

SAVE Close Down Event

Customer Model

June 2019



Scottish & Southern
Electricity Networks

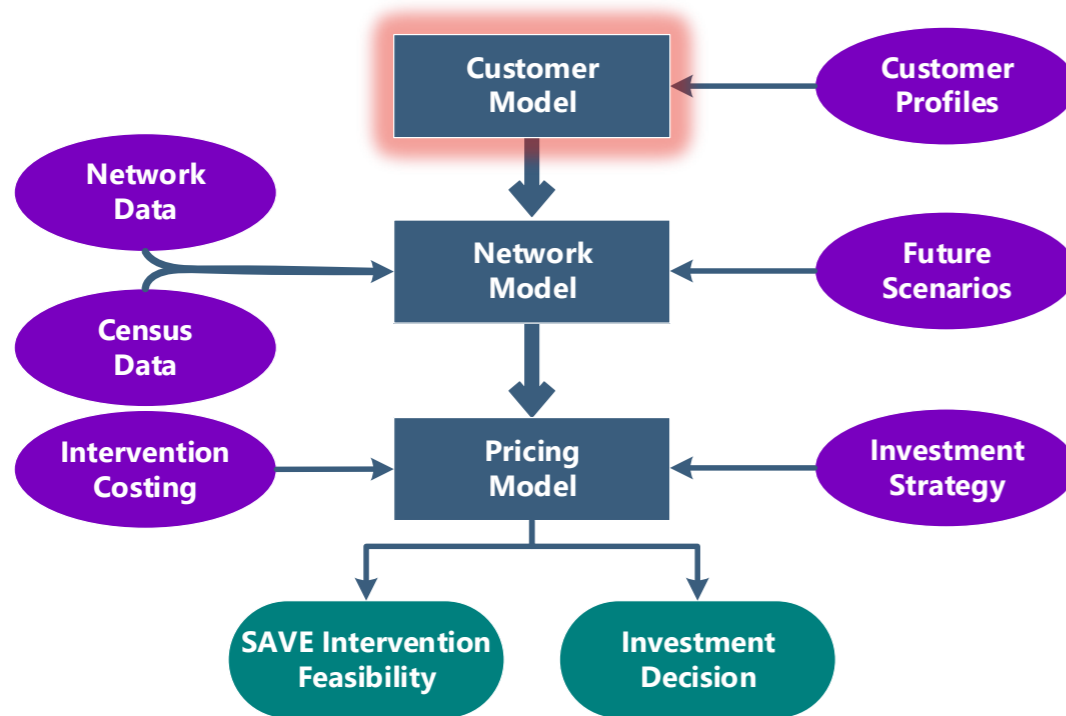
Customer Model

Content

- Project objectives
- Customer Model inputs: SAVE data streams
- Customer Typology
- Customer Model outputs:
 - 'Baseline' demand profiles
 - Intervention impact profiles
- Summary

Customer Model

Part of the Network Investment Tool



The Customer Model provides customer load profiles to the Network Model

Customer Model

Project objectives

- Analysis of the household characteristics that capture diversity in load and treatment effects in trial groups;
- Ability to produce 'baseline' half-hourly electricity consumption profiles at the individual household level;
- Produce similar profiles for trial intervention groups taking account of intervention trial effects;
- Produce similar profiles for designated Census areas in the Solent region;
- Estimate the change in electricity consumption at specific times of day that can be attributed to the SAVE intervention trials;

Customer Model

Model input data

		2017				2018				
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Treatment Group	Control TG1									
	Treatment TG2									
	Treatment TG3									
	Treatment TG4									
		TP1			TP2				TP3	
		Trial Periods								

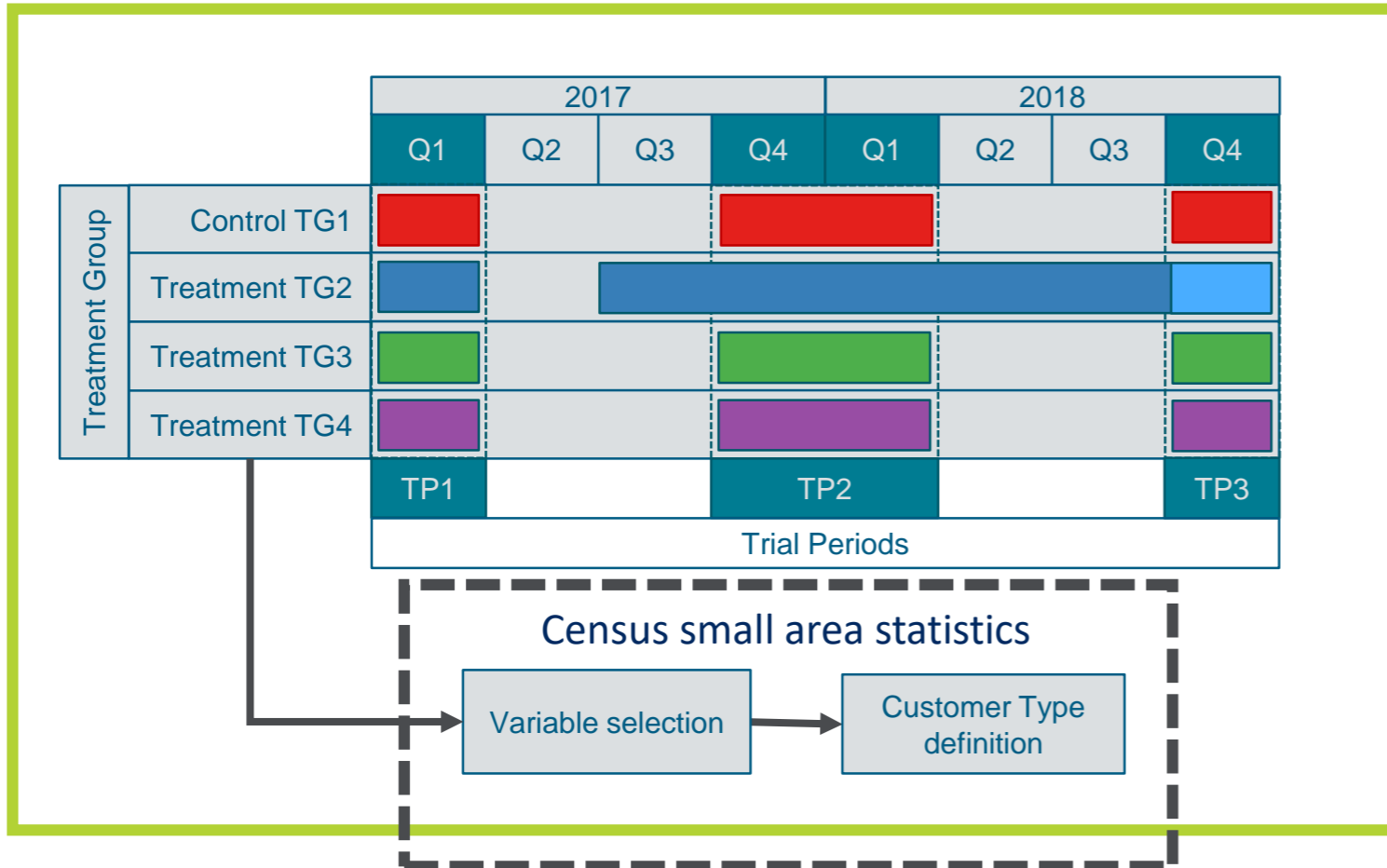
Monitored Electricity demand (Wh/15-mins)
4,000 households over 2 years

Household surveys:

- Data collected at recruitment
- Socio-demographic characteristics
- Dwelling characteristics
- Appliance ownership

Customer Model

Customer Typology

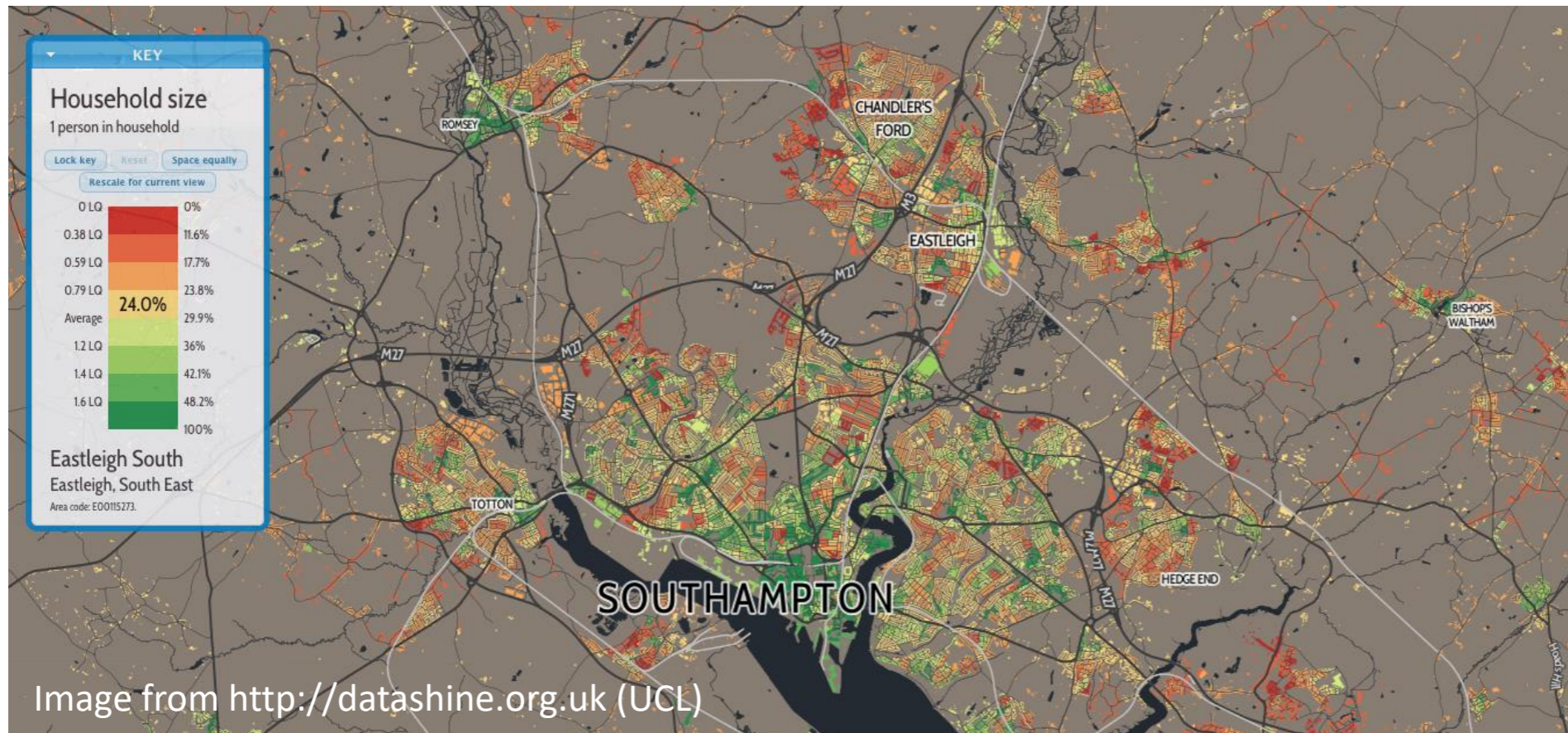


Customer types:

- Developed using data from all groups prior to interventions;
- Defined by household characteristics available in Census small area statistics;
- 3 characteristics selected that best predict load during peak hours;
- Characteristics vary across small areas providing a different mix of customer types for each small area.

Customer Model

Customer Typology



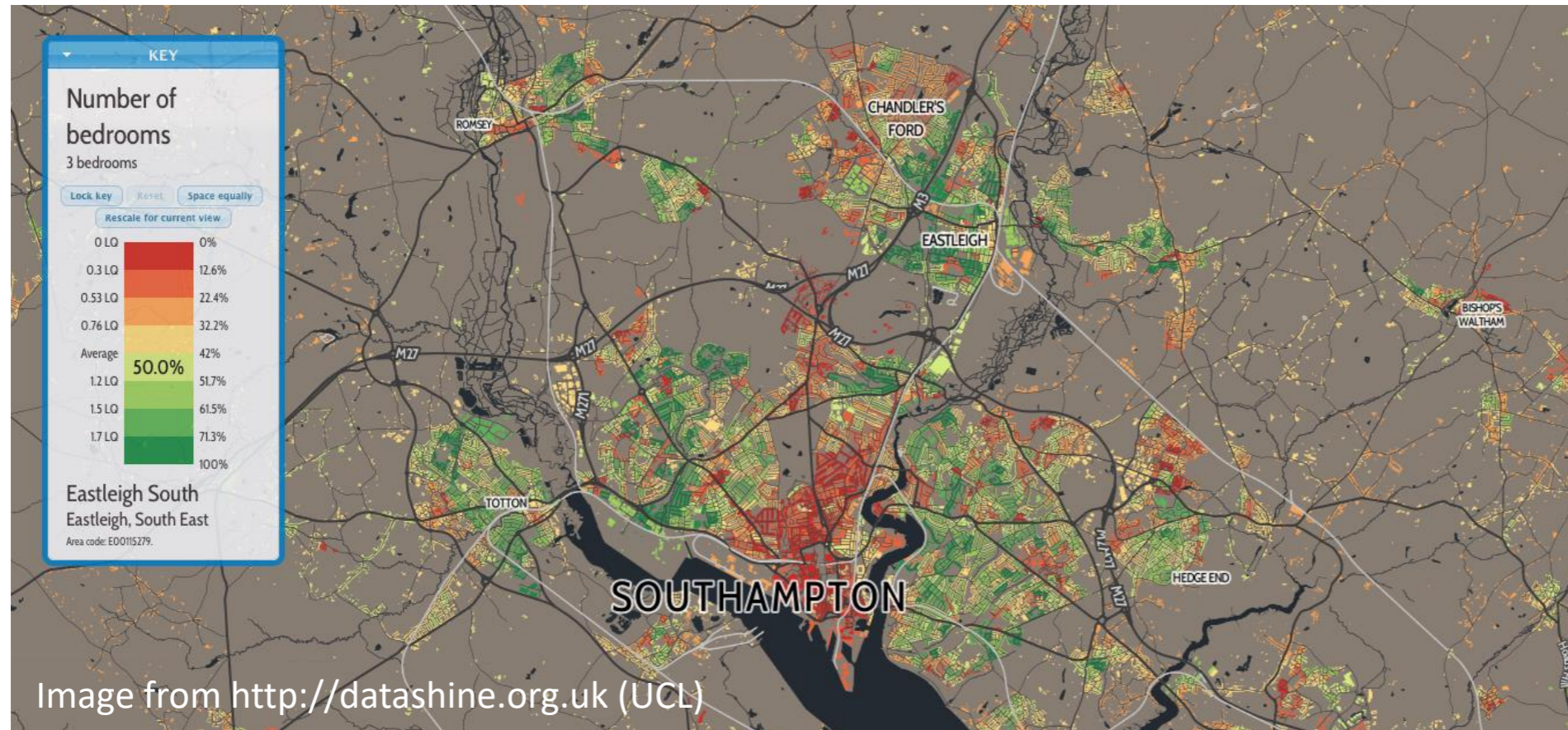
HOUSEHOLD SIZE (PERSONS)

4 CATEGORIES:

- 1 person
- 2 person
- 3 person
- 4+ person

Customer Model

Customer Typology



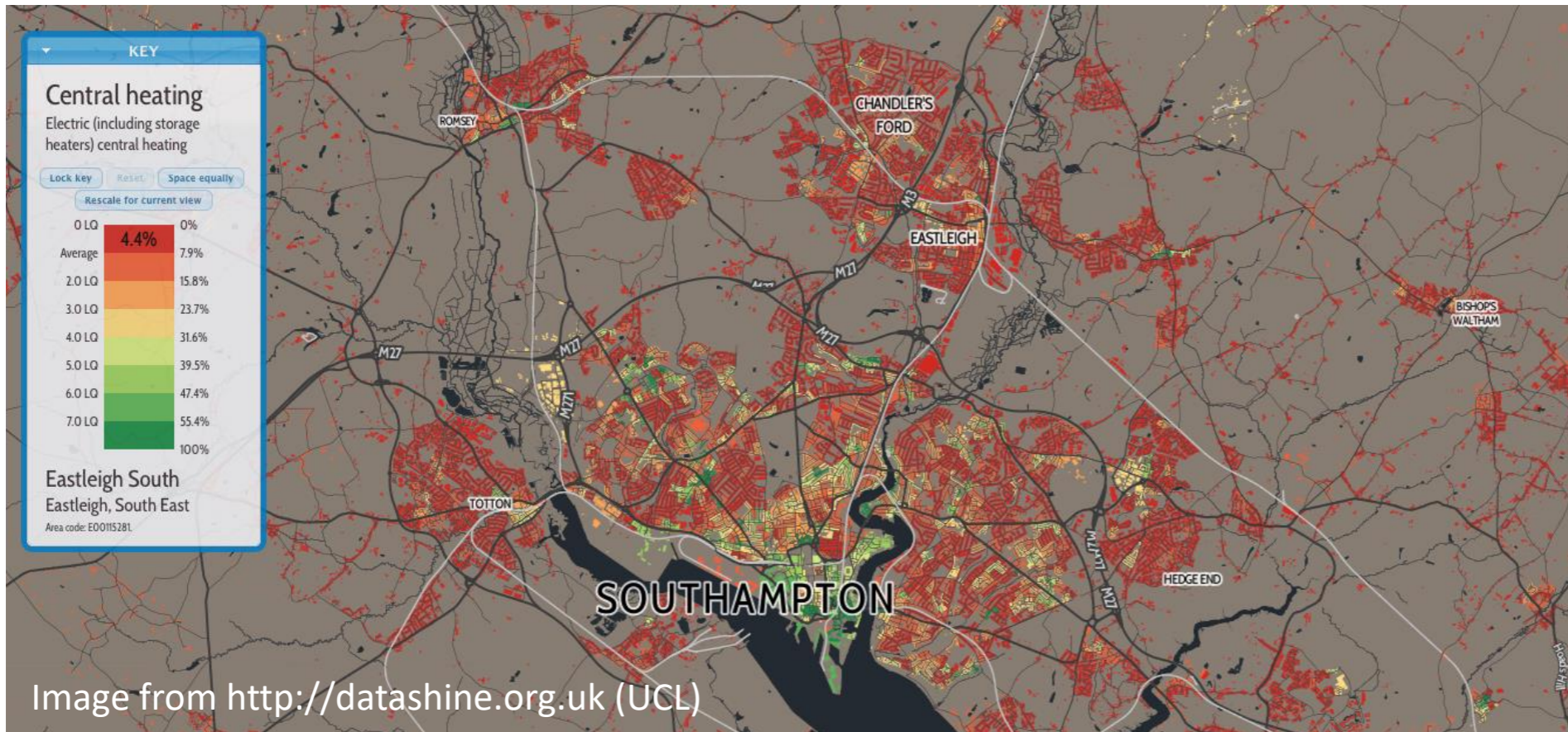
DWELLING SIZE (BEDROOMS)

4 CATEGORIES:

- 0-1 bedrooms
- 2 bedrooms
- 3 bedrooms
- 4+ bedrooms

Customer Model

Customer Typology



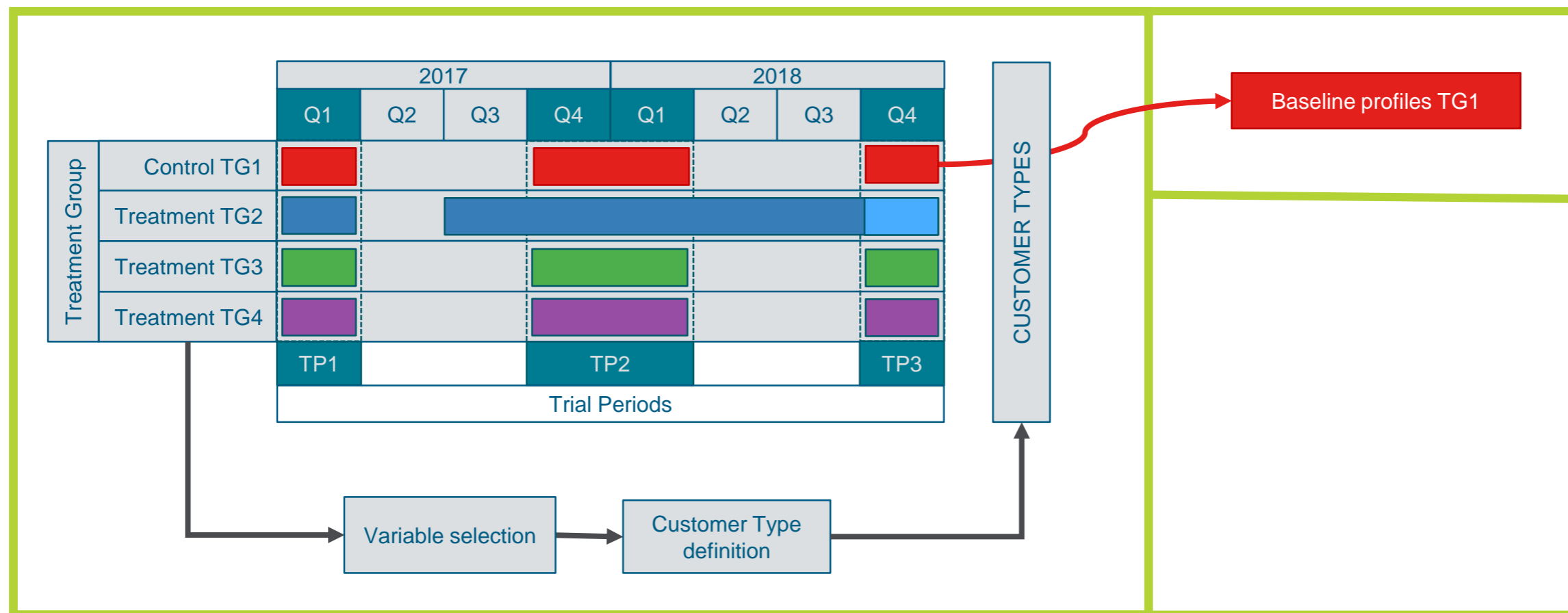
PRIMARY HEAT SOURCE

3 CATEGORIES:

- GAS
- ELECTRIC
- OTHER

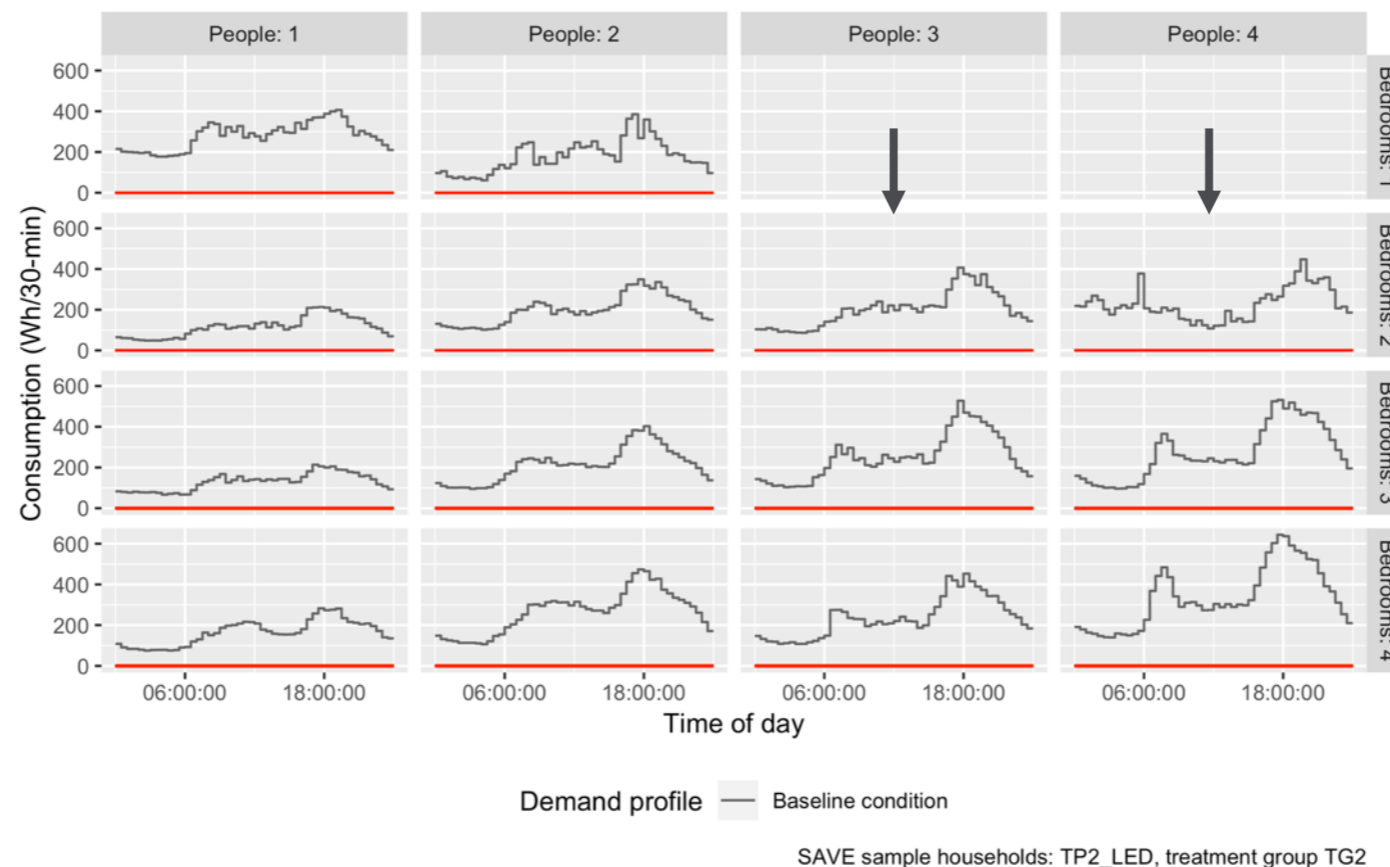
Customer Model

Model outputs – ‘baseline profiles’



Customer Model

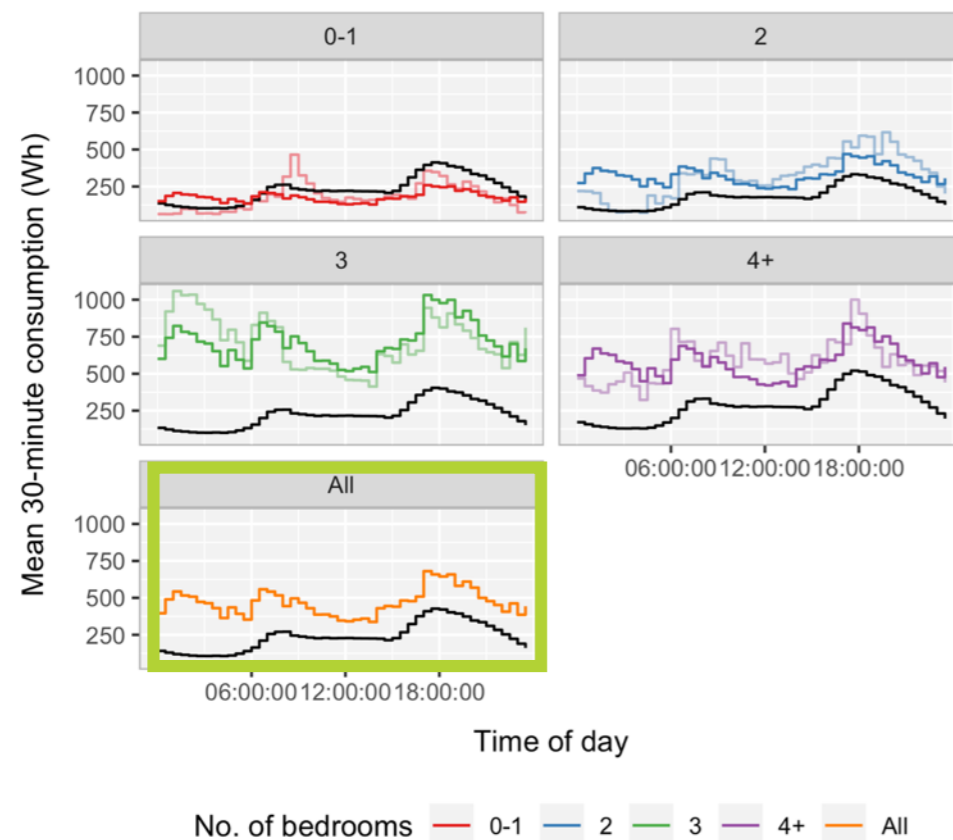
Model outputs – ‘baseline’ demand profiles



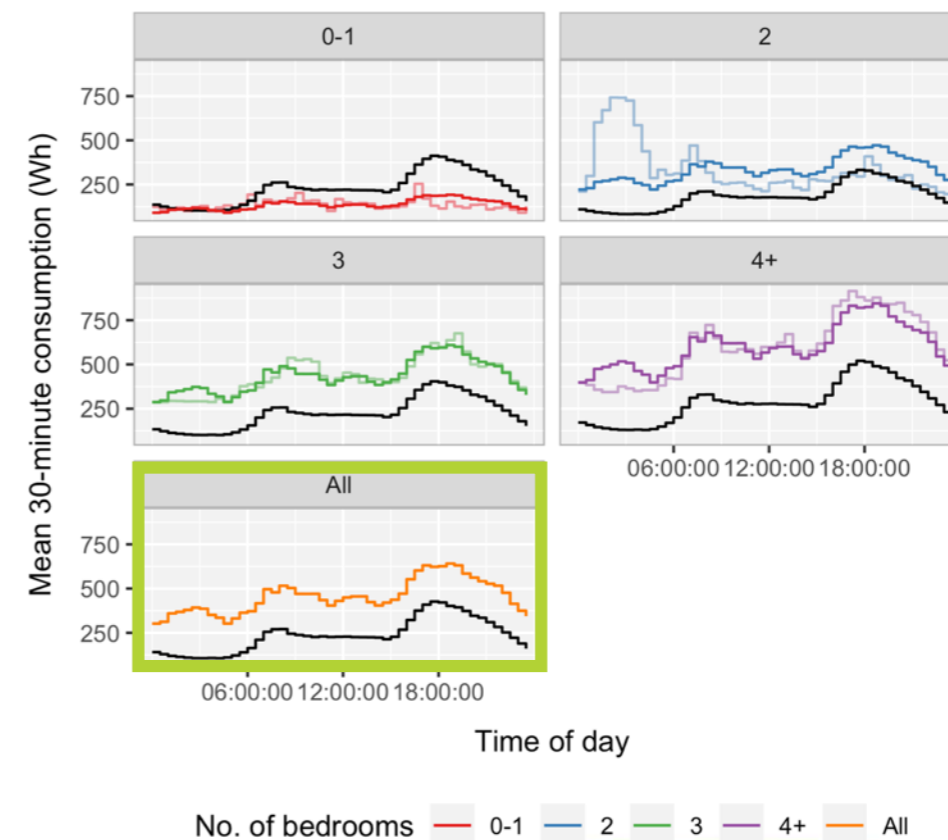
Customer Model

Model outputs – ‘baseline’ demand profiles

Electrically-heated households

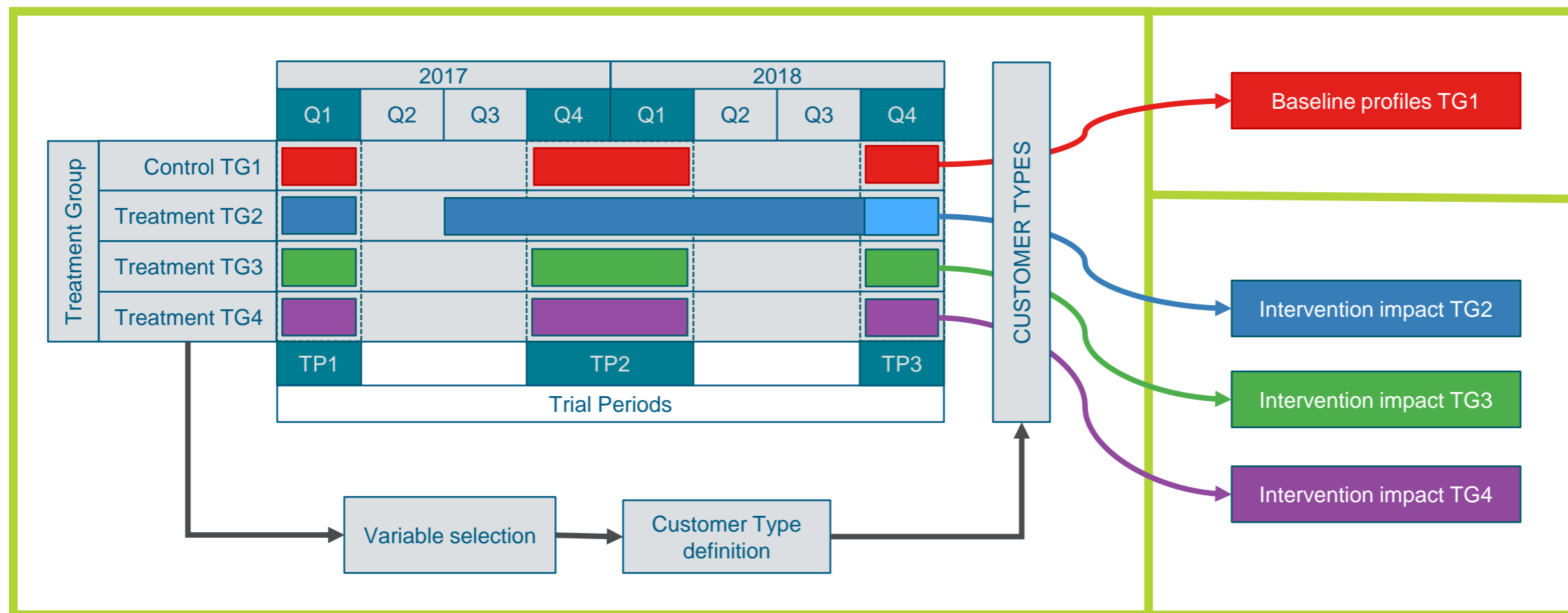


Other non-gas heated households



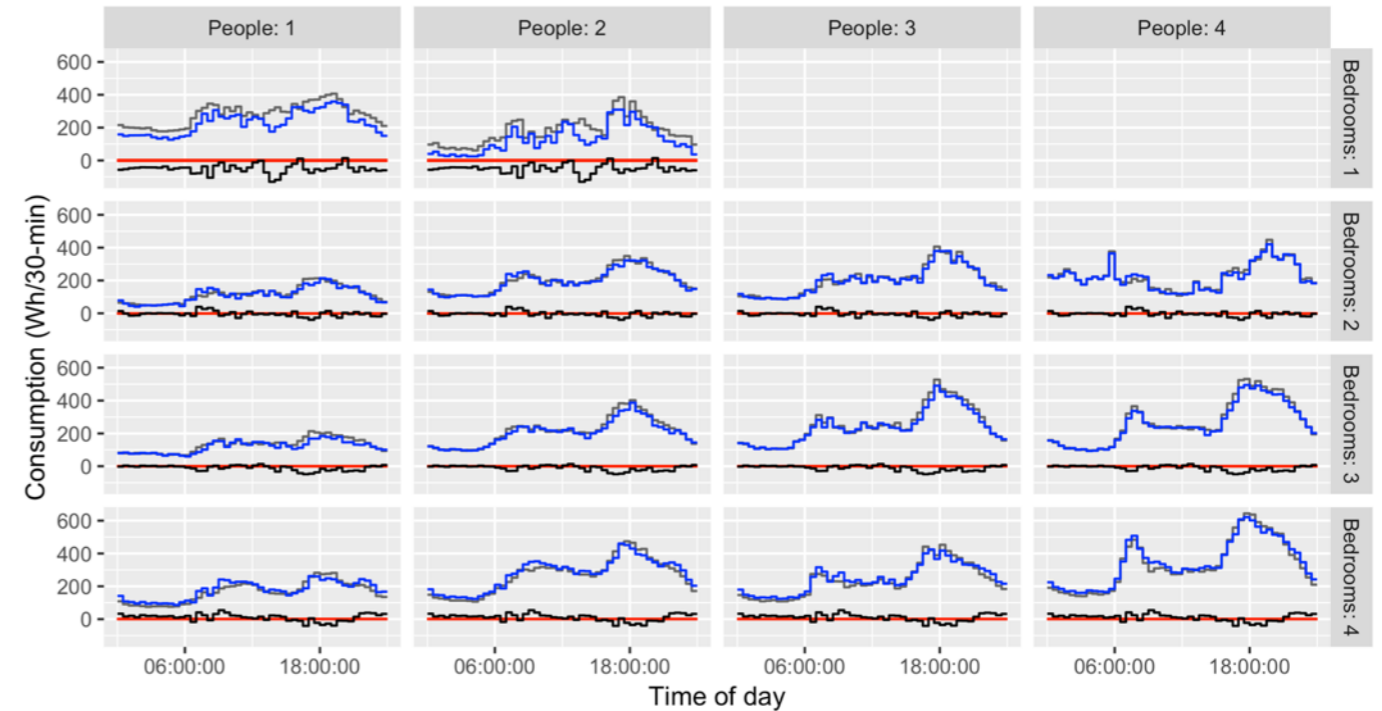
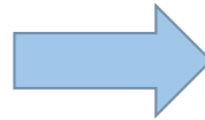
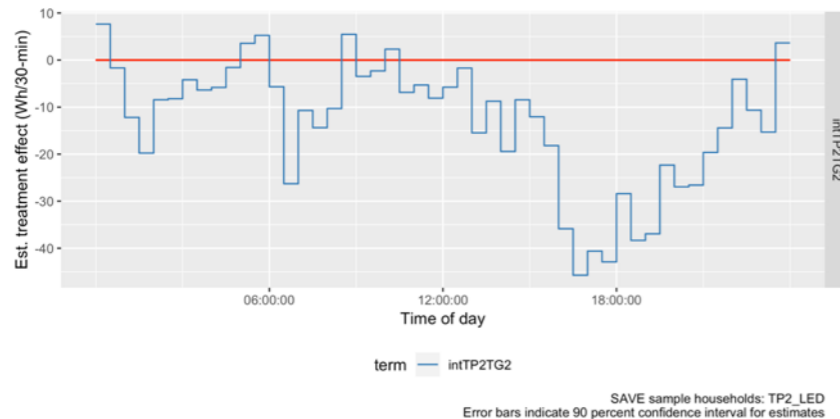
Customer Model

Model outputs – intervention profiles



Customer Model

Model outputs – intervention profiles

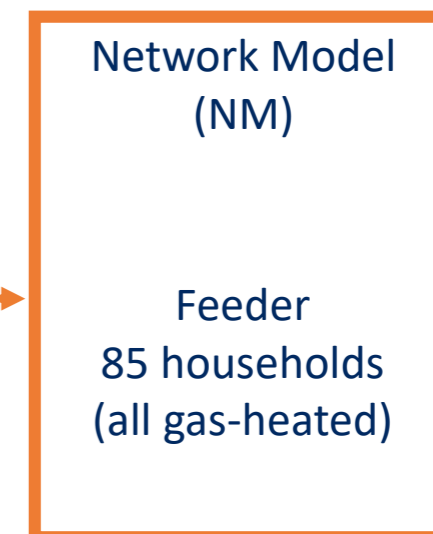
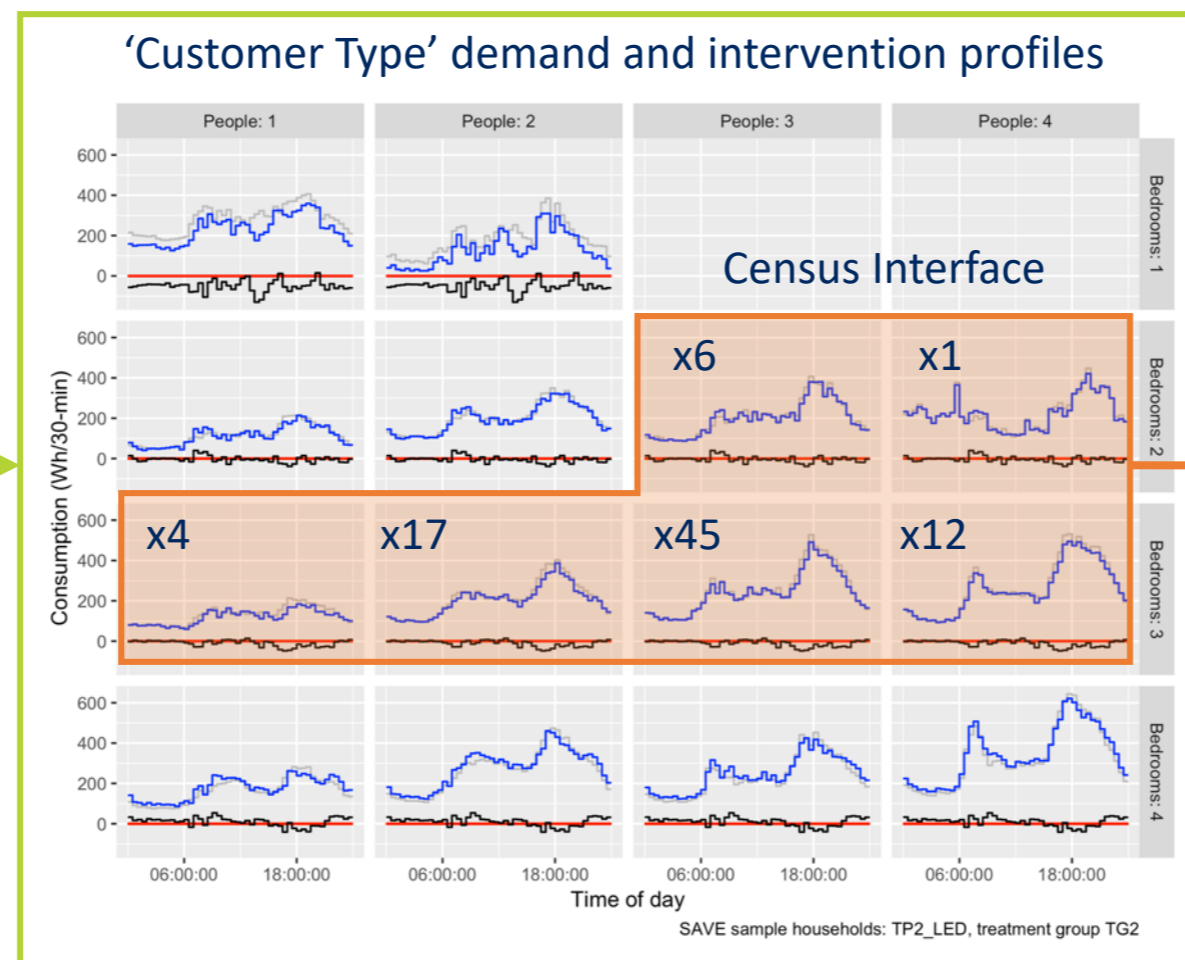
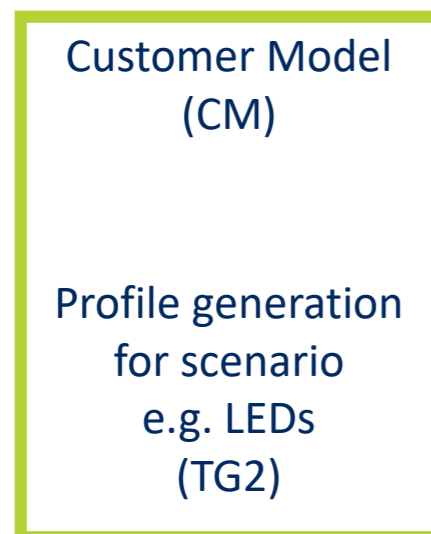


Demand profile — Intervention impact — Intervention condition — Baseline condition

SAVE sample households: TP2_LED, treatment group TG2

Customer Model

Model interaction



Customer Model

Summary

The Customer Model provides:

- A Customer Typology ...
 - Representing greater diversity of demand, and
 - aligned to Census data to mapping of profiles to Census output areas;
- ‘Baseline’ half-hourly electricity consumption profiles
- Intervention impact profiles providing estimated change in electricity consumption

Customer Model

Thank you for listening.
t.w.rushby@soton.ac.uk
@tom_rushby
#SAVEClosedown