

The impact of extreme weather events and long-term climatic variability on electricity generation: Residential perceptions on clean energy

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This study examines the impacts of increasing extreme weather events and long-term changes in climatic variability in the Southeastern United States on electricity in terms of fuel source for electricity generation. In the focal region, extreme weather events and long-term climatic variability share the strongest relationship with the fossil fuel source of coal. 42.2% of the monthly variability in electricity from coal is explained by extreme weather events and long-term trends, with 36.5% explained by extreme weather events. The second strongest relationship observed was between extreme weather and long-term trends on the fossil fuel source of natural gas. 30.5% of the variability for natural gas was explained by a combination of extreme weather events and long-term climatic variability, with the majority of the relationship explained again by extreme weather events. The "cleaner" electricity generation sources of nuclear power and hydro-electric shared much weaker relationships with climatic factors. Extreme weather events and climatic trends explained 9% and 2.2 % of the variability in the sources, respectively. The study also examined the perceptions of residents in the focal region regarding clean energy use by the utility organizations who were producing electricity. 43.2% of the variability in residential support for clean energy was explained, and was primarily related to individuals who supported behaviors that conserved energy and the environment. Those same individuals were over 4 times more likely to support clean energy use than individuals who were not conservation minded. Considering that extreme weather events are increasing in the region, and that greenhouse gas emitting fuel sources are being utilized to meet demand, policy implications for efficiency and clean energy use are discussed. The application of the methodology globally will be discussed.

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