Spatial Analysis & Characterization of Residential Smart Meter Data

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Abstract

With nearly every residential home electric customer in the state having the capacity to measure electric consumption in 15-minute intervals using Advanced Metering Infrastructure (AMI), Vermont is in a unique national position to serve as a statewide model for 21st century energy innovation. However, insights from this precise electric consumption data remain elusive to the customers, the utility companies, and the state, regional and federal authorities without careful analysis and understanding of the where, when, and why of household electricity consumption. This poster presents current work-in-progress seeking to examine and characterize the spatial aspects - the where - of household electricity consumption using data collected from approximately 2,000 households aggregated to census block groups in one anonymous region of Vermont. Preliminary results indicate that the location of a block group relative to its neighbors does indeed have a relationship to how much electricity is consumed, but increasing the scope to households in the entire state would make the analysis more accurate.