



**THE CHINESE UNIVERSITY OF HONG KONG**  
Department of Information Engineering

*Seminar*

**The Sharing Economy for the Smart Grid**  
by  
**Professor Chenye Wu**  
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Beijing  
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**Date : 16 Jan., 2017 (Mon.)**  
**Time : 11:00am – 12:00noon**  
**Venue : Room 1009, William M.W. Mong Engineering Building**  
**The Chinese University of Hong Kong**

*Abstract*

The sharing economy. It is all the rage. Going on vacation? Rent out your home for extra income! Not using your car. Rent it out for extra income! Companies such as AirBnB, VRBO, Lyft, and Uber have disrupted housing and transportation sectors. Their innovative business models are based on resource sharing that leverage underutilized infrastructure. They are enabled by peer-to-peer platforms that match eager sellers with willing buyers.

Are there compelling sharing economy opportunities in the electricity sector? What products can be shared in tomorrow's Smart Grid? Could consumers trade electricity via online matching markets? In this talk, we begin by exploring sharing economy opportunities in the electricity sector. We discuss regulatory and technical challenges to these opportunities. We then study the specific problem of a collection of firms sharing their electricity storage. We show that the investment decision of the firms form a Nash equilibrium which supports the social welfare. We offer explicit expression for optimal storage investments and equilibrium prices for shared storage in a spot market. We discuss control technology platforms necessary for the physical exchange of power, and market platforms necessary to trade electricity storage. We close with synthetic examples to illustrate our ideas.

*Biography*

Dr. Chenye Wu recently joined IIIS, Tsinghua University as an Assistant Professor. Before joining Tsinghua University, Dr. Wu was a postdoc at Carnegie Mellon University, UC Berkeley, and ETH Zurich. His research focuses on the power system reliable operation and electricity market design under uncertainties, with an emphasis on utilizing the pervasive intelligent resources. Dr. Wu holds a BS in electronic engineering and a PhD in computer science both from Tsinghua University. He was the best paper co-recipient of IEEE SmartGridComm 2012 and IEEE PES General Meeting 2013.

**\*\* ALL ARE WELCOME \*\***