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Presentation Title: Paying Customers to Limit Their Energy Consumption: Investigation of Consumers' Preferences

Abstract: To reduce greenhouse gas emissions, energy systems are changing towards more decentralized systems that incorporate increasing amounts of renewable energy. At the same time, new appliances, such as heat pumps and electric vehicles, change the way households consume electricity. Together, these two developments lead to more fluctuation in both energy production and consumption, which poses new challenges for the electricity grid in general, and specifically on a local level. Demand-side approaches to balancing supply and demand can help tackle this fluctuation and prevent investments into grid infrastructure. However, this involves energy consumers to be more flexible in their consumption of electricity. Grid operators can incentivize households to change their behavior through flexibility programs such as quota schemes: In times of high demand in a local grid, the grid provider can set a quota, a limit on the maximum electricity consumption, for a certain period of a day in advance. Participating households that comply with the quota by temporarily adapting (e.g., limiting) their consumption are remunerated for their flexibility. Yet, it is unclear to what extent consumers are willing to provide flexibility in their electricity use and participate in such flexibility programs. We present first insights from a study that combines a discrete choice experiment with additional survey data to investigate consumers' preferences for different aspects of quota schemes. Specifically, we examine how variations in the number of quotas per year, the duration and time of day of a quota, and the size of the financial incentive affect people's preferences for participation. Additionally, we examine the role of potential drivers and barriers to providing flexibility, such as psychological beliefs and norms. We present our results and discuss implications arising from our findings for the future design of electricity flexibility programs.