

Accepted Manuscript

Categories and functionality of smart home technology for energy management

Rebecca Ford, Marco Pritoni, Angela Sanguinetti, Beth Karlin



PII: S0360-1323(17)30306-2

DOI: [10.1016/j.buildenv.2017.07.020](https://doi.org/10.1016/j.buildenv.2017.07.020)

Reference: BAE 4999

To appear in: *Building and Environment*

Received Date: 25 April 2017

Revised Date: 11 July 2017

Accepted Date: 12 July 2017

Please cite this article as: Ford R, Pritoni M, Sanguinetti A, Karlin B, Categories and functionality of smart home technology for energy management, *Building and Environment* (2017), doi: 10.1016/j.buildenv.2017.07.020.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1 Categories and Functionality of Smart Home 2 Technology for Energy Management

3 Rebecca Ford^{1*}, Marco Pritoni^{2+*}, Angela Sanguinetti³, Beth Karlin⁴

4 1 University of Oxford, Oxford, UK. rebecca.ford@ouce.ox.ac.uk

5 2 Lawrence Berkeley National Laboratory, Berkeley, CA, USA. marco.pritoni@gmail.com

6 3 University of California, Davis, Davis, CA, USA. asanguinetti@ucdavis.edu

7 4 See Change Institute, Los Angeles, CA, USA. bkarlin@seechangeinstitute.com

8 + corresponding author

9 * these authors contributed equally to this work

10 Abstract

11 Technologies providing opportunities for home energy management have been on the rise in recent
12 years, however, it's not clear how well the technology - as it's currently being developed - will be able
13 to deliver energy saving or demand shifting benefits. The current study undertakes an analysis of 308
14 home energy management (HEM) products to identify key differences in terms of functionality and
15 quality. Findings identified opportunities for energy savings (both behavioural and operational) as well
16 as load shifting across most product categories, however, in many instances other potential benefits
17 related to convenience, comfort, or security may limit the realisation of savings. This is due to lack of
18 information related to energy being collected and presented to users, as well as lack of understanding
19 of how users may interact with the additional information and control provided. While the current study
20 goes some way to identify the technical capabilities and potential for HEM products to deliver savings,
21 it is recommended that further work expand on this to identify how users interact with these
22 technologies in their home, in both a standalone and fully integrated smart home environment to
23 deliver benefits to both homes and the grid.

24 Keywords

25 Home Energy Management; Energy Efficiency; Smart Home; Home Automation; Internet of Things

26

Download English Version:

<https://daneshyari.com/en/article/4917279>

Download Persian Version:

<https://daneshyari.com/article/4917279>

[Daneshyari.com](https://daneshyari.com)