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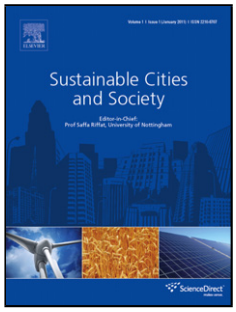

Title: Assessment of the Impact of Information Feedback of Prepaid Meter on Energy Consumption of City Residential Buildings using Bottom-Up Load Modelling Approach

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HIGHLIGHTS

- Impact of information feedback of prepaid meter on energy consumption is evaluated
- Bottom-up modeling approach is adopted for the study
- Weighted load constraint multiplier is used to limit energy consumption of loads
- This enhances total savings of 8.8% for weekdays and 8.8% for the weekends

Assessment of the Impact of Information Feedback of Prepaid Meter on Energy Consumption of City Residential Buildings using Bottom-Up Load Modelling Approach

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Abstract

This paper evaluates the impact of information feedback of prepaid meter as a Demand side Management (DSM) tool in reducing the energy consumption of residential buildings in the city of Ibadan, Nigeria. The bottom-up modeling approach which has the capability to determining the total energy consumption without historical data of energy use is adopted for the study. First, active residential occupancy pattern of different individual household population classes are obtained from literature, then the individual electrical appliances are aggregated in such a way that reflects the income pattern of the households to form single individual household load profiles. The load profiles of the various individual households are aggregated to determine the overall residential load profile of the entire city. The city of Ibadan, southwestern Nigeria is used as the study area. Information feedback from the prepaid meter ismodeled by setting priorities to groups of appliances as they affects the quality of life of the end user. The rate of energy consumption of the loads is limited using weighted load constraint multipliers. Some of the key results of a the study show that information feedback from

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