

Addressing the scale and complexity of the global energy challenge.



CAN RENEWABLES PROVIDE BIG ENERGY IN AMERICA'S ELECTRIC FUTURE?

Leeds School of Business Big Energy Seminar Series

Paul Denholm – Senior Energy Analyst at the National Renewable Energy Laboratory (NREL)

Thursday, December 1, 2011

5:00-6:15 pm, Koelbel Hall, Rm S125

Summary: Renewable energy sources currently provide about only about 10% of the nation's electricity, with most of that coming from large hydro sources. Renewable energy sources are scattered around the country, with much of the best wind and solar resources located in remote locations. These sources also may have a big footprint compared to conventional sources. Finally, solar and wind are often described as intermittent due to their variable and uncertain output. As a consequence, it is often claimed that renewables can't provide "big energy" and be a major contributors to a reliable electricity system.

This talk will discuss the resource base for renewables and changes to the grid that are needed to accommodate extremely large amounts of renewable energy. It will address new transmission requirements and attempt to cut through the hype surrounding the reliability of electric power systems using large amounts of wind and solar. It will discuss how utilities deal with the variability of renewable energy sources, and what happens when the wind doesn't blow and the sun doesn't shine. The potential role of energy storage in the grid of the future will then be discussed, using the latest studies about the actual grid integration costs and impacts of wind and solar energy.

Paul Denholm, Ph.D.

Paul Denholm is a Senior Energy Analyst at the National Renewable Energy Laboratory. His research interests include examining the technical, economic, and environmental benefits and impacts of large-scale deployment of renewable electricity generation, including the role of enabling technologies such as energy storage, plug-in hybrid electric vehicles and long distance transmission. He holds a B.S. in physics from James Madison University, an M.S. in instrumentation physics from the University of Utah, and Ph.D. in Environmental Studies and Energy Analysis from the University of Wisconsin-Madison.

Campus Map for Koelbel Building, Leeds School of Business: <http://www.colorado.edu/campusmap/map.html?bldg=KOB>
Recommended Parking: Metered lot on Regent Avenue next to Coors Event Center (basketball arena)