6.4 The alignment of incentives with consumption

People are currently exposed to multiple incentives to reduce energy consumption. In the workplace, the motivation is often provided in terms of carbon reduction as part of initiatives that aim to improve the public image of a company or organization and reduce running costs. In the home people are exposed to raw data in the form of meters and tariffs, as this is a space in which people directly incur cost for their consumption. This direct relationship suggests the use of tariffs and individual monetary reward as an incentive for change.

Our probe also surfaced energy consumption from different spaces that users inhabit as they go about their everyday lives. This invited cross-comparison between these spaces and promoted user reflection on the amount of energy used in each context. Understanding and managing the transitions between these spaces and the possibility of linking and comparing energy use across them will become a critical issue to consider as energy monitoring becomes increasingly widespread.

Offering individuals greater access to their energy consumption opens up the possibility of foregrounding the different incentives and drivers towards energy reduction. In doing so, this raises issues of the extent to which these are complementary or in conflict with each other. There is an as yet unexploited opportunity to transfer good practice through common mechanisms for surfacing energy use and unifying incentives, making people accountable for their consumption across all aspects of their lives in a consistent manner, and rewarding them for managing their throughout the day.

7 Conclusion

We have presented the deployment of a technology probe used to elicit user reactions to the measurement, apportionment and representation of energy consumption across multiple spaces. Our probe combined energy monitoring systems from the home and the workplace allowing us to study reactions by users towards the measurement and apportion of energy use. This has involved exploiting representations of personal energy consumption to investigate accountability of consumption measured across the home and the workspace.

A striking feature of our probe was the extent to which the measurement of energy consumption intertwines with a broad range of other social, political and economic drivers. The measurement and display of energy consumption surface these in terms of issues around apportionment and accountability. The future design of any widespread energy monitoring system will, by the very nature of the energy data collected, be embedded within a range of concerns about the nature of sustainability [7].

Our probe suggests that these issues will play out in the ways in which the technology seeks to attribute energy use and the ways in which the presentation of consumption provides information about the different contexts of energy use. Most striking for us was the ways in which energy consumption at work dominated total energy use but was not matched by the ability for people to exercise control over this use.

The probe highlights the importance of understanding and aligning with the broad social, political and economic drivers at play. Measurement and presentation of energy use is unlikely to change users' behaviour without some form of initiative to encourage and reward change. It is important that we understand the initiatives and that our measurement aligns with them rather than undermines them.

Our final observation is the way in which any ubiquitous computing system designed to measure energy embodies a sense of accountability. The challenge here is the way in which accountability and attribution of use are encoded in the system. Energy apportionment and accountability is a dynamically negotiated process. For example, the apportionment of energy use from a utility can often be a source of major discussion and debate involving consideration, compromise and trading. People need to understand the rationale for apportionment at play and may often wish to negotiate the principles by which this apportionment is carried out.

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