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2019 AGU Fall Meeting Abstract

Title: Water-Driven Constraints and Adaptations in Coal-Fired Power Plants

Authors: Gayoso, N; Gunda, T; Tidwell, V

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Technical Abstract: Water is a critical resource in the energy industry where 41% of all water withdrawals are used for coal-fired power plants. Changing water conditions are putting plants at risk for drought, flood, and/or discharge. To evaluate these risks, it is important to understand nuances of individual plants in their design, operational policies, and contingency planning. Thus, this research uses a semi-structured interview approach with plat owners and operators to obtain information. We are particularly interested in understanding where power plants get their water, potential restrictions on its use or discharge, and any contingency plans they have developed to deal with water limitations. The collected data, is coded and captured in a database to identify patterns and compare strategies among coal-fired power plants. Through data analysis, our findings show that while there are geographical differences in water availability, actual constraints faced by plants are both exacerbated and mitigated by engineered, operational activities, and policy constraints. This research has highlighted both vulnerabilities and opportunities for risk mitigations in the coupled human and natural system associated with the water management for energy resources.

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