London Energy Partnership

LONDON RENEWABLES

Renewable Energy in London:
The role of developers

Summary

This document is intended to show how developers can gain from increased use of renewable energy generation in London developments. The benefits to developers and their customers from renewable energy are set out, as are the drivers coming from Government. Both detailed technical information and training materials are provided free as part of this package from London Renewables. These can help you get trained up on renewable energy technologies and the issues around them so that your company doesn't get left behind.

Introduction

Why should you be interested in renewable energy?

The development of renewable energy in London is being driven by the London Plan, which increases dramatically the drivers for planners to require renewable energy and energy efficiency in new developments. As more Local Development Frameworks come into line with the London Plan, developers will find themselves being required to integrate on-site renewable energy into standard business practice. It makes sense to be ahead of the game.

Renewable energy technology provides a unique marketing opportunity for developers and the construction industry. The technologies are regarded as progressive and can help improve the environmental performance and public relations of the developer, owner, landlord or tenant. Renewable energy and energy efficient technologies and design will also lead to lower running costs for consumers, which can be marketed as a positive feature of a development.

Policy context

The London Plan

In February 2004, the Mayor published 'The London Plan: Spatial Development Strategy for Greater London'. This plan increases dramatically the drivers for planners to require renewable energy and energy efficiency in new developments. The London Plan states that:

- 'The Mayor will and boroughs should support the Mayor's Energy Strategy...' by, amongst others: 'requiring the inclusion of energy efficient and renewable energy technology and design...in new developments wherever feasible' and 'facilitating and encouraging the use of all forms of renewable energy where appropriate' (Policy 4A.7);
- 'The Mayor will and boroughs should request an assessment of the energy demand of proposed major developments[1], which should also demonstrate the steps taken to apply the Mayor's energy hierarchy' (Policy 4A.8). 'The hierarchy states that essential energy needs should be met through applying in sequence the following factors: using less energy, using renewable energy and supplying energy efficiently' and
- 'The Mayor will and boroughs should require major developments to show how the development would generate a proportion of the site's electricity or heat needs from renewables, wherever feasible' (Policy 4A.9). The Mayor's Energy Strategy expects 10% of a new development's energy demand to come from renewable energy generated on site.

The Vauxhall Cross Transport Interchange will be partly powered by solar power panels lining each of the cantilevered arms.
© solarcentury

London Renewables and the London Energy Partnership are working to ensure that borough planners and development control officers have the knowledge they need to implement these policies. **Now is the time for you to work with planners to make sure that future planning applications which are covered by the new requirements proceed as smoothly as possible.** This document, and the resources to which it refers, are designed to help you.

UK Context

The energy elements in the London Plan reflected the aspirations of the Mayor's Energy Strategy. This was developed within a national context set out in the government's Energy White Paper, published in February 2003. This looked to increased energy efficiency and use of renewable energy as two of the main mechanisms by which government energy policy could be delivered. Sustainable energy in buildings was portrayed as part of a more general drive towards sustainable construction. It is being supported with government funding for technology research and demonstration, and the formation of working groups such as the Sustainable Buildings Task Group.

1 This includes >500 dwelling units, or for commercial space >30,000 m^2 in the city, 20,000 m^2 in Central London or 15,000 m^2 outside of Central London. For more specifications refer to the *London Renewables: Toolkit for planners, developers and consultants*. Each borough is able to define what they consider to be a major development. It is suggested that the definition adopted is that currently used by the ODPM PS2 form, which each district planning authority must use to report general developments. The definition defines major developments as more than 10 dwellings, or for non-domestic use wherever the floor space is >1000m^2.

What's happening already?

There is a range of case studies demonstrating the integration of renewable energy installations into new developments. The following two case studies have been selected for the purposes of this document, but to access the wealth of other case studies available refer to the *London Renewables: Toolkit for planners, developers and consultants*.

North Nine, Laing homes, Edmonton

The UK's first commercial solar housing development was a 15 kilowatt peak (kWp) grid-connected installation on nine houses by Laing Homes. The development, known as North Nine, is located in Edmonton, a high density suburb in the London Borough of Enfield. The solar power system comprised of 130m^2 of photovoltaic roof-slates, which are just as easy to fit as normal tiles (but require wiring in) and look very similar.

Laing Homes development with solar power roof slates in Edmonton, North London. © solarcentury

Costs have reduced since the installation so it would be misleading to quote them. However all the homes sold faster than those without solar power panels and at a premium of between £5,000 and £10,000. Part-funding for the installation was obtained from the DTI's domestic photovoltaic systems field trial.

Planning permission was granted for the entire development and did not need to be granted separately for the solar power panels, although there was a requirement on the consultants to provide a system that blended with the traditional roofing slates being used.

Around the time of the completion of the project, Andrew Fryer, Managing Director of Laing Homes North London, said, "There is clearly an increasing demand from the public, especially when customers realise there is an emerging market for clean energy and that in the future you will get good premiums for excess units sold back to the grid. This means cutting electricity bills substantially or even, in some cases, getting all your power from your roof for free."

Willow Lane industrial estate development

This is a 4,500m^2 speculative commercial development comprising of 10 units, likely to be occupied by a mixture of storage and distribution, light fabrication, partial offices, light manufacturing or other similar industries. It is located in a light industrial estate in a built-up suburb that forms part of the London Borough of Merton.

London Borough of Merton's new renewable energy policy PE13/E11 states that, "All new non-residential development above a threshold of 1,000m^2 will be expected to incorporate renewable energy production equipment to provide at least 10% of predicted energy requirements." This is the first time in the UK that a developer has been compelled to respond to a prescriptive renewable energy policy.

Biomass heating

Fyne Homes Housing Association has installed a biomass boiler to supply 14 of its flats. The boiler is fed by woodchips from a local mill. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*

What's happening already?

Beaufort Court

Renewable Energy Systems head office, built on the site of an old egg farm just outside the M25, includes on the site a 225kW wind turbine, nearly 170m^2 of solar systems – both heating and electricity, a borehole cooling system and 100kW biomass boiler. For more information see training module 4.

© RES/Reter Mackinven

Chancerygate, the developers, have proposed the following energy technologies for the site:

- Energy saving measures including condensing boilers, intelligent lighting and passive stack ventilation;
- 10 small-scale wind turbines; and
- 5kWp of solar power panels.

London Borough of Merton has adopted a flexible, holistic and consultative approach to the planning application, mindful of the implications not just for renewable energy planning policies in the borough, but also nationally. During an external consultation, London Borough of Merton asked which of the following would be the best approach:

- Reducing the overall carbon emissions of the building by 17% of which 10% is through energy and water saving measures, and 7% through renewable energy generation. This would be complemented by other environmental considerations and mutually agreed, with goodwill and in collaboration with, the developer, or
- Reducing the overall carbon emissions of the building by 20% by requiring the developer to meet the full 10% target by installing solar power panels at an additional cost of £54,000 over and above the cost of option above. This would be achieved without the goodwill and collaboration of the developer.

The unanimous response of the consultees was for the first option, because if the rationale behind the policy is to reduce carbon dioxide then reaching a 17% reduction is clearly a success. In addition it proves that the policy can be successfully implemented in collaboration and partnership with a developer without confrontation and bad feeling.

The use of the word "expect" rather than "require" in Policy PE13/E11 ensures a degree of flexibility for both the developer and planning authority. It should be stressed however, that the flexibility allowed in this particular case should not set a precedent that allows developers to assume that the 10% has been abandoned, and that in any future cases 10% is the initial expectation. A developer will have to present a very robust argument as to why this target is not realistically achievable.

In approving the policy, the Government Inspector said that there was "unambiguous national and regional support for the approach adopted by Merton".

Solar power panels and solar heating at Renewable Energy System's head offices. © RES/Peter Mackinven

Frequently asked questions

Why is the Government advocating the use of renewables?

In order to reduce the impact of climate change caused largely by the burning of fossil fuels, the Government has stated in the Energy White Paper that, "Our ambition is for the world's developed economies to cut emissions of greenhouse gases by 60% by around 2050. We therefore accept the Royal Commission on Environmental Pollution's recommendation that the UK should put itself on a path towards a reduction in carbon dioxide emissions of some 60% from current [2000] levels by about 2050".

To help achieve this, the Government has set a target of producing 10% of UK electricity from renewable sources by 2010 as one of the main measures of tackling greenhouse gas emissions, and aspires to double this by 2020.

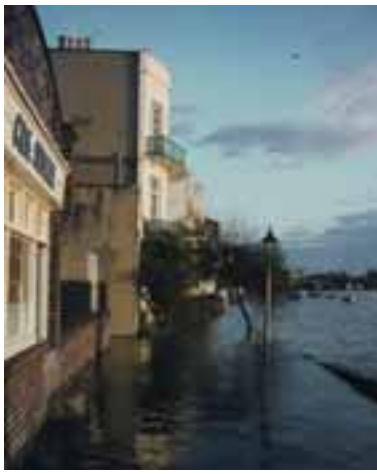
This national target has been complemented by a series of regional targets. In London, the Mayor has produced the London Plan, which sets out the spatial implications of the Mayor's environmental strategies. London's renewable energy targets can be found in the London Plan and in more detail in the Mayor's Energy Strategy (proposal 6). Section 4 of Chapter 4A of the London Plan covers 'improving the Use of Energy'. More specifically, Policy 4A.7 states that, "The Mayor will and boroughs should support the Mayor's Energy Strategy and its objectives of reducing carbon dioxide emissions, improving energy efficiency and increasing the proportion of energy used generated from renewable sources".

The Mayor will work with strategic partners to ensure that the spatial, transport and design policies of this plan support the Mayor's Energy Strategy and contribute towards achieving CO_2 and renewable energy targets.

Furthermore, job creation as a result of the application of renewable energy is desirable for the Government. Currently the industry supports 8,000 jobs. Assuming activity is sustained, it is projected that by 2020 the industry will support between 17,000 and 35,000 jobs.[2]

What are the benefits of prioritising renewables when others are not?

Competitive advantage: With London seeking to be an international leader in renewable energy, it gives an opportunity for developers, their partners and contractors to gain early experience and competitive advantage as well as benefiting from being part of an international showcase. By building up a proven track record of installing renewable energy technologies, developers will be more likely to attract clients seeking renewable energy within their developments.



For London, climate changes means hotter, morehumid summers, wetter winters and a significant increase in the risk of flooding. © Ian Yarham

Ground sourced heating

London's first domestic development to use ground sourced heating is 'Earthdome', comprising 4 flats in the London Borough of Croydon. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*

2 DTI, Renewable supply chain gap analysis, January 2004

Frequently asked questions

Solar heating

Gallions Housing Association has developed 39 properties (London Borough of Greenwich) that have on average 65% of their hot water needs provided by solar heating. The Association wanted to demonstrate that sustainable housing can be provided without huge effort or cost. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants*.

© Gallions Housing Association

How much additional cost will we incur if we include renewables in a development?

The London Renewables: Toolkit for planners, developers and consultants provides a comprehensive table with typical development scenarios plus their benchmark energy demand, cost and applicable renewable energy sources. It is recognised that capital cost will play an important role in decision making on which renewable energy technologies to include in development proposals. The costs depend on many design, site and commercial factors. Costs are also likely to change over time, as will the availability of government and other grant funding. The benefits of each technology should be taken into account at the same time as costs, taking time to develop as holistic an analysis as possible.

How can we encourage our clients to be interested in, and to pay for, renewable energy technologies?

Promoting the benefits of renewable energy will help clients see how renewable energy can help them reduce their environmental impact as well as be seen as a leading edge company. This can therefore help their public relations at two levels. Case study examples can: demonstrate that there are clients interested in installing renewable energy; provide cost benefit analyses; illustrate the PR opportunities and demonstrate competitive advantage. It is important for developers and other related industries to use case studies to provide as much information to clients as is possible to help them make an informed decision. Furthermore, there is a range of innovative renewable energy funding schemes available for public and private developments (details are available in the *London Renewables: Toolkit for planners, developers and consultants*, see Further Information). Discussions regarding the incorporation of renewable energy technologies into developments should be initiated at the earliest opportunity.

What funding is available for installing renewable energy technology?

Two grant schemes funded by the DTI offer partial grants. The level of grant depends upon the technology and building use.

- Solar Grants, for solar power (photovoltaic) panels[3]
- Clear Skies, for other renewable energy technologies for households and communities.[4]

Moreover, Enhanced Capital Allowances enable a business to claim 100% first-year capital allowances on their spending on qualifying energy saving systems (examples include biomass boilers, Combined Heat and Power, ground sourced heat pumps and solar heating). In addition, generators of renewable electricity can obtain Renewable Obligation Certificates, providing an income above the value of the electricity.

3 www.est.co.uk/solar, T: 0800 298 3978, pvenquiries@est.co.uk

4 www.clear-skies.org, T: 0870 2430 930, E: info@clear-skies.org

Frequently asked questions

How can we manage the potential risks or unknowns of installing renewable energy technologies?

Identify and minimise the risks. In most cases, risks are well known and easily overcome. The *London Renewables: Toolkit for planners, developers and consultants* provides extensive guidance and case studies and training modules are also available (see Further information section). Tapping into this existing knowledge can provide the following:

- Insight into the cost benefit analysis of installing renewables;
- Information about technologies that have worked successfully on various sites with differing requirements;
- Details of how to get through the planning maze successfully;
- Examples of how funding was generated for projects and
- Suggestions about how problems were overcome.

Where do we get advice on the feasibility of different renewables for a site?

The *London Renewables: Toolkit for planners, developers and consultants* offers an excellent source of information on each technology. This covers the benefits of the technologies, site-specific details of applicability, planning requirements and costs. The *Summary of renewable energy technologies' characteristics* provides a summary of some of this information. The Toolkit will inform Supplementary Planning Guidance on renewable energy. Please refer to the Further information section for more information on who to contact for more support.

How can we ensure that our planning application runs as smoothly as possible?

- The proposal will need to demonstrate clearly how it meets the Council's aims and objectives as well as relevant policies/ Supplementary Planning Guidance. Often the concern over developments perceived to be 'innovative' is that they are inappropriate for the proposed site or do not meet the needs of the local community. A supporting statement explaining how the proposal has been designed to take account of both of these is important;
- Demonstrating the benefit of the proposal to the local community and the borough as a whole can be advantageous;
- Proposals will benefit from early consultation with local residents and members to gain their support and
- Pre-application discussions with planners are important (note however that not all Councils follow this as best practice). It is important to demonstrate that the proposal has been considered in partnership with the Council and with local need in mind.

The Metropolitan Housing Trust's new headquarters is heated and cooled by a ground source system.
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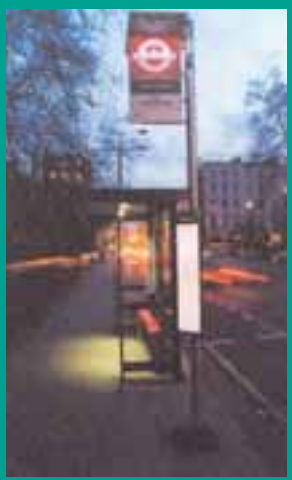
Solar power panels

Transport for London is using solar power panels to light bus stop information on 145 bus stops. Solar power is an obvious alternative to the expense and difficulty of bringing mains electricity into bus stop posts. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*

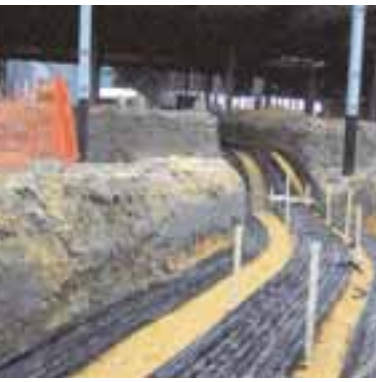


A solar powered bus stop and shelter in London.
© London Buses

Frequently asked questions

Ground sourced cooling

Alexandra Park School (London Borough of Haringey) is a new comprehensive which uses ground sourced cooling to cool the Information and Computer Technology (ITC) areas. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*



The offices at this distribution centre in Peterborough are heated and cooled by a ground source system.
© Geoscience Ltd

We are concerned that planning departments don't know enough to be able to judge the merits of a renewables installation. How can this be addressed?

A training strategy has been developed by London Renewables to tackle the gaps in knowledge of renewable energy technologies in various sectors. This is aimed at developers and London Borough Planners involved in assessing planning applications. In addition, training is being targeted at policy makers and elected members to ensure a holistic approach is being taken by local authorities to promote renewable energy technologies. Furthermore, the *London Renewables: Toolkit for planners, developers and consultants* has been designed to tackle the knowledge gaps and to inform the London Plan Supplementary Planning Guidance.

How can we avoid delays in the building process if renewables are to be installed?

Delays in the process are only likely when unfamiliar or new technologies are being employed. Therefore:

- Use proven and tested technologies where installation times are established;
- Make use of experience. It makes sense to employ designers and contractors who have experience with the relevant technologies;
- Train staff: It is also sensible to train up in-house design staff or construction staff; for training options you should refer to the London Renewables website (see Further information);
- Seek timely guidance: Through seeking expert advice in the design phase, the new technologies can be integrated into the project and their installation planned into the overall timeframe of the development, and
- Gain confidence in their benefits. By looking at good renewable energy exemplars, the process becomes more familiar and staff are better informed.

Why can't wind energy from outside of London be used to meet London's renewable energy targets?

The Mayor's vision for London is to be an exemplary sustainable world city that is prosperous, accessible and green. To do this, London needs to take a lead in being more responsible for the energy it uses, and the carbon dioxide emitted because of this use, and thereby ensuring a sustainable future in London and beyond. The national target set for renewable energy is a challenging one, and is more realistically achievable if met from a number of renewable energy sources. For each new development and major refurbishment scheme, it is important that all opportunities to integrate renewable energy within the building are considered at the design stage and the planning system is key in ensuring this.

What are the options for London?

Now is the time to take action. The questions below may help you to begin the process of integrating the delivery of low carbon buildings into your everyday business practice.

The activities which are most appropriate for you will depend on your role within your company and on how routinely the company includes sustainable energy in developments. However, the *London Renewables: Toolkit for planners, developers and consultants* and training materials referred to later in this summary can help you find answers to the questions posed.

YHA Rotherhithe goes Solar with support from Renewable Energy Action for London. © YHA 2003

Biomass heating can either be stoves or boilers that use biomass instead of traditional fossil fuels such as oil and gas. Biomass refers to any fuel material derived from living organisms, but in most cases the fuel will be wood that is either the waste product from another activity (e.g. tree surgery) or has been grown for the purpose.

Biomass Combined Heat and Power (CHP). A CHP plant is an installation where there is simultaneous generation of usable heat and power (usually electricity) in a single process. The plant may use biomass as fuel.

Ground sourced heating uses underground pipes or boreholes to absorb heat from the ground, which is then upgraded to a useful temperature and used to provide space heating and to pre-heat domestic hot water.

Ground sourced cooling/borehole cooling involves using the ground or groundwater for cooling of offices and other non-domestic buildings. As the temperature of the ground remains fairly constant, and in summer is well below peak air temperatures, a system working on the same principle as a ground sourced heat pump can be used to replace conventional cooling in offices and other buildings.

Solar heating systems use solar energy to heat water. The systems use solar collectors (flat plate or evacuated tube collectors), usually placed on the roof of a building, to pre-heat water that will be used in sinks, showers and other hot water applications. They do not provide enough energy for space heating.

Solar power (photovoltaics or PVs) can be fitted to buildings in a variety of different ways, such as bolt-on panels and roof tiles. They use sunlight to create an electric current, which can be used to power buildings or can be exported to the grid.

Wind turbines use the energy from the wind to turn a generator, which produces electricity. There is a huge range of different sizes available.

Solar heating

The Crowndale Building (office accommodation for London Borough of Camden staff plus a public library and health centre) has a solar water heating system that serves the washrooms. The Council has a policy to reduce greenhouse gas emissions. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*

Taking action

Now is the time to take action. The questions below may help you to begin the process of integrating the delivery of low carbon buildings into your everyday business practice.

The activities which are most appropriate for you will depend on your role within your company and on how routinely the company includes sustainable energy in developments. However, the *London Renewables: Toolkit for Planners, developers and consultants* and training materials referred to later can help you find answers to the questions posed.

Consider specific sites

Are you planning major developments which will be referred to the Mayor[5]? Do you have an interest in sites in Boroughs that have included a renewables target in their Unitary Development Plan (UDP), draft UDP or Local Development Framework, and will your proposed development be defined by the Borough as a 'major' development[6]? If either of these is the case, you will be asked to demonstrate that on-site renewable energy generation will be employed where feasible. You will need to consider the following:

- How can you best address this potential requirement for a proportion of the development's energy needs to be met by on-site renewables?
- What are the most cost-effective options open to you and how do these fit with possible clients' preferences?
- How would reducing energy demand, by designing an energy efficient development which has considered passive solar design and combined heat and power, impact on the size and cost of renewables required?

Review clients' needs

- Are you aware of your clients' attitudes towards renewable energy?
- Do you know whether they want renewables on their buildings or a low energy building design?
- Are you aware of where on their list of requirements sustainable energy sits? (In some cases it may come as high as third, behind location and price.)
- Have you considered including sustainable energy options in sales literature?
- Have you considered how the implementation of the EU Energy Performance of Buildings Directive might alter clients' perception of energy use in buildings?

In housing development, are there potential groups of house buyers for whom low energy design and the integration of renewables could be the deciding factor between a new build home and an older property?

Biomass Combined Heat and Power

A Slough trading estate is being supplied with heat and power from a large biomass Combined Heat and Power unit that uses industrial wood pellets and refuse-derived fuel briquettes. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*

5 This includes >500 dwelling units, or for commercial space >30,000 m^2 in the city, 20,000 m^2 in Central London or 15,000 m^2 outside of Central London. For more specifications refer to the *London Renewables: Toolkit for Planners and Developers*. The Greater London Authority Act 1999 gives the Mayor the power to direct the local planning authority to refuse planning permission for strategic planning applications.

6 Each borough is able to define what they consider to be a major development. It is suggested that the definition adopted is that currently used by both the ODPM PS2 form, which each district planning authority must use to report general developments, and some Boroughs. The definition defines major developments as more than 10 dwellings, or for non-domestic use wherever the floor space is >1000m^2.

Taking action

For commercial developments, are there high profile clients you would like to attract which may be interested in schemes that incorporate sustainable energy? Likely candidates include those which are proactive in terms of Corporate Social Responsibility and environmental reporting, or those with could capitalise on the PR of a world leading renewable installation.

Gather internal support

- Who in your organisation needs to be convinced about the benefits of including renewable energy generation and energy efficient design in all new developments?
- What key messages are contained here which can help you convince them?
- Should key staff in the organisation receive briefings or training about sustainable energy?
- What opportunities exist, in the trade media and elsewhere, for you to promote the company using the 'sustainable energy' hook?

Promote renewable energy

- Are you in a position to promote renewable energy to your prospective and existing clients?
- Are there examples of schemes or properties you have delivered successfully which can be used as case studies?

Develop a strategy

- Will the development of a sustainable energy strategy be of use to your organisation?
- Who can develop this strategy?
- How can routine incorporation of energy efficient design and on-site renewable energy generation contribute to meeting your existing corporate aims?
- Planning strategies will require more and more consideration of these issues in the future: does the corporate strategy take account of this?
- How will sustainable energy help to 'future-proof' your organisation? For example, would you be ready to install renewables if these were to be included in the Building Regulations in future?

Any strategy should include targets, e.g. a proportion of developments with on-site renewables or proportion of developments' energy needs which are met from on-site renewable generation.

Solar power panels

St James Homes have installed solar power panels, part funded by the DTI's solar grants programme, on a community building in an up-market housing development in the borough of Sutton. The company is committed to trialling the technology as part of its sustainability strategy. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*

Pay-and-display meter in Brixton, south London. © Impetus Consulting

Further information

Wind turbines

Ford's Dagenham Diesel Centre (London Borough of Havering and London Borough of Barking and Dagenham) uses two wind turbines constructed on site to supply all of the site's electricity. The installation helps demonstrate Ford's corporate commitment to sustainable development. The turbines are funded through a 'Merchant Wind Power' arrangement. Further details can be found in the *London Renewables: Toolkit for planners, developers and consultants.*

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Contact points for further guidance and advice

London Renewables: For information on London Renewables, the materials it is producing and possible training options take a look at the following website.
W: www.london.gov.uk/mayor/environment/energy/london_renew.jsp;
T: 020 7983 4000 (main switchboard)

The website provides links to other organisations' websites and links providing further information and support, including the DTI's **capital grant schemes**, details of which can also be found on page 6, footnotes 3 and 4, of this document. The London Renewables site also links to **London-based schemes** that assist with installations and national grants. The following are some of the other sites listed.

London Renewables: Toolkit for planners, developers and consultants (Available via the website listed above.) There is a range of organisations involved with renewable energy technologies. Please refer to the Toolkit's further information section where these organisations are listed.

Renewable Energy Enquiries Bureau: The DTI funds a renewable energy enquiries bureau and offers a range of detailed renewable energy publications on line.
W: www.dti.gov.uk/energy/renewables;
T: 0870 190 6349; E: nre-enquiries@aeat.co.uk

Renewable Power Association: The Renewable Power Association is a trade association open to all companies involved in the UK renewable energy industry. Every type of Renewable energy technology and supply chain service is represented.
W: www.r-p-a.org.uk; T: 020 7747 1830

Action Energy & Energy Efficiency Best Practice in housing:
Two programmes offering assistance on energy efficiency
W: www.actionenergy.org.uk; T: 0800 58 57 94;
E: help@actionenergy.org.uk;
W: www.est.org.uk/bestpractice/index.cfm; T: 0845 120 7799;
E: bestpractice@est.co.uk

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