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Identifying future electricityâ€“water tradeoffs in the United States

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Abstract

Researchers for the electricity industry, national laboratories, and state and federal agencies have begun to argue that the country could face water shortages resulting from the addition of thermoelectric power plants, but have not attempted to depict more precisely *where* or how *severe* those shortages will be. Using county-level data on rates of population growth collected from the US Census Bureau, utility estimates of future planned capacity additions in the contiguous United States reported to the US Energy Information Administration, and scientific estimates of anticipated water shortages provided from the US Geologic Survey and National Oceanic and Atmospheric Administration, this paper highlights the most likely locations of severe shortages in 22 counties brought about by thermoelectric capacity additions. Within these areas are some 20 major metropolitan regions where millions of people live. After exploring the electricityâ€“water nexus and explaining the study's methodology, the article then

focuses on four of these metropolitan areas â€“ Houston, Texas; Atlanta, Georgia; Las Vegas, Nevada; New York, New York â€“ to deepen an understanding of the water and electricity challenges they may soon be facing. It concludes by identifying an assortment of technologies and policies that could respond to these electricityâ€“water tradeoffs.

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Keywords

Water consumption; Water withdrawals; Thermoelectric power plants

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