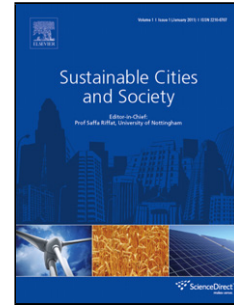


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Market and Behavior driven Predictive Energy Management for Residential Buildings

Amin Mirakhorli¹, Bing Dong^{2*}

¹Department of Mechanical Engineering, The University of Texas at San Antonio. One UTSA Circle, San Antonio, TX 78249. Email: Amin.mirakhorly@gmail.com.

²Department of Mechanical Engineering, The University of Texas at San Antonio. One UTSA Circle, San Antonio, TX 78249 *Corresponding author: bing.dong@utsa.edu

Highlights

- Model predictive controller is proposed for residential air conditioner, water heater, electric vehicle and battery.
- Building energy cost saving is studied in a one-year simulation in three TOU, hourly, and real time pricing.
- 42% overall saving is achieved for building energy management in real time pricing.
- Occupant's behavior is introduced to all levels of building energy management.

Abstract

With the advancement of smart home and grid, a more connected and efficient operation of the grid is achievable. Involving buildings as the largest consumer of electricity in such a smart operation is a critical step in achieving an interactive grid system. In this paper, a building energy management system is introduced considering electricity price and people behavior, controlling major consumers of electricity in a single family residential building. An air conditioner, water

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