

## Implementation of demand-side management technology in domestic properties

### Glasgow

### Energy management and ICT

The objective of this solution was to explore how domestic flats that utilise electricity storage as a heating source for space and water requirements, can benefit from smart controls that optimise the internal temperature against variables of market set price and charge period time intervals.

This solution included the installation of a domestic battery to explore options for charging/discharging schedules related to scenarios including either available electricity tariffs or renewable generation from solar PV assets owned by Wheatley Group that otherwise spill to the network as export.

#### DOMESTIC PROPRIETY



#### Smart Management System

#### Grid



### How does it work?

The electric heating system is a legacy of nuclear power and the electric heaters has traditionally charged overnight at low cost. This led to overheating at night, while any use of heat in the evening (traditionally the time where most heating was needed) was a high cost. The housing owner, Wheatley Group, installed smart meters in every single apartment giving the residents increased control. At the same time, the smart system ensures the heating system is charged when the tariffs are low.

This solution has worked to alleviate fuel poverty by removing the need for 'secondary heating' (the use of expensive stand-alone heaters at peak tariff rates) and also avoiding 'wasted' electricity purchasing by being able to better control the internal temperature based on the consumer preference. It has also had qualitative benefits by increasing comfort for residents, in relation to being able to set time and temperature control (which previously was not an option) in the Drygate high rise block in Glasgow. It has done so through making an existing electric storage heating much smarter in each individual apartment and for the complex overall.

### Lead partner:



## FACTSHEET G9

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### Impacts

- The solution has lowered the cost for residents vis-à-vis the traditional system.
- Surveys prove higher comfort for residents.
- The technology has been shown to reduce energy use by up to 30%
- Prior to the 2022 the technology cut bills by up to £300 per year.
- Collective control of multiple domestic storage heaters, with scalable option to control many thousand simultaneously, gives the ability to manage and balance the grid through interaction; in other words 'demand side management'.

*"With the old overnight storage heating tariff, I used to put my washing on during the night because it was cheaper. Sometimes I'd put a stew on to cook slowly too.*

*Now I have more control over when I use my electricity. I have heating and hot water when I want it."*

**- Liz Macinarlin, resident**



### Upscaling

The solution is being upscaled to at least 10,500 households across Glasgow and 2 other local authority areas in Scotland (Edinburgh and Dumfries) through ambitious investments from the Wheatley Group and partners, there is a £10.5 million programme planned up to March 2024.

### Replication potential

This solution is especially relevant for cities / buildings using Electric Storage Heating already. The solution itself has proven worth the investment both for the Wheatley Group and the residents living in the buildings.

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