

# Wind Vision Initiative



## A Picture of 20% of US Electrical Energy from Wind

- What would it look like?
- Does it make sense?
- What are its estimated costs and benefits?
- What are the major hurdles?

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*Wind Powering America States Summit June 7, 2007 Los Angeles, California*

# Topics

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- Major drivers behind the vision
- Expected benefits of achieving the vision
- Approach to developing and supporting the vision
- Status of the effort



# Overall Objective

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Change the mindset of energy community leaders

- Wind can be a truly major contributor
- Not a niche player limited to 1 or 2 %

Show that wind can be an important part of the solution to major national energy issues

# Continued National Prosperity : Primary Energy-Related Issues We Face

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## ❖ Dependence on imported fuels

- Oil from politically unstable regions now
- Natural gas from some of the same regions in the near future
- Declining production of these fuels
- Rapidly growing demand from China and India



## ❖ Economic competitiveness and financial stability

- Heavily unfavorable trade balance
- National deficits financed by China, et al
- Diminishing manufacturing capability



# Continued National Prosperity : Primary Energy-Related Issues We Face

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## ❖ Health of the natural environment

- Scientific consensus that climate change is very serious threat
- Fossil fuel combustion is a key contributor
  - Electric power, transportation
- Other negative impacts of fuel combustion, extraction and handling
  - $\text{SO}_x$ ,  $\text{NO}_x$ , mining, nuclear transport and waste



# Energy Options for Addressing These Issues: *Necessary Characteristics*

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- ❖ Sustainable, secure fuel source
- ❖ Minimal danger in fuel handling and management
- ❖ Minimal risk of fuel diversion for unintended uses
- ❖ Attractive energy return on energy invested
- ❖ Minimal life-cycle greenhouse gas emissions
- ❖ Acceptable water requirements
- ❖ Affordable costs

# Wind Energy Will Help In Addressing These Issues

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## ❖ Health of the natural environment

- No emissions of any kind during operation
- Net environmental effects likely to be highly positive



## ❖ Dependence on imported fuels

- Wind displaces natural gas now and in the future
- Electric and hybrid vehicle charging and fuels production from wind would displace oil directly



# Wind Energy Will Help In Addressing These Issues

## ❖ Economic competitiveness and financial stability

- Wind power technology, systems and components can be produced and manufactured in the U.S. *and exported worldwide*
- Production, construction and operation provides jobs and economic activity in the U.S.
- Depressed agricultural regions in the U.S. are being revitalized through wind development



# The Climate Change Threat Is A Major Business Opportunity

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- ❖ Technologies to reduce CO<sub>2</sub> emissions are needed worldwide
- ❖ Industries producing them will provide employment and profits
- ❖ Countries that produce them will enjoy export potential and trade-balance benefits
- ❖ Countries that *do not* may miss out on one of the 21st Century's best business opportunities

# Initiative Background

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- ❖ Vision of wind as a large energy contributor emerging over last two years
  - AWEA Board strategic planning
  - President's Advanced Energy Initiative
  - NWCC May 2006 forum
- ❖ Build on work underway
  - Wind Industry Growth Potential (B&V/AWEA)
  - WinDS generation expansion modeling (DOE/NREL)

# Initiative Background

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- ❖ AWEA-DOE-NREL collaboration on Wind Vision Initiative
  - Agreed to proceed at May NWCC forum
  - Announced at WindPower 2006 in June
- ❖ Over 30 AWEA-wind industry participants
- ❖ DOE-NREL Project Staffing
  - DOE-NREL-Sandia staff as technical participants
  - E.DeMeo and B. Ram/Energetics for project coordination and technical/logistic support

# Initiative Advisory Group

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AWEA:	Rob Gramlich and Tom Gray
DOE:	Stan Calvert and Steve Lindenberg
NREL:	Brian Smith and Bob Thresher
Industry:	Rashid Abdul, MPS Jim Lyons, GEGR Brian McNiff, MLI Jim Walker, enXco
UWIG:	Charlie Smith
Energy Foundation:	Ben Paulos
Worldwatch Institute:	Janet Sawin
Group Lead:	Ed DeMeo, Bonnie Ram

# Initiative Task Forces

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- ❖ Technology and Applications  
Mike Robinson  
*NREL*
- ❖ Manufacturing and Materials  
Larry Willey  
*GE*
- ❖ Customers and Stakeholders  
Larry Flowers  
*NREL*
- ❖ Utilities and Transmission  
Charlie Smith  
*UWIG*
- ❖ Environmental and Siting  
Laurie Jodziewicz  
*AWEA*
- ❖ Policy and Regulation  
Jim Walker  
*enXco*
- ❖ Supporting Analysis  
Maureen Hand  
*NREL*
- ❖ Communications and Outreach  
Mary McCann-Gates  
Jill Pollyniak  
*Clipper Wind Power*

# Wind Vision Initiative Elements

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- ❖ Vision development (Aug 06)
  - Define an aggressive and credible goal
- ❖ Critical examination (Sep 06 - May 06)
  - Can the vision be achieved?
  - What needs to happen to reach the goal?
  - What are the resulting benefits?
- ❖ Detailed technical report (ongoing)
  - Foundation for the vision
  - Results of the critical examination
  - Basis for developing follow-up action

# A Vision for Wind Power

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*Wind energy will provide 20% of U.S. electricity needs by 2030, securing America's leadership in reliable, clean energy technology. As an inexhaustible and affordable domestic resource, wind strengthens our energy security, improves the quality of the air we breathe, slows climate change, and revitalizes rural communities.*

# Status



- ❖ Extensive analysis of 20% scenario conducted
  - Thorough review by industry and utility sectors
- ❖ Report chapters drafted
  - External review under way
- ❖ Vision accepted and supported by AWEA, DOE and NREL as credible
- ❖ Report completion target: end of July
- ❖ AWEA Board of Directors to develop a 5-year plan for pursuit of the vision
- ❖ Additional outreach and promotion also likely