

## Assessing Wind Resource Adequacy for Peak Demand

**Kristen R. Schell**  
University of Michigan



**Abstract:** There are almost 50,000 individual wind turbines currently operating in the continental United States. Federal tax credits, as well as local price differences, have helped spur past and future investment in the wind industry. While this increase in wind capacity, at times, provides a remarkable percentage of load with renewable generation, variable wind power output is not often synchronous with peak demand, which raises the issue of its contribution to overall resource adequacy. We propose a new method for assessing wind resource adequacy in the planning phase, utilizing cross-spectra analysis of wind speed and electricity system load time series. The results indicate which geographic locations in an electricity system have wind resource potential that is most able to contribute to meeting peak load. This metric gives wind farm planners information on where to site wind farms that reduce reliability risk and increase supply adequacy. Such information is particularly important as electricity systems move toward maximum levels of variable renewable power penetration. Results are shown for three major electricity markets of interest – CAISO in California, NYISO in New York and ERCOT in Texas.

**Bio:** Currently a Postdoctoral Fellow in the Industrial and Operations Engineering Department at the University of Michigan, Dr. Schell's research lies at the interface of engineering, operations research and economics, leveraging these domains to analyze the complex questions facing the transition to an electric power system dominated by renewable energy sources. Her doctoral degrees are from the Engineering and Public Policy programs at Carnegie Mellon University and the Faculty of Engineering of the University of Porto, Portugal. She was a Visiting Researcher with Professor Pierre Pinson's Energy Analytics and Markets Group at the Technical University of Denmark (DTU) in 2016 and 2017.

**Thursday 15 March 2018, Pavillon André-Aisenstadt, Université de Montréal, room 4488.**

**15h30-15h45 Come meet the speaker and other researchers over drinks and snacks**

**15h45-17h00 Presentation**

All are welcome



Contact: [osg@polymtl.ca](mailto:osg@polymtl.ca)



Optimization for Smart Grids: <http://osg.polymtl.ca>