Wind Challenges and Opportunities

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Opportunities
A Changing World …

Growing population & energy density

Cost of energy ... fuel supply & demand

Increasing environmental requirements

Escalating security concerns

Driving power generation technology
Global Renewable Energy Targets

North America
- U.S. ... State RPS (35 + DC)
- Canada ... Provincial targets (9)

Europe
- EU ... 20% by 2020

Middle East & Africa
- Morocco ... 20% by 2012
- Jordan ... 10% by 2012
- Egypt ... 20% by 2020

Asia Pacific
- China
  - 10% by 2010
  - 20% by 2020
- India
  - 14 GW wind by 2012
- Japan ... 11% by 2030
- Australia ... 20% by 2020
- New Zealand ... 90% by 2025

Latin America
- Chile ... 10% by 2024

Targets in 73 countries worldwide ...
- 400 GW Wind & 80 GW Solar ...
- 800,000 wind turbines + 400 million solar modules

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Renewables ... A global non-linear shift

Global Wind & Solar PV annual installations

(GWs)  CAGR

The world today

- 4,800 GW installed
- 1% shift toward renewables
- ~40,000 wind turbines
- ~500,000,000 solar panels

Wind & Solar ... Zero fuel cost, zero CO₂ ... massive opportunity

Source: REN21 2008, EER, GE Marketing
Challenges
Policy ... Foundation for wind growth

Manufacturing, materials & labor

Technology

Siting & environment

Transmission & integration

Electricity markets

Five key components ... policy is the foundation
Policy ... Foundation for wind growth

- Manufacturing, materials & labor
  - Encourage capacity expansion
- Siting & environment
  - Streamline permitting
- Technology
  - Reward performance
- Transmission & integration
  - Motivate grid investment
- Electricity markets
  - Enable new revenue streams

GE Company Proprietary
Global wind installation trends

US industry inhibitors
- Electricity demand flat: ~1.5% YOY
- Reserve margins adequate: 20+%
- Natural gas prices low and stable: $5/MMBTU
- PPAs difficult to obtain ... ~40% '09 wind installs no PPA

Policy accelerators
- Stimulus $ (Treasury grant, LGP, Mfg ITC)
- National RES
- Carbon price

Source: GWEC, BTM, MAKE

New policies required to restore US growth
Waxman-Markey RES ... designed to come in 3rd

**Europe**
Fredrik Reinfeldt
EU President

- EU Renewable Energy Directive
- 2.3MM wind job years
- + 165 GW
- 2008: 65 GW
- 2020: 230 GW

**China**
Hu Jintao
PRC President

- National Energy Administration/NDRC*
- “State New Energy Revitalization Plan”
- *100 GW target
- 1.5MM wind job years
- + 138 GW
- 2008: 12 GW
- 2020: 150 GW

**US**
Barack Obama
US President

- American Clean Energy & Security Act
- “Waxman-Markey”
- 1.3MM wind job years
- + 100 GW
- 2008: 25 GW
- 2020: 125 GW

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75% of wind industry could be outside U.S.
GE and Wind ... Combining Strengths

**Wind Product Strategy**
1. High Reliability
2. Capacity Factor Leadership ... Most Efficient
3. Advanced Grid Integration
Environmental performance

Operating performance

Double R&D... $1.5 Billion
Grow Revenues... $25 Billion
Reduce Emissions
Report Progress