SEMINAR

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A Field Experiment to Evaluate the Impact of Information on Electricity Consumption

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Many potential benefits have been attributed to investments in smart grid technologies. One of these, real-time consumption and price feedback delivered via smart metering devices to homes has been reported to produce up to 20 percent declines in residential energy consumption. Yet significant uncertainty persists around the potential of feedback to engender energy conservation behavior, with widely divergent outcomes from small sample studies and limited rigorous empirical evidence available. In this study, we conduct a field experiment to obtain an estimate of the impact of a real-time feedback technology; the Google PowerMeter application. We find that access to feedback leads to an average reduction of 5.7 percent. Significant declines persist for up to four weeks but decline over time. In examining time of day reduction effects, we find that the largest reductions were observed initially at all times of the day but as time passes, morning and evening intervals show larger reductions. We find very few household characteristics explain heterogeneity in the treatment effect; we examine demographics, housing characteristics and psychological variables. Our results suggest cautious optimism for the potential of feedback to modify consumption behavior but underline the need to more permanently change habits and increase long term engagement with such technology.

Biography

Anant Sudarshan is a Giorgio Ruffolo Post-doctoral Fellow in the Sustainability Science Program at the Kennedy School of Government, Harvard University. He works at the intersection of energy policy, environmental economics, and engineering. He holds undergraduate and master's degrees in Mechanical Engineering from the Indian Institute of Technology (Delhi) and Stanford University respectively. He received his PhD in Management Science and Engineering, focusing on energy economics, from Stanford University in March 2011. His doctoral research explored the determinants of residential energy consumption and the role California efficiency policies had in reducing energy intensity in the state. More broadly he is interested in understanding how different incentives – both financial and behavioral – can be used to address energy and environment challenges and how information interventions can enhance regulatory effectiveness. Presently he is working with on a project supported by the Ministry of Environment and Forests in India to design and evaluate an emissions trading scheme for particulate matter.

PLEASE CONTACT PROF. ROSENBERG (X84510) IF YOU WISH TO MEET WITH THE SPEAKER.