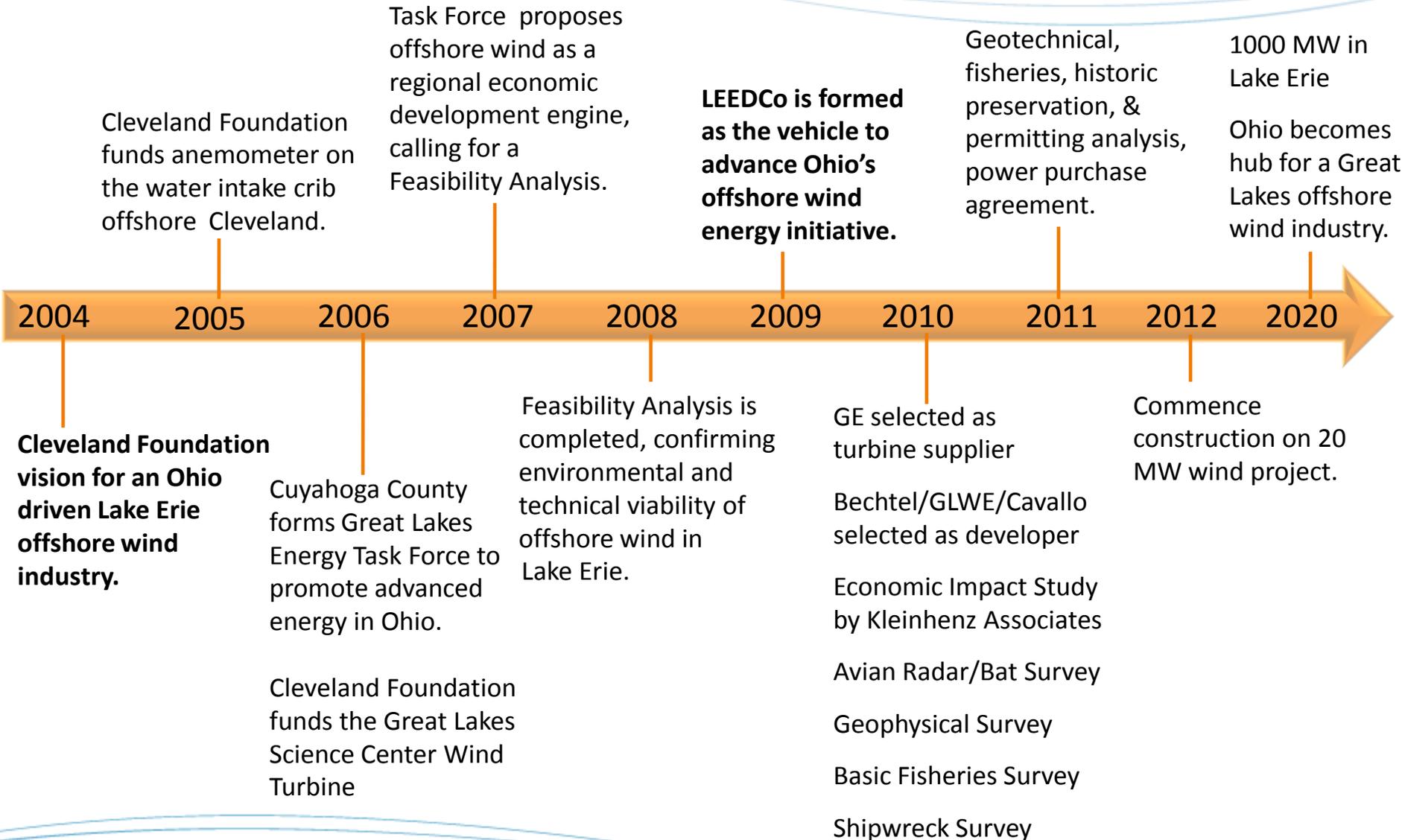
Strategic Advisors



GREAT LAKES ENERGY DEVELOPMENT TASK FORCE
A Cuyahoga County Initiative



Timeline



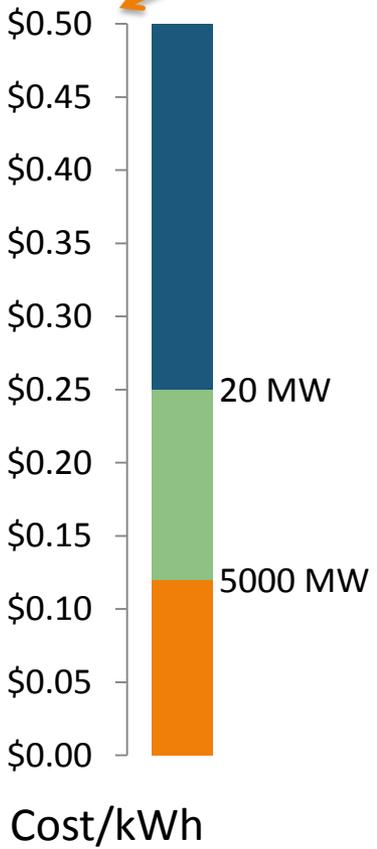
Beyond generating power, LEEDCo seeks to maximize Ohio's offshore wind energy potential by capturing the emerging Great Lakes industry – dubbing Ohio as the epicenter.

Vision:

2013 – 20 MW
2020 – 1000 MW
2030 – 5000 MW

Mission

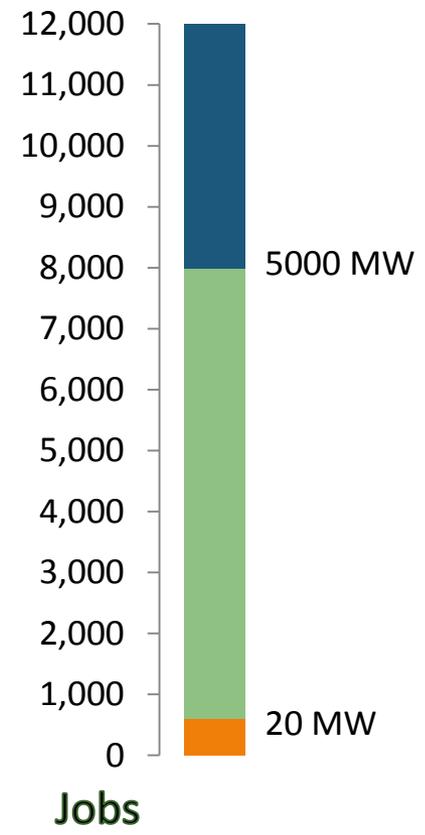
Nuclear - 1957



Lower
Costs



Jobs

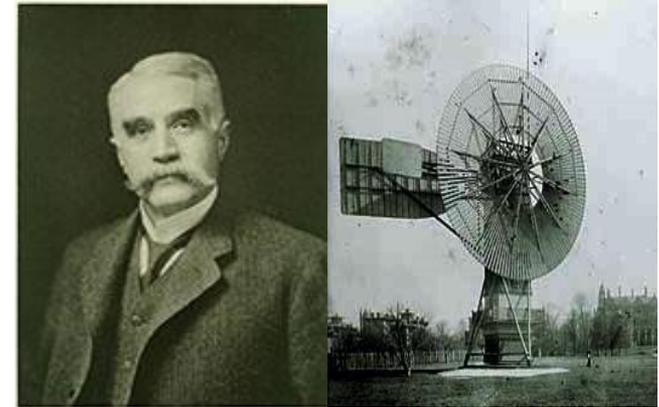


Lake Erie 68,000 MW Capacity
Great Lakes 250,000 MW

Ohio & Wind Energy History

- Charles F. Brush

- Born in Euclid, Ohio
- 1887 - world's first wind-powered electric generator in Cleveland.
- 144 blades, 50-ft. Rotor = 12 kilowatts
- Brush's company eventually became GE.



- NASA Glenn Research Center



- Located in Brook Park, Ohio
- Led U.S. Wind Energy Program between 1974-1980
- Turbine development paved the way today
- Program eventually divested.



3.2 MW turbine in Hawaii

Question: "Where did Ohio's turbines go?"

Learning Curve vs. Economic Urgency

Europe:

- 3,185 MW in operation
- \$100 BB planned
- Manufacturing is growing
- Ports revitalized/Jobs created

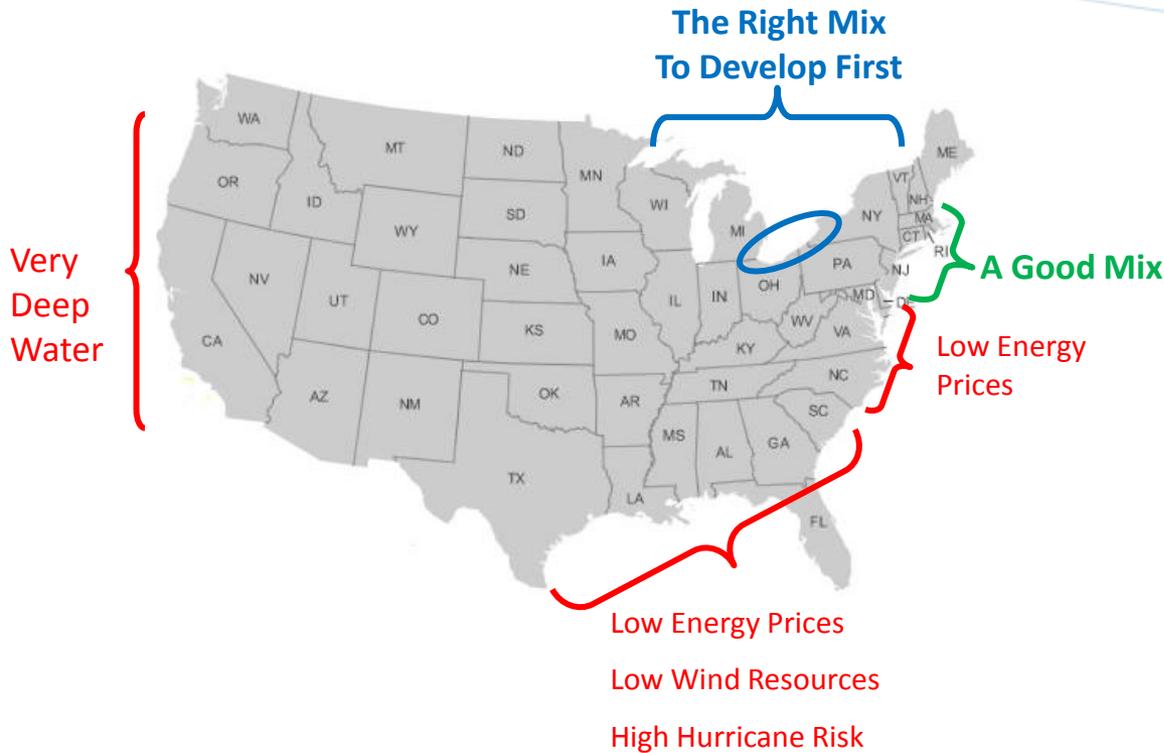


Asia:

- \$30 BB Investment in Wind
- Using European experience & dramatically driving costs down



Competitive Landscape



Select Great Lakes Projects*

- MI – Scandia Wind – 150 MW
- NY – NYPA – 100-500 MW
- WI – Aquilo Wind – 50 MW
- IL – Evanston – 200 MW
- OH – LEEDCo/Freshwater Wind – 20 MW
- OH – LEEDCo/Freshwater Wind – 1,000 MW

Select East Coast Projects*

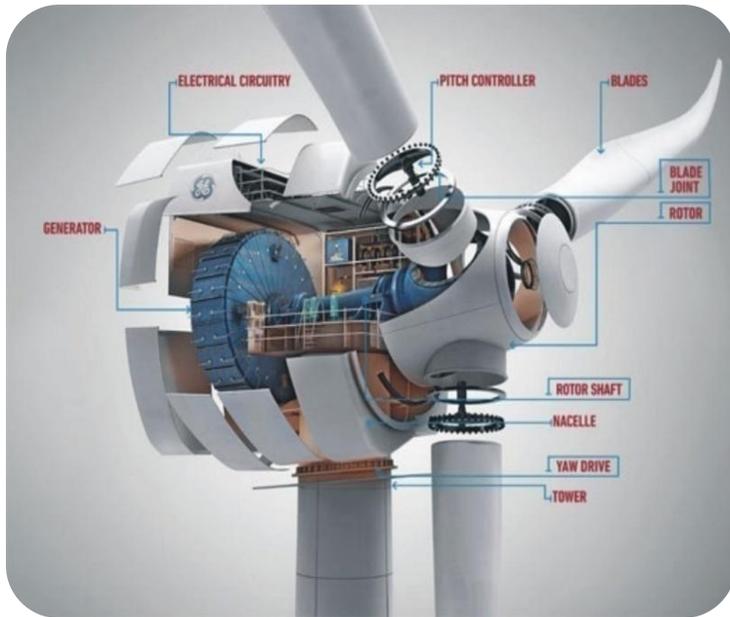
- MA – Hull - 15 MW
- MA – Cape Wind – 468 MW
- RI – Deepwater Wind/Block Island – 30 MW
- RI – Deepwater Wind/RI Sound – 385 MW
- NY – Con Ed/LIPA – 350/700 MW
- NJ – Fishermens Energy Atlantic City – 20 MW
- NJ – Fishermens Energy Federal Waters – 350 MW
- NJ – Garden State Offshore Energy – 350 MW
- NJ – NRG Bluewater Wind – 350 MW
- DE – NRG Bluewater Wind – 300-450 MW
- VA – APEX Wind – 1,200 MW
- VA – Seawind Renewable Energy – 1,000 MW

What does this mean for Ohio?

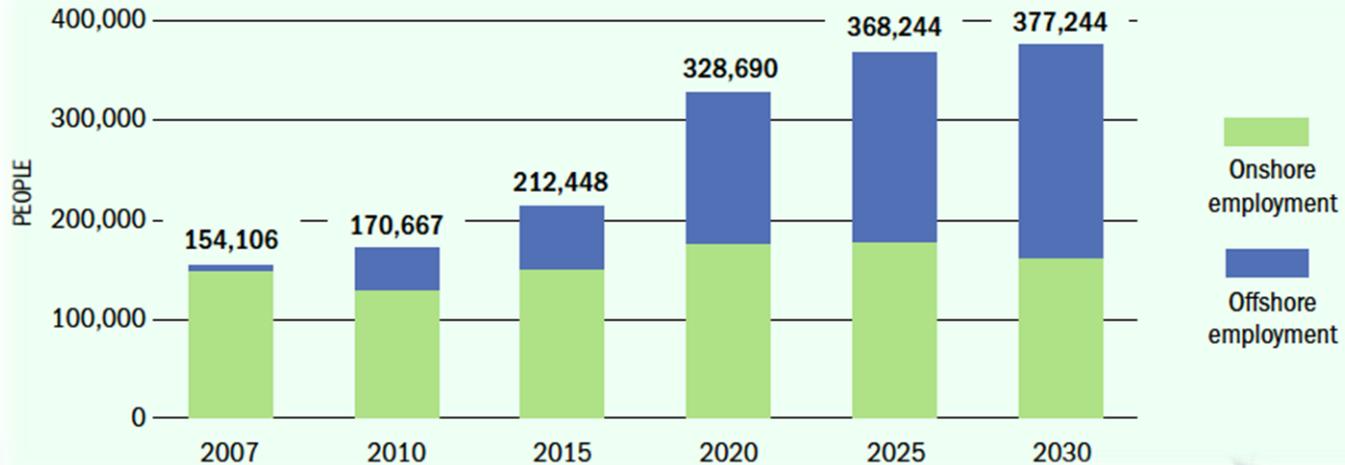
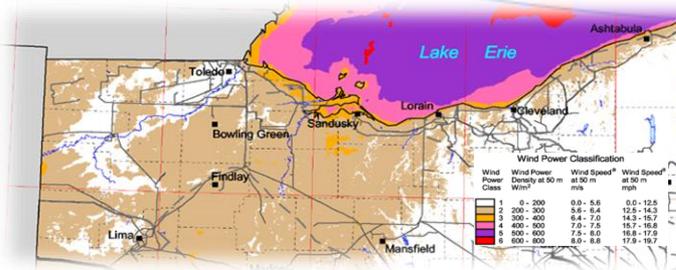
- *Sputnik moment...*
- *Ready or not: Offshore wind industry is coming*
- *Urgency: Race is on to capture economic benefits*
- *Utilize momentum to be first in the water*

Ohio Currently...

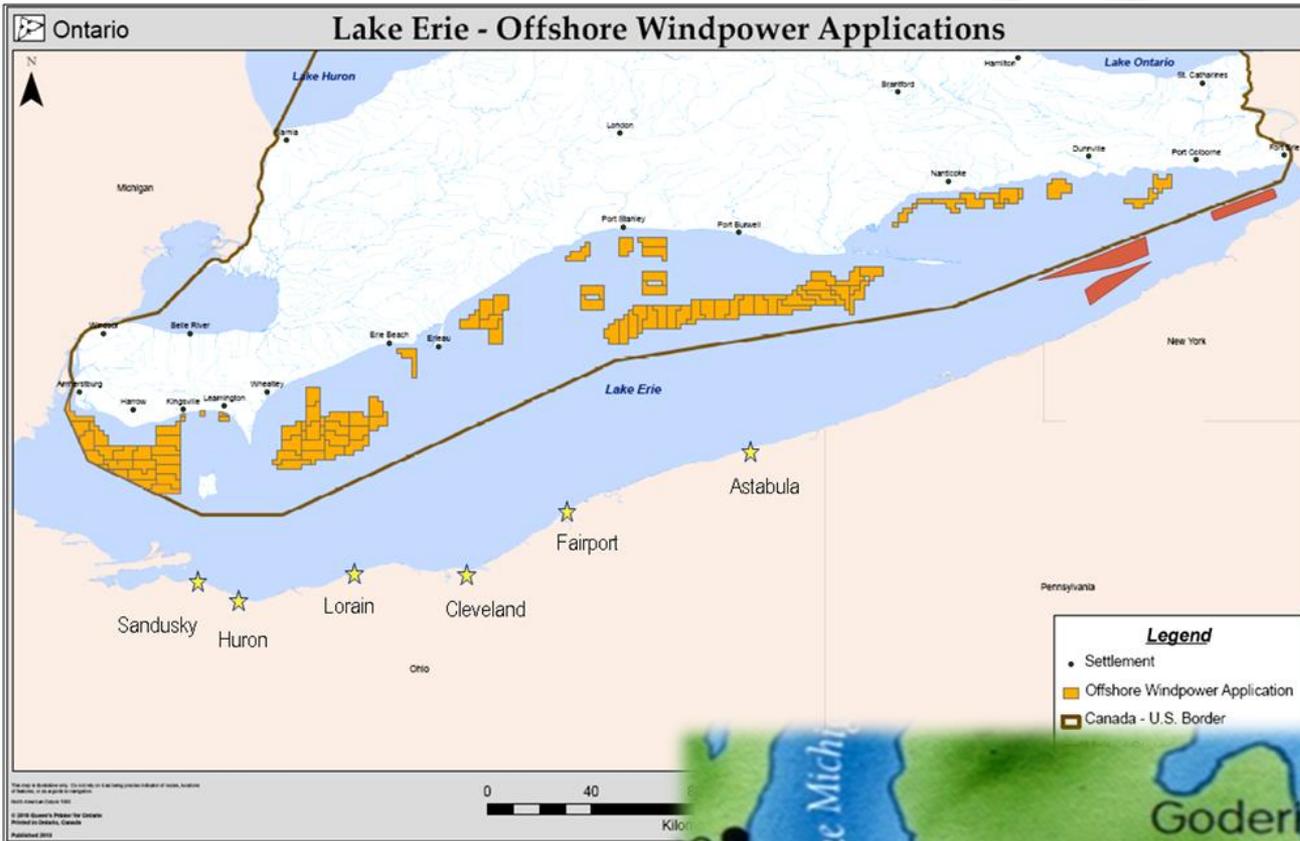
- Ohio a leader onshore
- 7,500 wind manufacturing jobs
- World Class Manufacturing Strengths



...But There's More in Offshore



Ohio Ports to Dominate



Lake Erie Activity

- Canada - 4,500 MW
 - 1500 Turbines
- New York - 500 MW
 - 150 Turbines
- PA - 1000 MW
 - 300 Turbines



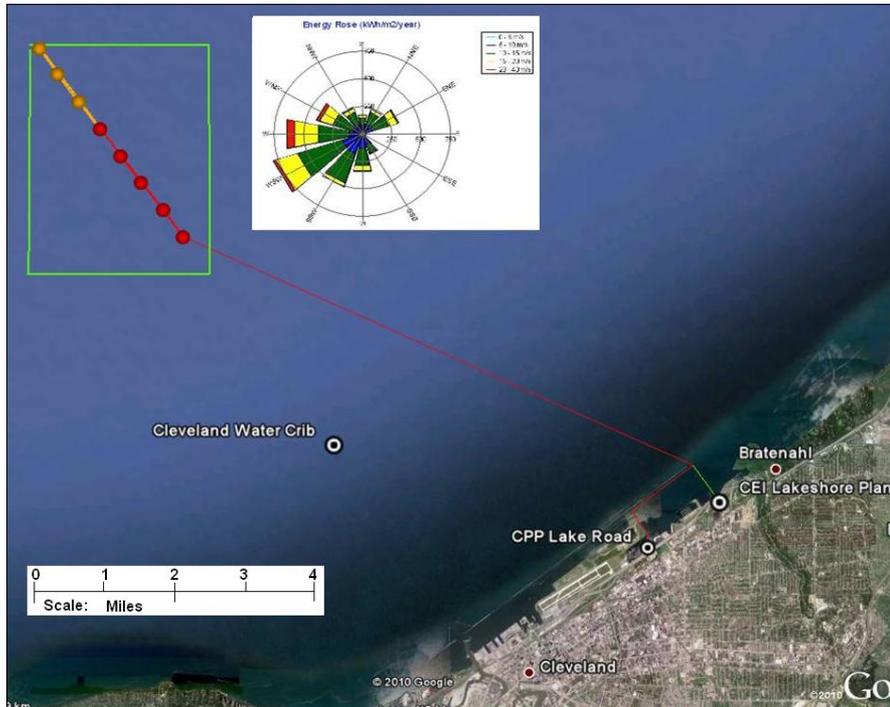
- 50% Canadian content = Ohio component/job exports
- LEEDCo as a model

Scale of Deployment

- Revitalize Ohio's Ports/Shipyards
- Initial fabrication & staging to be in Cleveland or Lorain.
- Commercial scale projects could utilize most ports.



Initial Project:



- ⚓ Iconic
- ⚓ 7 Miles offshore
- ⚓ 5-8 turbines producing 20-30 MW

- Big enough to capture attention
- Small enough to do fast and position Ohio as first
- Small enough to limit rate impact
- Target dates:
 - ✓ Begin 2012
 - ✓ COD late 2013



20 MW Catalyst...

Industry to coalesce where 1st projects are built.

▣ Claim stake

- Demonstrate
- Capture new investment
- Supply Chain



▣ Jobs

- Manufacturing, construction, installation, maintenance, research, and innovation

▣ Infrastructure

- Ports, Shipbuilding, Grid-System



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