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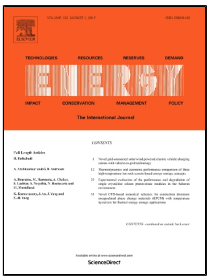

The application of Household Appliances' Flexibility by Set of Sequential Uninterruptible Energy Phases Model in the Day-Ahead Planning of a Residential Microgrid

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PII:	S0360-5442(17)31333-6
DOI:	10.1016/j.energy.2017.07.149
Reference:	EGY 11337
To appear in:	*Energy*
Received Date:	17 October 2016
Revised Date:	10 May 2017
Accepted Date:	23 July 2017

Please cite this article as: Amin Mohseni, Seyed Saeidollah Mortazavi, Ahmad Ghasemi, Ali Nahavandi, Masoud Talaei abdi, The application of Household Appliances' Flexibility by Set of Sequential Uninterruptible Energy Phases Model in the Day-Ahead Planning of a Residential Microgrid, *Energy* (2017), doi: 10.1016/j.energy.2017.07.149

The application of Household Appliances' Flexibility by Set of Sequential Uninterruptible Energy Phases Model in the Day-Ahead Planning of a Residential Microgrid

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Abstract

In this work, an accurate energy consumption model of household appliances based on Set of Sequential Uninterruptible Energy Phases (SSUEP) is applied to day-ahead energy management framework of a residential microgrid in order to effectively activate time-based demand response programs. The homes in the microgrid include the essential and/or shiftable household appliances accurately modeled by the SSUEP. These homes are also equipped with the photovoltaic systems, battery energy storages and electric vehicles. The residential microgrid is assumed to be connected to a smart grid such that bi-directional exchange of electric power would be possible. Being aware of the amount of power demand for the appliances and the day-ahead prices of the energy, the consumer provides the required energy