Geophysical Research Abstracts
Vol. 20, EGU2018-1373, 2018
EGU General Assembly 2018

The impact of climate change on the residential electricity demand in China

Yating Li (1), Billy Pizer (2), and Libo Wu (3)

(1) Duke University, Energy Initiative, Sanford School of Public Policy, United States (yating.li@duke.edu), (2) Duke University, Energy Initiative, Sanford School of Public Policy, United States (billy.pizer@duke.edu), (3) School of Economics and School of Data Sciences, Fudan University, China (wulibo@fudan.edu.cn)

Understanding the damages of climate change across the globe is critical to policy analysis, yet existing empirical estimates concentrate in the western countries, especially the United States. Using daily meter data from over one thousand households in Shanghai, China, we estimate how electricity demand changes with warmer temperatures. For colder days below 10°C, a 1°C increase in daily temperature reduces electricity demand by 6%. On already warm days above 26°C, a 1°C increase in daily temperatures leads to a 12% increase in electricity consumption. As income increases, households' weather sensitivity remains the same for hotter days in the summer while increases during the winter. Coupled with 21 downscaled global climate models (GCMs), we find that the annual electricity cost increase by 8.4% per +1°C on average. We further analyze the daily electricity response across the year, where daily electricity use increases by as much as 80% under RCP 8.5 during the summer period from July to September.