

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Comparison of Solar and Wind Power Output and Correlation with Real-Time Pricing**<sup>1</sup> KATHRYN E. HOEPFL, ALVIN D. COMPAAN, Dept. of Physics & Astronomy, University of Toledo, ANDREW SOLOCHA, Dept. of Finance, University of Toledo — This study presents a method that can be used to determine the least volatile power output of a wind and solar hybrid energy system in which wind and solar systems have the same peak power. Hourly data for wind and PV systems in Northwest Ohio are used to show that a combination of both types of sustainable energy sources produces a more stable power output and would be more valuable to the grid than either individually. This method could be used to determine the ideal ratio in any part of the country and should help convince electric utility companies to bring more renewable generation online. This study also looks at real-time market pricing and how each system (solar, wind, and hybrid) correlates with 2009 hourly pricing from the Midwest Interconnect.

<sup>1</sup>KEH acknowledges support from the NSF-REU grant PHY-1004649 to the Univ. of Toledo and Garland Energy Systems/Ohio Department of Development.

Kathryn E. Hoepfl  
Dept. of Physics & Astronomy, University of Toledo

Date submitted: 26 Nov 2010

Electronic form version 1.4