The London Borough of Merton was the first local authority to formalise the Government’s renewable energy targets in its Unitary Development Plan. The council pledged to provide at least 10% of the energy needs for all its new major developments from renewable energy technologies.

As part of the review process, we also:

- Assessed the practical measures which could be used to achieve these emissions reductions
- Carried out an economic assessment of the options in order to quantify the financial impact for residential developers
- Identified the short and long term costs per tonne of CO₂ saved.

**KEY OUTCOMES**

Our industry survey showed that the implementation of certain policies associated with the Merton Rule has increased the use of renewable energy technologies in new-build housing. However, there does not seem to be a corresponding rise in the implementation of energy efficiency measures to the building envelope.

Results from the survey informed the selection and development of three scenarios which we then tested using building energy modelling techniques on a hypothetical development. The scenarios were:

1. Achieving a 10% reduction in energy use by implementing improvements to building fabric and services
2. Achieving a 10% reduction in energy use through the implementation of renewable energy technologies
3. Achieving a reduction in energy use through the combined effects of scenarios 1 and 2.
The modelling clearly demonstrated that the most cost effective way of reducing energy consumption (by approximately 10%) lies in improving building fabric and services. The greatest lifetime reduction in CO₂ emissions, however, was achieved from implementing renewable energy technologies. This was 4.2 times higher in cost per tonne of CO₂ saved for only an additional 1.1% reduction in energy use.

Combining improvements to building fabric and services to achieve approximately a 20% reduction in energy use was cheaper per tonne of CO₂ emissions reduced than by achieving a 10% reduction by using renewables alone.

Thus, our Strategic Assessment and Evaluation Team concluded that improvements to building fabric and services should be implemented first with additional renewable energy installations to follow.

Enhancing the thermal performance of the building envelope helps to future-proof the structure and also yields the greatest CO₂ savings. Adding renewable technologies will then yield maximum emissions reductions with lower long-term costs for the construction industry. This was found to be the most cost effective, holistic solution for achieving the challenging Code for Sustainable Homes energy targets.

Note: Since the modelling was carried out, a rise in energy prices has occurred and further, large energy suppliers will be required to pay feed-in tariffs to those generating and exporting electricity from renewable technologies. Both of these may impact on payback periods for renewable energy installations.

For further information, visit www.bre.co.uk