

Executive Summary

The Government's vision is for every home in Great Britain to have smart energy meters, with business and public sector users also having smart or advanced energy metering suited to their needs [1].

Starting in 2014, a mass roll-out of smart meters will begin, with every home having a smart meter by 2019 and all major energy providers being responsible for replacing gas and electricity meters [1].

“The roll out of smart meters will play an important role in Britain's transition to a low-carbon economy and help us meet some of the long-term challenges we face in ensuring an affordable, secure and sustainable energy supply.” [1]

The main belief is that by providing everyone in the UK with a smart meter, the real time energy use information can be used to reduce wastefulness and lack of care over energy consumption in the home.

However the issue is not just what our carbon footprint looks like in 10 years time but what the issues are right now. A household is considered to be in fuel poverty if more than 10% of its income is spent on home heating. In a report today, projected figures by the UK Government say that 300,000 people will meet the criteria for fuel poverty in just a few weeks time. This is in part due to a 7% increase in fuel prices this year alone. Estimates show that by 2016, 9 million people could meet the fuel poverty criteria [2].

These are rightfully alarming figures. In some areas of the UK, almost a third of elderly people have to choose between food and heating. As the population grows older, this number will increase. This means that smart energy meters have a major role to play and can really make a difference to this ageing population in years to come [4].

I have chosen to look at smart meters since they offer real time, versatile feedback on current and projected energy consumption. By improving on the technology, hopefully I can ensure that these devices are used effectively to save money on energy and prevent millions of people falling into fuel poverty.

The Eco-Eye real time electricity monitor requires a set up process. This process involves attaching a sensor clip to a live electricity main, plugging that into a wireless transmitter which then sends real time electricity measurements to a small screen which can be placed in any position around the home.

There are various issues with the current process. Namely the instructions are very long and wordy, the clip is fiddly, stiff and ugly, the screen is small and loading tariff information is very mentally challenging.

In an attempt to address these issues, I carried out a series of observations on 2 male and 2 female users, married and single, different ages and with various different backgrounds in order to determine how each person approaches the problem. In addition, I performed a task analysis both normally and with my hands taped to try and empathise with users of limited dexterity to gain some insight into their struggles. Finally, I carried out a questionnaire to determine people's awareness of their consumption, how they would like to have their consumption represented and what information they would ideally like to see on their energy meter.

Through a process of iterative design, I constructed various models and simulated situations to try and immerse the users in a realistic alternative situation. This was done with the original users of the product in order to see a clear comparison of the re design and to gain genuine comparative feedback.

This feedback was fed back into the design process each time and the design was altered to a final solution.

This report details that design process showing how my investigations led to user insight which manifested itself as concept designs which were tested and refined to a satisfied conclusion.

These methods are also relevant to my final year project and their application to that project is shown in section 8.