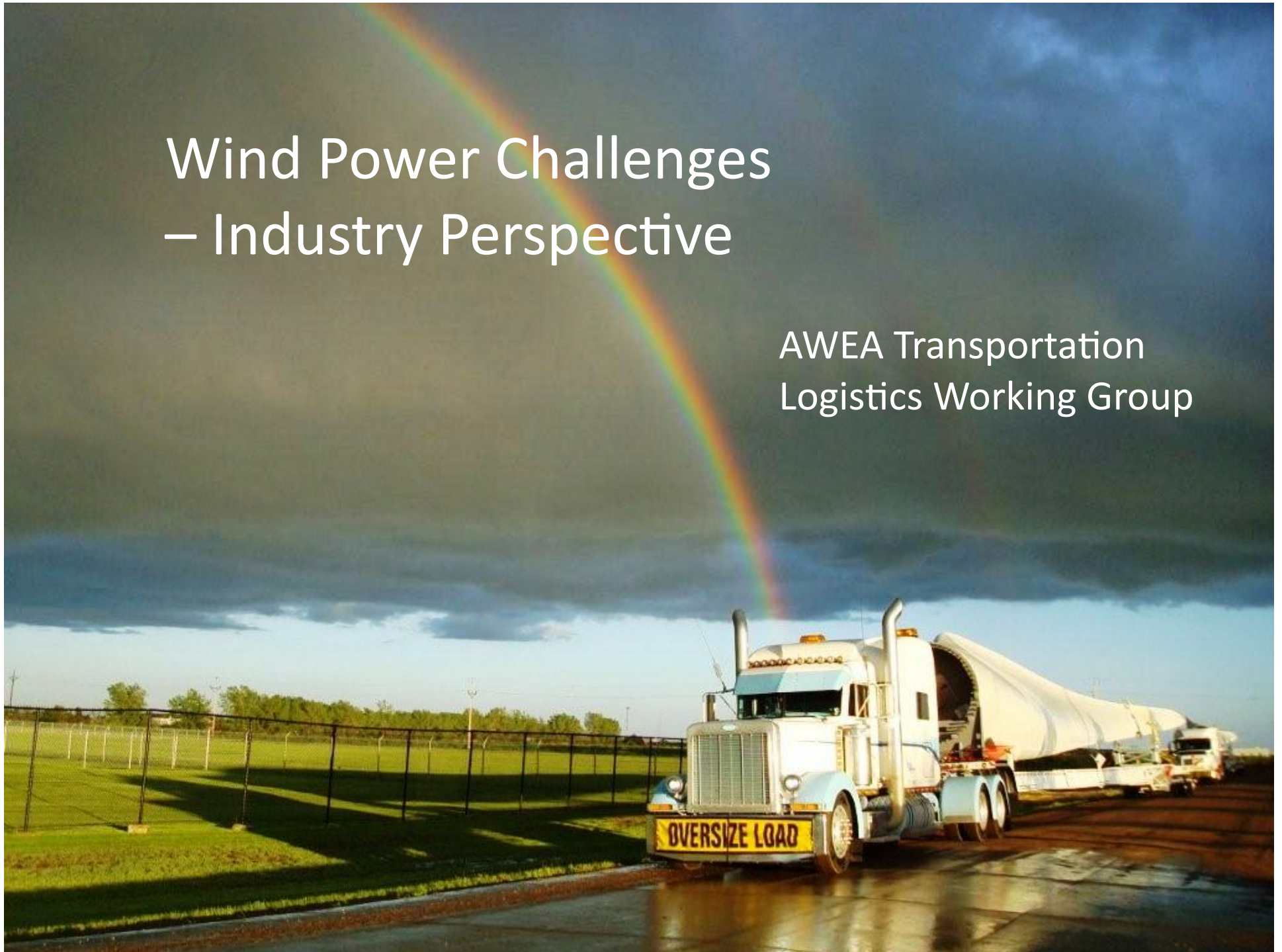


Wind Power Challenges – Industry Perspective

AWEA Transportation
Logistics Working Group



Wind Industry Overview

» AWEA

- TLWG – Transportation Working Group

» North America Wind Energy

- Current Status

» Wind Farm Locations

- Growth continues

What is AWEA?

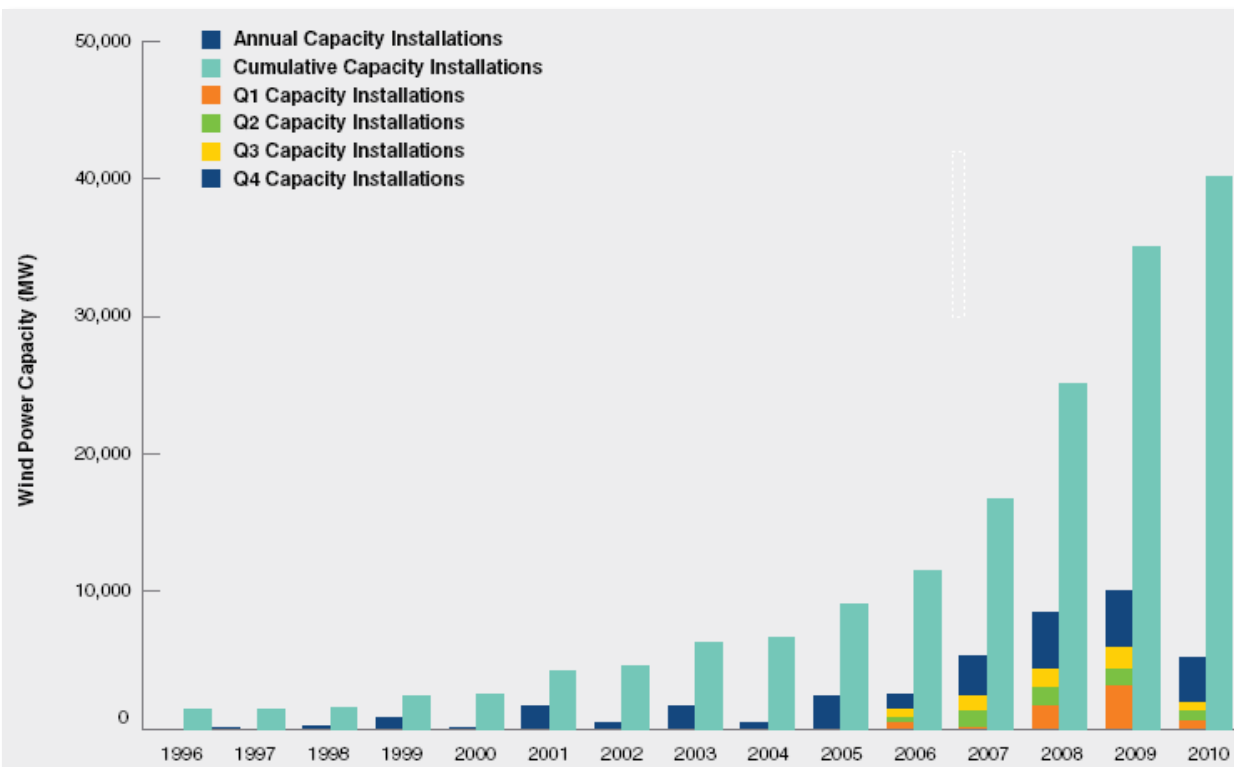
- Founded in 1974
- Trade association for the wind energy industry
- More than 2,500 business members
 - Wind project developers
 - Transportation and construction companies
 - Manufacturers from bolts to turbines
 - More than 8,000 parts in a turbine

TLWG - Transportation Logistics Working Group

- » AWEA has established a Transportation and Logistics Working Group (TLWG) to identify the key transportation challenges facing the industry
- » Originally group had many focuses
- » Reduced focus to two challenges
 - Uniformity
 - Manufacturing Dimensions and Weights

U.S. Annual and Cumulative Wind Power Capacity Growth (Utility-Scale Wind)

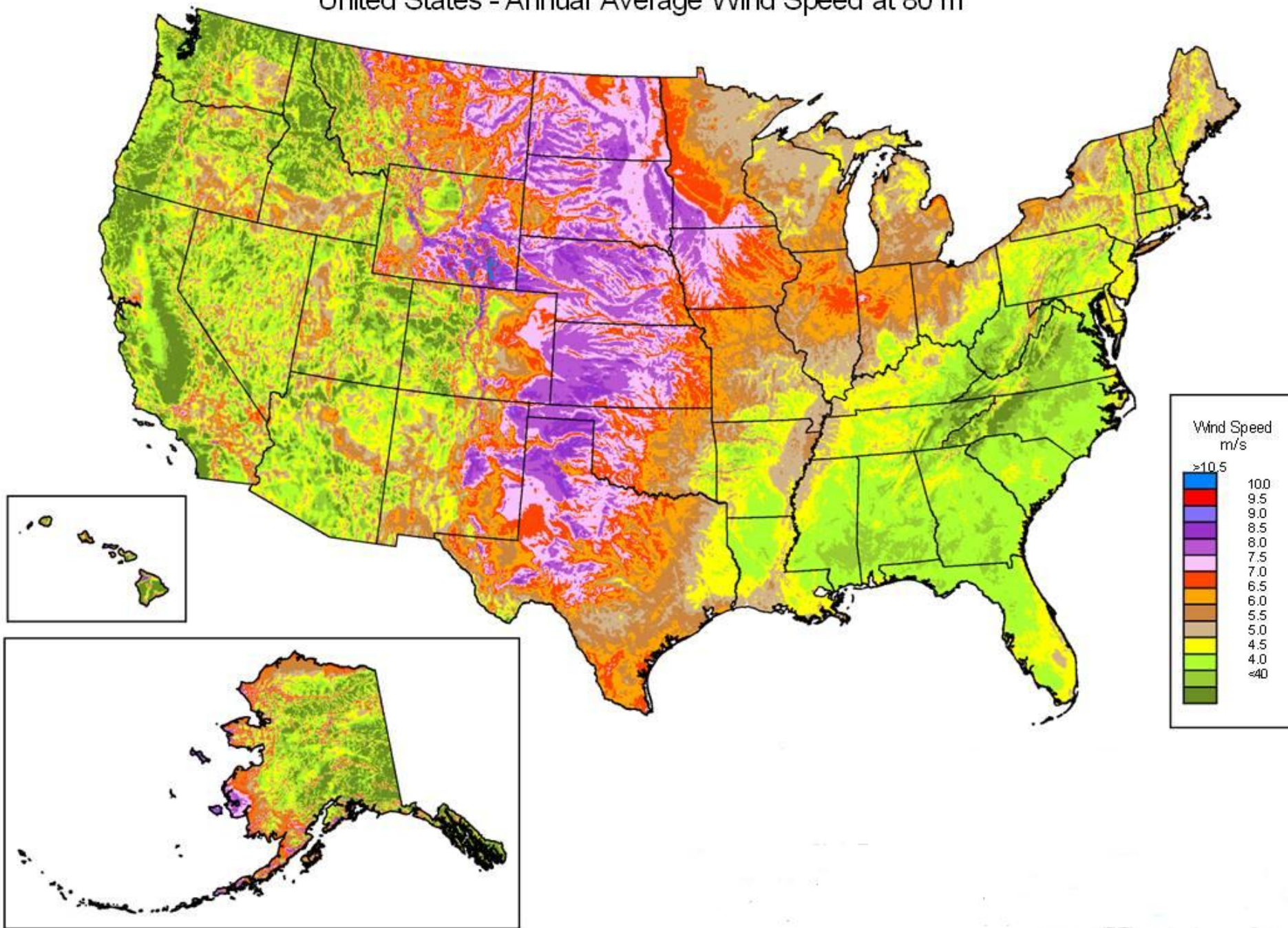
U.S. Annual and Cumulative Wind Power Capacity Growth (Utility-Scale Wind)



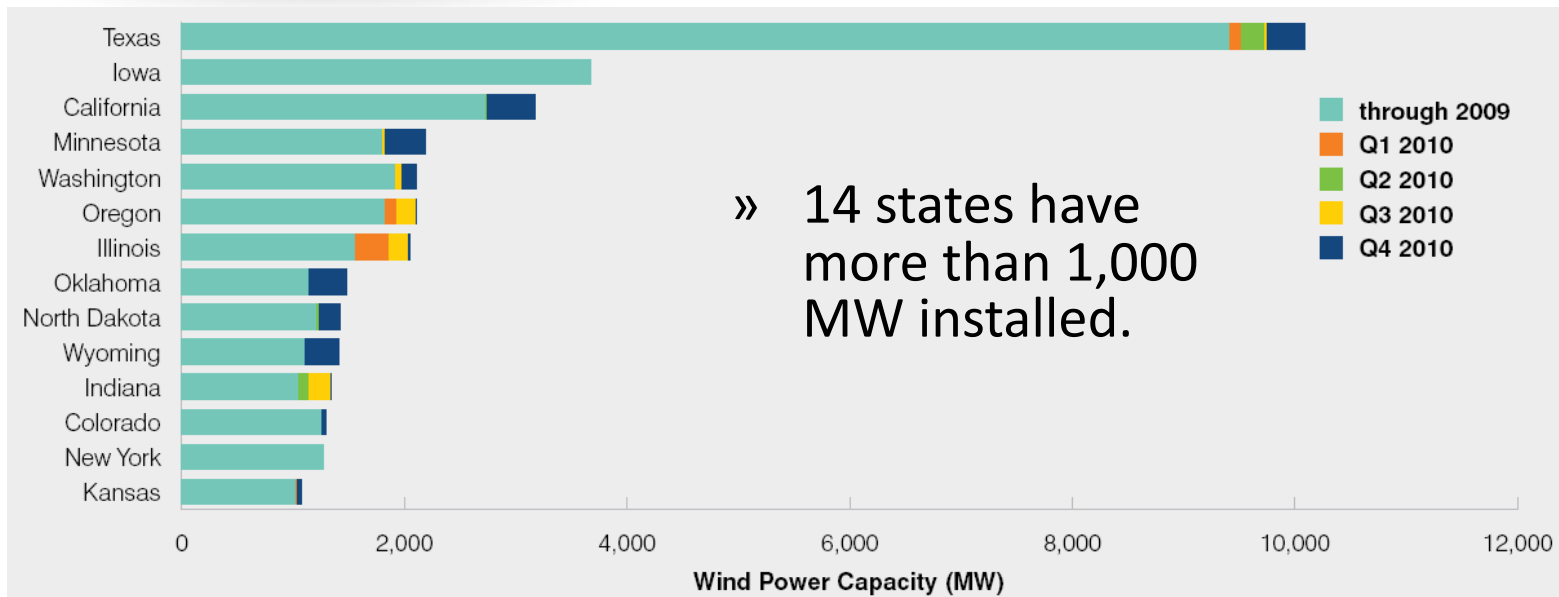
- » The wind industry installed 5,116 MW in the U.S. in 2010
- » 15 percent growth in 2010
- » Total U.S. wind installations stand at 40,181 MW
- » Average annual growth for the past five years was 35 %
- » U.S. wind installations represent over 21% of global wind capacity

Source: AWEA U.S. Wind Industry Annual Market Report Year Ending 2010

United States - Annual Average Wind Speed at 80 m

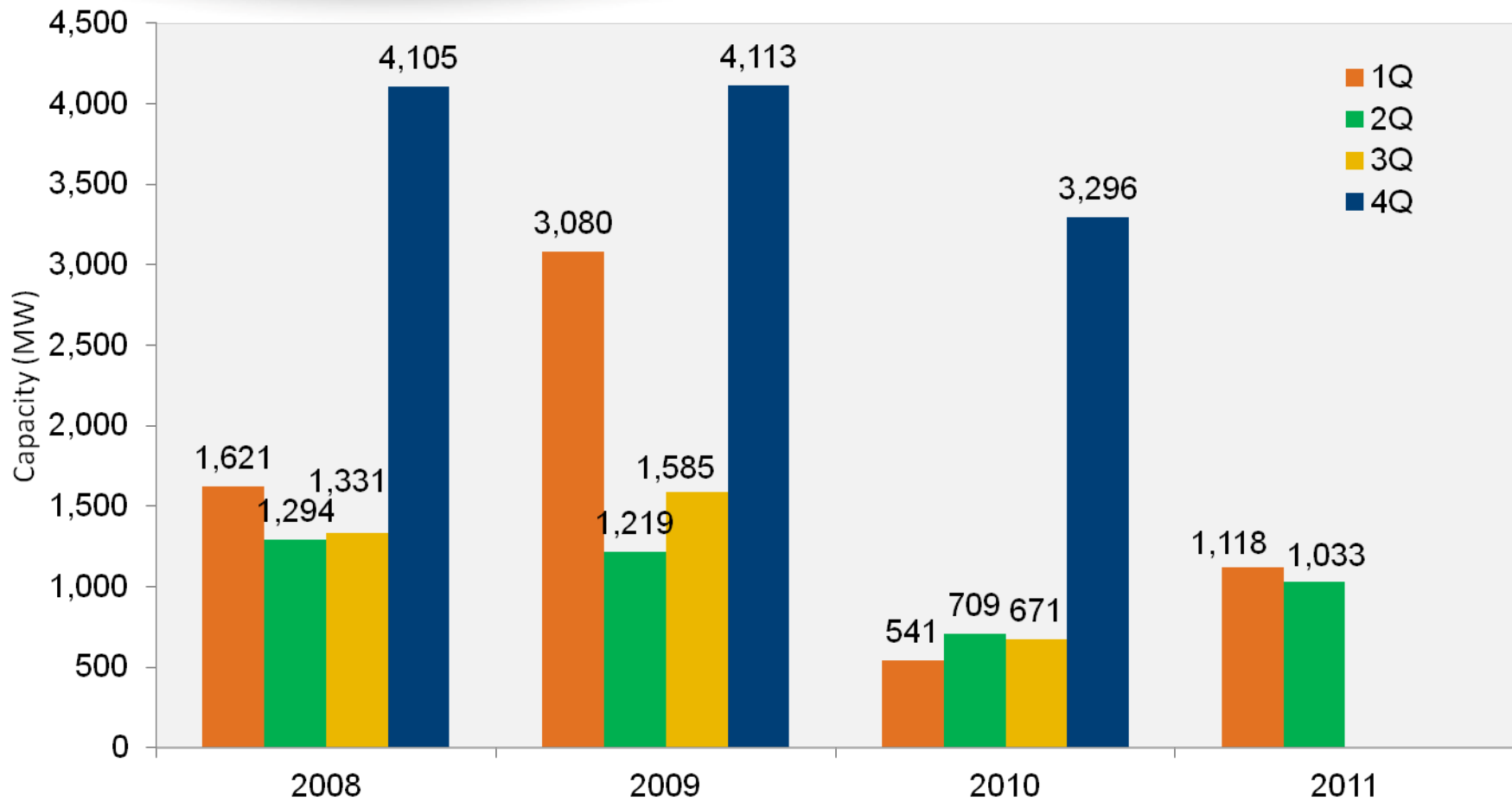


U.S. Wind Power Capacity Installations, Top States



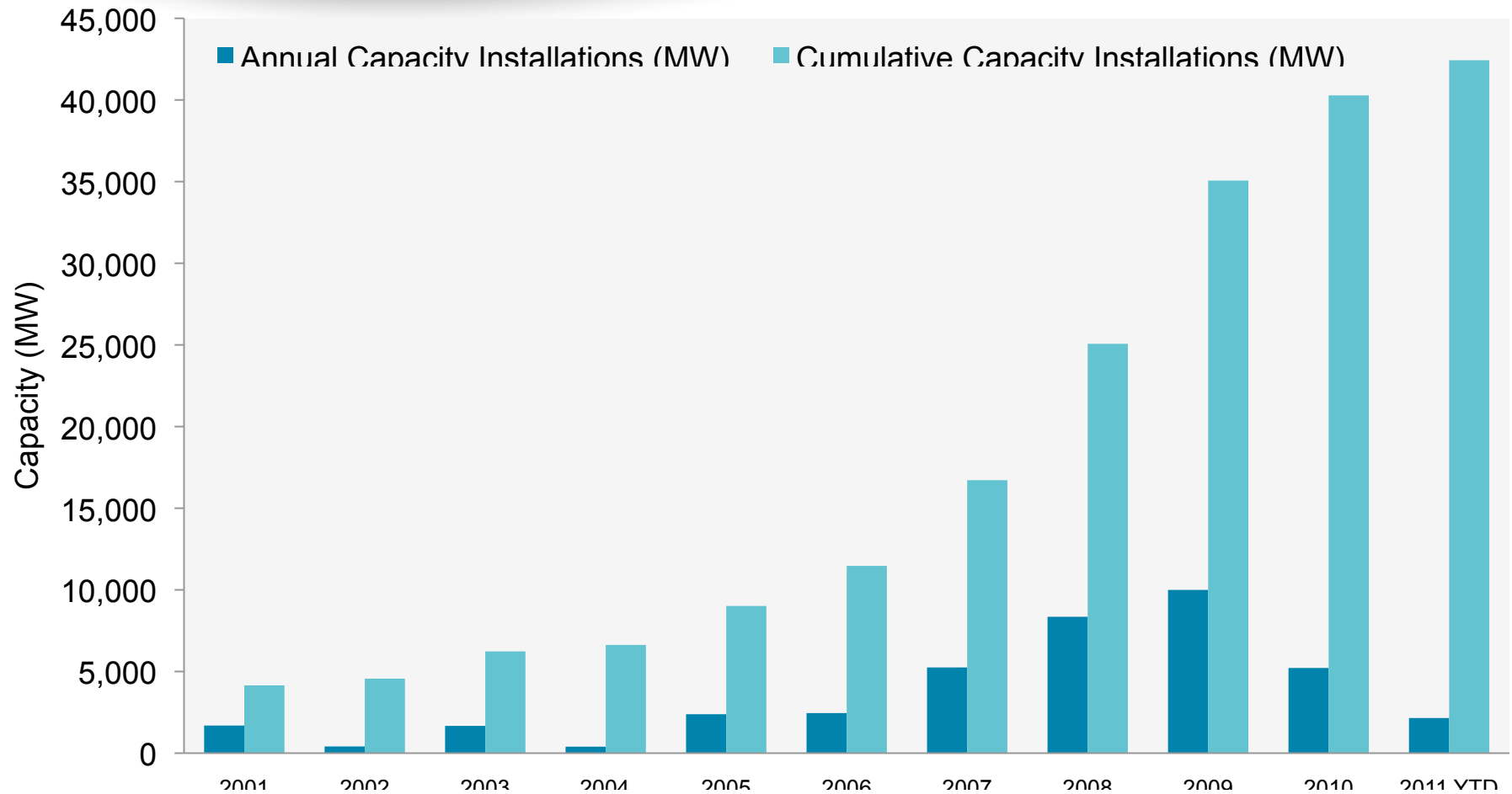
Most Capacity Additions in 2010		Fastest Growing in 2010	
	Capacity (MW)		Growth
Texas	680	Delaware & Maryland	First utility-scale project
Illinois	498	Idaho	140%
California	455	South Dakota	126%
South Dakota	396	Arizona	103%
Minnesota	396	Maine	52%

Wind Project Installations by Quarter



Source: AWEA Second Quarter 2011 Market Report

Annual/Cumulative Project Growth



Source: AWEA Second Quarter 2011 Market Report

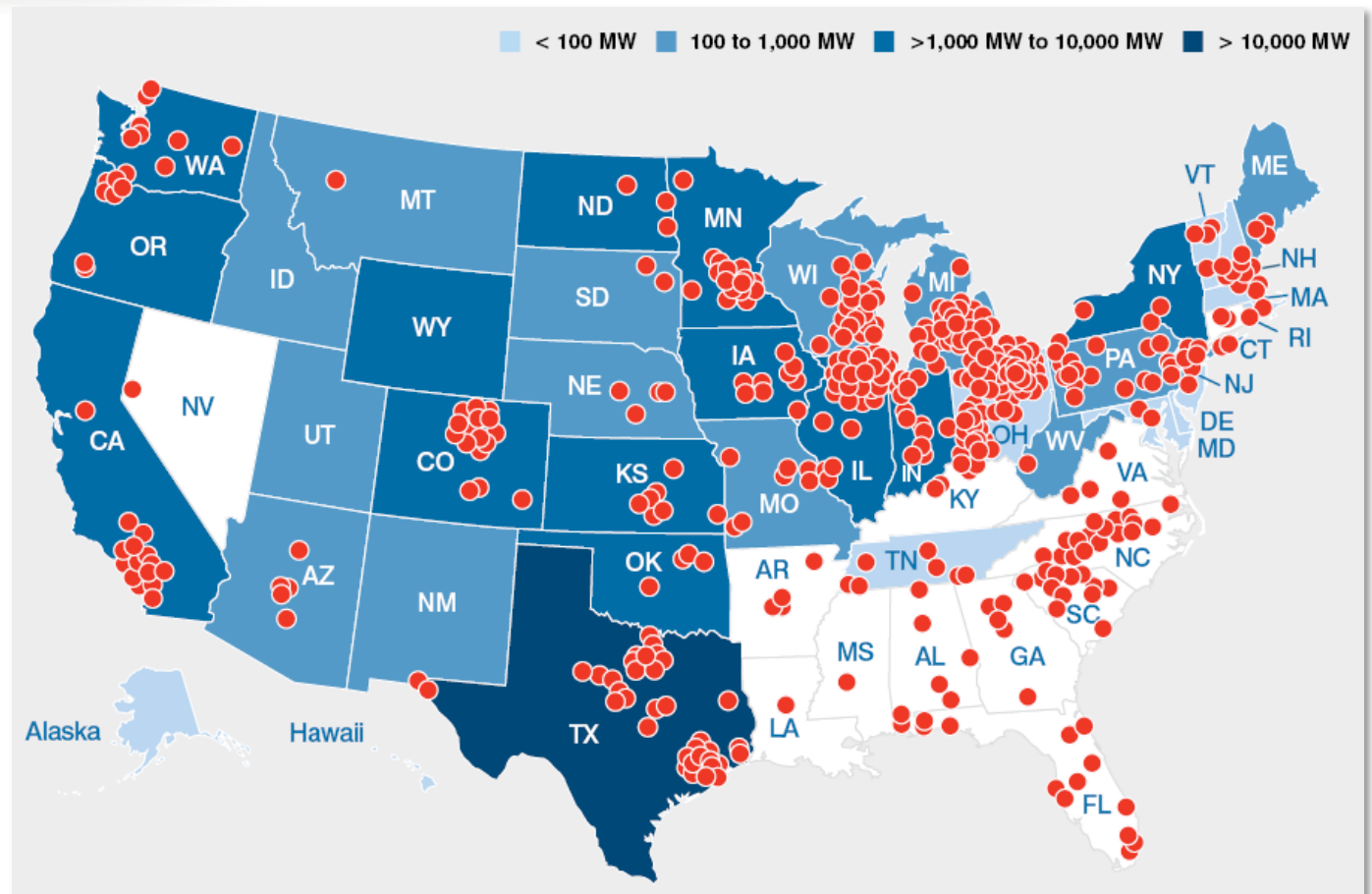
Manufacturing – Employment -Technology

- » Manufacturing
 - Domestic factory growth
- » Employment
 - Jobs -Value to State and Local Governments
- » Wind Tower Technology
 - Sizes continue to grow

All Online Wind-Related Manufacturing Facilities

All Online Wind-Related Manufacturing Facilities

- » At the end of 2010, there were over 400 manufacturing facilities online making wind-related products.
- » The online facilities span 42 states



Major Wind Manufacturing Facility Locations – Turbine & Turbine Assembly

» At the end of 2010, there were 12 online turbine manufacturing facilities and an additional 8 announced facilities.



Source: AWEA U.S. Wind Industry Annual Market Report Year Ending 2010

Major Wind Manufacturing Facility Locations – Towers

» At the end of 2010, there were 22 online tower manufacturing facilities and an additional 8 announced facilities.



Source: AWEA U.S. Wind Industry Annual Market Report Year Ending 2010

Major Wind Manufacturing Facility Locations – Blades

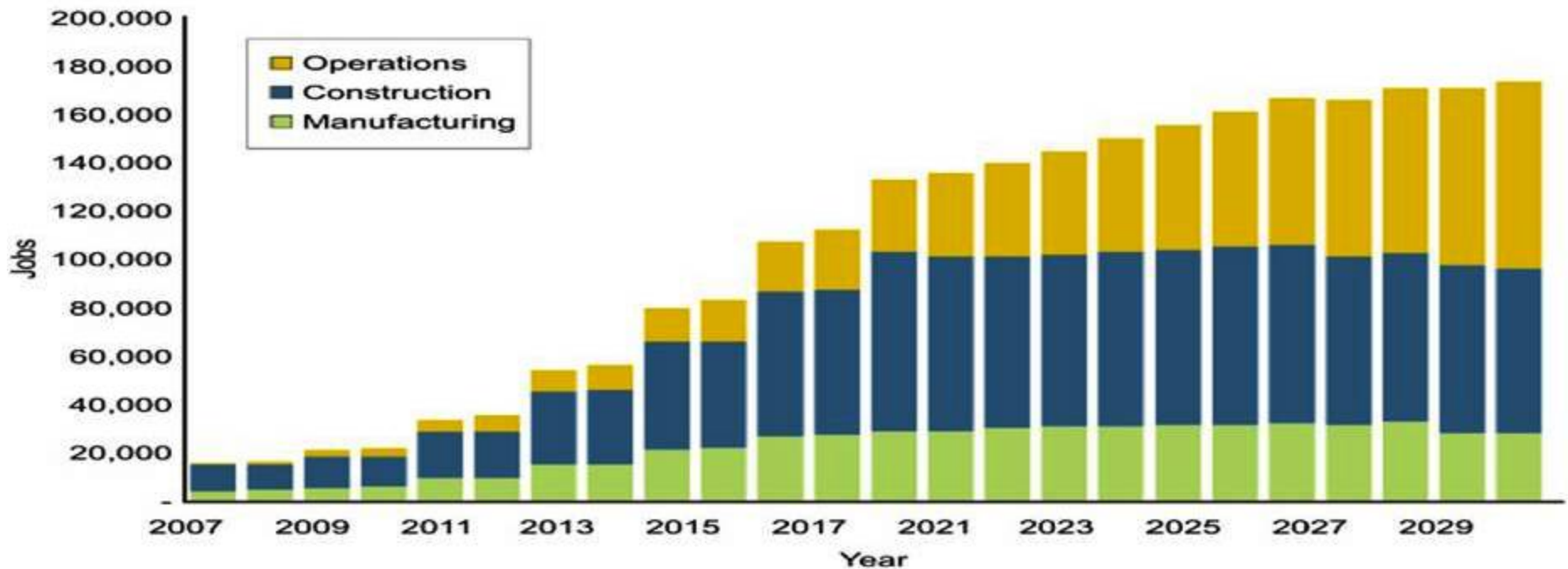
» At the end of 2010, there were 11 online blade manufacturing facilities and an additional 5 announced facilities.



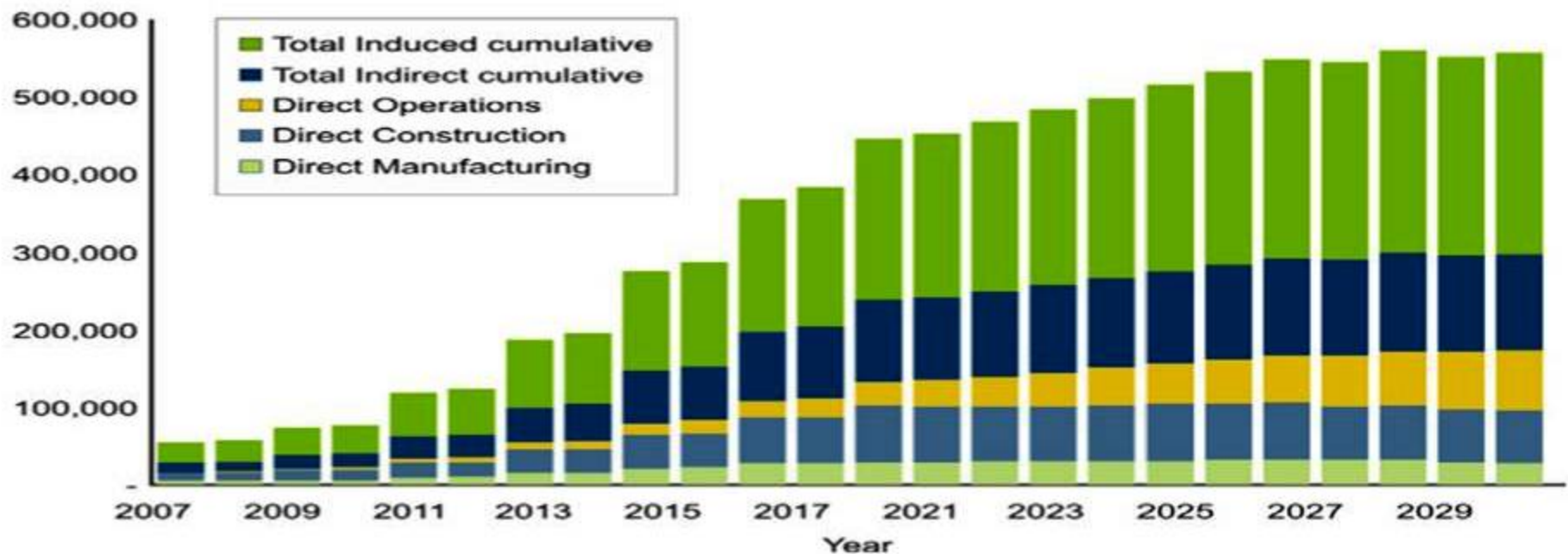
Source: AWEA U.S. Wind Industry Annual Market Report Year Ending 2010

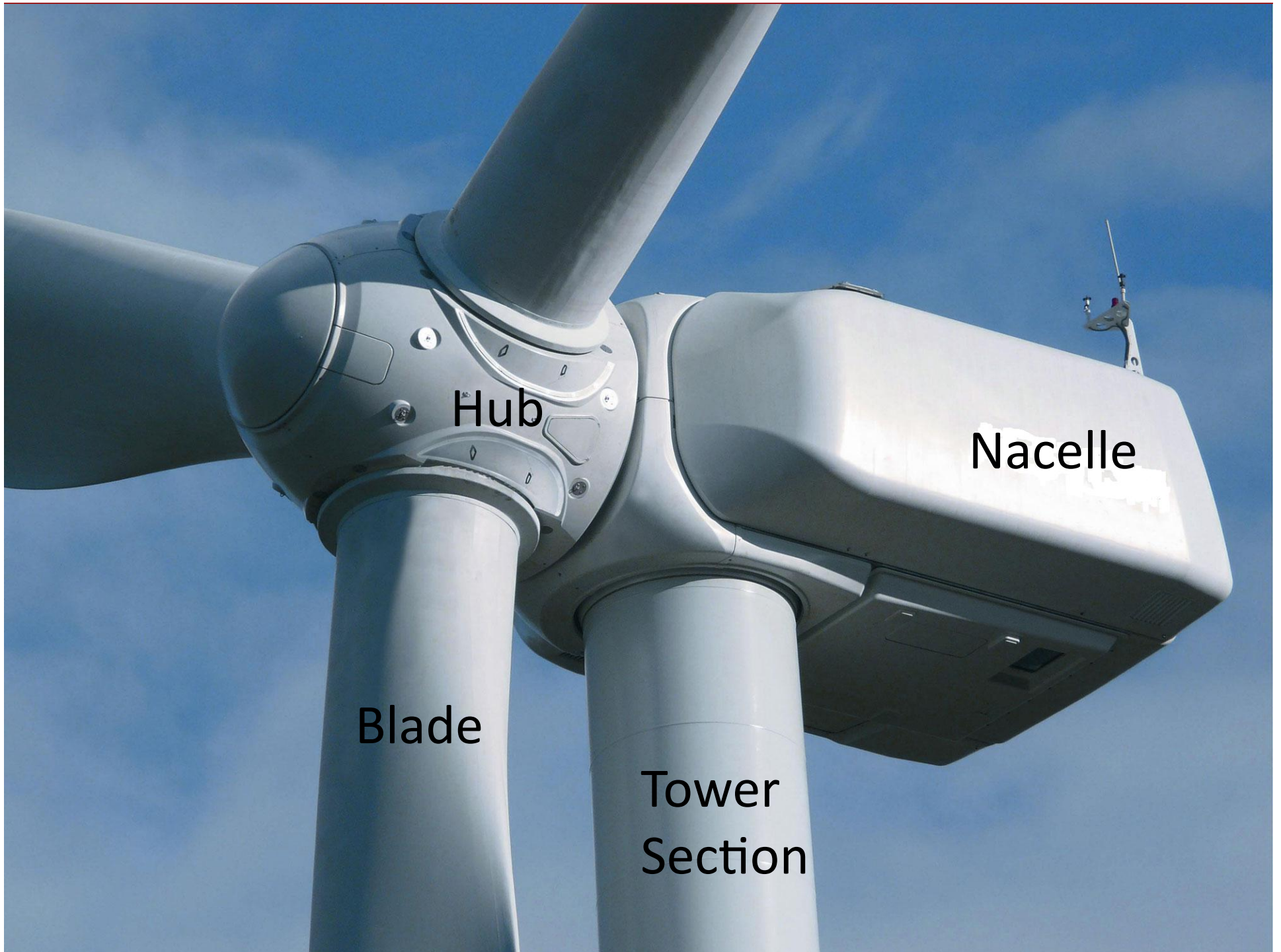
American Jobs Perspective

Meeting Goal of 20% Renewable by 2030



American Jobs Perspective Meeting Goal of 20% Renewable by 2030





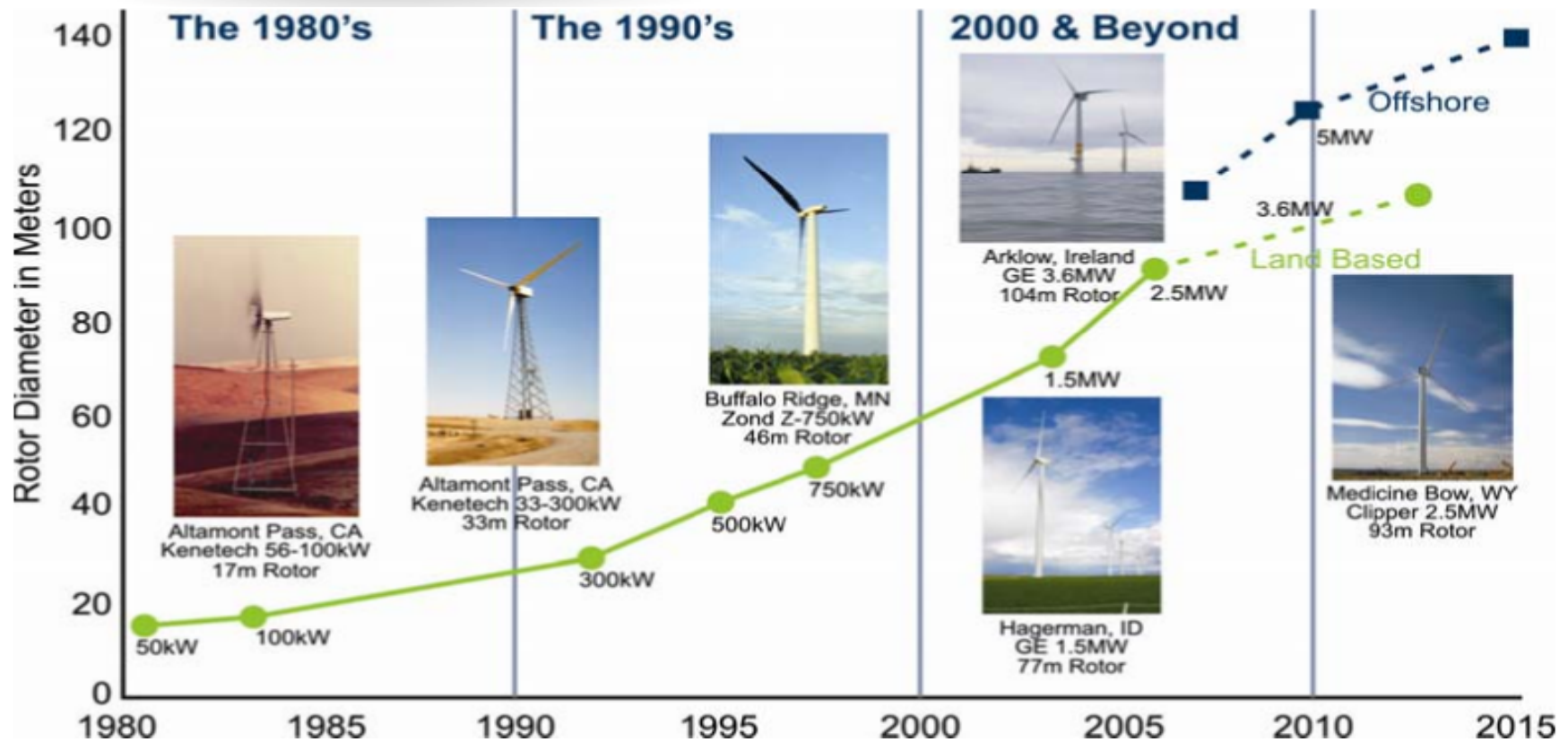
Hub

Nacelle

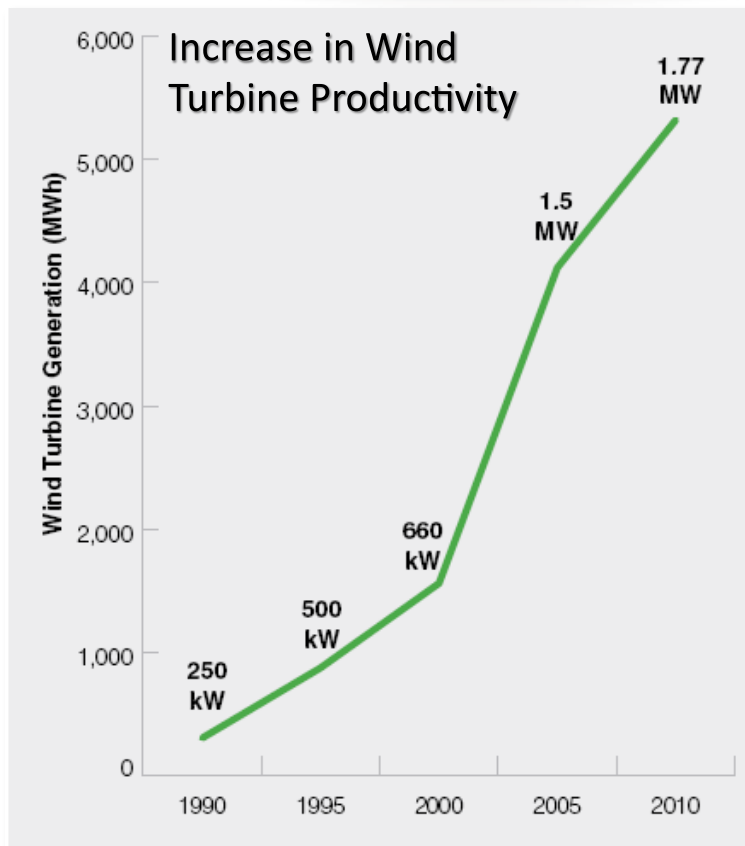
Blade

Tower
Section

Transition – Increased MW = Increased Size

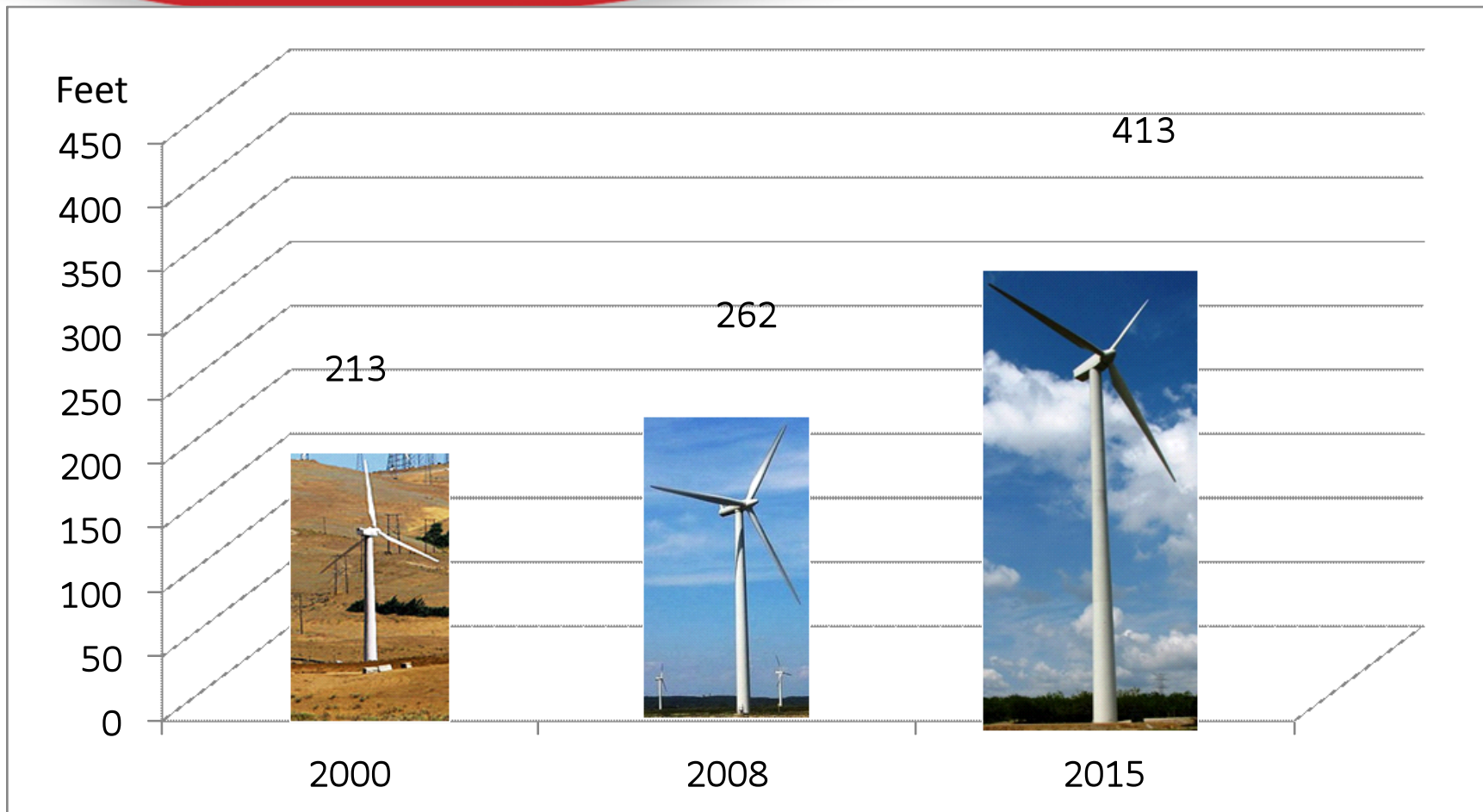


Increase in Wind Turbine Productivity

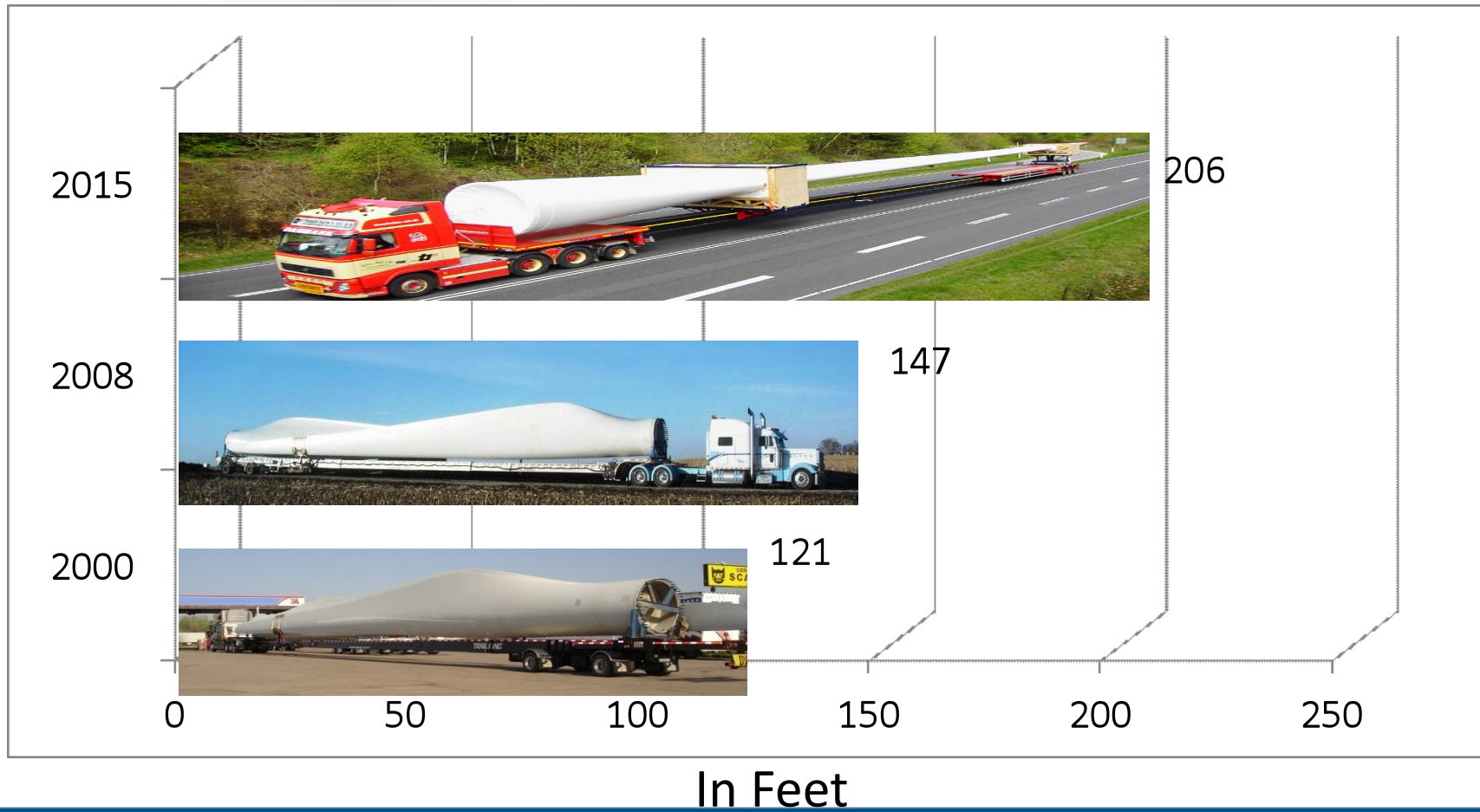


- » Technology has continued to improve with taller towers, larger rotors, increased turbines availability, and better siting technology to achieve increased capacity factors.
- » This improved performance translates into a turbine with a nameplate capacity 7 times larger than a typical turbine in 1990, can produce 15 times more electricity.

Tower Height in Feet



Blade Length in Feet



Going Forward

- » PTC – Pre-Tax Credit
- » 2012 Outlook
- » Challenges
- » How Can We Improve The Process
- » Summary

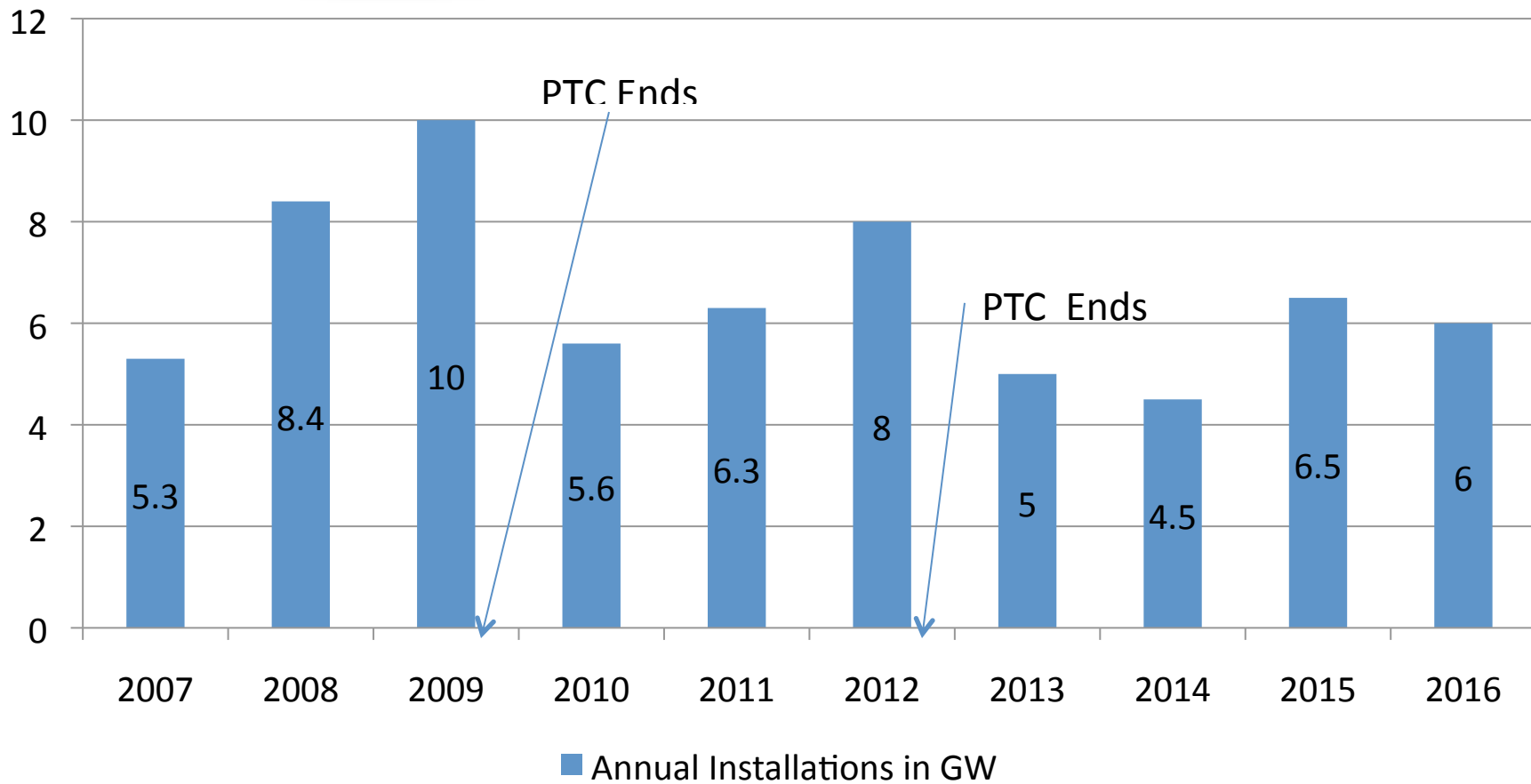
Pre-Tax Credits - PTC

- » Pre-Tax Credit is due to expire at the end of 2012
- » At expiration the volumes will decrease unless Congress passes new extension
- » AWEA is lobbying for a five year extension
- » Wind Industry needs the sustainability by having long term government tax incentives

2012 Outlook

- » The expiration of the PTC – Pre-Tax Credit demise at the end of 2012 will create installation of 8 Gigabyte
 - Nearly same volume as experience in 2008 – Third Largest
- » Dimensions growth will make the delivery process harder because of reduced capacity
- » Communications with State Offices is paramount for success

Annual Installations in Gigabytes



Challenges To Deliver

- » Safety to the public
- » Variances in Multiple differences in the Commodities
- » Lack of Uniformity
 - Height and Weight restrictions
 - Route Continuity
 - Pass Through Restrictions
 - State /Police and Pilot Car Differences
- » County and City Changes and Restrictions
- » Construction

How Can We Improve The Process

- » Work closer with State and Local Governments
 - » Get States involved at the beginning
- » Pre-Planning for developing Wind Corridors
- » Uniformity – Harmonization
 - » Weight
 - » Length – Width – Height
 - » Police and Commercial Escort Requirements

How Can We Improve The Process

- » Multi-State Routes/Permits
- » Improve our communications to State DOT's
- » Support of the State DOT's
- » Long Term Sustainability -PTC – Pre-Tax Credit

Wind Industry - Importance

- » New Jobs
- » Reduce the Challenges
- » Reduce Electric Costs
- » Improve The Environment