



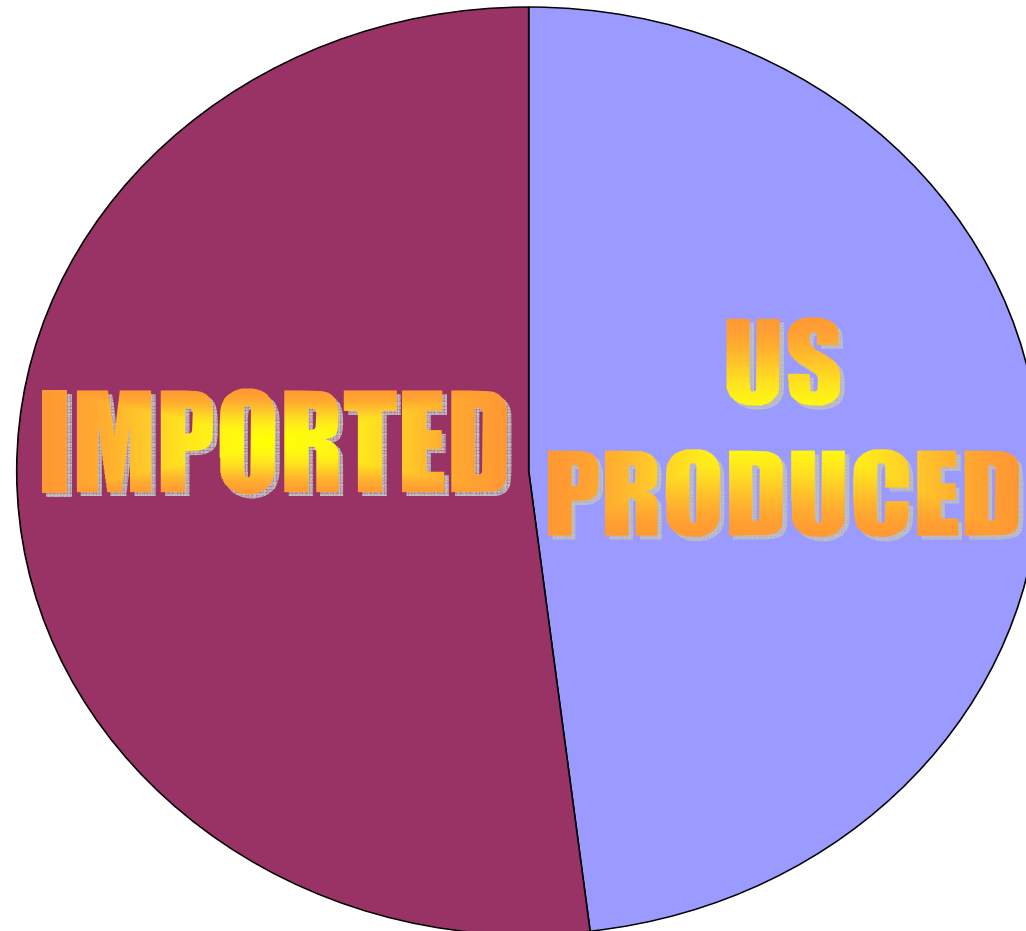
Wind Turbine Supply Chain



Matt Garran
Director, Technical Services



Wind Turbines Installed in North America





Financial Impact from the Ohio RPS

- ◆ **7,000 MW of wind energy by 2025**
 - ◆ **4000 new turbines/towers**
 - ◆ **\$14 Billion of sales**
 - ◆ **Market opportunity.....**
-
- ◆ **\$10 Billion in components**



Market Opportunities (Ohio)

◆ Towers	\$2.1 Billion
◆ Blades	\$1.7 Billion
◆ Gearboxes	\$1.3 Billion
◆ Hubs	\$ 700 Million
◆ Control Systems	\$ 690 Million
◆ Generators	\$ 670 Million
◆ Bearings	\$ 400 Million
◆ Support bases	\$ 380 Million



The Triple Three's

- 1) Primary component groups:
 - Blades & Hub
 - Machine Head or Nacelle
 - Tower & Bases



The Triple Three's

2) Primary manufacturing factors:

Scale

Reliability

Global Pricing



The Triple Three's

3) Primary evaluation metrics:

Capability

Qualifiability

Competiveness



OEM's Are In Search of...

PARTNERS

- ◆ **Well-established, capable operations**
- ◆ **Sharp focus on quality**
- ◆ **Commitment to service**
- ◆ **Financial stability**
- ◆ **Ability for growth**
- ◆ **Willingness to serve as an Integrator**



Challenges for Component Manufacturing

- ◆ **Scale**
- ◆ **Precision**
- ◆ **Capacity**
- ◆ **Reliability**
- ◆ **Cost-Competitiveness**
- ◆ **Connections**



How to Proceed?

- ◆ **Evaluate the Wind Market**
 - **Good fit for your business?**
 - **Business planning**
 - **Available financial resources**
- ◆ **Find Partners**
 - **Vertically integrate**
- ◆ **Make Connections**



Developmental Timeline

Research

Evaluate

Business Plan

Implementation

Qualification

Validation

Production



Great Lakes WIND Network

- ◆ **Our Mission: Increase the Domestic Content of NA's Wind Turbines**
- ◆ **How: Work with OEM's and Manufacturers**
 - Find your fit (which components, tier)
 - Develop ability to meet OEM expectations
 - Provide connections to customers, suppliers partners and resources
- ◆ **More info: www.glwn.org**



Supply Chain: Summary

- ◆ Business opportunities are **HUGE**
- ◆ Challenges are **SIGNIFICANT**
- ◆ Success means **LONG TERM GROWTH**



Thank You



© Copyright 2009
Great Lakes WIND Network