



MECHANICAL ENGINEERING

“New findings on variable renewable energy and the electricity grid”

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Abstract: Increasing the market share of variable renewable electric power generation in the United States from the present 4% is eminently feasible. The variability of wind and solar power is much less at high frequencies than at low frequencies, so that slow-ramping generators can compensate for most of the variability. The inter-annual variability of wind power is beginning to be understood, as are the biases in its day-ahead forecasts. Geographic aggregation of wind and solar power has been proposed as a method to smooth their variability; for wind power it has been shown that there is little smoothing at times scales where the magnitude of variability is strongest. The point of diminishing returns is reached after a relatively few wind plants have been interconnected. It is now possible to predict the amount of additional capacity of dispatchable generation that must be procured by system operators to cover the uncertainty in wind forecasts.



Brief bio: Jay Apt is a Professor at Carnegie Mellon University's Tepper School of Business and in the CMU Department of Engineering and Public Policy. He is the Director of the Carnegie Mellon Electricity Industry Center and Director of the RenewElec (renewable electricity) project. He has authored over 90 papers in peer-reviewed scientific journals. He has published op-ed pieces in the Wall Street Journal, the New York Times and the Washington Post. He and Paulina Jaramillo have recently authored the book “Variable Renewable Energy and the Electricity Grid”. Professor Apt received an A.B. in physics from Harvard College in 1971 and a Ph.D. in physics from the Massachusetts Institute of Technology in 1976. He is a Fellow of the American Association for the Advancement of Science. He received the NASA Distinguished Service Medal in 1997 and the Metcalf Lifetime Achievement Award for significant contributions to engineering in 2002.

Friday, February 13th, 2015
11:00 am Seminar in 233 Mudd
Lunch served at 12:00pm
in MECE Lobby