



# BIG energy seminar series

Addressing the scale and complexity of the global energy challenge.



## *Antecedents and Effects of Company Behavior in Energy Technology Development: Insights from the Solar and Shale Gas Industries*

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**Date:** Tuesday, January 28<sup>th</sup>, 2013 at 1:00pm

**Location:** Caruthers Biotechnology Building, A115 (East Campus)

### **Abstract:**

The trajectories and dynamics of energy innovation are intrinsically linked to the companies invested in energy technology development. This presentation will review my work on the antecedents to, and effects of, company behavior on technology innovation, technology implementation, and technological environmental impact.

The first study investigates the drivers of partnership formation in the solar industry. The complexity of solar technologies and the pace of their development over the past decade has driven many companies to maintain their competitiveness through strategic alliances with other firms. Although many studies have documented the effects of technology partnerships in the solar industry, none have differentiated between the many different types of partnerships. This presentation covers the antecedents and effects of technology alliances in R&D, manufacturing, supply, distribution and project development. We use a sample of 1079 partnerships in the solar industry to test how partnerships related to R&D differ from the other technology partnerships in terms of the size of firms involved, their technological focus, their position in the value chain, the geographical distance between the partners, and the firm's location. Finally, we discuss policy levers for accelerating partnership formation and patent output in emerging energy industries.

The second and third studies switch gears, focusing on how company attributes, experience, and behavior impact the environmental consequences of shale gas development in the Marcellus play. We find significant variation in the waste management practices of Marcellus firms, with a large portion of this variance attributed to waste disposal method, company experience operating in the Marcellus, and drilling practices. We also find significant variation in the frequency and severity of oil and gas drilling violations in the Marcellus, but find that much of this variation is explained by enforcement discrepancies. Taken together, this work suggests that impact minimization is a function of company and regulatory agency decision making on a highly localized scale.

### **Bio:**

Professor Meagan Mauter's research interests lie at the intersection of energy and water. Mauter has undergraduate degrees in Civil and Environmental Engineering and History from Rice University, and a Ph.D. in Chemical and Environmental Engineering from Yale University. Her doctoral work on the role of next-generation membrane materials and processes in minimizing the energy consumption of separations prepared her to join the Science Technology and Public Policy Program at the Harvard Kennedy School of Government as a post-doctoral fellow in Energy Technology Innovation Policy. At Harvard she performed extensive research on the technologies and management practices that minimized the environmental impacts of produced water management. Mauter is currently an Assistant Professor at Carnegie Mellon University with joint appointments in the Departments of Chemical Engineering and Engineering and Public Policy. Her present research continues to apply novel materials, advanced treatment processes, and innovation analysis to the pressing challenge of resource efficiency in water and energy systems.

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