



## Energy project briefs background

### Project statement

"To identify opportunities for new energy services for London "Able to pay" owner occupiers which could substantially reduce Carbon dioxide emissions".

### Background

Residential households make up a significant part of total energy demand and CO<sub>2</sub> emissions – about one third in the UK as a whole, and up to 45% in London.<sup>1</sup> Domestic energy use is therefore of major importance to the success of the Climate Change Programme and the longer-term imperative of cutting emission sharply to avoid damaging climate change.

Clearly, reducing energy use through efficiency gains has a crucial role to play. According to the 2003 Energy White Paper: "The cheapest, cleanest and safest way of addressing our energy policy objectives is to use less energy".<sup>2</sup>

Most domestic emissions do not come from fuel poor households, but from the "fuel rich" or "able-to-pay" sector. In London the non-fuel poor sector (both owner occupied and rented) accounts for 38% of all CO<sub>2</sub> emissions - about 16 million tonnes a year. This represents the great majority of domestic emissions.

The crucial fact about this sector is that they are able to invest in their own energy efficiency and home generation. Unlike the fuel poor, where the task is to identify eligible households and undertake free measures, the aim with the fuel rich is to motivate and support investment by householders themselves.

### Design Council RED team

The Design Council is a publicly funded body tasked with making UK managers the best users of design, and has a track record in making social and economic change through the application of design. The RED team within the Design Council uses design methodology and the creativity of designers to produce new approaches and solutions to intractable problems. Through focusing on users and combining this with expertise from within appropriate fields design provides a space for innovation. Previous projects have included; investigating how the interaction between citizen and state could be redesigned to enhance a sense of nationality; and most recently developing new approaches to the question of public health focusing on chronic condition management and prevention.

The team is led by Robin Murray, and includes a core team of designers and policy experts.

For further information on RED and the work that we are doing please look at our weblog at: <http://www.designcouncil.org.uk/red/>

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<sup>1</sup> Environmental Change Unit (2005) *40% house* Oxford University, p 11; GLA (2004) *Green Light to Clean Power: The Mayor's Energy Strategy* p 13

<sup>2</sup> DTI (2003) *Our Energy future – Creating a low carbon economy* p 32

## BRIEF D: Green Energy Modular Roof

Our initial user research has encouraged us to pay more attention to London household roofs - a forgotten surface - how could we better exploit them...?

In rural areas, it can be difficult to find suitable places to site renewable energy sources like wind generators and solar panels. This is exacerbated in urban areas like London. The most obvious place to locate these devices in a city is on rooftops or gable walls at rooftop level. To the average London householder, living in a typical Victorian / Edwardian property, their rooftop may be seen as:

- A burden that requires regular maintenance and renewal to tiles, gutters, boards, etc
- A potential to create more living space & perhaps greater house value
- A useful space to store their junk

Additionally, householders in flats or house conversions have a further difficulty of shared ownership with their neighbours, perhaps a freeholder too.

Furthermore, a recent Mayor of London study has highlighted a slowly growing issue resulting from Londoners paving over what were front gardens. With on-street parking at a premium in the capital, front garden lawns and shrubs are steadily being turned into parking spaces. This is resulting in a reduction of bio-diversity and natural habitat, a reduced capacity for CO<sub>2</sub> absorption by photosynthesis as well as more run-off water, placing an extra burden on the drainage and sewer systems. Increasing the number of green roofs (i.e. ones that are planted with turf and shrubs) is one solution to the problem – this is a popular approach in Germany, but less common in this country.

There is a design challenge to rethink replacement roofs. Roofing technology has changed little in 100 years. What might a new type of lightweight modular roofing system, designed for mass manufacture – be like..? Issues might include;

- Reduced maintenance...
- New materials beyond wood and tile – e.g. aluminium and plastics, mouldings and extrusions...
- Better insulation at the joist / attic floor level...
- Grass and other plant layers on roof surfaces keep homes cool in summer and warm in winter...
- Creating more space (and house value...) for bedrooms, studies, storage, etc...
- Creating small roof terrace spaces – what might a “reverse dormer” be designed like?
- Provide structural “hardpoints” for mounting wind turbines or Photovoltaic Arrays...
- Make better use of chimneys and chimney pots – i.e. the now “extinct” energy technologies...
- Offer new vistas through rooftop viewing points – what about home periscopes or camera obscuras..?

In considering this challenge there are a number of related or adjacent issues that might be worth thinking about;

- What effect could new roofing approaches have on the households patterns of behaviour?
- Is there a new, aspirational aesthetic for home energy products?
- What enhanced rooftop functionality would make people more aware of household CO<sub>2</sub> emissions?
- How might energy utility companies harness this approach to help their customer relationships?
- Is there scope for new retail approaches to selling roofing solutions for homes.