

Social Science Interim Report

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The first interim report from DEI's social science team contributes a series of initial observations into current electricity demand and the potential flexibility of demand going forward. These findings are drawn from early analysis of the data generated in face to face visits to customers which included semi structured interviews and energy tours of SME and domestic customer's properties. This Briefing Note provides high level summary of key messages from the interim report.

Electrical intensity of practices/activities/ load types.

DEI asked customers about which parts of their everyday lives are most electrically intensive. Laundry, bathing and personal cosmetic practices were perceived by customers to be most electricity intensive domestic loads. Showering and tumble drying in particular are identified by domestic customers as the most intensive loads, with hair straighteners, hair dryers and irons also identified as consuming more power than others. Many customers found the in-home display units helpful in developing more detailed and more accurate understanding of which appliances are most energy intensive. In addition, the qualitative data suggests that business specific loads can be spikier than other loads. That is, they can be intensive but intermittent.

Factors shaping electricity use

The data suggests that everyday practices which consume power (such as showering cooking, laundry) are most heavily structured by material circumstances, lay knowledge about managing the home budget and by temporal structures like shifts, school days, TV schedules etc. This is to be contrasted with attitudes and personal commitments to environment, society or the community. This appears to be true of SMEs and households.

We also found that many households in the study were 'in transition', that is, they were in temporary situations with family members living together in informal, temporary or intermittent ways which impacted practices such as entertainment, cooking and bathing. Not only do the temporary arrangements change how practices are conducted, they also mean that customers may benefit from being able to switch between propositions/tariffs more frequently than is currently understood.

Factors causing energy use/practice to change over time.

The analysis suggests that macro-level structural trends are important factors influencing how practices change. However, cultivating trust and knowledge confidence between providers and consumers and technologies are also important factors in shaping future energy demand.

What does flexibility in energy use mean in a domestic and SME context?

At a broad level the analysis suggests that customers can be flexible in 2 ways:

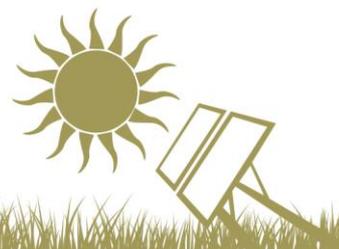
1) Practice Flexibility: Changes in the “when and where” energy consuming activities take place. This could be:

- Intra-day flexibility
- Inter-day flexibility
- Locational flexibility
- Practice curtailment or abstention

2) Input Flexibility: This involves changing the energy consumption involved in achieving an outcome.

Examples of input flexibility include use of microwave rather than gas, slow cooker rather than an oven, battery powered internet device rather than TV. Here, outcomes (hot meals, connectivity) are sustained in time or location but their electrical load profiles are altered.

Factors Enabling Flexibility	Factors Constraining Flexibility
<p>Dual fuel practices (e.g. gas and electric cooking appliances, electric shower but gas hot water)</p> <p>IHDs in combination with TOU tariffs have enabled customers to differentiate between loads.</p> <p>Unconventional work patterns (non 9-5).</p> <p>Active use of timers on white goods enables spatio-temporal flexibility where customers are aware of this functionality.</p> <p>Engagement with the IHD</p> <p>Experience of the ‘workings’ of the grid</p> <p>Effective communication of the challenges facing the grid from a trusted individual has a positive effect on perceived flexibility</p>	<p>The need for continuity and avoidance of interruption positions switching off as a risk due to cool-down / start-up times and risks of faults occurring in start-up</p> <p>Uncertainty around communication channels and notice periods for demand response.</p> <p>For SMEs there is little perceived space between business as usual and closing the premises.</p> <p>A lack of clustering of participating customers could reduce the value of DSM to networks</p> <p>Work and school routines</p>



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