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A SYSTEM DYNAMICS ANALYSIS OF INCENTIVE MECHANISMS FOR DEMAND RESPONSE PROGRAMS IN CHINA

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Abstract

Severe power shortages and poor performance of administrative demand response (DR) in China have motivated exploration of potentially more effective market-based approaches to promote DR deployment. We present a systems dynamics model for estimating DR-related costs and benefits to stakeholders. The model is used to study the performance of DR programs under various alternative incentive mechanisms. The systems dynamics process can quantitatively explain incentive-related obstacles in China and provide insights on key issues in Chinese DR financing, program design, and implementation. Based on the analysis, a DR promotion mechanism combined with effective incentives for utilities and customers is recommended. Key factors affecting the performance of the suggested mechanism are also analyzed. The model can be used by policy makers to investigate strategies that influence how DR programs influence power sector investment and operations.

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