



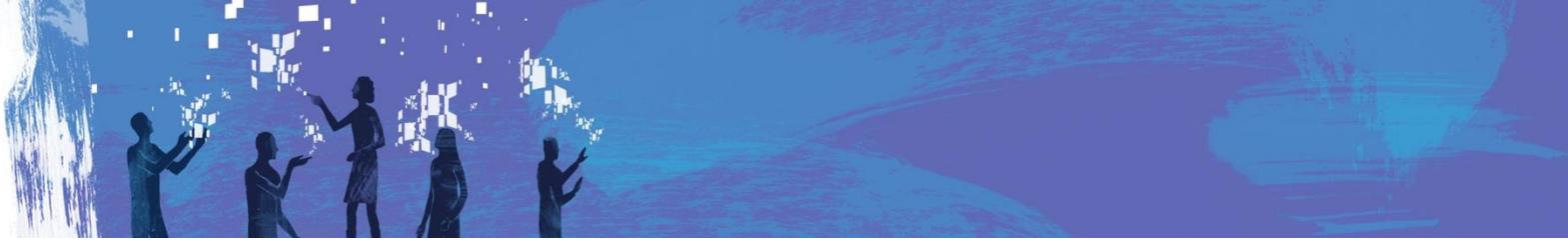
## Using smart energy and sensor data for energy advice **the Smart and Snug project**



Fuel Poverty Research Network

Bristol

17/05/18



“70% of our work  
is about giving  
people advice on  
how to use their  
heating controls”

But people don't  
implement the  
advice ...

Not very  
interested...  
worried what might  
happen...  
don't believe you..



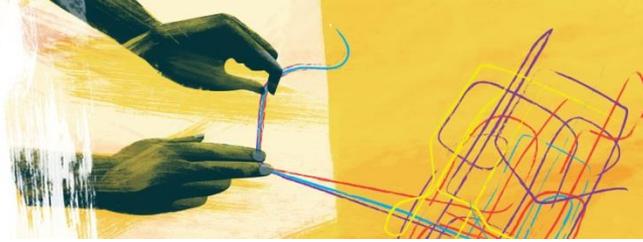
# Effective advice..



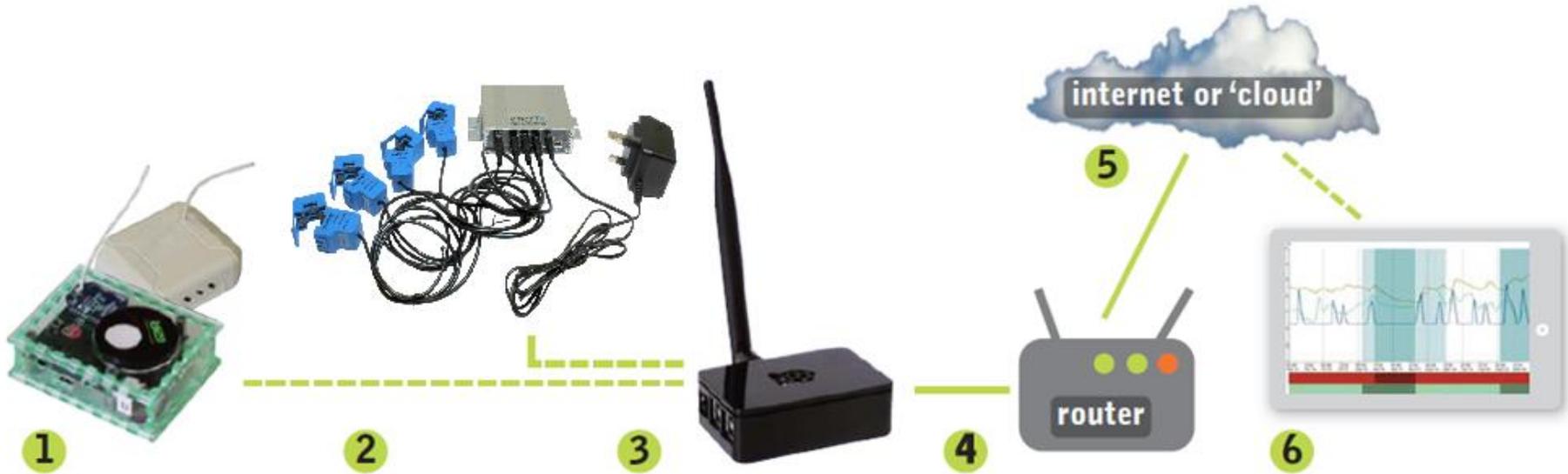
Now you're talking...

- Feedback on effects of behaviour reinforces it
- Where feedback is specific it is more effective – move beyond rules of thumb
- Energy literacy helps - where people know the relationship between behaviour and energy consumption
- Where people can see when things are anomalous
- Where people can see the relationship between their energy consumption and the things that matter to them - achieving a health home, comfort and the costs of being comfortable

Means...sensing, analytics and engaging visualisation of information



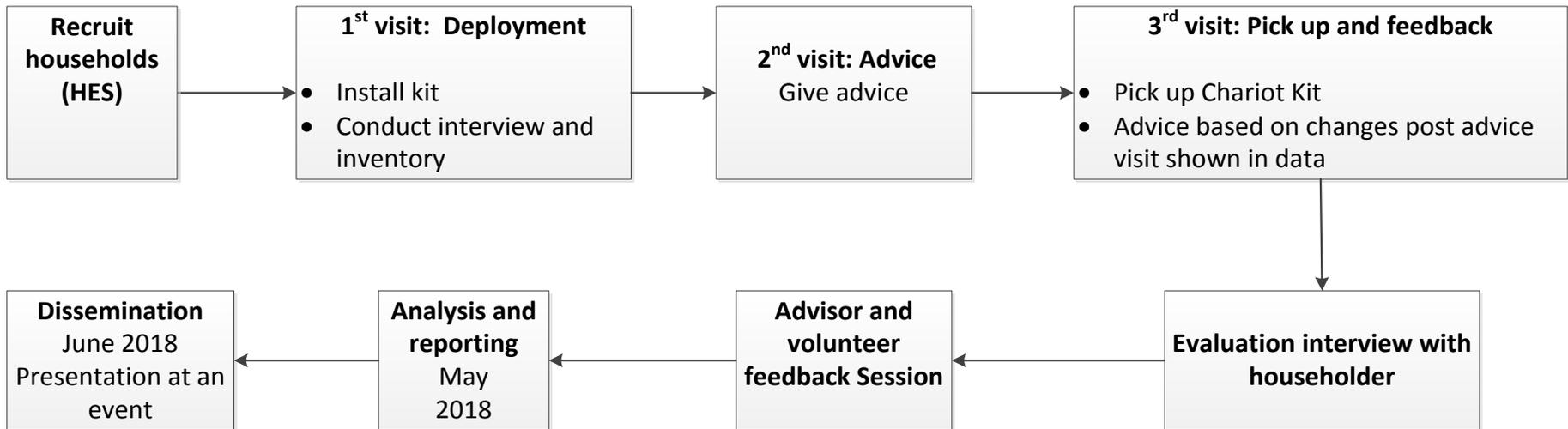
# Our sensing kit



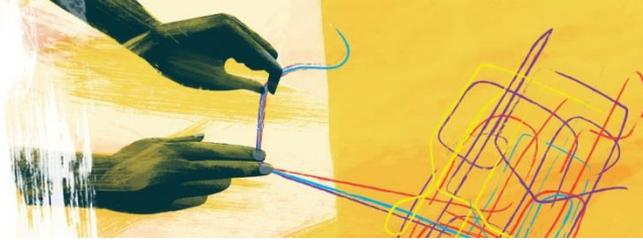


## Smart 'n' Snug aims

1. To explore how smart temperature, humidity and energy data can be used in energy advice targeted at vulnerable households
  2. To test a smart safeguarding intervention based on “safe” temperatures
  3. To explore householder attitudes and behaviours in response to smart advice and the prospect of demand side management
- 14 households
  - All elderly and living in the Somerset area
  - All heating their homes with Night Storage Heaters

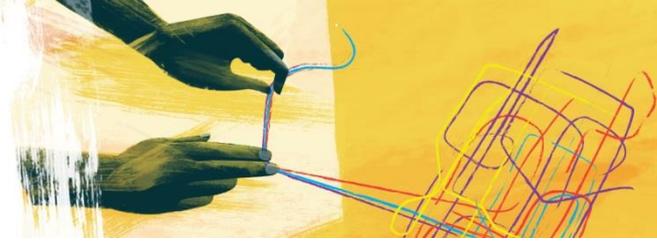


1. Visit 1 – deployment of the kit and collection of information about heating settings and equipment
2. Visit 2 - advice visit – using the data collected from deploying kit conduct advice visit
3. Visit 3 - collection of kit and report on any changes shown in data following advice visit



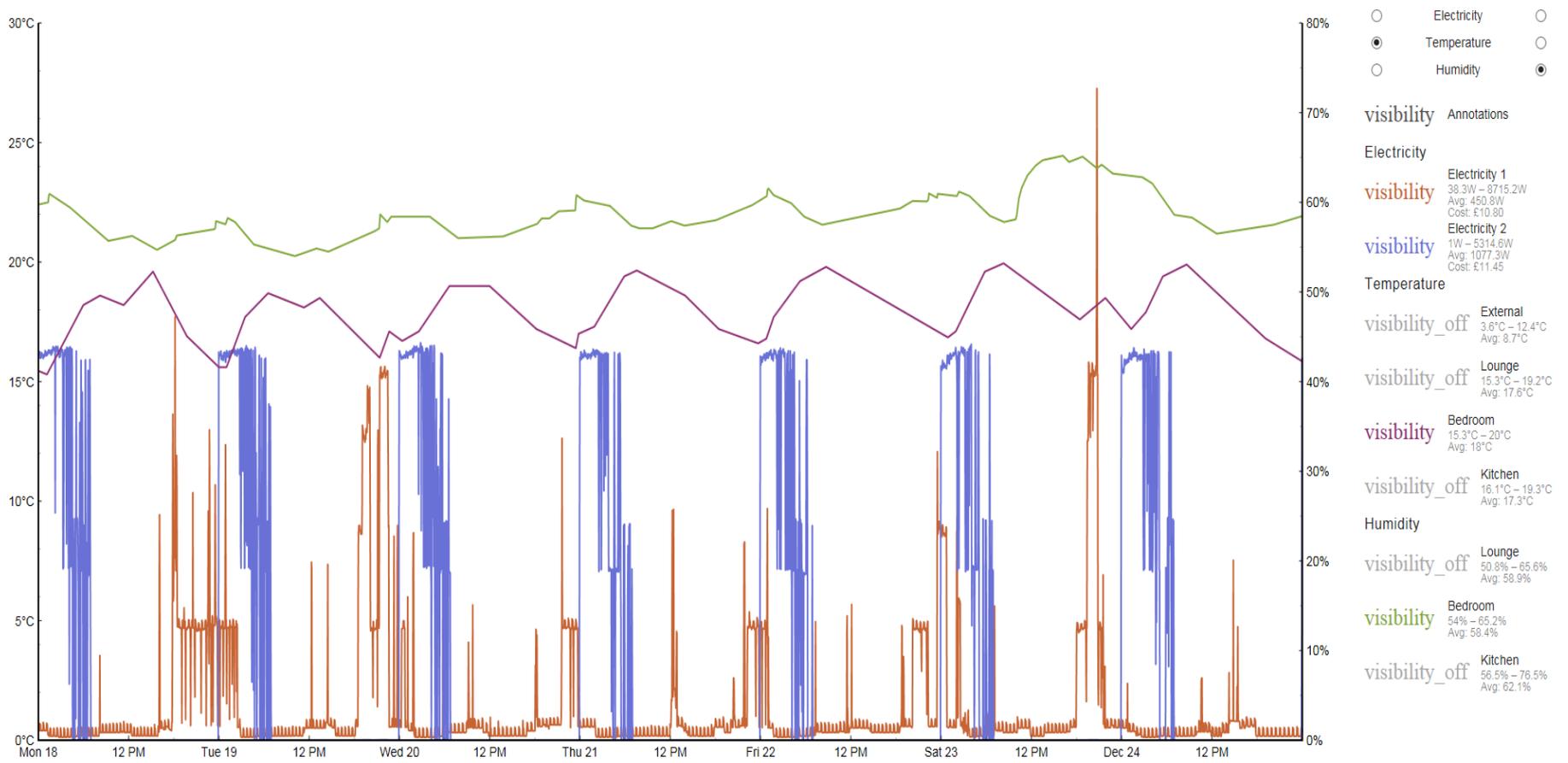
Realtime data!

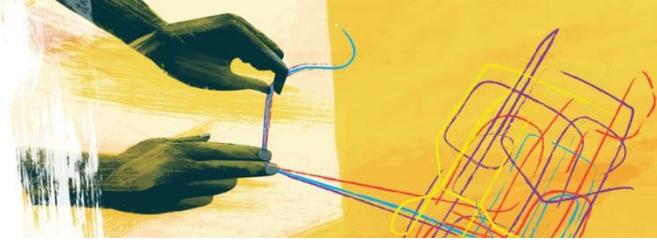




# Interpreting the data

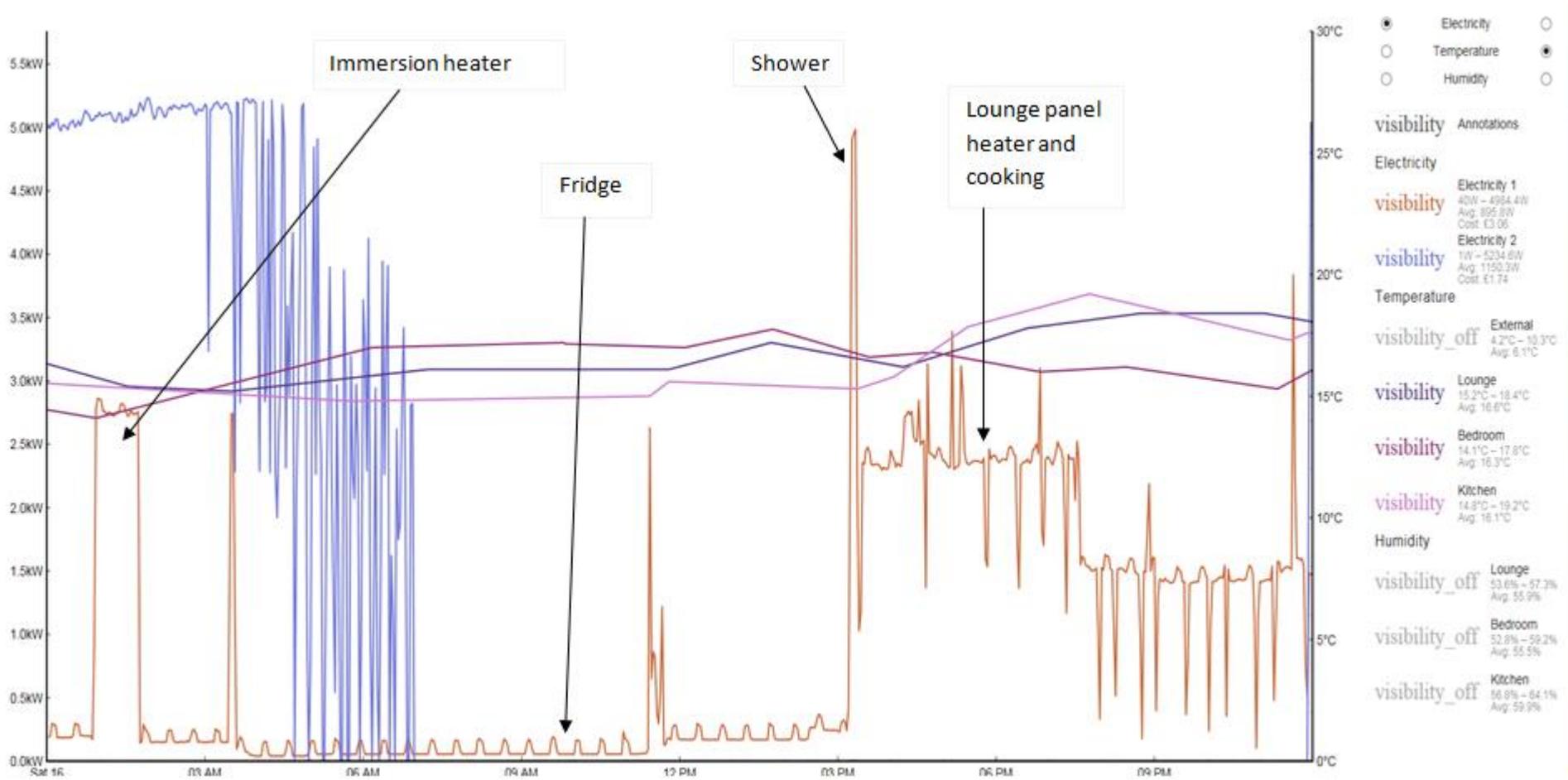
- What are the heating times and temperature range? Do these match occupancy?
- Is humidity over 70% (damp and mould)?

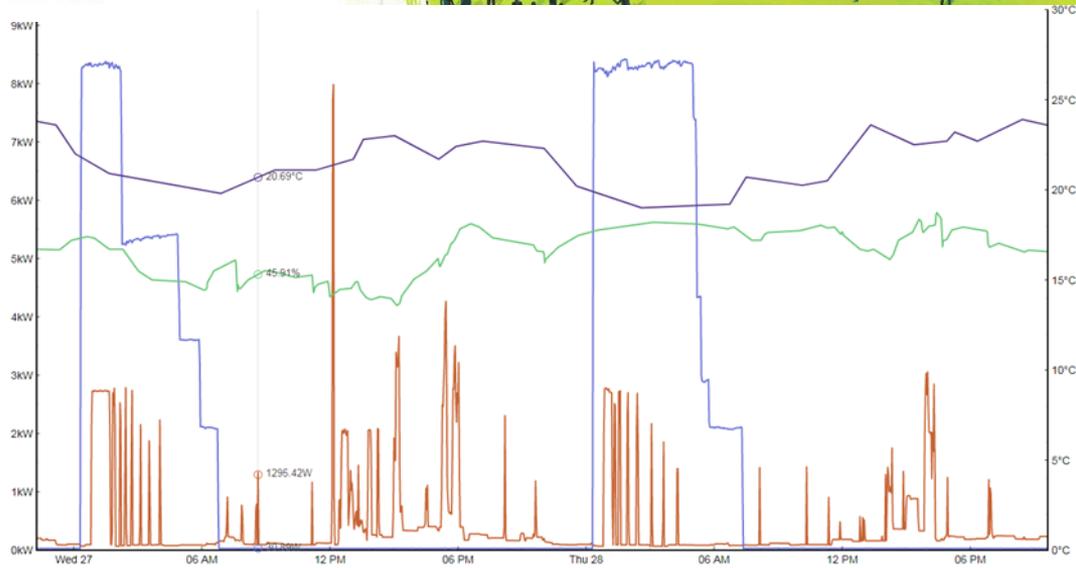




# Interpreting the data

- Do heating , temperature and humidity use fit together?
- Does electricity use indicate anything about appliances or their usage?
- Does temperature imply anything about the energy performance of the property?



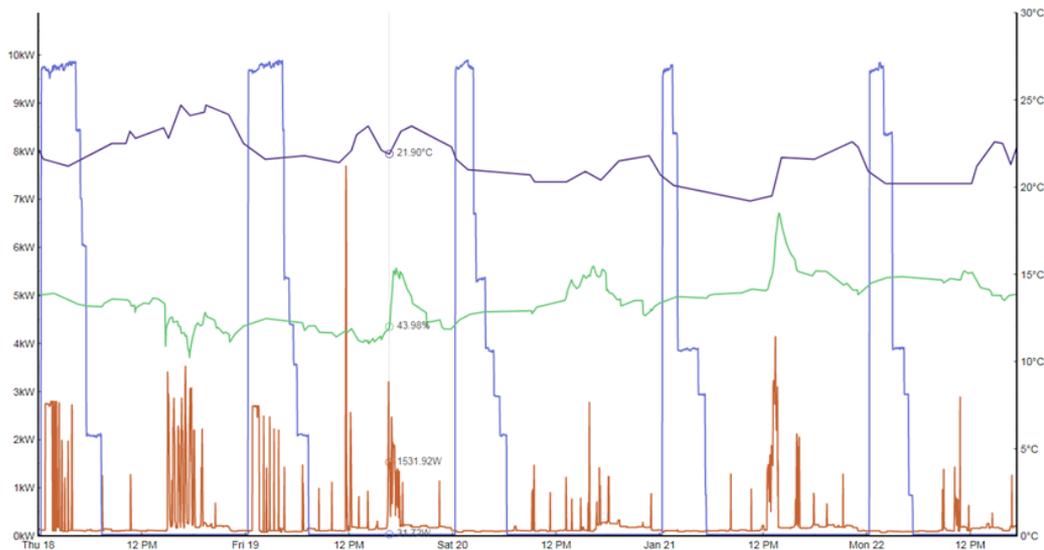


### Pre-advice intervention

- Overheated living room
- Immersion heater on for 4 hours every night

### Advice

- Charge the storage heaters less
- Charge the immersion less

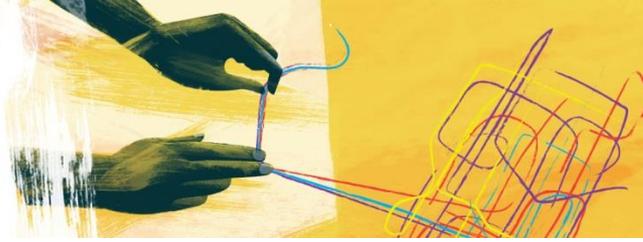


### Post-advice intervention

- Less charge to storage heaters
- Immersion charge to 1 day/wk

### Result

- Living room at lower safe temp
- Heating and water heating savings estimated at £53/month

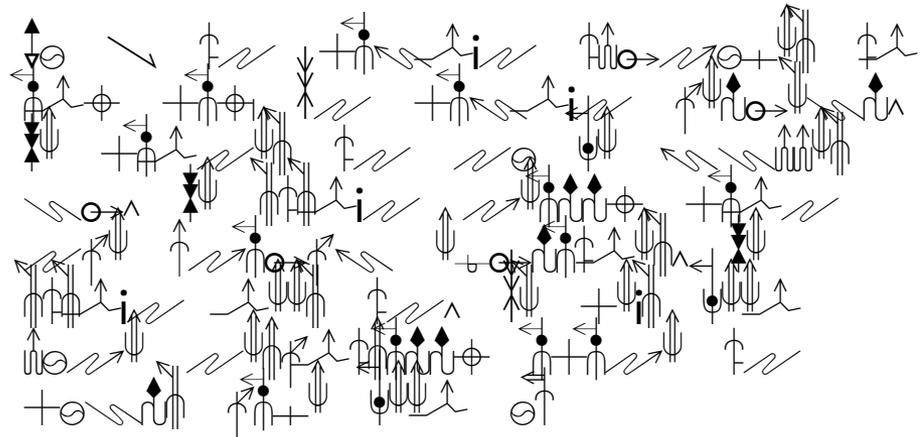


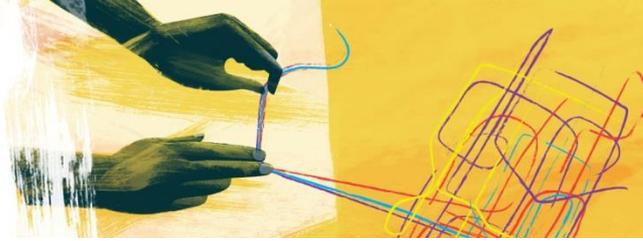
## From the horses mouth

“It was helpful. The graphs were very interesting. I could "see" the shower and the kitchen "utensils". But there were some energy uses that "we couldn't work out". It was good to connect the graphs to energy use and the advice was more interesting and engaging”

“The graphs showed how things were heating up through the night unnecessarily. Been able to save some money”

Re text alerts: **I don't think particularly helpful. I'm not going to do anything different**





## Some early conclusions

- Diagnosis of problems and solutions is enabled by smart monitoring – importantly safe solutions can be suggested
- Feedback from advisors suggests that the data did improve advice “stickability”
- Data did boost energy literacy particularly for heating and hot water costs
- The data is complex and needs interpretation from an expert – we are some way from a monitoring solution that a non-expert householder can use by themselves with the same effectiveness
- Alerts and alarms to be handled carefully - information overload and habituation..



Thank you

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