London Borough of Croydon

Introduction

The London Borough of Croydon is located 10.4 miles (15 km) to the south of London, England. The area is 34 square miles (87 km²) and houses a population of 342,700. The borough is based around the historic town of Croydon where it has expanded over the years. Central Croydon houses one of the largest office and retail spaces outside of central London and the borough itself has over 120 parks and open spaces. This means that Croydon has a very diverse urban heritage, which is of high quality and unique in nature.

The diversity is also apparent in the mix of housing that Croydon offers. This ranges from some areas and sections of the community that experience significant disadvantages to other areas which are quite affluent. To encompass and steer the future planning, regeneration, and development of this borough, Croydon Council was one of the first councils in the UK to implement the "Merton Rule". The Merton Rule is the new planning policy, pioneered by the London Borough of Merton, which requires the use of renewable energy on-site to reduce annual CO₂ emissions in the built environment.

Croydon Council adopted the rule which requires all proposals for non-residential developments exceeding 1000 m² gross floor space, and new residential developments comprising 10 or more units, to incorporate renewable energy production to off-set at least 10% of predicted carbon emissions. This rule applies to both new build and conversion of residential developments, and is in addition to meeting requirements for use of energy efficiency under the Building Regulations.

PV integrated into façade at Ashburton School, Croydon
Description of PV programmes/projects

Within the Croydon Council area, PV has been installed on a number of public and private developments including schools, shopping centres and residential developments. Most recent PV systems have been installed as a direct result of the Merton Rule. The first project designed to reach the 10% target was completed in July 2005. A year later Croydon Council had approved more than 100 new developments with on-site renewable energy generation.

The PV systems installed in Croydon are briefly summarised below.

Summary of PV Projects

In total, more than 250 kWp of PV has been installed in Croydon, including:

- 108 kWp of PV integrated into the BedZED housing development of 82 flats and houses in 2002 (not installed under the Merton Rule)
- 50.4 kWp PV system on multipurpose commercial units at the Spitfire Business Park
- 39.4 kWp PV solar tiles installed on residential blocks at the Queensgate development
- 3.6 kWp PV façade integrated into the top floor roof of the Croydon Centrale shopping centre
- 3.5 kWp of solar roof tiles installed on the entrance roof to the nursery at Valley Park Healthy Living Centre
- 2.2 kWp PV system installed onto the roof of St James the Great School
- 0.99 kWp PV system mounted on the roof of St Joseph’s Infant School
- Numerous PV systems (bolt-on and integrated) onto individual residential roofs. Examples are Croydon Mills (1.44 kWp), Croydon Mickelburgh (0.96 kWp), Croydon Card (1.14 kWp). These are not a requirement under the Merton Rule.

The box on the following page provides additional details on the two of the most notable PV installations in Croydon under the Merton Rule.

Summary of problems, barriers, solutions and recommendations

During discussions with stakeholders, the following issues were raised concerning the uptake of PV and implementation of the Merton Rule in Croydon:

1. Some developers have complained about the impact of the renewable energy requirement on obtaining planning permission and subsequent delays.

The Council advise that the renewable energy requirements are part of the planning process. The developers are naturally resistant to change, but usually report that it is relatively easy when they have done it once. The intention is that incorporating renewables into a development becomes “just part of the process”.

As with any new planning conditions and regulations, it takes time to become familiar, to comply and meet the standards required. This is why Croydon Council have set up a help line called Croydon Energy Network’s Green Energy Centre which provides advice and support with identifying the type of renewable energy that can be used for a particular development and where developers can access grants to contribute to the costs of a renewable energy installation.
Queensgate Housing Development
Queen’s Hospital Housing Development is a large scale, low carbon development in Croydon, comprising 365 new residential dwellings. The developers, Fairview Homes, have met the 10% renewables requirement on this 3.7 ha site, through a combination of integrated solar PV, solar thermal roof tiles and micro wind turbines. The PV systems comprise:
  - Integration of 39.4 kWp of PV on five new residential blocks at the south end of Queen’s Hospital site.
  - Over 1,000 solar PV tiles provide 44,243 kWh of electricity per year for communal lighting.
  - The solar PV provides annual carbon reductions of over 15 tonnes of CO₂.

Spitfire Business Park
Hillview Developers have developed multi-purpose commercial units at the Spitfire Business Park in Croydon. The business park is designed to accommodate full height warehouses with office space, and comprises 30 units. Natural ventilation and lighting was designed into the units, in addition to incorporating low energy light bulbs and recycled insulation. To meet the requirements under the planning policy, the developers chose to install PV on six of the units. The PV system comprises:
  - A total of 316 m² of PV panelling installed on the roof of 6 of the units.
  - A total installed capacity of 50.4 kW of Sanyo 200 hybrid silicon PV modules.
  - Estimated annual energy generation of 45,360 kWh, resulting in emission reductions of 25.8 tonnes of CO₂.
The council require planning applications to include an Environmental Performance Statement for any new development. This details how it will meet the high sustainable construction standards in accordance with local planning policies including the siting, size and location of renewable technologies. Guidance is provided to ensure that what the council recommend is completed in advance of planning permission. Without adhering to the guidance, achieving compliance is likely to be made much more difficult and expensive later and could undermine the development.

With maturity of the policy, improved enforcement and developer understanding, there has been a steady increase in the uptake of on-site renewables. As stated in a report issued in September 2007 by London South Bank University, throughout the Greater London Authority, there has been a gradual reduction in the length of the application process from 700 days in 2004 to around 100 days from the end of 2005 onwards.

Solar PV façade at Croydon Centrale shopping centre

2. Some developers complain about the added cost of installing on-site renewables.

The main objection to implementing the Merton rule is the added cost to developers, and that it may undermine the feasibility of otherwise viable projects. While there is an added capital cost to a project, Croydon Borough Council has observed that the real obstacle appears to be know-how rather than cost. This is backed up by research undertaken in 2006 for the Office of the Deputy Prime Minister’s Part L Building Regulations review that demonstrated that carbon reductions of at least 20% in new build housing could be achieved with small renewable energy systems typically adding 1% to the sale price of the average new build house in the south-east of England.

More evidence is emerging to suggest that houses and developments that are environmentally sustainable will also add value to the property, a bonus to any property developer. Eddy Taylor, former Environment and Sustainability manager at Croydon Borough Council stated, “Evidence is increasing that renewable energy can increase sales values. There is also recognition among developers that this is the direction the industry is moving, and it is in their interests to stay ahead of the game.”

It is also interesting to note that some purchasers are prepared to pay a premium for homes built with PV. A development in the Peak Districts of the UK by Gleeson Homes sold homes with integrated solar PV tiles at £140,000 compared to £128,000 for otherwise identical non-solar homes on the same estate. As Tom Whatling of Gleeson Homes commented, this “allowed the homes with photovoltaics installed to be sold at a premium [of 8.6%] thereby offsetting the additional cost involved.”
3. Some developers argue that the Merton Rule acts as a barrier to affordable house building.

This argument is due to the added cost of installing renewable energy technologies. However the experience from Croydon does not support this argument. The Merton Rule was introduced into Croydon Borough Council’s Unitary Development Plan in 2004, and there has subsequently been a significant increase in housing completions, as shown below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Dwellings completed</th>
<th>Dwellings started</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003/04</td>
<td>304</td>
<td>449</td>
</tr>
<tr>
<td>2004/05</td>
<td>391</td>
<td>516</td>
</tr>
<tr>
<td>2005/06</td>
<td>400</td>
<td>1410</td>
</tr>
<tr>
<td>2006/07</td>
<td>845</td>
<td>685</td>
</tr>
</tbody>
</table>

Source: Communities and Local Government

Furthermore, in 2006/07, Croydon exceeded the London Mayor’s target of 50% of all new homes being affordable. The Mayor congratulated Croydon Council saying, “It is very noteworthy that, unlike many councils, you have delivered – in fact exceeded – the levels of social rented housing recommended in the London Plan.”

4. Some developers have grudgingly accepted the planning conditions placed on them.

Soon after the introduction of the new rule, enforcement action was required in some instances. However developers have now generally accepted the requirements. Some developers continue to see the difficulty and cost implications of adding renewable technologies, but most are finding it less difficult to comply than originally anticipated. As Eddy Taylor stated, “developers are working with us to deliver the 10% requirement and are often surprised at how easy it is to achieve. On a new housing estate for example, it is often unnecessary to install a micro renewable system on every dwelling in order to achieve the estate’s overall 10% target.”

Some developers are now starting to see the PR benefits. One such developer is Barratt Homes, with David Pretty reporting, “We’re doing this not just because it makes commercial sense, but because we believe it makes sense for the future. New homes buyers are pleased with the aesthetics and particularly impressed that solar tiles can save them money.” Fairview New Homes Director, Terry Rood commented about their development at Queens Gate, “The Merton Rule encouraged us to add value to our buildings, which we believe have set a blueprint for the future. Fairview New Homes is delighted to be involved in a nationwide first.” The development, which was completed in July 2007, has since sold out.

5. Energy output from renewable installations not maximised

In one of the earlier projects under the Merton Rule, the maximum energy potential from a PV installation was not realised due to the poor location of the PV systems. They were placed in the shade on a garage roof.

There is guidance available to developers to ensure that the energy output is maximised. The London Renewables Toolkit provides guidance on renewable energy technologies and how to calculate the 10% figure, based on off-setting 10% carbon emissions above and beyond compliance with Building Regulations Part L. (Building Regulations Part L covers fuel and energy conservation in both domestic and non-domestic buildings).
The Merton Rule

The Merton Rule is a planning policy that was first introduced by the London Borough of Merton in October 2003, requiring non-residential developments to generate at least 10% of their electricity needs from on-site renewables to reduce carbon emissions in the built environment. This pioneering policy has since been revised so that residential developments also are required to cut their carbon emissions by 10%.

The first project that complied with the policy was completed in June 2005. Other local authorities, in particular the London Borough of Croydon, were quick to follow and adopt similar policies. The first project designed to meet the 10% target in Croydon was completed in July 2005. To date, 34 local authorities throughout the UK have fully adopted policies requiring 10%+ on-site renewable energy. In excess of a further 140 are either assessing the feasibility, actively progressing or have incorporated similar draft policies.

Croydon’s policy is regarded as the best practice model for the 10% renewables requirement. The policy states:

“The Council will expect all development (either new build or conversion) with a floor-space of 1000m² or ten or more residential units to incorporate renewable energy projection equipment to provide at least 10% of the predicted energy requirements.”

This is a prescriptive policy which requires the use of on-site renewables, encompasses change of use in regeneration areas and precludes the purchase of green energy to meet the requirement. As such, it has been effective in lowering CO₂ emissions, stimulating the micro-renewables industry, addressing fuel poverty and lowering energy bills.

Both Merton and Croydon have collaborated to enforce the application of the Merton Rule, requiring the approval by the Local Planning Authority of a report provided by the applicant, detailing how the requirement will be met. The required carbon savings are above and beyond what is required to comply with Part L of the Building Regulations (which covers fuel and energy conservation and sets maximum carbon dioxide emissions for whole buildings). As such the Merton Rule was specifically designed to act as an incentive to design and build beyond the Building Regulations requirements.

The only instance when a developer is not required to comply with the Merton Rule is if it can be proved conclusively that the policy is either “unfeasible” or “unviable” within a particular development. However in practice there are few developments with valid reasons why implementation of the policy is not feasible or viable. In these cases, the developer and local authority may negotiate on the percentage target.

The Merton Rule has been heralded as preserving “initiative, innovation and imagination at a local level”. Its existence was recently threatened by the draft Climate Change Policy Planning Statement which was set to remove the right of planning authorities to set renewable energy targets across their jurisdiction. However the Planning and Energy Bill, which is currently passing through parliament and covers England and Wales, will allow local councils to set targets in their areas for on-site renewable energy, on-site low carbon electricity and energy efficiency standards in addition to the national requirements. It will require developers to source at least 10% of any new building’s energy from renewable sources.

The Merton Rule has the potential to deliver major contributions to the UK Government’s carbon emission and renewable energy targets. It is also seen as a fundamental building block to achieve the Government’s aspirational target of zero-carbon homes across the UK by 2016.
The toolkit can also be used as guidance for developers and installers to ensure that PV systems are correctly located and oriented to maximise performance. This advice is also available for other renewable energy installations.

6. Choose the best renewables option

The Council are encouraging developers to install as many energy efficient measures as possible and then to look at renewable energy alternatives. The most common renewable energy solution is solar water heating. PV is recommended to be taken up where it is the best possible option. For example, PV is being installed in instances where hot water tanks are not preferred due to spatial requirements, i.e. if the cost of losing space outweighs the cost of PV, then PV is the better option.

The most popular on-site technologies used to date are solar water heating, biomass, solar PV and ground source heat pumps, in that order. Compared to solar water heating, the main barrier to further uptake of PV under the Merton Rule is cost.

Eligible technologies under the Merton Rule as implemented in Croydon include: photovoltaics, solar water heating, wind, combined heat, power and cooling, communal heating, cooling and power, biomass fuelled heating, cooling and electricity generating plant, renewable energy from waste (subject to air quality standards being addressed, which is unlikely for units below 400kW), hydrogen fuel cells, and ground-coupled heating and cooling.

7. Restriction on renewables in some areas.

A barrier to the uptake of on-site renewables has been obtaining planning permission, in part due to the time, cost and also a lack of clarity about the need for planning permission for some technologies.

To overcome this barrier, Croydon Council has been lobbying for permitted rights across all boroughs in England. Permitted development rights have now been introduced throughout England, as of 6th April 2008. Planning permission for roof-mounted PV is now not required unless:

- panels when installed protrude more than 200mm
- they would be placed on the principal elevation facing onto or visible from the highway, in buildings in Conservation Areas and World Heritage Sites

Stand alone PV does not require planning permission unless it is:

- more than 4 metres in height
- installed less than 5 metres away from any boundary
- above a maximum area of array of 9m2
- situated within any part of the curtilage of the dwelling house or would be visible from the highway in Conservations Areas and World Heritage Sites

Solar PV tiles at Fairview Homes, Croydon
The Welsh Assembly Government, Scottish Government and Northern Ireland Government are currently all considering changes to their legislation to provide permitted developments to micro-generation installations.

8. Not the most effective means of reducing carbon emissions.

One of the criticisms of the Merton Rule is that it is not the most cost-effective means of reducing carbon emissions. However it was implemented specifically to incentivise renewables.

The renewable energy industry views the Merton Rule as an extremely important policy instrument to stimulate jobs and investment in these new technologies. It creates guaranteed demand opportunities that companies can safely invest into. Seb Berry, Head of External Affairs at Solarcentury, the company that has installed the majority of PV systems in Croydon, stated that “the Merton Rule is absolutely critical to development of the fledgling UK micro-renewables industries. It is driving the demand for these technologies.” In 2007, “Merton Rule” projects delivered 30% of Solarcentury’s UK turnover.

Energy efficiency measures are generally more cost effective than renewables, and this has been an argument against the Merton Rule. However energy efficiency is covered within the Building Regulations, Part L, whereas renewables is now viewed as a planning issue. (The latest revisions to Part L set maximum carbon dioxide emissions for whole buildings, but the building designers have an element of flexibility which could include renewable micro-generation). It is also worth noting that the Merton Rule encourages developers to reduce the carbon footprint of a building before the contribution from on-site renewables. In addition, the recent national policy PPS1: Planning & Climate Change promotes the use of energy supply from local renewable and local low-carbon sources (i.e. on-site and near-site, but not remote off-site) on a relatively small scale.

There has also been some argument for off-site generation to be an option. However offsetting carbon emissions by purchasing electricity generated from remote renewables generation will not promote development of the UK’s renewable energy industry or result in any additional generation capacity.

**Sources of further information**

The Merton Rule – [www.themertonrule.org](http://www.themertonrule.org)
Solarcentury – [www.solarcentury.com](http://www.solarcentury.com)
Croydon Council – [www.croydon.gov.uk](http://www.croydon.gov.uk)
Creative Environmental Networks – [www.cen.org.uk](http://www.cen.org.uk)
London South Bank University report – [www.london.gov.uk/mayor/planning/docs/lsbu-research.pdf](http://www.london.gov.uk/mayor/planning/docs/lsbu-research.pdf)

Case Study prepared by:
Emily Rudkin of Halcrow Group Ltd
e-mail: rudkinej@halcrow.com

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