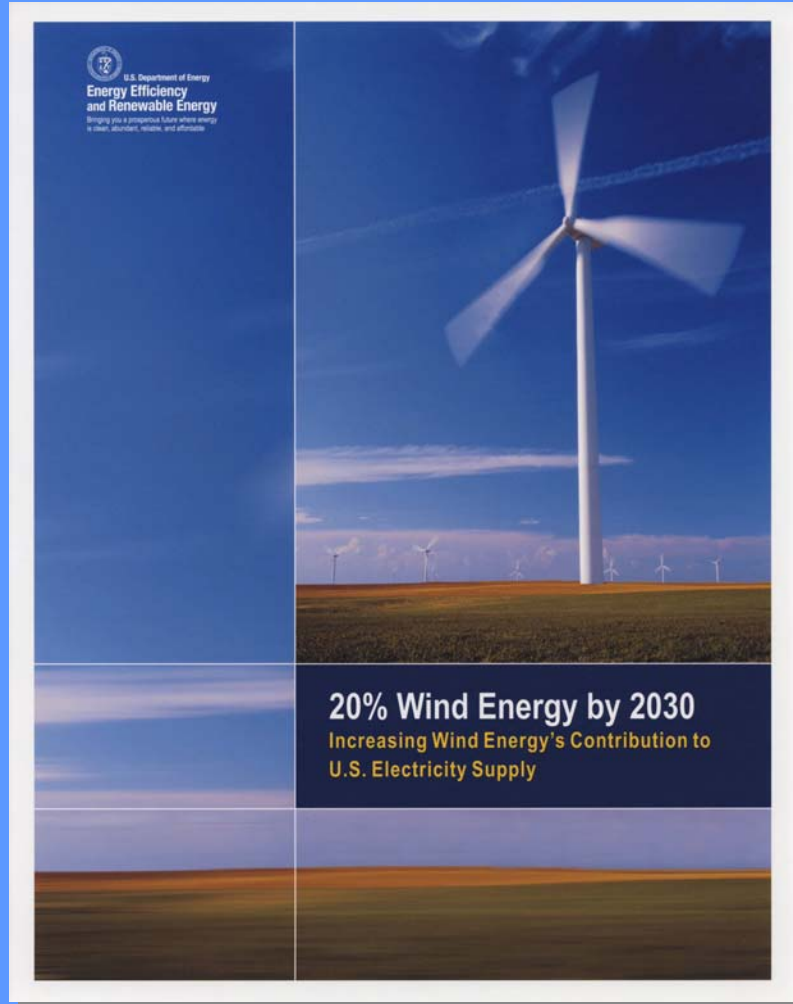


# 20% Electrical Energy from Wind

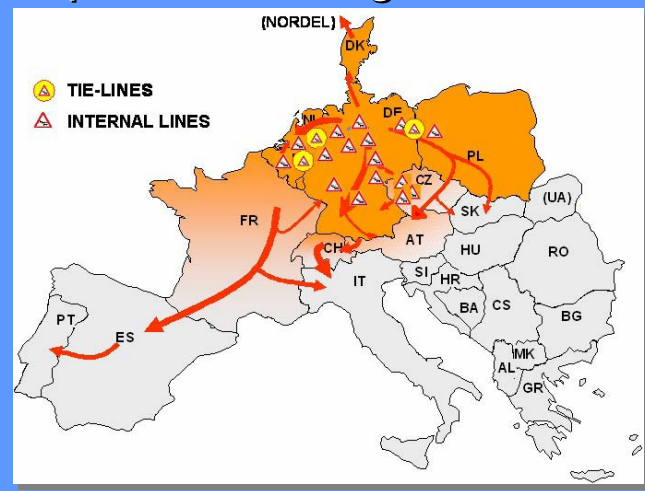
US Initiative: 20% by 2030



Irish All Island Study



Europe Wind Integration Study



IEEE-PES Super Session  
July 22, 2008

Session Chair: Ed DeMeo  
Renewable Energy Consulting Services



# 20% Electricity from Wind: Super Session Panel Overview

---

---

## ❖ *U.S. Collaborative Initiative*

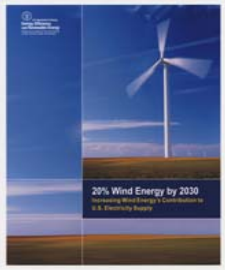
- ❖ USDOE, AWEA, NREL, B&V
- ❖ Examine feasibility of 20% US wind electricity by 2030
- ❖ Two-year effort completed May 2008

## ❖ *European Wind Integration Study*

- ❖ 15 European transmission system operators
- ❖ Maintain system integrity with substantial wind growth
- ❖ Early results now; final results in late 2009

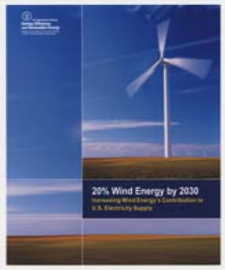
## ❖ *Irish All Island Grid Study*

- ❖ Examine ultra-high wind penetrations in isolated system
- ❖ Multi-year effort completed January 2008



# 20% US Electricity from Wind: Session Panelists

- ❖ Jim Lyons, Novus Energy Partners (formerly GE Global Research): Wind Turbine Technology
- ❖ Maureen Hand, National Renewable Energy Laboratory: Power-System Modeling of 20% Wind
- ❖ Charlie Smith, Utility Wind Integration Group: Integration of 20% Wind into the US Electric Power System
- ❖ John Stough, American Electric Power: Interstate Electric Superhighways for Renewable Energy
- ❖ Laurie Jodziewicz, American Wind Energy Association: Environmental and Siting Status and Needs
- ❖ Jim Walker, enXco: Benefits, Impacts and Policy-Related Issues



# 20% US Electricity from Wind

## Key Issues Addressed

- ❖ Are national wind energy resources sufficient?
- ❖ What are the wind technology requirements?
- ❖ Does sufficient manufacturing capability exist?
- ❖ What are the economic costs and benefits?
- ❖ Can the electric network accommodate 20% wind?
- ❖ What are the environmental benefits and impacts?
- ❖ Is the scenario feasible?



# European High Wind Penetration: Session Panelists

---

---

## ❖ *European Wind Integration Study*

❖ JuanMa Rodriguez Garcia, RED Electrica (Spain)

## ❖ *Irish All Island Grid Study*

❖ Sonya Twohig, Eirgrid

The European wind and power communities have moved well beyond the issue of feasibility.

Now the issue is: How can high wind penetrations be accommodated while maintaining system reliability?