AWEA AMERICAN WIND ENERGY ASSOCIATION

Wind Power in Denmark and the U.S.

MYTH-BUSTING: THE FACTS ABOUT WIND POWER IN DENMARK AND THE UNITED STATES

On September 14, the Institute for Energy Research (IER), an anti-clean energy industry funded group, began distributing a collection of claims--some misleading and others outright false-- about wind power in Denmark in a report *Wind Energy – The Case of Denmark*. These claims were presented in a study commissioned by IER and accompanying fact sheets that presented the report's conclusions in an even more misleading manner.

Here are the facts about wind power in Denmark and the United States.

Wind Capacity, Generation & Potential

- → Denmark produced 20% of its electricity from wind power. In 2008, Denmark produced nearly 3,200 megawatts (MW) of wind power - enough to power roughly 1 million U.S. homes.
- → Other European countries successfully obtain a sizable share of their electricity from wind energy, including Spain (12%), Germany (7%), Portugal (9%), and Ireland (8%).
- → With a much larger demand for power, the U.S produces 1.25% of generation from wind power with our 25,400 MW of wind (enough to power around 7 million U.S. homes) at the end of 2008. But the U.S. has a wind resource potential of nearly 13,000,000 MW, or roughly 20 times the peak electricity demand in the U.S. The U.S. also has 200 times the land area of Denmark and higher average wind speeds, making it an ideal location for the development of wind power.

Production vs. Consumption of Electricity and Emissions Displacement

- → Wind power displaces the most expensive fuel source, commonly natural gas, but also coal and oil. Wind energy can also be used to reduce the output at hydroelectric dams, where water can be stored to later displace fossil fuels. Thus, every unit of wind energy offsets a carbon-emitting unit of fossil fuel generation.
- → According to the BTM Consult World Market update for wind in 2008, the wind energy produced in Denmark in 2009 will displace over 5 million tons of CO_2 across the European Union.
- → In the U.S., wind production by the wind farms installed through 2008 will avoid over 44 million tons of CO2 annually.

The laws of physics (as well as the principles of economics) dictate that electricity will flow from where it is produced to where it is needed. For example, in the U.S. during the winter, electricity flows from California through transmission lines to the Pacific Northwest to heat homes there, while power flows in the opposite direction during the summer to run California's air conditioners.

In the United States, the displaced source of electricity can be several states away; in Europe, several countries away. In some cases, wind energy allows a hydroelectric plant to store additional water behind its dam, which can then be used later to displace marginal fossil fuel sources. In both the United States and the European Union, state or national boundaries are not a barrier to carbon reduction in the larger area.

Economic and Jobs Impacts of Wind Power

- → Denmark employs nearly 30,000 people in the wind industry.
- → The U.S. wind industry employs 85,000 people.
- → The European Commission found that "It is therefore of immense value that increasing the share of [renewable energy] not only does not harm the economy, but actually benefits it by creating jobs and increasing GDP."

Denmark has established itself as a leader in not only wind energy production, but in wind energy companies, manufacturers, and advanced R&D centers, creating 30,000 jobs in the wind energy sector. The manufacturing of wind turbines and components represents a once-in-a-generation opportunity for the U.S. job market as the global wind industry builds out its supply chain and decides where to locate factories, potentially allowing us to transition our manufacturing from declining sectors into the growing wind industry which already employs 85,000. In 2008 alone, the U.S. actually brought online, announced or expanded 55 wind manufacturing facilities, representing over 10,000 manufacturing jobs.

According to a recent report funded by the European Commission, renewable energy technologies like wind and solar contribute additional jobs in the European Union and strengthen its economy: "Policies that support renewable energy sources give a significant boost to the economy and the number of jobs in the EU. Improving current policies so that the target of 20% [renewable energy supply] in final energy consumption in 2020 can be achieved will provide a net effect of about 410,000 additional jobs and 0.24% additional gross domestic product".

Energy Production and Energy Subsidies

- → Supporting energy production, as a public good, is common and prudent national policy. The U.S. Government Accountability Office (GAO) states, "Because of electricity's importance to producers, consumers, and businesses, the federal government has undertaken a wide range of programs to develop the electricity sector, which includes fuel suppliers, electric utilities, and others in the electricity industry."
- → According to GAO, from 2002 to 2007, fossil fuel energy sources received nearly five times the amount of tax-based subsidies compared to renewable energy sources.

Historically, U.S. subsidies for oil, natural gas, coal, nuclear and hydropower totaled approximately $500 billion from 1950 to 1977, or approximately $18 billion per year (2004 dollars). In the last century, this created an abundance of affordable domestic energy, powering strong economic growth, but also building an addiction to fossil fuels. Today's rising demands – and volatile prices – are creating a need for a more diverse energy supply.

Denmark as a Leading Example of Wind's Potential for the U.S.

- → Denmark was the first country to produce 20% of its electricity from wind energy.
- → The technical and economic feasibility of 20% production and consumption of wind energy by 2030 in the U.S. was confirmed by the Department of Energy in their 2008 report.

The U.S. has one of the largest and strongest wind resources in the world, but Denmark was the first country to produce 20% of its electricity from wind. The fact that Denmark has accomplished 20% electricity production from wind energy suggests it is entirely feasible in the U.S., which has a power network 100 times the size of Denmark's, a land area 200 times as large, and holds nearly 13,000,000 MW of wind potential. The technical and economic feasibility of 20% production and consumption of wind energy by 2030 in the U.S. was further confirmed by the Department of Energy in its 2008 report (see 20percentwind.org).