AWEA AMERICAN WIND ENERGY ASSOCIATION

A National RES and the US Manufacturing Base

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American Wind Energy Association

About the American Wind Energy Association (AWEA)

- Founded in 1974

- More than 2000 business members
  - Wind project developers
  - Wind turbine manufacturers
  - Component manufacturers: towers, blades, gears

- www.AWEA.org provides extensive info on wind

Overview

- Basics about a National RES
- Turbine Components
- Turbine Manufacturers in the US
- Growth in Wind Manufacturing
- RES and Manufacturing

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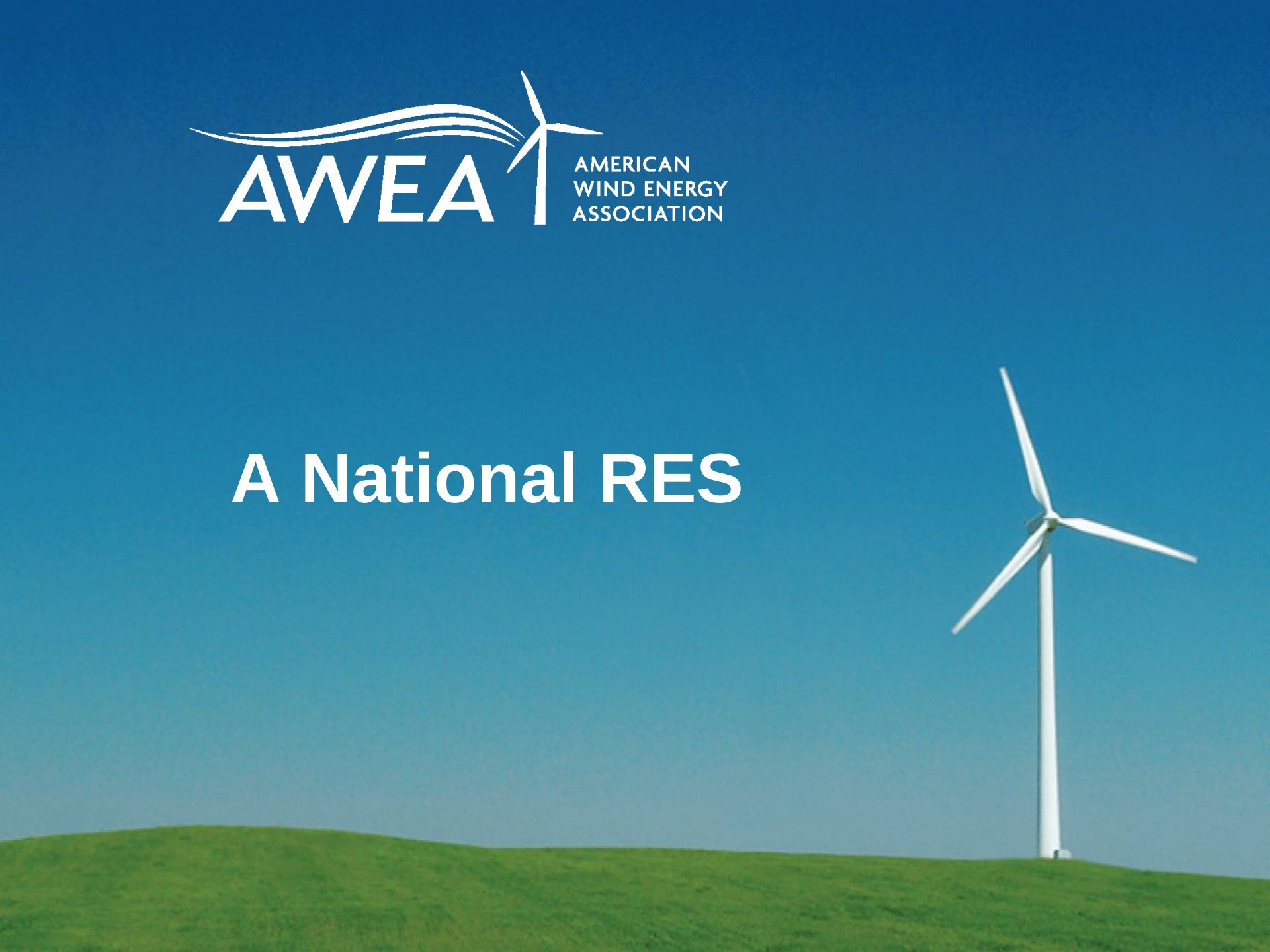
A National RES



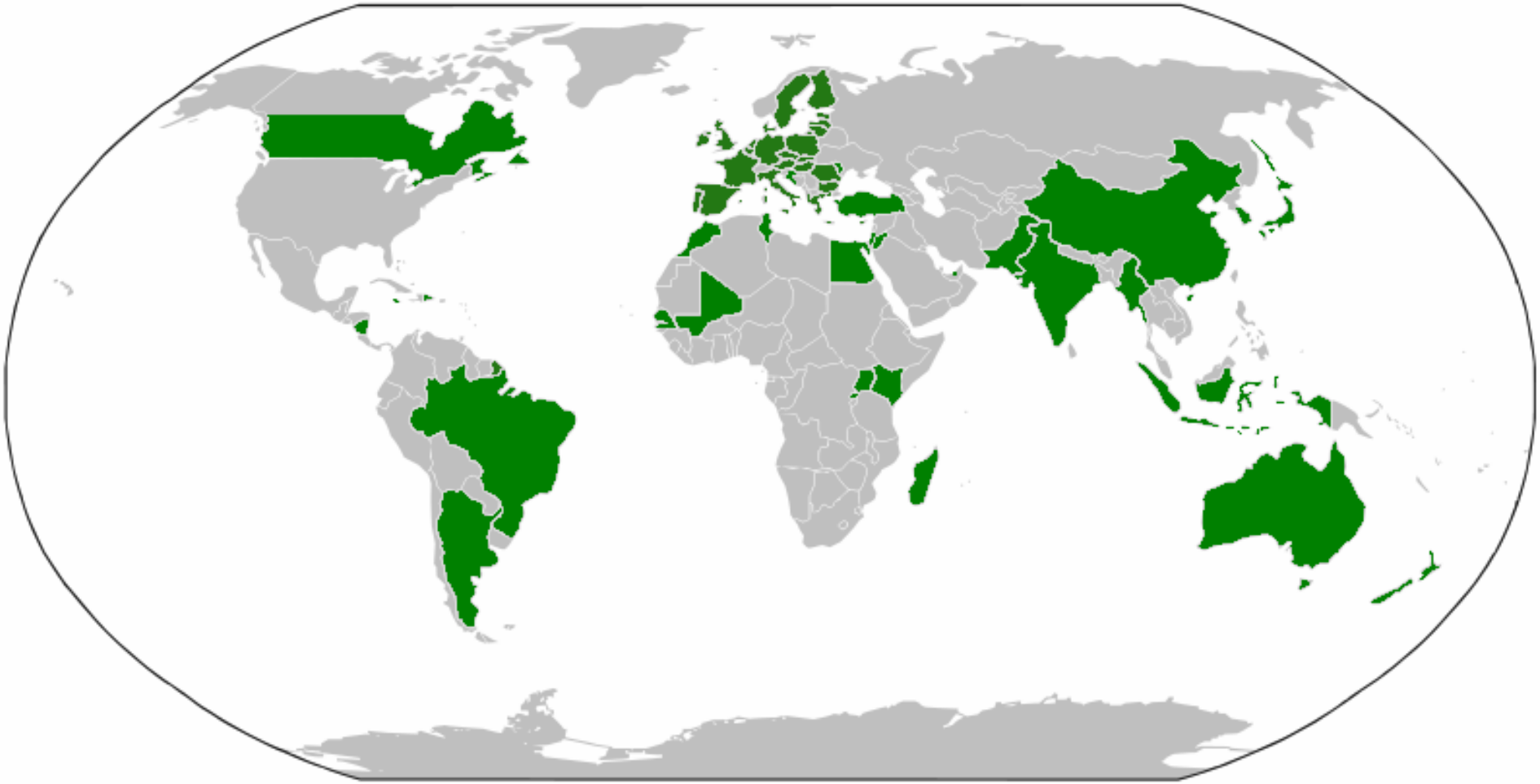
National Renewable Electricity Standard

- Seeking a 25% of the nation's electricity to come from renewables by 2025
  - Set an aggressive near-term target, such as 10% renewable electricity by 2012
- Would send a strong signal to businesses that we are committed to the US manufacturing base, energy independence, clean energy and reducing greenhouse gases
- Would require investment in new transmission infrastructure and reform of outdated policies

Benefits of a National RES

- Spurs economic development
  - 20% renewable electricity by 2020 would create over 185,000 jobs and would result in about $1.2 billion in lease payments to farmers and rural landowners (Union of Concerned Scientists)
- Saves consumers money and protects against fuel price spikes
  - National RES would reduce natural gas and coal prices for American consumers by up to 4% in 2030 with a negligible overall impact on total consumer expenditures (EIA)
- Reduces green house gas pollution
  - 25% renewable electricity by 2025 could meet over 40% of the emission reductions needed to reach 1990 CO_2 levels by 2020 in the electric sector

Global Renewable Energy Requirements
(Both Percentage and MW Goals)



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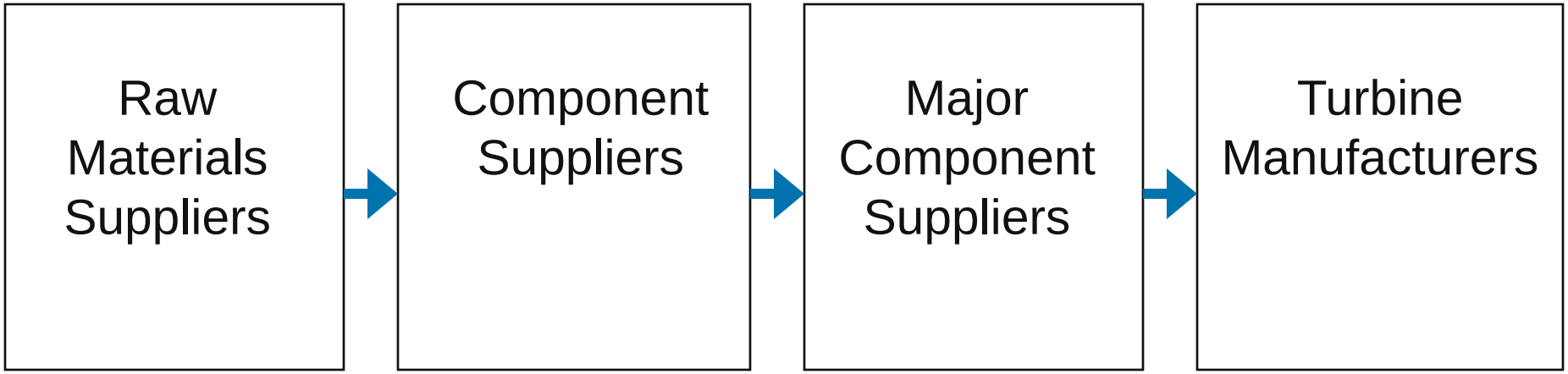
Turbine Components

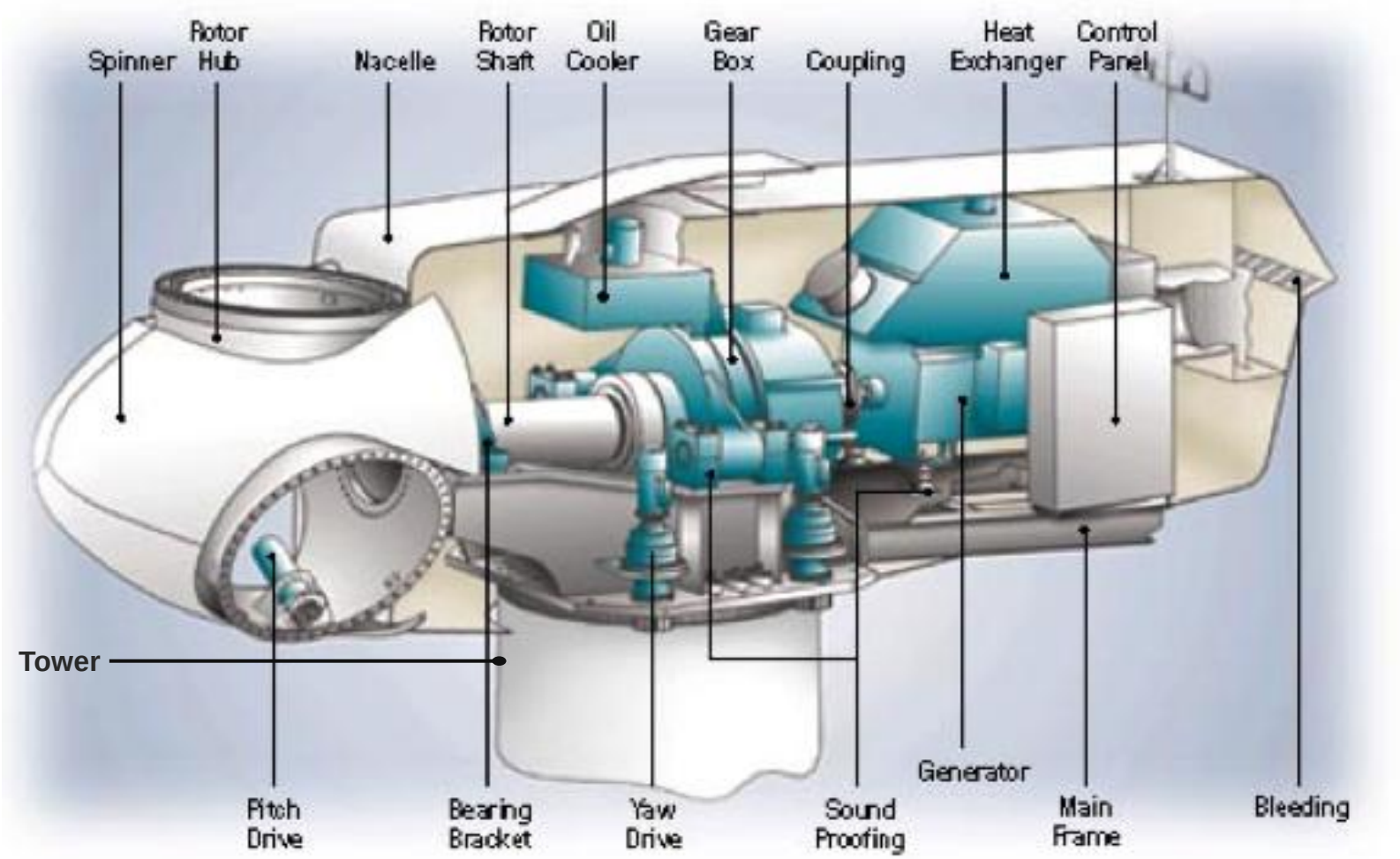
Basic Supply Chain



Turbine Manufacturers create a ripple effect down the supply chain, creating even more jobs indirectly than at their facilities.

Inside the Nacelle

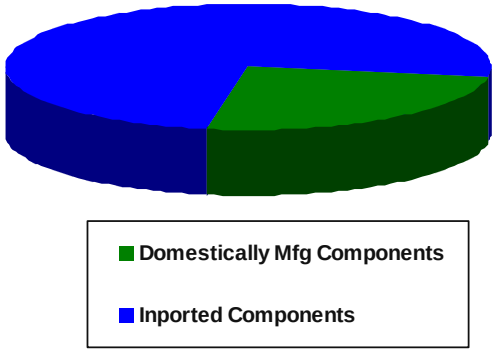
There are over 8000 components in a turbine!



Domestically Manufactured Components

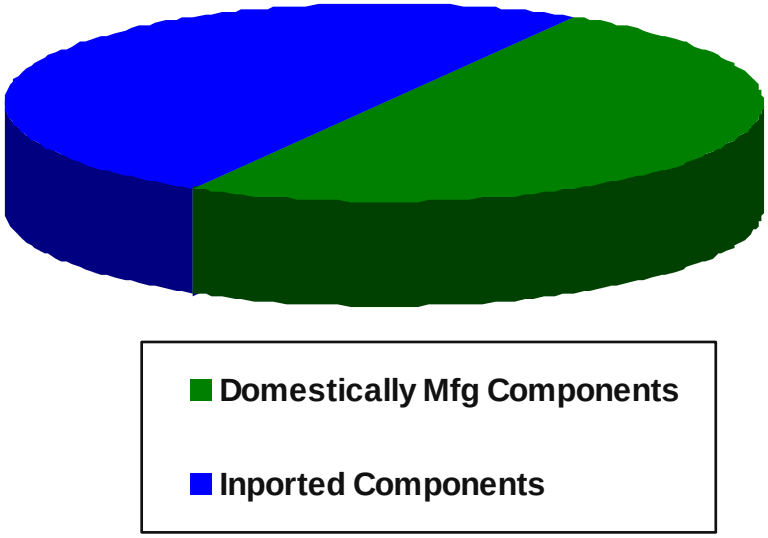
There has been a dramatic shift towards domestic manufacturing for wind turbine components

2005



~25% domestic components
~2,500 MW installed
~1,500 turbines installed

2008



~50% domestic components
~8,500 MW installed
~5,300 turbines installed

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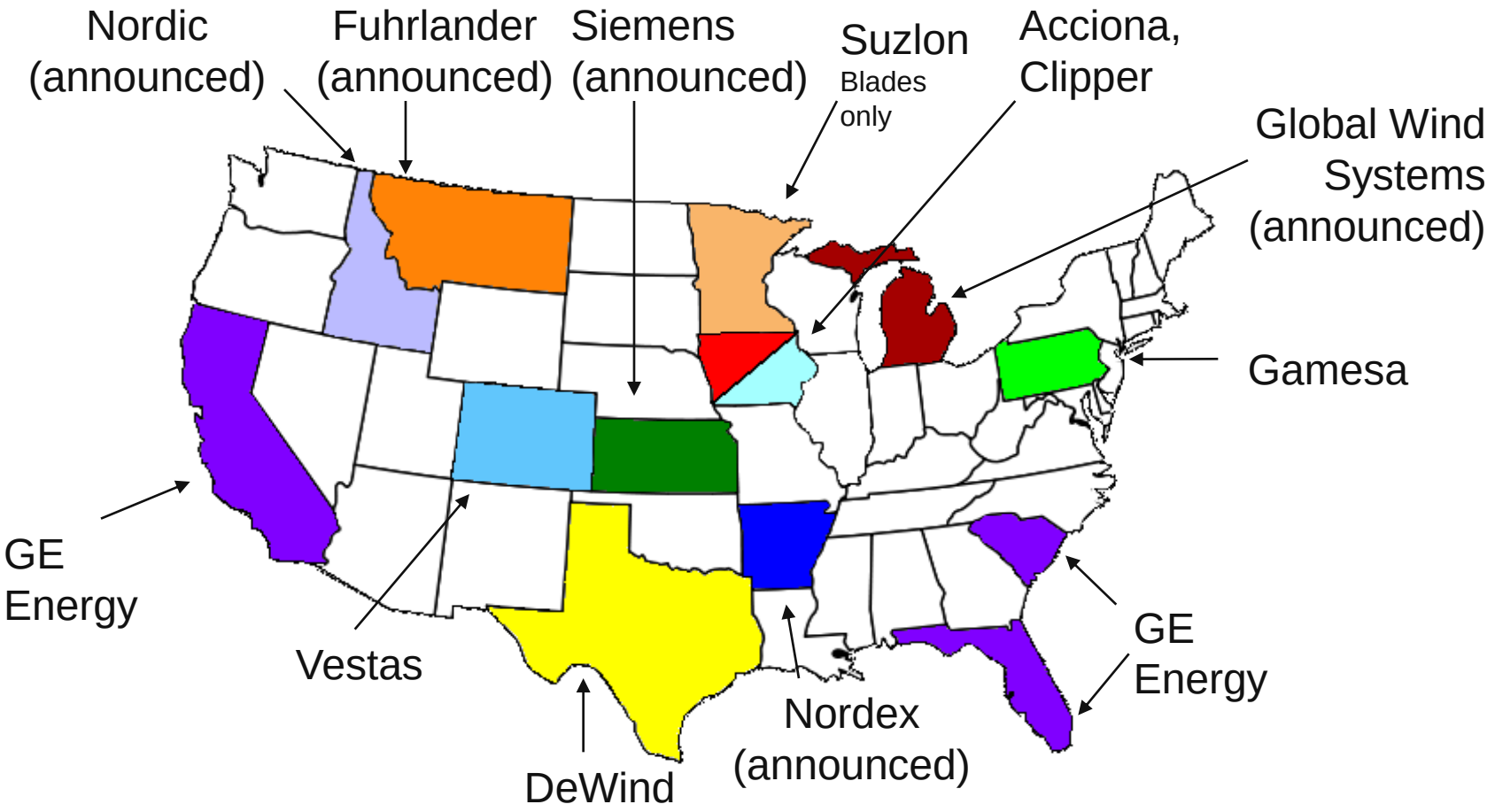
Turbine Manufacturers

Turbine Manufacturers with a U.S. Presence

- Acciona
- Clipper
- DeWind
- Gamesa
- GE Energy
- Siemens
- Suzlon
- Vestas
- *Fuhrlander (Announced)*
- *Global Wind Systems (Announced)*
- *Nordex (Announced)*
- *Nordic (Announced)*

Turbine Manufacturer Locations

Every major manufacturer creates 4-5 times as many jobs down the supply chain as they create in their facilities



Impact of Turbine Manufacturers

While many turbine manufacturers and top tier suppliers are European companies opening US facilities and creating jobs, many American companies are entering the supply chain as suppliers.

Many of the top manufacturers have self-imposed domestic sourcing goals that they hope to meet in coming years.

In order to meet sourcing goals, the American supply chain will have to rapidly expand, but they need a long-term market signal to do so.

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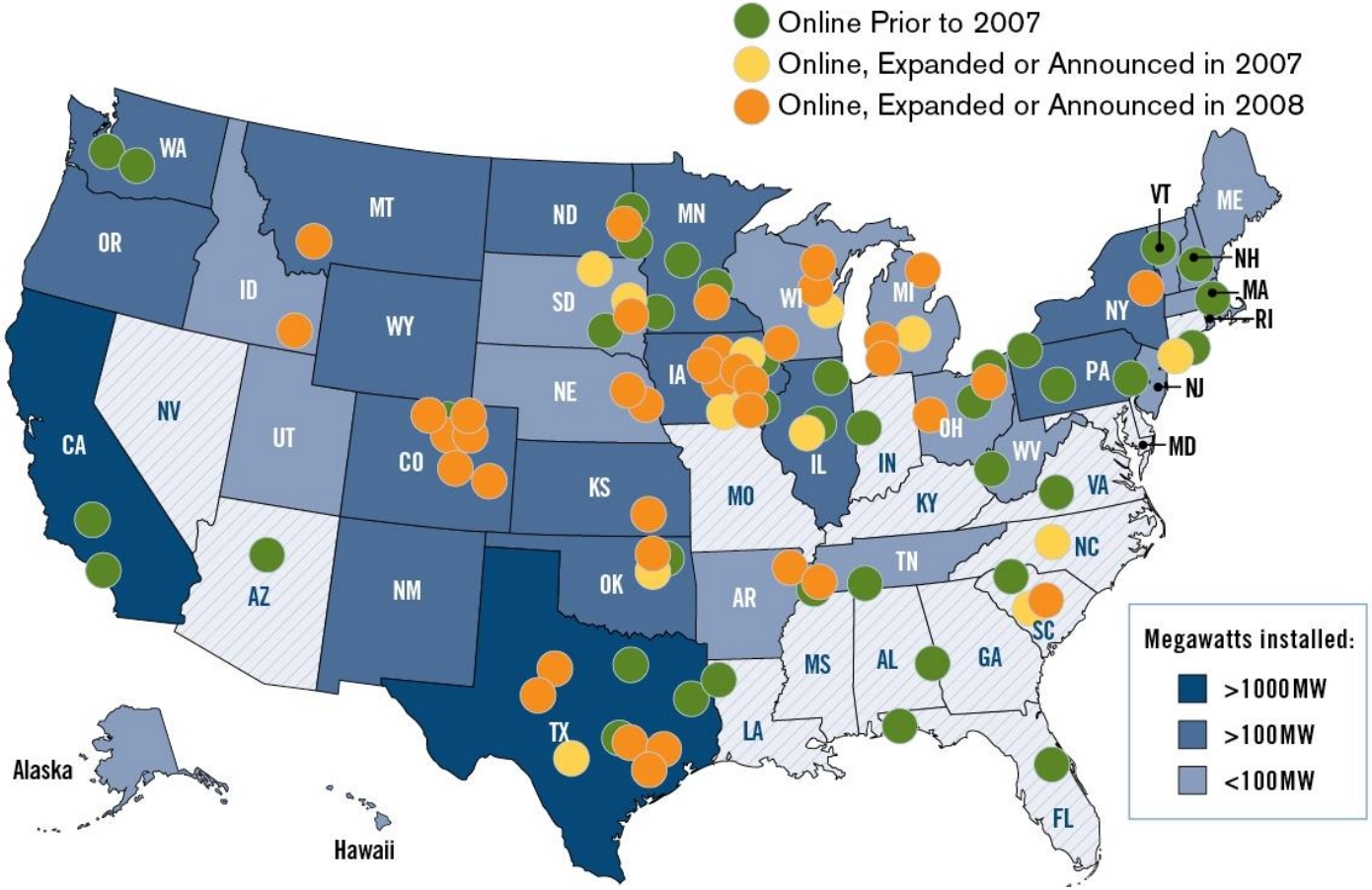
Growth in US Wind Manufacturing

U.S. Wind Jobs & Manufacturing Growth

- **Over 55 manufacturing facilities** opened, expanded or announced in 2008
- Over **35,000** wind industry jobs created in 2008
- **85,000** total U.S. wind industry jobs



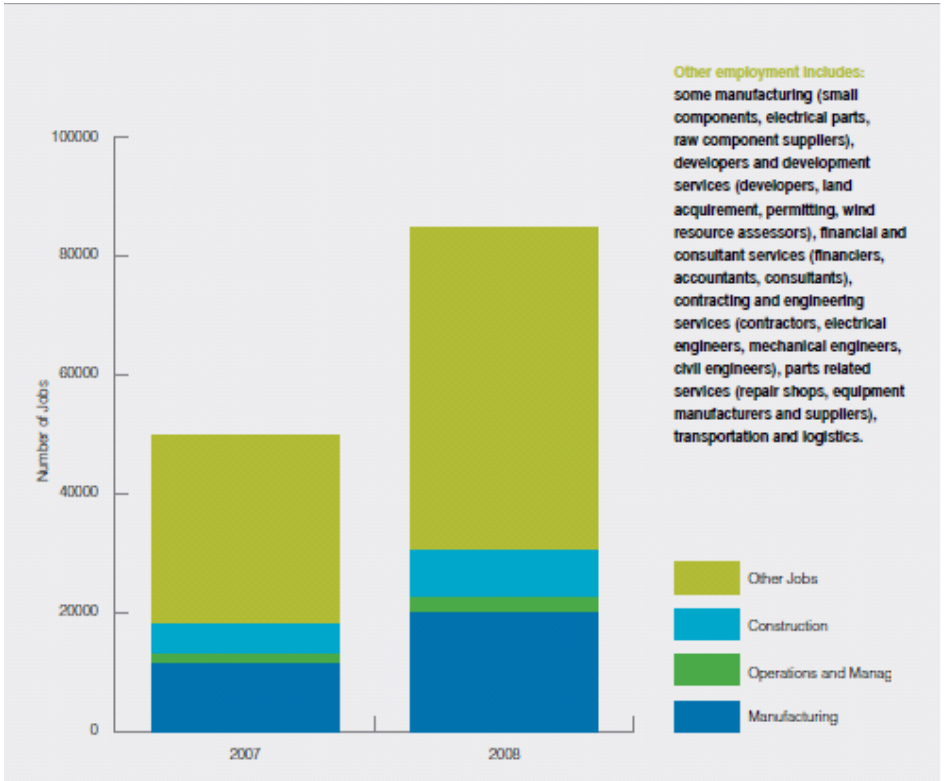
Source: AWEA, Sample of Manufacturing Facilities, November 2008

Wind Jobs and Manufacturing

In 2008, the US wind industry brought an additional 35,000 jobs online.

In 2008, US manufacturing jobs for the wind industry nearly doubled, reaching 20,000 direct jobs.

Without an RES, some of these jobs could be lost.



Manufacturer – Gamesa

- Over 1,200 employees at Gamesa USA
- Invested over $70 million in PA at four plants, 2 making blades, and 1 each making towers and assembling nacelles

Retooled 250,000 sq-ft steel plant into a state-of-the-art wind turbine manufacturing facility.

Manufacturer – DMI Industries

DMI is an American company that diversified into wind in the 90s. It is a heavy steel wind tower manufacturer with one of the largest tower manufacturing capacities in the US, employing around 500 workers in wind manufacturing.

DMI has just expanded two facilities based on promises of an RES. Without a long-term policy, DMI has recently had to lay off some workers.

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Wind Manufacturing and an RES

RES: Best Policy to Grow Green Jobs

An RES sends a signal to manufacturers that the US is invested in the wind industry and provides the long-term policy necessary to ensure investment.

●**“The U.S. needs to establish a strong Renewable Electricity Standard to provide a robust manufacturing base in this country.”**

- Roby Roberts, Senior Vice President of External Relations, Vestas Americas

●“In Newton, Iowa, **TPI replaced over 300 jobs lost** when Maytag left town. We are looking to create more Newton type stories. **A significant Renewable Electricity Standard would provide that needed signal**."

- Steve Lockard, President and CEO, TPI Composites

RES: Best Policy to Grow Green Jobs

- **"We are aware of 10 to 12 foreign suppliers who have expressed a strong interest in opening [manufacturing] facilities in the U.S., but are awaiting a long term policy signal."**

  - Edward Lowe, GE

- "REpower believes passage of long-term policy supportive of wind energy, such as a national RES, **provides a strong signal to companies such as REpower that are ready to make [a U.S.] investment in wind industry jobs and economic growth**."

  - Steve Dayney, CEO, REpower USA

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Thank you!

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