



# Solent Acheiving Value from Efficiency (SAVE): data archive overview

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**Document history****Table 1:** Document history

Version	Date	Author	Notes
Version 0-1	25th July 2019	T. Rushby	Initial preliminary run.
Version 0-2	9th October 2019	T. Rushby	Minor updates to text.

# 1 About

This report provides an overview of the data deposited with the UK Data Archive, titled:

Rushby, Thomas W and Anderson, Ben and James, P. A. B. and Bahaj, AbuBakr (Unspecified). Solent Achieving Value from Efficiency (SAVE): randomised control trial household electricity consumption, survey and time-use data 2017-2018. [Data Collection]. Colchester, Essex: UK Data Service.

The LCNF funded Solent Achieving Value from Efficiency (SAVE) project collected a range of data on household electricity demand for the purposes of examining the drivers and practices linked to demand, and to evaluate the impact of a randomised control trial into demand response.

This work was carried out by the Sustainable Energy Research Group<sup>1</sup> in the University of Southampton's Faculty of Engineering and Environment<sup>2</sup>.

The work was funded by the Low Carbon Network Fund (LCNF) through the Solent Achieving Value from Efficiency<sup>3</sup> project and is (c) 2019 the University of Southampton.

This report forms part of the documentation supporting the deposit with UK Data Archive of data collected under the SAVE project.



This report reproduces much of the meta data entered into the UKDS reshare system in support of the submission.

## 1.1 Citation

If you wish to refer to any of the material from this report please cite as:

- Rushby, T., Anderson, B., James, P.A.B. and Bahaj, A.S. (2019) Solent Achieving Value from Efficiency (SAVE): data archive overview, University of Southampton: Southampton, UK.

## 1.2 Circulation

This report is public, to accompany the data release associated with the Low Carbon Network funded (LCNF) Solent Achieving Value from Efficiency (SAVE) project.

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<sup>1</sup><http://www.energy.soton.ac.uk>

<sup>2</sup><http://www.southampton.ac.uk/engineering/index.page>

<sup>3</sup><http://www.energy.soton.ac.uk/save-solent-achieving-value-from-efficiency/>

## 2 Data description (abstract)

The LCNF funded Solent Achieving Value from Efficiency (SAVE) project collected a range of data on household electricity demand for the purposes of examining the drivers and practices linked to demand, and to evaluate the impact of a randomised control trial into demand response. The project initially recruited over 4,000 households in late 2016 but due to attrition the sample size slowly declined. Efforts were made to refresh and re-recruit new households to replace those that had withdrawn.

The SAVE sample is a stratified, random, address-based sample of households recruited from: the County of Hampshire the City of Southampton the City of Portsmouth the Isle of Wight The data comprises: Anonymised household survey completed by study participants; 15-minute electricity consumption measurements; Time-use diaries completed by a sub-sample of households on a number of days during the trial. The data from each source is linked using a unique anonymised household identifier.

## 3 Contributors

### 3.1 Data creators

- Rushby, Thomas W, University of Southampton, (<https://orcid.org/0000-0002-3686-5140>)
- Anderson, Ben, University of Southampton, (<https://orcid.org/0000-0003-2092-4406>)
- James, P. A. B., University of Southampton, (<https://orcid.org/0000-0002-2694-7054>)
- Bahaj, AbuBakr, University of Southampton, (<https://orcid.org/0000-0002-0043-6045>)

### 3.2 Contributors:

- BMG Research Limited
- Navetas (Trust Power)

### 3.3 Sponsors

The work was funded by the Low Carbon Network Fund (LCNF) through the Solent Achieving Value from Efficiency<sup>4</sup> project and is (c) 2019 University of Southampton.

## 4 Project title

Solent Achieving Value through Efficiency (SAVE)

### 4.1 Topic classification

Housing and land use

Science and technology

Demography (population, vital statistics and censuses)

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<sup>4</sup><http://www.energy.soton.ac.uk/save-solent-achieving-value-from-efficiency/>

## 4.2 Social stratification and groupings

Society and culture

## 4.3 Keywords

electrical energy consumption, households, energy conservation, energy supply, demand response, energy efficiency, energy demand

## 4.4 Project dates:

From: 1 January 2016 To: 31 January 2019

## 4.5 Coverage and methodology

Temporal coverage:

From: 1 January 2017 To: 31 December 2018

Collection period:

Date from: 1 October 2016 Date to: 31 January 2019

## 4.6 Geographical area

Geographical coverage: Southampton, Portsmouth, Hampshire and the Isle of Wight

Country: England

Spatial unit: Administrative > Local Authority Districts

Census Geography > Super Output Areas (Lower Layer)

Administrative > Unitary Authorities (England)

Electoral > Wards (Electoral)

## 4.7 Observation unit

Individual, Family: Household family, Household, Time unit

## 4.8 Kind of data:

Numeric, Text, Other

## 4.9 Type of data

Experimental data , Other surveys, Time series

## 4.10 Resource language

English

# 5 Data collection method

## 5.1 Recruitment

To generate a representative random sample, households were selected for recruitment via stratified random address selection. UK Census Output Areas (COAs) were stratified by Index of Multiple Deprivation 2015 and Rural Urban Classification 2011 and a total of 1,165 COAs were then randomly selected from each stratum proportionate to the number of households accounted for by each. In each of the selected COAs up to 50 addresses were then randomly selected from the Postcode Address File (PAF) to give an initial sample of 58,233 households.

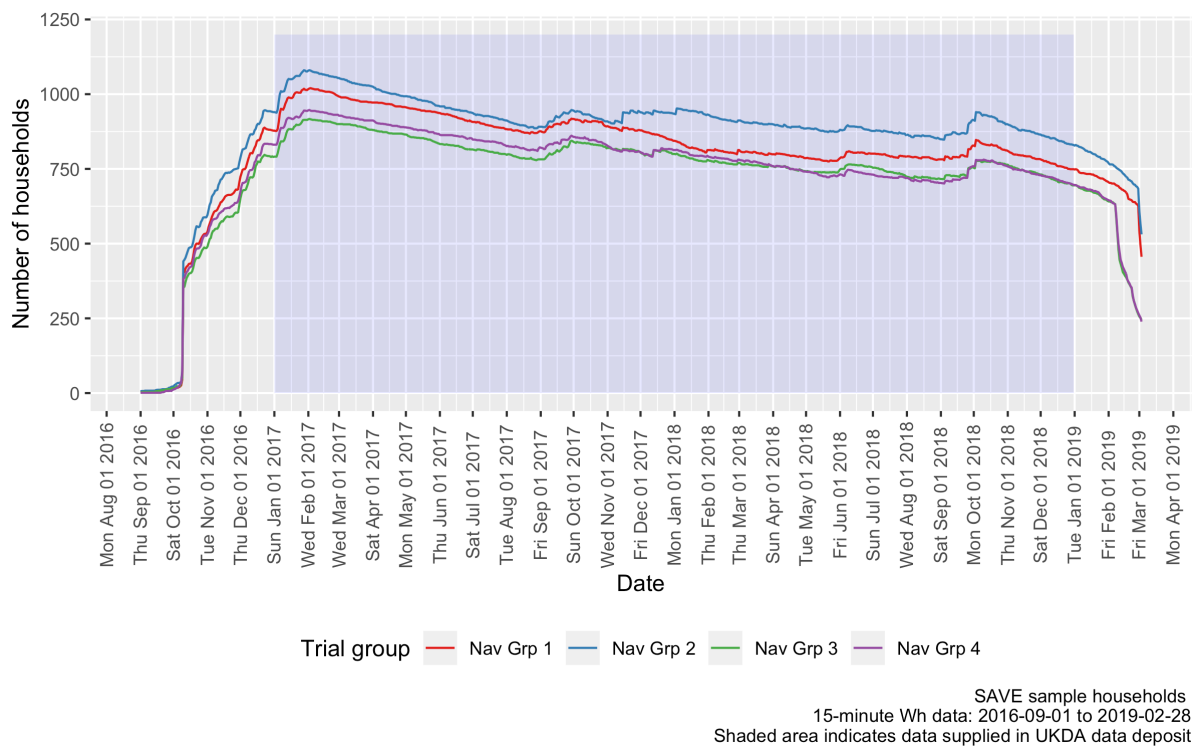
This sample was screened against commercially available databases (e.g. Acorn) to remove multi-occupancy households, flats/tower blocks and student households where possible. Each of the resulting 42,470 households was then randomly allocated to one of the four sample groups, and assigned a unique anonymised household ID. The selected households were sent an introductory letter informing them of the background to the study, explaining that their household has been randomly selected for participation, and providing telephone and email contact details. No additional publicity or appeal for volunteers was conducted to prevent contamination by self-selected volunteers.

Each household was then visited by one of the subcontractor's field team, who described the nature of the study, outlined the incentives for participation (£30 on completion of recruitment and additional £5 for each of the three planned follow-up surveys) and invited them to participate in the study. In line with current evidence-based best-practice, addresses were visited five times before a replacement was drawn from the issued sample. It should be noted that where a flat was sampled, it was included where it was possible to undertake an installation of the monitoring equipment.

## 5.2 Electricity consumption monitoring

This monitoring equipment consisted of a battery-powered meter clamp and transmitter fitted around the live supply in the meter box together with a separate mains-powered gateway in the dwelling. The latter uploads the consumption data to the project's secure data store via the household's broadband router (where possible) or via a cellular SIM card-enabled hub.

Figure 1 shows the number of monitoring systems contributing (any) data on any given day during the project.



**Figure 1:** SAVE 15-minute consumption: number of households with data by trial group

### 5.3 Household attributes

As the installation process was expected to take up to 30 minutes, householders were then re-contacted either by email or telephone and invited to complete an initial recruitment survey via Computer Aided Web Interview (CAWI) or Computer Aided Telephone Interview (CATI). The average length of the CATI survey was 33 minutes covering dwelling attributes, occupant characteristics and household behaviours. In addition, to ensure basic household characteristics were current, yearly update surveys were conducted with participants.

### 5.4 Time Use Diaries

Time-use diaries (CATI) were implemented on sub-samples of the trial groups as part of the trial evaluation methodology during each trial period.

## 6 Access and Administration

### 6.1 Data sourcing, processing and preparation

Full data processing and cleaning information is given in the documentation. In summary, the archived household electricity consumption data was derived from the original Navetas (Trust Power) Loop data and is made available as a series of compressed .csv files. Refer to *15-minute electricity consumption documentation* for further details. The household survey and time-use diary data was derived from several original project data files and are made available as a number of .csv files which can be linked to the household electricity consumption data via an anonymised ID. For further details, refer to *household survey data documentation* for further details.



## 6.2 Notes on access

The Data Collection is available under the UK Data Service End User License Agreement (Safeguarded data)<sup>5</sup> for download to users registered with the UK Data Service. The data may be used for any commercial or non-commercial research purpose provided that no attempt is made to identify data subjects.

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<sup>5</sup><https://www.ukdataservice.ac.uk/get-data/data-access-policy/safeguarded-data.aspx>