LONDON
RENEWABLES

London Energy Partnership

Guide to Developing an Energy Action Area

SEA/RENUE

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Cover picture:
Elephant & Castle Regeneration (courtesy of London Borough of Southwark)

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Executive Summary

This report is intended to provide guidance to parties interested in developing Energy Action Areas in London. It was commissioned as part of a larger piece of work by the London Energy Partnership in partnership with the London Borough of Barking and Dagenham and the Thames Gateway Development Corporation. This additional work was to produce an implementation plan or route map for Barking Town Centre Energy Action Area.

The guidance therefore draws on the work conducted in Barking Town Centre and lessons learnt through working through the problems and issues that are faced in one existing pilot Energy Action Area. Interviews have also been conducted with the other pilot Energy Action Areas to gain an understanding of common themes, barriers and solutions that are being faced in all four areas.

The Guide explains what an Energy Action Area is, how to select an area and appropriate technologies for that area, what the key steps are, what the delivery mechanisms might be, how to fund it and how to build support for the project.

There are four existing pilot Energy Action Areas in London:

- Barking Town Centre in the London Borough of Barking and Dagenham
- Elephant & Castle and adjoining Concerto Community in the London Borough of Southwark
- Wembley redevelopment in London Borough of Brent
- Mitcham Town Centre in the London Borough of Merton

The next phase of Energy Action Areas is expected in summer 2007. Energy Action Areas are an initiative of the Mayor of the London and delivered by the London Energy Partnership.

A Task Group of the London Energy Partnership exists to oversee the development and co-ordination of the Energy Action Area programme.

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1 Introduction

1.1 Background to Energy Action Areas

In February 2004, the Mayor of London published his Energy Strategy for London, Green Light to Clean Power.

As one of the central elements of the Strategy, the Mayor stated his intention to establish the London Energy Partnership to use "the power of partnership to enable London to respond to the challenges of climate change, security of energy supply and fuel poverty."[1] and "as the mechanism for delivering this strategy"[2]

As one of many important initiatives within the strategy, the Mayor stated his intention to "establish a small number of 'Energy Action Areas', which will be defined geographical areas that act as showcase low-carbon communities, demonstrate a range of sustainable energy technologies and techniques in different types of buildings, and provide a means of targeting resources."[3]

Once established, the London Energy Partnership was tasked with the responsibility for creating and co-ordinating Energy Action Areas in London. Invitations were then invited from London boroughs to put forward an area for Energy Action Area status.

Why set up an Energy Action Area?
What are the benefits to becoming an Energy Action Area? All of the existing Energy Action Areas felt that the key point was the political support it gave them. The non-statutory nature of CO_2 reductions and energy issues (beyond Building Regulations) means that it's often difficult to make energy issues heard amongst the competing demands to achieve other social goods from a development. Energy Action Area status gives energy a much higher profile in a regeneration scheme that makes it difficult to ignore.

Funding was also mentioned as a key factor in becoming an Energy Action Area. For some the initiative has meant funding directly from the London Energy Partnership to support the development of their Area. However as it was made clear from the start that large capital funding was not currently available, it was also felt that the status could help to lever in capital funding from elsewhere.

The Energy Action Area Task Group also provides a forum to share solutions with others working through the same difficulties and issues around achieving low carbon communities.

In April 2005, four areas were selected. These were:

- Barking Town Centre in the London Borough of Barking and Dagenham
- Elephant & Castle and adjoining Concerto Community in the London Borough of Southwark
- Wembley redevelopment in London Borough of Brent
- Mitcham Town Centre in the London Borough of Merton

A Task Group of the London Energy Partnership exists to oversee the development and co-ordination of the Energy Action Areas.

1.2 Purpose

This report is intended to provide guidance to parties interested in developing Energy Action Areas elsewhere in London. The work began in January 2006 and was completed in May of the same year. It was commissioned as part of a larger piece of

[1] www.london.gov.uk/mayor/environment/energy/partnership-steering-group/about.jsp
[2] Green Light to Clean Power, p195
[3] Green Light to Clean Power, page xvii

work by the London Energy Partnership in partnership with the London Borough of Barking and Dagenham. This additional work was to produce an implementation plan or route map for Barking Town Centre Energy Action Area.

The guidance therefore draws on the work conducted in Barking Town Centre and lessons learnt through working through the problems and issues that are faced in one existing pilot Energy Action Area. Interviews have also been conducted with other pilot Energy Action Areas to gain an understanding of common themes, barriers and solutions that are being faced in all four areas.

Section 2 explains what to look for in selecting an Energy Action Area and how the key criteria might be met in practice.

Section 3 explores the choices of technology open to an Energy Action Area and investigates issues of compatibility and phasing.

Section 4 sets out how the planning and policy framework can be made to work for the implementation of an Energy Action Area.

Section 5 explains the key steps in the process of implementing an Energy Action Area.

Section 6 sets out the milestones in the development process and how to integrate implementation of an Energy Action Area into these milestones.

Section 7 explores how to deal with existing building stock within an Energy Action Area that won't be the subject of regeneration.

Section 8 details the funding and financing options for an Energy Action Area. It briefly summarises the choices of Energy Services Company (ESCO) drawing on case studies from around the UK.

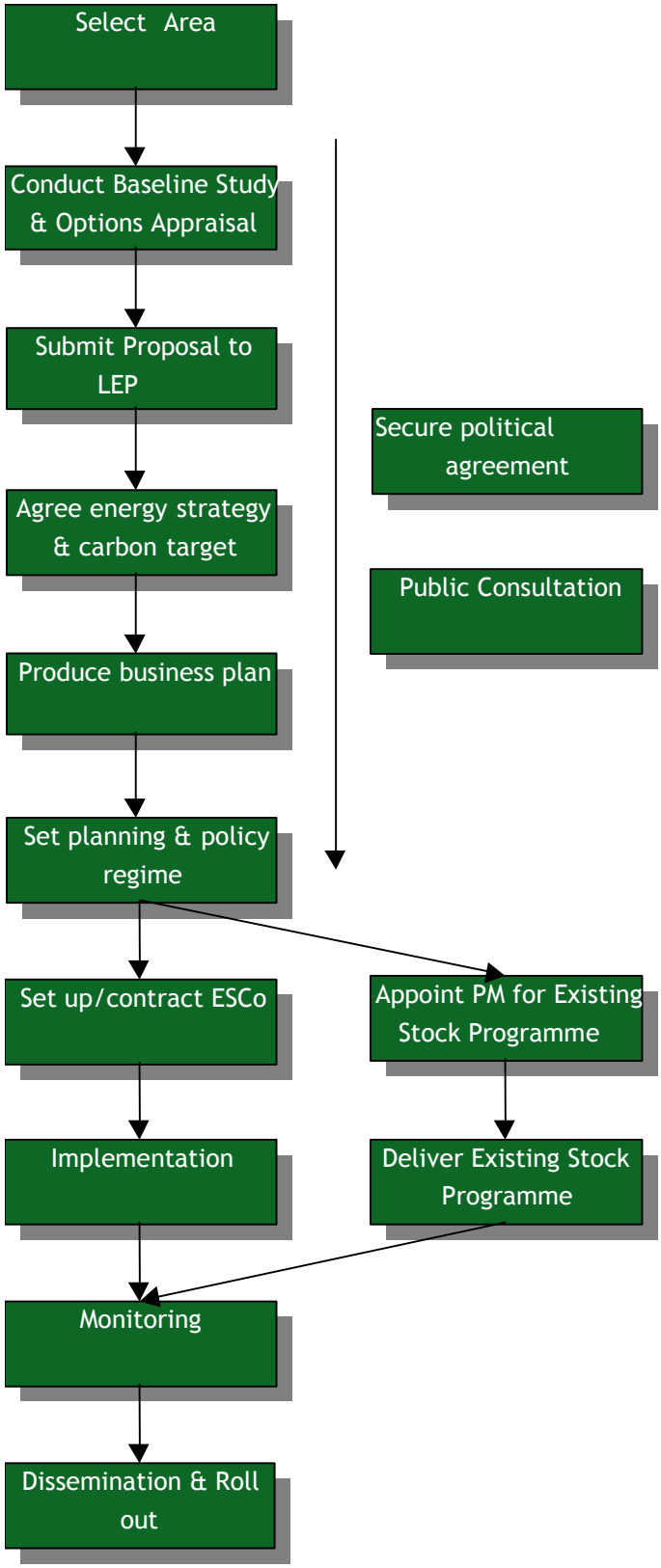
Section 9 sets out tools for the promotion and marketing of an Energy Action Area.

Section 10 presents a summary of key facts from the four existing pilot Energy Action Areas.

Finally, Section 11 sets out sources of further information that may be useful in developing an Energy Action Area.

1.3 Key Steps Summary

Figure 1 Key Steps Flowchart



2 Selecting the Energy Action Area

2.1 What is an Energy Action Area?

Energy Action Areas are an initiative first put forward by the Mayor of London in his Energy Strategy for London, Green Light to Clean Power.

The Strategy describes Energy Action Areas as: *"well-defined geographical areas which can act as showcase low-carbon communities, demonstrate a range of sustainable energy technologies and techniques, and provide a means of targeting resources. They could act as a focus for improving energy efficiency in buildings, for example, integrating sustainable technologies and incubating local skills development. This approach would add value and profile to projects, generate nodes of good practice, and provide models for the rest of London and other urban areas to follow."*

In the following sections the key elements of the above definition have been extracted and suggestions as to how an Energy Action Area might meet these criteria have been made.

2.2 How This Might be Interpreted in Practice

2.2.1 Low carbon community

A low carbon community means that the activities undertaken by or within a community involve very low levels of carbon emissions.

The London Energy Partnership's 'Low Carbon Designer' toolkit sets out definitions of a low carbon community. There is an expectation that a target to reduce carbon emissions is set that goes beyond the norm.

Existing pilot Energy Action Areas have set varying emission reduction targets. The Concerto community in Southwark has set a target of a 75% reduction in carbon emissions. The Elephant and Castle pilot Energy Action Area has set a target of zero carbon growth - in view of the estimated 228% increase in floor area.

The floor space in London as a whole is set to grow and without concerted action this is likely to result in increased overall emissions. As Energy Action Areas may include areas of regeneration, careful thought should be given as to how the target set for an Energy Action Area will impact on London emissions.

Measuring Carbon

Carbon dioxide emissions arise as result of activities undertaken by or within a community. Existing pilot Energy Action Areas have tended to limit the targets to carbon emissions that can be measured, that is emissions resulting from direct energy use within buildings.

However there are other factors that an Energy Action Area might wish to try and measure and set targets for. Transport emissions are a rapidly growing area of carbon emissions, with aviation growth a serious area of concern. An Energy Action Area might try and influence lifestyle and consumer choices in terms of the food, travel or other goods. The embodied emissions in food purchased by an average household are now estimated to be larger than household gas and electricity use in London.

The London Energy Partnership has produced a separate Carbon Accounting Guide which is available on their website. This sets out the methodology that should be used in reporting and monitoring carbon emissions in an Energy Action Area.

2.2.2 Demonstrate sustainable energy technologies

Sustainable energy technologies are plainly an automatic concomitant of being a low carbon community. However it's entirely possible, certainly in a UK context, to satisfy a low carbon definition with quite a limited range of technologies or even just one technology: for instance biomass CHP. The question arises therefore as to whether an Energy Action Area should attempt to demonstrate a wide range of technologies. The reality is probably that cost and a rational approach to design will determine that certain technologies predominate. If it's true that some technologies are more appropriate to an Energy Action Area, then demonstrating other inappropriate technologies will often be undesirable.

2.2.3 Act as focus

Inherent in the idea of an Energy Action Area is that the area will act as a focus and have a positive demonstration effect both in the borough it is situated and across London. Whatever works in an Energy Action Area can be replicated and rolled out in other areas. A clear sense of how the lessons learnt will be disseminated and how the developments can be rolled out across a wider area is important. The use of highly visible technologies as landmarks will help in this regard.

Visibility

Unobtrusiveness could be represented as a positive aspect of sustainable energy technologies, but there is a danger that technologies employed such as CHP, community heating and ground source heat pumps could easily be invisible to visitors to the area. Using a range of highly visible technologies as landmarks will help in this regard.

One of the areas in Europe with the largest concentration of sustainable energy technologies is the City of Freiburg in Southern Germany. Any visitor to the city is struck by the large number of large scale renewable technologies that clad the city's buildings. This highly visible, eye catching usesof technology could be used in London to signify that a visitor is entering an Energy Action Area.

Although a multi-storey car park is an unlikely representation of sustainability, the building in Freiburg below shows how renewable energy integration can have a very positive impact on the aesthetics of what are normally very unattractive structures. The saw-tooth pattern of PV on the car park roof provides a very attractive and striking profile.

2.2.4 Incubating local skills development

The development of local skills could be implemented through local labour in construction initiatives, identifying the range of sustainable energy skills that will be needed for the development, and providing training for local people to meet these requirements.

The employment and skills impacts of regeneration or refurbishment schemes are often not considered separately. It is simply assumed that the work will lead to beneficial side effects in these areas, requiring no special intervention.

However, some of the skills required are quite specialised and may not exist to any great degree. A concerted programme to train local people may provide better value to the contractor as well as benefits to the local community.

Aberdeen Heat and Power Skills Development

Aberdeen Heat and Power (AHP) is an ESCo set up by Aberdeen City Council to develop combined heat and power and district heating in Aberdeen. As part of the development of district heating, AHP identified a skills gap in the installation and maintenance of district heating. The company partnered with a local training provider to develop a skills base in this area. AHP now subcontracts the maintenance of the scheme to the company they formed.

AHP consider the local company to be better value than existing alternatives, providing better quality services at a lower cost.

The London Climate Change Agency is currently developing a number of inward investment projects in conjunction with Think London to establish renewable energy, hydrogen and waste technology manufacturing or assembly plant in London to reduce the cost of such technologies and to provide local skilled employment.

2.3 Selecting an Area

From the definition above it can be seen that a site to be put forward as an Energy Action Area needs to have the potential and opportunity to meet these criteria. To really transform an area into a low carbon community requires quite radical intervention and all of the Energy Action Areas are therefore based around either a new development, involving demolition of the previous poorly performing buildings, or a refurbishment scheme. The London Energy Partnership is keen to see a mix of refurbishment and newbuild within Energy Action Area proposals, representative of London. Most of the existing pilot Energy Action Areas contain a mix of newbuild and existing stock enabling different approaches to be trialled. Whilst considerable newbuild activity is planned for London, reducing emissions in the existing building stock must also be addressed for London's carbon reduction targets to be met.

3 Selecting the Right Technologies for An Energy Action Area

3.1 Conducting an Options Appraisal

An energy strategy is a critical part of developing an Energy Action Area. The first step towards deciding what sort of mix of measures might be applied to a selected area is an options appraisal. This should firstly produce a picture of the baseline energy use and resultant carbon emissions. This can be later used to set a target. Ideally this should be part of a wider strategy for the whole borough so that a long term view is taken as to what the Energy Action Area needs to contribute to an overall borough wide target.

An options appraisal should analyse a range of technologies that might be applied to an area. This will include renewables, combined heat and power and energy efficiency measures.

Generally these should be judged on lifetime costs to save a tonne of carbon. Some measures may have large capital costs but when the savings in energy and operation and maintenance costs are taken into account, they may have the lowest lifetime cost. There may however be cases where this will not be the main factor considered. The view may be taken that the long term potential of a particular technology means that it's important to include it to help bring down the cost or it may be considered that a particular technology provides better future proofing than a cheaper alternative.

There are a number of specialist consultants who could be used to conduct this type of feasibility work.

3.2 Technology Compatibility

A key factor in selecting a mix of technologies is how these different systems will work together as a whole and provide the optimum carbon reduction.

The table below gives a guide to the compatibility of different supply technologies, or more accurately how well they work together. It is perfectly possible that solar thermal can be installed together with combined heat and power (CHP) and district heating, but they both provide carbon free heat simultaneously, meaning that no additional carbon savings are achieved by installing solar thermal if CHP has already been selected.

Table 1: Technology Compatibility

Technology	CHP/DH	Ground source heat pumps	Solar thermal	Solar PV	Wind	Micro-CHP	Hydro
CHP/district heating (DH)		X	X	✓	✓	X	✓
Ground source heat pumps	X		✓	✓	✓	X	✓
Solar thermal	X	✓		✓	✓	X	✓
PV	✓	✓	✓		✓	✓	✓
Wind	✓	✓	✓	✓		✓	✓
Micro-CHP	X	X	X	✓	✓		✓
Hydro	✓	✓	✓	✓	✓	✓	

Without wishing to pre-judge the options appraisal, all four existing pilot Energy Action Areas have selected community heating and combined heat and power as a core part of their strategy. It is difficult to imagine these technologies not playing some part in an Energy Action Area. Therefore this guide includes special consideration on the issues around the implementation of community heating and CHP.

3.3 Selecting a Heat Source for Community Heating

The full spectrum of fuels has to be considered on a long-term basis. Fossil fuels are still the main options in terms of availability and supply chain, but they cannot deliver a zero carbon development. Biomass fuels should be preferred for the development, but the supply chains are not yet fully developed. One option is that a combination of fossil and biomass fuels is used initially. The biomass fraction could be increased with time, in order to supply 100% renewable heat and power.

Availability of biomass fuels within the area, such as tree surgery and clean wood waste, should be investigated. This potential fuel could be collected and used in a centralised biomass energy plant. This might need to be developed in conjunction with other businesses and organisations.

Another potential heat source could be the use of waste heat coming from local power stations. If there are any local power stations around the Energy Action Area, the use of waste heat from the power station should be investigated (see text box).

Heating an Energy Action Area

London already generates around 40% of its electricity needs within the city's boundaries. Like most of the UK's power generation, the heat by-product of this generation is wasted, simply dumped into waterways or the atmosphere. This could be used to provide heating and hot water for London.

An options appraisal should consider using heat from existing power plant. Even if the plant is incompatible with CHP, there may be plans for refurbishment or extension of the plant. Three of the existing pilot Energy Action Areas have large generation plant nearby. Heat can be transported surprisingly large distances with very little heat loss.

The DTI provides a list of all existing power generation plant on its website. The London Community Heating Development Study identifies the scope for using heat from some of these power plants.

The London Community Heating Development Study sets out some of opportunities for heat from existing power stations in London.

3.4 Community Heating Network Strategy

The physical elements of a community heating system are a central heat source, a heat distribution network and end-user installations in each dwelling.

3.4.1 Community heating network

In order to connect different buildings, a heating network is required. The network would normally consist of pre-insulated pipes (or heat mains) that are buried in the ground in a similar way to gas or water mains.

This type of pipe system is covered by different European standards. New mains are very reliable, with service life in excess of 30 years and produced by specialist manufacturers. Mains would normally include a leak detection system located within the insulation that helps to locate and solve the fault, which in turn will avoid corrosion of the pipes.

The design of the heat distribution network is fundamental to the economic viability of community heating, because it has a major impact on the capital and running costs. Economic optimisation is normally carried out when designing community heating networks. It involves the evaluation of capital costs, running costs and distribution heat losses with the aim of minimising the life-cycle cost for the system.

Energy Action Areas could be developed in stages and it is likely that isolated networks will be developed with time and will be eventually connected to one or more CHP/boiler plants. Incorporating heat loads to existing networks requires careful hydraulic design (temperatures and pressures). If the system is not well designed to accommodate this, it could compromise the development of the larger scheme.

Another option is to develop biomass systems within each individual regeneration site, for example biomass boilers or CHP engines running on biofuels (eg biodiesel or biogas), and then the sites can be connected to each other to create a larger network.

3.4.2 Centralised heat sources

One of the main advantages of community heating is that heat can be provided from a range of different energy plants linked to each other. Community heating schemes can utilise different types of fuel and technologies. The heat can be sourced from boilers or CHP units from one or several sites.

The location of these potential sites has to be considered when designing the distribution network. An appraisal study of the different options should be carried out in order to estimate the land-take and location for energy plants.

Linking several energy plants could bring advantages such as:

- Fuel flexibility - Some plant could use fossil fuels and others biomass
- Back up - If one plant fails, another could supply the heat required
- Build up the system - start with one area and expand to others with time.

Some biomass plants might require large fuel storage areas. It is also important to consider fuel delivery issues, which will depend on the type of biomass fuel chosen. Some building developments will have to consider space for boiler and cooling plants. These spaces can be used for developing larger energy plants that could supply heat and power to several buildings.

3.4.3 End-User Installations

The end user components of the community heating system are normally similar to what already exists in conventional gas-fires systems, ie pipework, radiators, hot water storage, and thermostatic and time controls.

A significant difference is that there will be a consumer unit interface instead of a boiler. This unit will normally take-up less space than a boiler and does not require a flue pipe or any gas connections. This unit does not need to be located next to an outside wall.

Hot water will come from the heat mains and it is then distributed to the radiators and hot water storage tank. In some models, these units can produce instantaneous domestic hot water via a heat exchanger, so there is no need for storage. These

systems can be controlled in a similar way to conventional systems, which include room temperature, hot water temperature and timer-based on/off systems for heating and hot water.

There are two main ways for charging for heat, using a service charge or using heat meters. Service charges are normally related to the property size, so the charge is not directly related to actual consumption. Service charges do not promote energy efficiency but equally do not penalise other more vulnerable users (eg elderly people). Heat meters work in a similar manner to electricity meters. They record the kWh of heat used by the property and customers are charged only for the heat used.

3.5 Phasing and Community Heating

One of the most complex areas in developing a community heating scheme is how to phase the development of a community heating network with the phasing of the different stages of building. Existing pilot Energy Action Areas are considering a range of different approaches.

Due to the size and phasing of some developments, this may need to be implemented in several stages, which might require interim measures to achieve a fully functional community heating system for the Energy Action Area.

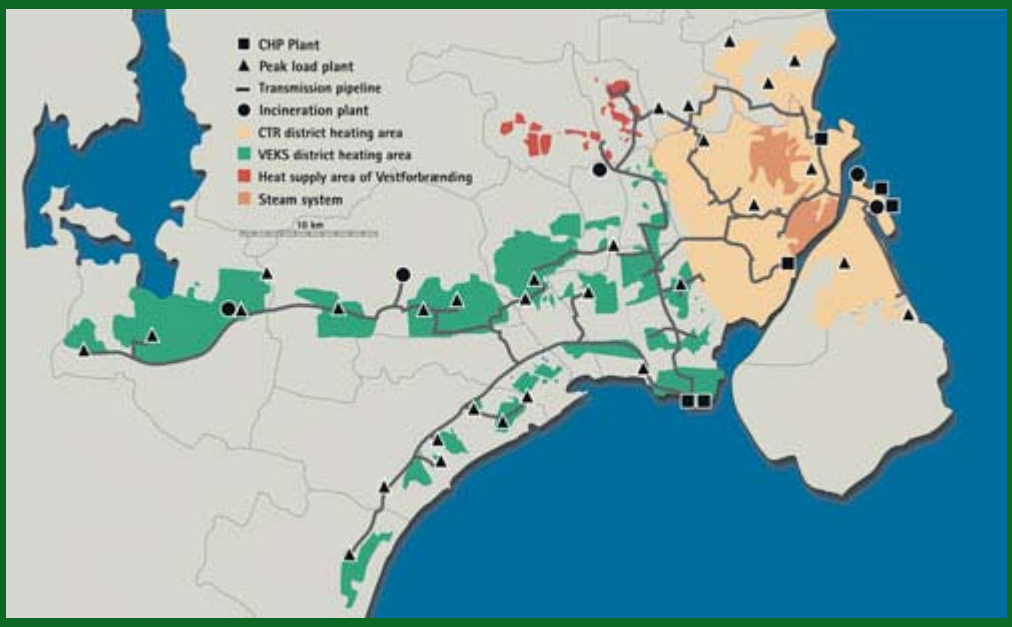
Interim measures could include:

- Using central boilers instead of individual boilers for apartment blocks
- Using gas boilers to build up the community heating system
- Using small biomass boilers to supply renewable heat to different developments
- Sizing heat mains in order to cope with large heat load in the future
- Ensuring community heating systems are designed to be compatible with each other in the future
- Ensuring that end-user installations are compatible with future larger energy plants
- Ensuring heat charges are suitable and promote the use of community heating systems
- Having a sound maintenance and management system in place.

Copenhagen's City-Wide Heat Network

In Copenhagen five municipal authorities, (the equivalent of a London borough), agreed to co-operate with the Greater Copenhagen authority to comply with the heat planning requirements and develop city-wide heating and CHP. These authorities were politically diverse and two had no experience of community heating at all. At the time a series of district networks existed together with a number of power plants which were having to dump heat. The solution that was developed was to build a transmission network, owned and operated by a municipal company owned jointly by the authorities involved. This is shown below.

The Copenhagen Transmission Network



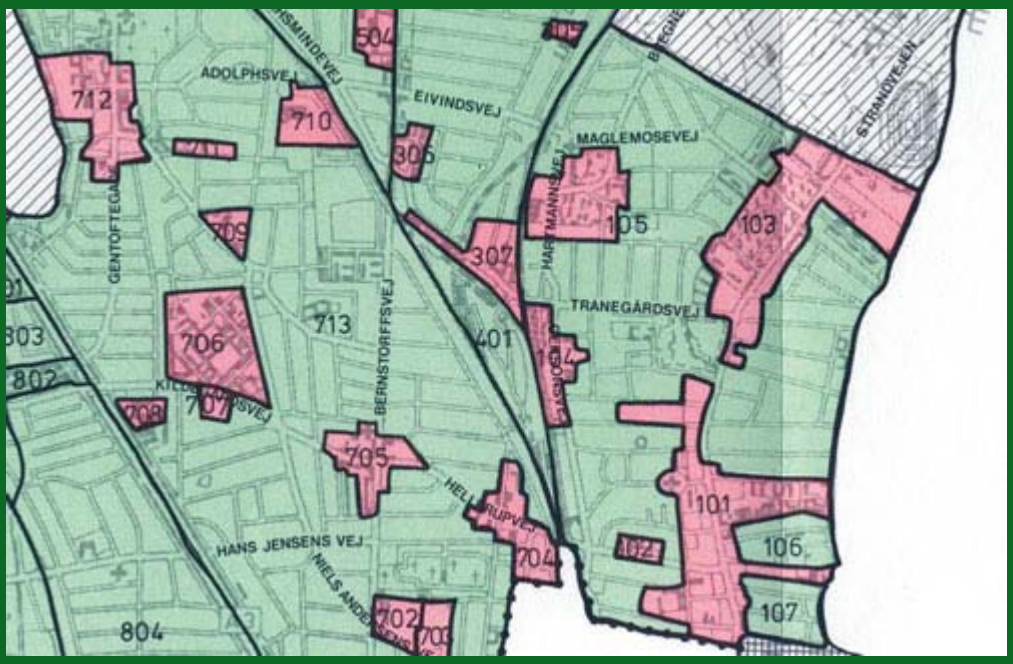
The transmission network is a connecting link between the local district heating networks and the heat sources. The Copenhagen system thus mimics a typical privatised electricity system where production, transmission and distribution are separated into three different areas of operation. The transmission company buys heat from the CHP plant operators, transports it through the network and sells it to the partner municipalities, who are then responsible for the further transportation and supply to individual consumers.

The result today in Copenhagen is one of the world's largest district heating systems, supplying heat for a floor area of around 50 million square metres. The transmission system connects four CHP plants, four waste incinerators, and more than 50 peak load boiler plants to more than 20 distribution companies in a one pool-operated system with a total heat production of around 30,000 TJ.

Development of CHP and District Heating in Denmark

Denmark has developed one of the most extensive networks of CHP based district heating systems in the world. Networks have developed covering whole cities or small rural towns of only 250 in habitants utilising a range of different fuels, including gas, straw, waste wood, municipal waste and biogas. These initiatives have led to the reduction of space heating energy requirements by 50% since 1973. One of the most important elements of this was the use of a nation-wide systematic planning of the heat supply and a maximisation of CHP on the basis of such planning.

An Example of Heat Zoning in Denmark



This map above shows an example of least cost heat planning in Denmark. The areas in red have been designated for connection to district heating, the areas in green for connection to the gas network. This planning was done on the basis of heat density. The plans were supervised by central authorities in collaboration with consultants and the utilities.

3.6 Energy Requirement in Planning Policy the Development of Community Heating

The welcome introduction of the requirement for a percentage of on-site renewable energy through the London Plan and some London borough's planning requirements has clearly brought forward an increase in interest in renewables and a range of solutions to maximising on-site renewable energy generation. An issue that clearly arises is how this can be best integrated with a desire to develop a district heating system and CHP.

In other countries, the route to CHP and district heating would generally be made using temporary fossil fuelled boiler plant. Initially, each development would be heated by this temporary plant until sufficient scale had been built up to allow for the inter-connection of the developments to a really large CHP plant. This approach is more difficult in the London context because of the requirement for a percentage

of renewable energy. Some regional and local authorities are considering including a requirement for community heating in new developments alongside on-site renewables.

A range of different strategies to deal with this have been put forward:

3.6.1 Temporary biomass boilers

The installation of packaged biomass boilers as an interim measure could be a viable option as the phased development takes place. These would feed each phase of the development communally. The connection between each phase could either be laid as they occur or put in place during the last phase. Finally the development could be connected to biomass CHP and the packaged biomass boilers removed for use at further developments or retained for back up.

The advantage of the temporary biomass boiler approach is that it has the effect of building up the supply chains for biomass and heat networks over time to a level that could support a large CHP plant. It also minimises CO_2 emissions in the interim and will contribute towards the renewable energy requirement in planning policy.

In the UK, biomass boilers can be supplied up to 5MW by different manufacturers and the installed cost is in the range of 300 to 700 £/kW, excluding the cost of civil works. Different fuels could be chosen, such as woodchips or pellets. Pellets are normally more expensive but have higher calorific values, higher volumetric densities and lower moisture content than woodchips. Woodchips could be a cost effective alternative to supply biomass fuel, especially if they come from tree surgery operations within the same borough.

Space requirements are an important issue to consider. Fuel storage will depend on the total amount of space available. Several deliveries might be required during the winter period and only a few during the summer. Any equipment requirements will depend on the manufacturer specifications.

Boiler manufacturers recommend that the biomass boiler is the lead boiler, so that it works close to full output most of the time, thus improving the efficiency of the system.

Modular boilers could offer the following advantages:

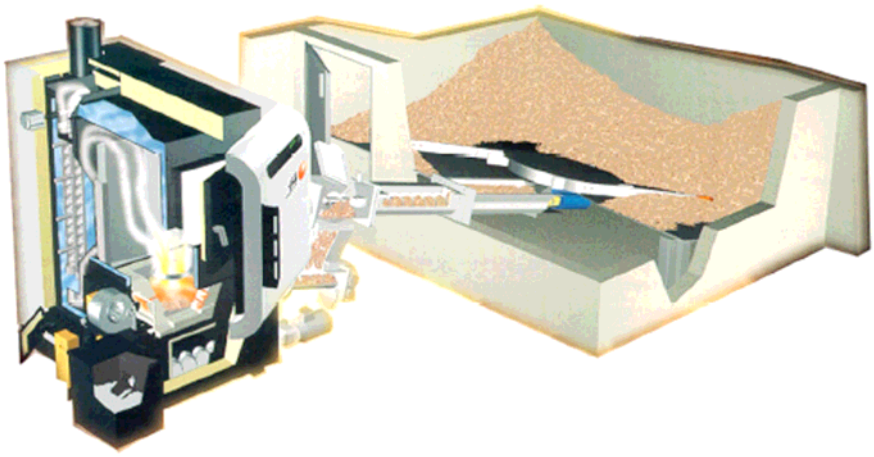
- They would potentially supply a large amount heat demand (potentially higher than 10%)
- They would normally come in one piece, mounted on a base frame
- Flue gas clean up is normally built-in within the unit
- Boiler efficiencies are higher than 85%, depending on the moisture content
- Automated fuel feeding equipment is normally included
- They would be easier to relocate if necessary at a later stage and be used again
- Good combustion controls are normally included within the units
- Some manufacturers offer units that could handle a variety of biomass fuels
- Smaller storage space requirements would be needed.

If biomass boilers become the lead boilers (for the base heat load), gas boilers could supply the rest of the heating requirements. According to Econergy Ltd, a 500 kW_{th} boiler would require a room to house the boiler with the following dimensions, 9m

long x 5m wide x 4m high. The biomass storage would depend on the amount and type of deliveries proposed for the scheme.

In urban cases, it would be desirable to use underground storage that could be connected to the boiler. A lorry could bring the biomass fuel and tip it into the storage area. Once the fuel is in underground storage it could be fed to the biomass boiler as shown in the figure below.

Figure 2: Modular biomass boiler (courtesy of Econergy Ltd)



Other options are possible, such as using silos or containers that automatically feed the boiler and therefore remove the need for tipping or underground bunkers. Consideration of potential limitations in an urban environment may be necessary. The final storage option will depend on several factors and will be specific to the site chosen for the biomass development.

Most of the wood resource in London is disposed at Civic Amenity (CA) centres, or taken away by tree contractors. This would normally represent a cost to the CA site or the contractor, which means that a biomass plant could potentially charge for taking this wood waste, effectively a gate fee. Renewable heat does not attract Renewable Obligation Certificates (or the heat equivalent) at the present time.

It is believed that the capital cost for biomass boilers will reduce further in the next 5 to 10 years, as the technologies improve and become more widely available. Natural gas prices have increased substantially over the last year, which makes this type of technology more attractive than before.

3.6.2 PV and/or wind

A further strategy for meeting the planning policies renewable energy requirement might be to ignore the heating and hot water demands altogether and to concentrate on meeting the target with PV and/or wind and simply install gas boiler plant for heating and hot water. This is likely to offer a more expensive solution, as capital costs for PV are currently high, but has the advantage that there is no inherent competition between the interim measure and the eventual solution. The gas boiler plant could simply become peak load boiler plant once the CHP is connected in.

3.6.3 Solar thermal

Solar thermal technologies generate domestic hot water mainly during the summer months, at the same time when the system heat demand is at its minimum. This type of technology is not normally compatible with centralised CHP plants, as both of them will be trying to generate heat at the same time so they will be fighting for this demand. This could mean that either the CHP plant or the solar panels might have to be turned down and minimising their efficiency, as the heat production would otherwise be excessive.

3.6.4 Communal ground source heat pumps

In theory, the use of communal ground source heat pumps allows for later replacement and connection to biomass (or other) CHP. Ground source heat pumps are also clearly preferable to gas condensing boilers in the short term, with emissions at perhaps half that of a gas condensing boiler system.

4 Making the Planning System Work for your Energy Action Area

Once the options appraisal has been conducted, this should provide a clear idea of what technologies will be used to deliver the Energy Action Area. Assuming that the selected area contains a new build component, it will be necessary to introduce a planning framework that is quite clear in terms of what is expected from the developers involved.

A few years ago, the idea that the planning system could be used to determine the energy performance of buildings would have seemed improbable. Tentative wording in planning guidance to "encourage" developers to orientate buildings to maximise solar gain or to "consider" higher energy efficiency standards were widespread but had limited effect. The national Building Regulations set the framework for the energy standards and developers tended to build to meet the minimum standards.

The introduction by the London Borough of Merton of a requirement for 10% of energy requirements to be supplied by on-site renewables opened up a whole possibility of using the planning system to deliver sustainable energy. Concurrently, at a regional level, the Mayor of London introduced planning policies relating to energy efficiency, efficient supply and renewable energy through the London Plan. These focus on decentralised energy use as well as a requirement for renewables, which is set at 10% in the Mayor's Energy Strategy. Now 25% of UK local authorities have a 10% on site renewables requirement.[4]

Local authorities developing Energy Action Areas need to think carefully about how their planning systems interact with regional planning frameworks, national Building Regulations and the use of combined heat and power and district heating, if this is selected through the options appraisal.

4.1 Setting a Carbon Reduction Target

One approach, discussed earlier, is to set a carbon reduction target within the planning framework, without actually specifying how you want this to be achieved. The developer then has the freedom to decide whether to follow, for instance, a CHP based strategy or ground source heat pumps. This may work well for the area where a single developer is responsible for the entire site, but where a number of different developers are developing different parts of the area, it could lead to a fragmented approach.

Ideally this target would be based on a long term target and strategy for the whole local authority area, where an estimate has been made of how much the Energy Action Area must contribute to an overall reduction target. In practice this level of planning and detailed analysis may not be available.

4.2 Building Regulations, Renewable Energy Requirements & CHP

As they stand, the new 2006 Building Regulations make requirements for a Target CO_2 Emission Rate (TER) expressed in kg/m^2/yr. For most dwellings (under 450m^2)

[4] Since the time of writing the Town and Country Planning Association has undertaken research, establishing how many local authorities in England now have an on-site renewable energy policy. Further information can be found at www.tcpa.org.uk.

the SAP (Standard Assessment Procedure) method must be used and this now includes ventilation and internal fixed lighting as well as heating and hot water.

The target is set by entering the dimensions of the proposed buildings into SAP but using a standard set of reference data for U-values, boiler efficiency etc, multiplying this by a fuel factor and then adjusting this overall carbon figure by an improvement factor of 20%. The reference set of U-values are essentially the U-values set out in 2002 Building Regulations. Thus far, this would imply that an overall 20% improvement on these values needs to be achieved.

However low or zero carbon energy supply systems such as PV, solar thermal or ground source heat pumps or CHP can be used to contribute towards this target. In order to prevent excessive trade offs (ie using renewable energy technologies without improving the energy efficiency of the building envelope), a minimum set of U-values has been set. These are similar to the 2002 Regulation values.

The actual building emission rate is known as the Dwelling Emission Rate (DER). The Dwelling Emission Rate is calculated through SAP using the actual proposed U-values, boiler efficiency etc. The dwelling emission rate obviously must meet the Target Emissions Rate for compliance to be achieved.

Essentially, the overall impact appears to be that it's possible to build to the 2002 Regulations if CHP, ground source heat pumps, PV or other renewables are used in sufficient quantities to provide a 20% carbon reduction. However, there is some uncertainty over this since neither the Regulations nor the supporting documentation currently specify that the whole 20% can be made up from low or zero carbon sources. The documentation on the Department for Communities and Local Government website refers to discussions on figures of 10%, 15% or 20%.

4.3 Planning Policy and Strategy

In order to reinforce the aims of the Energy Action Area, it is desirable to embed these in as many policies as possible. This will increase awareness amongst elected members, officers and the general public. Additionally, if the aims are embedded in several policies, it will demonstrate that the authority is committed to the Energy Action Area, allow targets to be set for officers to report against on an annual basis, and will help reinforce the objectives for developers.

There are a number of actions and strategies that will need to be put in place in order to ensure that the implementation of the Energy Action Area is able to move forward. It is recommended that these are determined early in the process, so that implementation can fit in with development timeframes and that strategies are in place to make use of timely opportunities.

It is particularly important that sustainable energy becomes an integral part of the regeneration and development agenda. This will be achieved through the introduction of regeneration and development policies and strategies reflecting the Energy Action Area aims, ensuring it is a key step in the development process. These will need to be agreed in collaboration with environmental and development roles and put in place at an early stage of the Energy Action Area implementation.

4.3.1 Strategy documents

There are many strategic drivers at an international, national and regional level that should be considered when setting targets for an Energy Action Area, including the

EU Energy Performance in Buildings Directive, the Energy White Paper and the Energy Review, the London Plan and the London Energy Strategy. At a regional level, targets have been set for embedded generation within each borough. These are excellent starting points, but an Energy Action Area should look to establish higher targets. It is recommended that these targets are included in as many borough policies and strategies as possible, in order to reinforce commitment, and strengthen the message to developers and residents.

As a minimum, it is recommended that the targets and principles behind the Energy Acton Area be included in the Local Development Framework. As the targets will also bring about economic, environmental and housing targets, inclusion within the Corporate Plan and the resulting annual reviews is recommended. Having to report annually on progress will underline the commitment of the members responsible, and is a very good way to demonstrate progress against the targets. Additionally, reaching targets then becomes a part of the work of the officers and members, thus ensuring that real and effective action is taken.

Inclusion within the Economic Development Strategy will provide a delivery mechanism for council stock, as well as existing commercial buildings, where there are significant energy savings to be made. The creation of an Energy Action Area should also lead to job creation, and improve the local economy, as the residents will have more disposable income if they are spending less on fuel. This should be recognised within the Economic Development Strategy.

Adding the targets set under the Energy Action Area into several policies means that a number of committees will have to approve the policies. This will help to highlight any training requirements, to increase understanding on the part of councillors and directors across the council. Political support for the aims and objectives will also be gained as a part of this process, and will reduce the risk that the person championing the measures within the borough moves on.

4.3.2 Planning policies

The review of the London Plan and the formation of Local Development Frameworks are an ideal opportunity to include targets for the borough as a whole, and more particular targets for the Energy Action Area. Many boroughs are now looking at the inclusion of fixed targets for embedded generation within these frameworks, and it is recommended that targets for the inclusion of heat and electricity generation from renewable sources, or through CHP, be included. Careful consideration of the targets should be given, as it may be that a 10% overall requirement will be insufficient if both heat and power are considered.

Where the consultation and development of the Local Development Framework has not included targets for embedded heat and power generation, it is possible to adopt a planning policy document for this inclusion. Many London boroughs now have such a document. Development of Planning Policy Documents for energy generation is supported by supplementary planning guidance, produced by the Office for the Deputy Prime Minister (now the DCLG), and is expected by the London Plan. These documents can enforce targets across the borough or for specific areas, such as the Energy Action Area.

Planning gain is also an instrument available to local authorities for the inclusion of sustainable energy targets within any development. This is especially useful in regeneration areas where there are phases of development that are too far

advanced to be included as part of the policy development. Section 106 agreements can be agreed with the developers that will, for example, establish requirements for renewables, help to finance the marginal costs of heat networks, or include the requirement for travel plans. Optimum use of Section 106 agreements should be made in order to ensure that early parts of the development do not compromise the overall aims and objectives of the Energy Action Area.

In large regeneration areas, it is likely that the burden of any section 106 agreements, particularly those aimed at meeting the marginal costs of community heating networks, can be spread amongst several developers, reducing the risk outlined above, and thus not discouraging developers from involvement. This may be one of the points to take into consideration when selecting the Energy Action Area.

4.4 What to expect from developers

This section draws on experience of meetings with development teams around specific developments, to outline what are believed to be the pressures facing developers, how these impact on energy matters in any given development, and how these might be addressed or overcome in an Energy Action Area.

4.4.1 What are the pressures?

Financial

Pressures on developers fall into a number of categories, but ultimately all affect the bottom line. It is typical of developments in the UK that the local authority wishes to achieve a number of social goods as part of the development. These might include the provision of social, affordable or key worker housing or perhaps the provision of transport infrastructure or community facilities. In the Barking town centre case, sustainable energy itself is highlighted as an additional social good.

Generally speaking, these social goods either raise the cost of developing on a given site or reduce the sale value. The end effect is the same: profit margins are reduced for the developer. A careful balancing act is required to maximise these goods without reducing profits to such a level that the developer decides to withdraw. This happened, for instance, in the negotiations over the Elephant and Castle development.

A requirement to provide social housing does not add to the cost, indeed it may reduce it as the developer may provide more basic facilities, but it means that the rental value is lower and therefore the return that can be derived from the investment is lower. Conventional housing for sale or rent can be sold or rented at full market value and so offers higher margins.

A traditional way of achieving these goods is through Section 106 agreements where the developer is given planning permission to develop a site, in return for a commitment to, for instance, pay for transport infrastructure or to give a part of the site for a community facility. In general, this is a two way process, so it is possible to examine the economic viability of each individual case at the discussion stage.

Consumer preferences

Consumer preferences can work in both ways in terms of sustainable energy. Sustainable low energy construction should, in theory, improve the saleability of a property, but statistics on this are inconclusive. Surveys with regard to energy efficient housing have shown mixed results with some showing that energy

performance is a factor in purchasing a house and others showing it as a very low priority.

Communal heating systems are not as widely accepted in the UK as on the continent and may, in some consumers' minds, have a poor image. Ageing systems installed in the 1960s and 70s with failing pipework and poor control do not give confidence in such systems generally. The ubiquitous individual gas central heating system is widely accepted and the gas supply trusted. There is little understanding that any ageing poorly maintained system will result in poor performance irrespective of whether the energy delivery mechanism is gas or hot water. The performance of large scale heating systems in countries such as Denmark shows that the provision of heat to a dwelling can be as reliable as the provision of any other utility: whether gas, water or electricity.

Communal systems

It is generally accepted that developers dislike any form of communal system. Communal systems such as lifts and community heating require management and maintenance. Developers have traditionally opted for electric heating systems where possible since these require very little maintenance. They are generally more costly to run and have higher associated carbon emissions, but have significantly lower capital costs to install and require no ongoing management.

4.4.2 Addressing the pressures

Where the demand for sustainable energy systems increases the cost of a development, this can in part be alleviated by:

- Assisting with grant funding - potential grant funding sources are outlined later in the report
- Providing an ESCO a financing arrangement whereby the cost of the measure is reclaimed through the sale of electricity, heat or a service charge. It could be the case that an ESCO finances the cost of on-site renewables in return for the income derived from electricity and ROC sales.

Foyer Building Development – A Case Study

The Barking Town Centre pilot Energy Action Area is about to submit a Foyer Building development to planning. This will provide basic bedsit accommodation for 16-24 year olds as well as office space, training facilities, and possibly a cafe. The current design is an 8-storey concrete frame building. The 10% target has, to date, lead the design team towards a route of providing solar water heating and ground source heat pumps. The tables below show the estimated total energy demand and CO_2 emissions for the building and the impact of a range of renewable energy measures.

Renewables Options Appraisal for the Foyer building

	Gas consumption (KWh)	Elect consumption (KWh)	Fuel Cost (per yr) £	CO_2 Emissions (tpa)	10% CO_2 Target Savings (tpa)
Base Case Scenario	762,278	502,636	13,721	361	36

Renewables Options	% or No units	KW or m^2 or units	Full Cost/ (unit or m^2 or kW)	Total full cost £	Gas savings (kWh)	Elect savings (kWh)	Fuel savings £	CO_2 savings (tonnes)	% CO_2 savings
Biomass Boilers to cover 25% of thermal load	25	70	350	24,500	190,570		1,601	36	10%
Solar thermal to cover 25% of roof area	25	168	400	67,000	98,981		1,782	19	5%
Solar PV to cover 50% of roof area	50	335	688	230,313		31,490	2,362	14	4%
Wind Turbines - Ropatec	4	6	15,000	60,000		30,400	2,280	13	4%

As can be seen from the table the cheapest way of meeting the requirement, following the GLA Toolkit methodology, would be a biomass boiler of around 70kW costing only £25,000. The toolkit does not recommend the technology that the developer has actually selected (ground source heat pumps) for a building of this kind. The use of solar PV on 50% of the roof area would cost £230,000 and reduce CO_2 emissions by 4%. The maximum use of wind turbines on a roof area of this size would also provide emission savings of 4% and cost around £60,000. Increasing the roof area coverage of PV to 75%, together with the four wind turbines, meets the 10% target at a total cost of £405.000.

4.5 Lessons from the Foyer Development

- Without clear guidance, developments in Barking Town Centre will not be compatible with the aims of the Energy Action Area. This is hardly surprising given that developers are currently unaware of the strategic aims of the Energy Action Area and the potential for community heating. Developers and their design teams will see their buildings in isolation and, understandably, attempt to meet requirements set by planning and building regulations within the site boundaries. Currently this appears to lead to a choice of ground source heat pumps and/or solar thermal.

- The proposed strategy for Barking Town Centre to demand that the building meet the 10% renewable energy requirement through the use of electricity generation only will impose significant costs on developers. In the case of the Foyer this amounts to perhaps £230,000 to meet a 4% reduction of CO_2 emissions - though with grant funding this could be reduced to a contribution of around £100,000. In light of this, some flexibility may be required in implementing the requirement.

- Developers' design teams have their own philosophies about sustainability that reflect the spread of ideas within the architecture and engineering professions as well as the general public. These diverse philosophies will not always be compatible with the aims of the Energy Action Area. Both education and strict planning requirements (and enforcement of them) will be required to overcome this.

- Building mounted wind has significant design and planning implications and needs to be thought through and integrated early on in the design process.

- As the draft Building Regulations currently stand, and without specific planning requirements on energy efficiency standards for the Energy Action Area, developers in Barking Town Centre may use the 10% renewables requirement to offset the need for higher energy efficiency standards.

4.5.1 Recommendations for Energy Action Areas

- There needs to be full understanding across the local authority developing an Energy Action Area. Development control, housing regeneration, design and architecture units should take on responsibility for ensuring that Energy Action Area aims are fully integrated into new developments.

- A seminar with prospective design teams working in the Energy Action Area should be held to enable the rationale behind the Energy Action Area philosophy to be fully explained.

- A view should be taken on whether, within an Energy Action Area, the use of renewables should be allowed to reduce energy efficiency standards as permissable in the draft Building Regulations.

- Education and awareness raising is required to overcome the poor view of communal heating systems. Ultimately, a functioning reliable system developing over time, and providing heat at competitive prices, will provide the best educational tool.

5 Building Support and Consensus

Within the Energy Action Area, it is a very good idea to ensure that there is a good understanding of the rationale behind the setting of the targets, especially among elected members and directors, so that they support the process though the planning procedure. Public support and understanding is vital to reduce planning objections, and increase buy-in into the technology, as well as secure potential customers for an ESCo. Some potential measures and investigations that may be helpful to gain support include the following.

5.1 Technical Studies, Training and Support

A number of technical studies can be considered to inform the implementation of the Energy Action Area from the London borough's perspective. For example, in planning terms what steps to take, which technologies to incorporate and to understand the developer's perspective (in the case of new developments).

5.1.1 Community heating systems

Where community heating is a favoured option, this should be carefully researched and designed, as it is a major project. Heat loads need to be identified, as well as potential or existing heat sources, and design of the distribution system. Interconnection with new developments also needs to be planned for, including extra facilities/equipment requirements, and how existing buildings could be connected.

5.1.2 Feasibility study into locations for stand-alone wind turbines

It would be beneficial to undertake a study into the best locations within each Energy Action Area in which to install stand-alone wind turbines, to build on the London Energy Partnership Wind and Biomass study undertaken in 2005-06[5]. The London Energy Partnership study identified locations for large-scale commercial wind turbines (above 100 kW turbines), and also examined the requirements for locating smaller stand-alone wind turbines (1 kW-100 kW turbines) but did not identify specific locations as these would be very numerous across the whole of London and would be identified at local level. A further study could examine and determine the actual local potential for smaller stand-alone turbines in each Energy Action Area.

It is recommended that such a study be carried out at an early stage of Energy Action Area implementation, so that any wind turbine projects successfully identified and taken forward to installation could quickly become landmark features and visible icons identifying an Energy Action Area.

5.1.3 Feasibility study for large PV arrays (with suitable funding)

A similar exercise could be carried out to determine suitable locations for larger PV arrays and how to take them forward with suitable funding. These would also be independent of any regeneration plans.

5.1.4 Feasibility survey of retro-fit measures in non-development areas

It is recommended that a survey is carried out of the residential and non-residential properties in non-regeneration areas to determine the actual potential for

[5] Feasibility Study into the Potential for Non-building integrated Wind and Biomass Plants in London, undertaken for the London Energy Partnership by SEA/RENUE, TNEI Ltd, the Wind Consultancy Service and Ian Bright. Available on the LEP website www.lep.org.uk

retrofitting renewable energy installations and energy efficiency measures. Such measures would include, for example, PV, wind turbines (building integrated or stand-alone), solar thermal (where community heating is not being considered), cavity wall insulation, loft insulation and external cladding of solid walls. Cavity-wall and loft insulation is where the greatest carbon emission reductions can be achieved at the lowest cost.

This work could be done on a total capacity basis, or with the involvement of a selection of interested residents/businesses as part of a local energy scheme, and could inform options for a wider (possibly financially supported) scheme to encourage take-up.

Such measures (particularly if there is a limited level of involvement) will have smaller overall impact on carbon reduction targets and will have greater costs associated with them so will be less of a priority. However, they could be useful in providing some visible examples of putting Energy Action Area measures into effect in residential and non-residential areas, and would be a tangible way of involving the wider community in the Energy Action Area.

5.1.5 Study into renewables options for municipal services

A study could be commissioned to identify the options for installing PV systems and small wind turbines to provide power to street lighting, powered signs and parking meters in each Energy Action Area. This could also include any environmental and traffic monitoring equipment operated within Energy Action Areas and could recommend policies to enforce use of renewable power by any engineering works in Energy Action Areas.

Such measures would again be useful in providing visible use of renewable energy in an Energy Action Area and demonstrate the borough's engagement in Energy Action Area implementation within its own services.

5.1.6 Green transport study

It is suggested that a green transport study be carried out to investigate options for reducing carbon (and other) emissions in the transport sector. This aspect could provide significant carbon reductions. As part of new developments, proposals will need to incorporate provision for cycle parking and access to public transport. However, further changes in transport modes (including cycling and walking), transport fuels/vehicles, provision of public transport and other transport schemes such as car clubs should all be examined.

5.1.7 Feasibility studies for renewable energy

Feasibility studies for the incorporation of renewable and energy efficient technologies into new developments would be the responsibility of developers. However, London boroughs may wish to inform themselves of the options and issues relating to different technologies.

5.1.8 Training and support

It is also recommended that training and support be provided to ensure the local borough and other stakeholders understand the motivation behind each Energy Action Area, the measures available, and the associated benefits and considerations. The various departments of the London borough itself need to be aware of the implementation of the Energy Action Area, how they need to contribute and be in a

position to help those being required or encouraged to put in place the Energy Action Area implementation measures, such as developers, residents and businesses.

Training should be given to departments that have any involvement with the implementation of an Energy Action Area, even indirectly, so that there is a cross-department understanding of the technologies involved, as well as incorporation of Energy Action Area measures into working practices. It might also be considered what support can be offered to help developers incorporate the Energy Action Area measures into their developments, in terms of advice and contacts with consultants.

The provision of advice to residents and businesses wanting to get involved themselves or improve their environmental sustainability should also be considered. This could be done relatively easily through leaflets and website information, or through a dedicated advice line.

5.2 Consultation

Consultation is an important part of any development process and implementation of an Energy Action Area would benefit from the input of residents, businesses, other organisations and borough departments. Public support for development proposals is more likely to be gained if there is an understanding of what an Energy Action Area is aiming to achieve, the technologies themselves and what benefits an Energy Action Area might bring.

Initial consultations could be carried out about an Energy Action Area in general and about specific developments incorporating relevant measures. This could be done through a number of media, including workshops/open days, articles in local papers/borough newsletters, leaflets, letters or information provided on borough websites.

Consulting Residents in Barking Town Centre

As part of the Energy Action Area implementation plan study, two public consultation events were held to discuss the Energy Action Area. Further feedback was provided through questionnaires distributed through residents' groups and local interest groups, via a display in Barking Town Hall and a solar launch event in the borough.

Although only a small sample group, the questionnaires provided some interesting insights into public perception of low carbon development and local environmental concerns. 75% emphasised transport as an area which needed action in order to improve the local area. This suggests that a holistic approach to the promotion of the aims of the Energy Action Area will be effective. The results also overwhelmingly reflected a positive perception of renewable energy technology as a necessary and important part of regeneration. Over a quarter of respondents stated that it should be standard practice to include renewable energy technology in all new build homes.

The sample focus groups were a useful tool in providing the local community with the opportunity to get involved with the development and voice their own concerns and perceptions of Barking Town Centre's environmental challenges. This creates a stronger foundation for the generation of focused information events and highlights areas where concerns need to be addressed – such as heat controls on a community heating system, transport issues, and health.

Due to the level of appreciation of environmental issues demonstrated, the focus groups and questionnaires also provided information to use in presenting low carbon regeneration to developers. Respondents both recognised the importance of renewable energy technologies such as solar, and expected to see it utilised in modern buildings.

Further involvement and encouragement to get involved could be achieved through local groups and associations, particularly residents' associations, business

associations, green groups and so on. Members of the community could be encouraged to become involved in the areas that relate to them personally. Campaigns and competitions could also be useful ways of raising the profile of Energy Action Area implementation and gaining interest and support.

Particular consultation may be required in the case of implementation of community heating, as many people may have a poor perception of community heating in general and a low level of understanding of modern systems and their benefits.

5.3 Political and public support

For an Energy Action Area to properly achieve its potential, it is important to get understanding and commitment from all borough departments involved in any way in the Energy Action Area, and general awareness of the implementations.

Council Members will also need to be aware and agreed on the implementation, as they will be making decisions on issues affecting the implementation. Any policy conflicts will need to be addressed as early as possible in order to find a workable compromise where necessary.
Any public-private sector partnerships likely to be affected or involved should also be directly consulted.

The wider public is beginning to be more aware of the issues of climate change and is in general supportive of measures being taken to combat it. However, there is still work to do to inform people of what is involved and what will be necessary. Support can be gained for specific projects and work in general when people are properly informed of the measures being implemented and what benefits they can bring.

Consultation (as above) is key and awareness and interest can also be raised through campaigns and competitions, involving schools and so on. These and general information on Energy Action Area activities, and suggestions on how to get involved, could be disseminated through a local newsletter to accompany other mailings and publications, newspaper articles and through the council web-site.

A few key events could also be used to raise the profile of the Energy Action Area and implementation activities and to increase interest and support for climate change action.

6 Milestones for New Developments

Where new developments are planned, implementation measures need to be considered within the development timeframes of those proposals, in order to be properly incorporated, and to avoid unnecessary delay and cost.

Where development plans are already underway, it will need to be considered which measures can still be incorporated during the remaining phases, and concessions may need to be made as to what can or cannot be achieved.

6.1 Master-planning

The master-planning stage is the most effective time to get involved in proposals and plan for environmental measures to be included in development plans. Requirements can be defined at this early stage as to what should be included and how and they are more likely to be successfully implemented when included.

Feasibility studies can be carried out to investigate what the best options are to achieve the targets set for each development.

Where possible, local planning policy and strategy should be adapted to take account of the aims of the Energy Action Area (see section 4). The more policy and strategy is in place at the early stages of development, the easier it will be to ensure the implementation of the required measures.

6.2 Development

At the stage of creating the development brief and tendering for a development partner, Energy Action Area measures will need to be discussed from an overall perspective to allow developers to consider the options available to them and to plan for any requirements imposed.

Feasibility studies can be carried out to investigate what the best options are to achieve the targets set for each development.

Public consultation can be initiated at this stage to gain support and provide input to the process.

This is the key stage in influencing development proposals. It can become more difficult after this point, as there is less flexibility in the later stages.

Where policies do not currently exist, developers could still be persuaded to take on board additional requirements of the Energy Action Area aims, however it will always be easier to achieve this under policy frame-work.

6.3 Design

In the development design stages, prior to planning application and afterwards, it is still possible to influence the measures to be incorporated. However, there may need to be some flexibility in terms of what can be expected and achieved. Generally, most environmental measures and services are not difficult to add on to the main building design.

Developers will need to be able to allow for any additional equipment requirements and flexibility, including the use of temporary measures if appropriate (eg temporary on-site CHP and boilers prior to completion of a community heating scheme).

Local authority development managers will need to be clear on the requirements imposed and be able to discuss them with developers to achieve an acceptable design.

6.4 Retrofit

Once developments are complete, and on existing buildings, retro-fit measures should be considered, although these will have to work around what services and provisions have already been made in a building. Although it may be more costly to add some measures as a retro-fit measure, there are, however, still financial benefits to building owners/operators (including private homes), particularly if some of the capital cost of installation is met through funding.

Depending on the size of the development and the equipment already in place (such as boilers and other equipment), it might prove add costs to install CHP or biomass boilers. Other technologies such as PV, wind or solar thermal might be more appropriate at this stage and can be pursued. The selection of renewable technologies will depend on specific site issues that need be analysed in each case.

It is still possible to connect these kind of developments to larger community heating schemes. This could lead to more efficient use of the systems in place and potentially to an expansion of local community heating network. Technical appraisals should be carried out to investigate the feasibility of this option.

Where air conditioning is being used by some developments, strategies to minimise or reduce the need for it should be sought. New cooling strategies or even cooling reduction could be implemented in order to reduce the air conditioning needs.

However, there are many barriers to retro-fitting this type of technology into new developments, not least of all cost, so it may be better, wherever possible, to choose a regeneration area that is not too far down the redevelopment process.

7 Improving Existing Buildings

Existing buildings that will remain in place during and after the new development within the area, may well use a considerable amount of energy, when compared to new build. There are several ways a strategy for these buildings could be approached in order to reduce energy use or reduce associated levels of CO_2 emissions. Energy efficiency measures, renewable energy and behavioural change will be among the main options to consider.

These properties may be owned by the local authority, private individuals, housing associations, community groups and businesses. This diverse ownership could make some strategies more complex to implement and co-ordinate. For this reason, it is recommended that a project manager be given the responsibility for co-ordinating activity within existing stock.

7.1 Analysis of the building stock

Local authorities and housing associations would normally hold stock condition databases for the domestic properties they own, and in some cases for private stock. These databases are normally used to assess the energy efficiency of their own stock through NHER (National Home Energy Rating) and SAP (Standard Assessment Procedure) ratings.

From this data, an analysis of the building stock could be carried out. Queries could be run to search for properties with particular characteristics, eg single glazing, unfilled cavity wall, and low levels of loft insulation, among others. This type of analysis of the existing building stock will provide an idea of the different range of options available to improve the energy efficiency of these properties.

Commercial and industrial buildings could be assessed against energy consumption benchmarks. Energy audits, where necessary, could be carried out in order to establish the areas with greater potential for improvement.

This analysis of the building stock would give a clear indication of the options available for improvement and could lead the way for different programmes and strategies.

7.2 Options Study - Examine Retro-fit Options and how to Fund

The potential options for energy efficiency and renewable energy should be analysed. An options study is recommended to assess the economic and environmental implications. Depending on the type of measures proposed, private and/or government funding might be available.

An options study should look in detail at all the possible alternatives and analyse the impact on energy efficiency, CO_2 savings, cost, and social issues (eg fuel poverty, decent homes, etc).

In the case of commercial buildings, this would need to be linked to energy savings, building regulations and potentially to local and European building directives.

7.3 Energy Efficiency and Renewables

Energy efficiency and renewable energy represent the main options for reducing the levels of CO_2 emissions within the energy action area.

Potential energy efficiency measures include:

- **Higher levels of insulation -** Unfilled cavity wall represents one of the highest potential for energy savings at a low cost of implementation. Solid walls are more expensive to insulate, and will normally affect either the interior or the exterior of the property. Where loft insulation levels are less than 100mm, more insulation could be added, provided good access to the space is granted.
- **Condensing boilers -** New gas condensing boilers have seasonal efficiencies in excess of 90%. Old gas boilers could have efficiencies as low as 65%, depending on the type, age and condition. The upgrade to condensing boiler will provide, in some cases, good savings in gas consumption.
- **Improved heating controls -** Appropriate heating controls (ie programmers, thermostats, thermostatic radiator valves (TRVs) and others) could help to save energy. TRVs are one of the most cost effective measures for energy savings.
- **Appliances & lighting -** More efficient appliances and lighting could save electricity. For example, energy efficient light bulbs reduce the amount of electricity used significantly. The options should be investigated and applied where considered necessary.
- **Community heating and combined heat and power (CHP) -** Community heating and CHP are one of the best options for improving the overall efficiency of a scheme, but they normally involve a higher investment and level of planning. If there are plans to connect new build to community heating networks, the option of connecting existing buildings should be analysed.

Renewable energy options could include:

- **Wind -** Small building integrated wind turbines are under development, and they will provide a good option for generating renewable electricity. Larger turbines can also be installed within the area. In both cases, feasibility studies would be required to asses the energy potential.
- **Solar thermal -** Domestic solar thermal systems are a well proven technology and they could be promoted across the Energy Action Area.
- **PV -** This is an expensive technology that is expected to become more cost effective in the mid term. There are several technological options that could be implemented for existing buildings.
- **Biomass boilers -** This option should be preferred for communally heated systems but fuel storage could represent an issue. It is also a well developed technology, and with gas and electricity prices on the increase, it could represent a viable option. A community heating scheme could start with biomass boilers and be converted to biomass CHP in the future.
- **Biomass CHP -** At present these systems are better implemented at large scale, but new technologies will be available for small scale schemes in the foreseeable future.

It is currently possible to draw down funds to help improve the performance and reduce energy demand on existing stock in both the domestic and commercial sectors. Grants are available through a number of sources, but these are subject to

change at short notice, particularly those available from utility companies under their Energy Efficiency Commitments. The Energy Action Area needs to make the most of marketing opportunities to inform the occupants of potential funding for the existing buildings, and what they may be eligible for. To this end, it is recommended that a project manager should be appointed who is up to date on the availability of all such grants and to co-ordinate activity in the Energy Action Area. Working with your local Energy Efficiency Advice Centre[6] can help provide grant information in the domestic sector. Additional funding mechanisms may also become available if an ESCo is established for the delivery of heat and power.

7.4 Behavioural changes

Behavioural changes are necessary for occupants within an Energy Action Area in general, but will have the biggest impact in existing buildings, where the scope for easily improving energy performance is more limited. A key recommendation of delivering an Energy Action Area is to work with existing providers of schemes, such as Action Energy and similar programmes, in order to teach people how to make the best use of their energy.

It is recommended that this is considered in two areas: domestic and commercial. The domestic sector can benefit from talks and presentations on simple measures that can be done at low or no cost to the householder. Recommendations for replacement products, such as light bulbs, boilers and appliances can also be made. In Energy Action Areas where transport emissions have been included within the targets, advice on alternative transport modes, reducing car use through car clubs and alternative fuels and vehicles can also be delivered. Events can be run to encourage behavioural changes, such as making pledges, running competitions and other such innovations.

For businesses, behavioural or process changes will often elicit the most carbon savings in existing stock. There is some help available to businesses through the Carbon Trust. This advice ranges from the provision of benchmarks and advice over the phone right through to energy audits and assistance via interest free loans and Enhanced Capital Allowances. There are also other schemes that can deliver audits where they fall outside of the Carbon Trust criteria, although these are not usually free. Transport can play a significant role in emissions reductions, so initiatives, such as pool bikes, car clubs, creating delivery nodes for small businesses and the supply chains could also be looked at for these businesses.

This activity should be co-ordinated by a project manager. The local authority may also like to consider setting aside an additional budget to assist with the delivery of a behavioural change programme for all sectors. As a minimum, a dedicated marketing budget should be set aside to advertise the availability of these services, and the availability of grants. As many studies have shown, one of the key barriers to behavioural change is up front costs. If additional grants could be made available, and publicised, this would help to reach the occupants of the existing stock, and may well be the deciding factor in encouraging them to take action.

7.5 Other Buildings

Community buildings and schools should also be considered, as they are a very visible means of demonstrating what is possible in both the retrofit and new build

[6] There is a network of Energy Efficiency Advice Centres across the UK. Your local Centre can be contacted on 0800 512 012.

situation. Obviously, the potential in this sector is limited, due to the relatively small number of this type of building there is likely to be in the Energy Action Area. However, such installations can act as fantastic demonstration projects, that can demonstrate that a technology is feasible, and monitoring can provide real time data on the energy and cost savings.

Some utility companies offer 'green tariffs', for the supply of electricity from renewable sources. These tariffs fall into two categories: green supply, which guarantees that their electricity is generated from renewable sources, and green funds, where they guarantee to invest your premium into renewable energy schemes that will benefit the community. Many of these funds are a potential source of funding for community size schemes, such as solar schools, leisure centres, scout huts and many other applications, and can help to reduce the running costs of the building over its lifetime, therefore giving the group greater long term sustainability.

Some of these suppliers will only invest in renewable energy projects in developing countries, but many offer assistance to groups in the UK. Each will have their own criteria for the grant, but by and large, applications will be to fixed calls at various points throughout the year.

Using a combination of the new Low Carbon Buildings Programme and other funds, it is likely that a major portion of the capital costs for community projects will be funded, meaning that community groups have only to raise the project management element of the funding. The utilities also have some social and education funds that may also be drawn upon to teach the community group more about their technology, but these are much more variable, and more difficult to access.

8 Funding, Financing & ESCos

It is often the case that sustainable energy measures cost more, at least in terms of up front capital costs. However, in many cases, when the operational costs and revenues are compared over the longer term, the "lifecycle or lifetime cost" is often lower with sustainable energy technologies than the conventional alternatives.

This means that funding is not always needed in grant form. Instead the scheme represents an investment where the critical factor will be rate of return expected on capital invested. This investment can be provided either by borrowing or through an Energy Services Company (ESCo). A brief discussion of ESCo options is included in this section. This is the subject of a further London Energy Partnership publication to be published in November 2006.

Where sustainable energy technologies do incur additional lifetime costs, funding will need be found. At present, there are grants available to assist with the reduction of CO_2 emissions from existing buildings. At the time of writing, funding for both the costs of insulating domestic buildings, and of connecting the existing buildings to a CHP heat main is available. Funds are also available to help reduce the energy demand of businesses and community spaces. Possible funding options for these measures are explored in the following sections.

8.1 Funding Schemes

Making the Development Pay – Section 106 Agreements.

The first option is to utilise some of the margin generated by the development to fund sustainable energy measures. This can either be achieved directly through a requirement on the developer to meet a 10% on site renewables requirement or it can be through a Section 106 agreement where the developer agrees to provide funds for, for instance, the development of a heat network.

Energy Efficiency Commitment (EEC)

EEC is funded from a levy placed on all domestic electricity and gas customers. The latest programme (EEC2) 2005-8 has a target of 130 TWh savings. The scheme has been running since the mid 1990s in one form or another – formally as Standards of Performance.

Electricity and gas suppliers control the administration of the scheme, which is regulated by Ofgem. Centrica holds the largest funds. The targets placed on the obligation holders (the energy companies) are based on an agreed reduction in emissions so there is an incentive to deliver the highest emissions reductions at the lowest cost. The cost is based on the capital cost of the project divided by the kWh reduction discounted at a Treasury rate of 6% per annum over 15 years. Therefore grants will be most attractive to the obligation holders at the lowest cost per kWh. As a guide, the level of cost to be attractive to the obligation holders will be around 0.7 to 1p/kWh.

EEC is "technology blind"; it will fund any type of energy saving measure that is accepted by EST. The measure must, however, provide additionality to the Building Regulations. Simply installing double glazing will not allow EEC funding to be used, the window must be above Building Regulations standards to qualify.

At least 50% of the energy efficiency target has to be met in the "Priority Group", ie households in receipt of at least one of a number of benefits. Under EEC 2005-8, suppliers are provided with an incentive to deliver energy services. Suppliers will receive an increased energy saving if their energy service package involves an audit of the dwelling, measures to improve the household's energy efficiency by 13% and the option of a deferred payment for those measures.

Defra has also introduced an incentive for suppliers to offer for 'innovative' energy efficiency measures. Micro combined heat and power (mCHP) has been labelled innovative and will qualify for additional energy savings. Those measures not used under the current EEC, and which have significantly greater savings than a similar product under the current programme, will also be considered 'innovative'.

Warm Front[7]

Warm Front is aimed at assisting the most vulnerable groups that may be at risk from fuel poverty. Aimed at the private sector only, qualifying households can receive up to £2,700 for a mix of insulation, heating (gas or electric, depending on the existing fuel supply to the house), and heating system repairs.

European (EC) Grant Aid

This is available through the EU for certain classes of projects in the UK through the Sixth Framework Programme. There are a range of different programmes for both revenue and capital projects. All require European partners. Generally the level of support for capital projects is set at 35% for capital projects. It is recommended that all streams under the European Intelligent Energy funds be explored[8].

Low Carbon Building Programme (LCBP)

This has replaced the current Clear Skies, Major Photovoltaics Demonstration (MPVDP), and Community Energy Programmes, which ended in March 2006. A range of technologies are funded under two streams[9].

The Carbon Trust

The Carbon Trust offers a raft of help and advice to businesses of varying sizes. Small businesses with an energy bill of under £50,000 per annum can access help and advice through their freephone number, and the Carbon Trust also offer a range of different audits, to include an Action Plan for reducing energy demand. They can assist with CHP and also do feasibility studies for installing major plant, or renewable energy technologies, but the company will have to seek match funding for the more detailed surveys. This level of survey will also help the business benefit from any funding that may be available, including grants (which will be limited, due to State Aid rules), or financing arrangements, such as loans, Enhanced Capital Allowances etc, that will make the installation of low carbon technologies much more attractive.

There are also Green Mark schemes and awards, aimed at looking at the overall environmental impact of the business, as well as ongoing environmental improvements. Assistance towards registration for industry standards, such as ISO 14001 is also included under the support package for the scheme.

[7] For more information, please see www.eaga.co.uk/grants/warm_front.htm
[8] For information on EU programmes, calls and partner searches please see www.managenergy.net
[9] For information on the Low Carbon Buildings Programme, please see www.lowcarbonbuildings.org.uk.

London Development Agency

In 2005 the London Development Agency (LDA) announced a call for a fund that will be aimed at improving the environmental performance for businesses across Greater London. The successful applicants were announced in March 2006. It is possible that applicants have submitted bids that will cover an Energy Action Area, so it is recommended that contacts be made with the successful applicants, in order to maximise the benefit for businesses within an Energy Action Area.

Green Funds

Some utility companies offer 'Green Tariffs', for the supply of electricity from renewable sources. These tariffs fall into two categories; green supply, which guarantees that their electricity is generated from renewable sources; and green funds, where they guarantee to invest your premium into renewable energy schemes that will benefit the community. Many of these funds are a potential source of funding for community schemes, such as solar schools, leisure centres, scout huts and many other applications.

Energy Suppliers that have green funds include, but are not limited to:

- EDF Energy
- Powergen
- n-power
- Scottish & Southern Energy
- Ecotricity

Each will have their own criteria for the grant, but by and large, applications will be to fixed calls at various points throughout the year.

Using a combination of Low Carbon Building Programme, the Major PV Demonstration Programme, and Green Funds, it has been possible to get 100% of the capital costs funded, meaning that community groups have only had to raise the project management element of the funding. It is likely that a major portion of the capital for renewable energy schemes could in future be funded by combining Green Funds and the LCBP. The utilities also have some social and education funds that may also be drawn upon to teach the community group more about their technology, but these are much more variable, and more difficult to access.

Transco Affordable Warmth

This fund is available to provide finance for elements of community heating. Under the programme, Transco underwrites a (SSAP21 Compliant) operating lease over a fixed number of years that enables Transco to take advantage of the Enhanced Capital Allowance Scheme recently introduced by the Government. Transco will also underwrite the 10% residual value of the lease at the end of the term. The programme allows for refurbishment and development of both existing and new schemes with or without CHP. However only items that are removable can be financed through this scheme ie CHP, condensing boilers and internals – not heat mains.

8.1.1 ESCO options

Finance can be raised through an ESCO. There are a range of possible partners in developing an ESCo and growing interest from existing utility companies. The ESCO would generally be expected to operate and maintain a heat distribution network and sell heat onto consumers, where CHP and district heating are part of the Energy

Action Area. This is the most complex area of development as there is little UK experience of this on the scale envisaged in London. A number of options are discussed below and case studies of the limited UK examples are included subsequently.

8.1.2 London Climate Change Agency (LCCA)

The Climate Change Agency has an emerging role in the field of sustainable energy in London and is intended to play a key role in helping to deliver the Mayor's Energy Strategy for London, including the Energy Action Areas. The Agency was set up through the London Development Agency. The London Climate Change Agency Ltd and EDF Energy plc have established the London ESCO a public/private joint venture Energy Services Company with the remit to identify, design, finance, build and operate decentralised energy projects in and for London. The London ESCO will be one option open to future Energy Action Areas.

8.1.3 Carbon Trust Pipelines

Carbon Trust Pipelines is a 100% owned subsidiary of the Carbon Trust. It has been set up to finance own and operate connections between existing heat sources and existing heat loads. They would do this on the basis of 10% return on investment. They are a new venture and as yet have no real schemes in the ground, though have several under development.

8.1.4 Utilities

EDF Energy were recently announced as the delivery partners for schemes across London with the Climate Change Agency. They would be likely to be prepared on approaches for the establishment of ESCO partnerships. However, many other utility companies could be approached. Utility companies already have expertise in the delivery of fuel/ electricity to homes, billing and other matters.

8.1.5 Private sector ESCOs

A number of private sector ESCOs exist such as Utilicom, Vital Energi, EcoCentraGen who might be willing to take forward such as scheme. These would design, build, finance and operate a scheme.

8.1.6 Not for profit special purpose vehicles

An alternative that many local authorities such as Aberdeen and now Southampton have developed, is to set up a not for profit special purpose vehicle specifically for the development of CHP and community heating. The Aberdeen case is discussed below.

8.2 ESCO Case Studies

8.2.1 Barkantine Heat and Power

Barkantine Heat and Power (BHP) was set up through a Pathfinder PFI to serve 530 homes on the Barkantine Estate with heat from a 1.4 MWe CHP plant in the London Borough of Tower Hamlets. Barkantine Heat and Power is owned by London Heat and Power, which is in turn a subsidiary of EDF Energy. It began operation in March 2001.

BHP is responsible for managing the Energy Centre which houses the CHP, boiler plant and thermal store for a period of 25 years. At the end of the 25-year term, the Energy Centre reverts to Tower Hamlets Council ownership, at which time the plant will be refurbished.

Whilst Tower Hamlets are reportedly very satisfied with BHP's management of the scheme, it seems the new parent company, EDF Energy, have shown little desire to develop further schemes, though the recent announcement of partnership with the London Climate Change Agency appears to represent a change of direction in this regard. According to Tower Hamlets, negotiating the PFI was a difficult process and later schemes have been done in-house. A separate company, Dalkia are responsible for maintenance of the plant. A tenant liaison officer is employed by EDF Energy on site.

8.2.2 Southwark

London Borough of Southwark own four CHP plant, (the largest of which is 1 MWe) and around 90 boiler houses serving a total of 20,000 dwellings and a number of non-domestic properties, including offices, a health centre and a number of shops. Maintenance is provided by three contracting companies but managed in house by Special Technical Services.

Heat is provided unmetered to residents using a charging formula based on the number of bedrooms. The CHP and networks have been financed using a combination of Southwark's own resources with some funding from EEC for CHP plants.

8.2.3 Woking – Thameswey Ltd

Woking Borough Council set up a wholly owned company who then own a minority share in another company along with a Danish investment company who own the remaining 81%. The company is called Thameswey Ltd.

Woking has developed a number of CHP schemes using this model, believed to total around 5 MWe. A private wire approach has been adopted which has lead to a much greater income from electricity sales from embedded generation. Finance has come in part from Danish investors and in part from the ability to keep a proportion of savings made.

8.2.4 Aberdeen Heat and Power

Aberdeen Heat and Power (AHP) was set up as a separate not-for-profit company by Aberdeen City Council. This company is a company limited by guarantee and the board is made of local community representatives, and chaired by Michael King from the Combined Heat and Power Association. Ownership of heating components within the properties remains the property of the council leaseholder or Registered Social Landlord, but the heat network, CHP and Energy Centre is owned by Aberdeen Heat and Power.

Part of the rationale behind setting up a special purpose vehicle was to maintain independence and control. Any surpluses made are either ploughed back into the scheme or are used to lower fuel bills. The company currently employs no staff but effectively uses a combination of a consultant (Bill Rowe), financial services from the Council and the time of the Council's HECA officer. In the longer term it is their intention to employ dedicated staff.

AHP uses a company known as a consolidator to deal with electricity sales, and the sale of electricity direct to tenants has recently been initiated. Like the Southwark scheme, the Council charges for heat with rent on a flat rate basis. The Council then collects heating payments and in turn pays AHP.

Aberdeen Heat and Power provides heat to just over 1000 home as well as a swimming pool and sheltered housing, and further expansion is envisaged.

9 Promotion and Marketing

Energy Action Area status presents a range of opportunities to engage and inspire the local community, disseminate ideas of sustainable energy choices and environmental issues, and enhance the image of the development site for both the local area and outside audiences, such as prospective investors.

By improving the quality of the buildings through sensitive design and utilisation of innovative technology, the area will be presented as addressing the challenges of climate change and modern development, with a local authority that takes responsibility for positive regeneration activity. Improved design will also be a major attraction to new residents, with well-designed, modern homes, which enable people to reduce their ecological footprint.

Such investment in environmental technologies and the improvement in an area's image will also attract and encourage businesses to invest in the area, with an improved working environment and modern approach to urban development. A new market could be generated through attracting environmental businesses through the low carbon development. These will then contribute to improving employment prospects for the local community.

Successful deployment of carbon reduction measures and environmentally sensitive design throughout the Energy Action Area will produce results that will achieve London-wide and possibly national recognition and acclaim. The benefits which developers, residents, businesses and public sector organisations are most interested in will be slightly different in each case, but can be summarised as follows:

Table 2: Benefits for developers, residents, businesses and the public sector

	Benefit to Developers	Residents	Businesses	Public sector
Increased expertise and reputation	Y			
Provision of flexible energy services	Y	Y	Y	Y
Low cost heat and electricity in buildings	Y	Y	Y	Y
Attractive buildings for those wanting to low cost or environmental measures	Y	Y	Y	Y
Energy Action Area gives people the option to be involved in tackling climate change	Y	Y	Y	Y
Attractive buildings for those wanting to achieve energy targets, reduce Climate Change Levy	Y		Y	Y
Pilot areas may attract more funding	Y	Y	Y	Y
Other support provided through the Energy Action Area	Y	Y	Y	Y
Renewables/energy contractors more likely to get involved with widespread development throughout Energy Action Area than individual developments	Y			
Improved image through working in an environmentally sustainable building	Y	Y	Y	Y
Increased opportunities for environmental businesses		Y	Y	
Business attracted to the area		Y	Y	Y
Residents attracted to the area			Y	Y

It is important that stakeholders involved in the implementation of the Energy Action Area, from the local council to the developers, understand the benefits that low-carbon development can bring about, in order to achieve an increased level of commitment to their incorporation. The benefits should also be taken into consideration when using the Energy Action Area to market the local area to wider audiences. Potential methods to engage with key audiences are listed below:

Dissemination of information

- Enable stakeholders to understand and engage with the aims of the Energy Action Area
- Avoid stakeholders from feeling these changes are being forced on them with no appreciation of the benefits
- Increase the potential for local residents and businesses to apply the Energy Action Area measures in their own homes or offices
    - Practical community engagement will also present an effective argument for developers to incorporate renewable energy technology into their projects, as it will be both understood and looked for by their key audiences.

Events

- Link to current successful and recognised events, both in order to engage the community and to provide a platform to reach key commercial audiences
- Use major or landmark installations for launch events and to achieve media exposure:
  - Providing interesting and inspiring examples of regeneration to the local community
  - Highlighting the increasing potential of the area for commercial interests

Consultation forums

- Opportunity to maintain dialogue with stakeholders rather than simply inform and maintain good level of awareness of concerns which can then be addressed
- Dedicated websites could carry links to forums, such as the Elephant & Castle site, which carries specific pages dealing with consultation with target audiences: developers, community and local businesses (www.elephantandcastle.org.uk).

Guide for community groups

Once local groups are engaged with the Energy Action Area, there will be opportunities to provide support for groups to take a more practical approach to involvement with the aims of the low carbon development. Possible methods for achieving this include the production of resource guides, available at one stop shops or through the borough website.

Landmark installations

A landmark installation might not have a large impact on carbon reduction but it will provide a tangible image for the community and for publicity of the project, becoming the visual representation of improved perceptions of an area, as well as generating interest in the benefits of the area to businesses, developers and new residents.

Local issues

It is often more effective to focus on the issues which affect the particular area or audience which is being targeted. Global environmental issues can be intangible and difficult both to communicate and to apply to everyday life, unless they are presented in a local context.

Engaging with schools

Focusing information campaigns on schoolchildren is an effective means of approaching a wider target audience and presents opportunities to deliver key messages through creative media.

10 Energy Action Areas To Date

10.1 Examples from pilot Energy Action Areas

The table below summarises key facts about the four existing pilot Energy Action Areas. Southwark has been split into two for simplicity because of different strategies being pursued for different elements of the area.

Table 3: Key Facts about Existing Pilot Energy Action Areas

	Barking	Brent	Merton	Southwark A	Southwark B
Benefits	Political support Funding	Control over energy in development process	Route to implement local heat and power	Political support Funding	Political support Funding
Size	Total 167.3ha	Core 40ha Total 80ha	Core 45.7ha	Core 23.4ha Total110ha	Core 27.1ha Total 71.2
Selection based on	Regeneration	Regeneration	Regeneration	Regeneration	Refurbishment
Carbon Target	25% Reduction	60% reduction by 2050 BREEAM V Good	15% Reduction by 2015 on 1990 level	0% Growth	75% Reduction
Floor Area increase	Yes	Yes	Yes	228% increase	No
Based on	Buildings	Buildings	All sectors	Buildings	Buildings
Members Agreement	Y	Y	Y	Y	N
Energy Strategy	Y	Y	Y	Y	Y
Transport?	East London Transit	Travel Plan	Tramlink	Only 25% car parking	Tramlink
Food/Lifestyle	No	Food emissions estimated	Longitudinal lifestyle studies	Not beyond parking	Source separation of kitchen waste
Heat from Existing plant?	Yes	No	No	Considered	Considered
ESCo	Not yet Agreed	Multi Utility Services Company	Not yet Agreed	Multi Utility Services Company	Aberdeen Model Proposed
Existing Buildings	Some	No	Some	Some	100%
Biggest Problems	Funding Phasing ESCo	Funding Phasing ESCo	Determining existing building consumption Funding Phasing	Funding Phasing ESCo	Funding Phasing ESCo
CHP & DH at core of strategy?	Yes	Yes	Yes	Yes	Yes
Skills/training	No	No	No	No	Education & Training Centre
Consultation	Integrated into regeneration consultation		Integrated into regeneration consultation	Energy Focus Groups & questionnaires	Energy Focus Groups & questionnaires
Lessons Learnt			Link waste & energy		

11 Sources of information

Useful Contacts

Combined Heat and Power Association
www.chpa.co.uk

For further information on Warm Fronts grants:
www.eaga.co.uk/grants/warm_front.htm

Managenergy provides information on EU programmes, calls and partner searches
www.managenergy.net

The Carbon Trust offers a range of help and advice to businesses of varying sizes.
www.thecarbontrust.co.uk

The Energy Saving Trust manages the DTI's Lower Carbon Buildings Programme and provides advice and information on energy saving through their website.
www.est.org.uk

For further information on the Energy Efficiency Commitment (EEC), please see:
www.defra.gov.uk/Environment/energy/eec

Reports

Low Carbon Designer Toolkit, Element Energy, Southfacing & E4tech for the London Energy Partnership, June 2006

The London Community Heating Development Study, PB Power on behalf of the GLA, June 2005

Development of a Renewable Energy Assessment & Targets for London Volume 1 and 2, prepared by ETSU for the Mayor of London, ALG and GoL, December 2001

The London Wind & Biomass Study, prepared by SEA / RENUE & TNEI for the London Energy Partnership, March 2006

Potential for Microgeneration Study and Analysis: Final Report prepared by Element Energy and Econnect for EST, 14th November 2005

Attitudes to Renewable Energy in London: public and stakeholder opinion and the scope for progress prepared by Brook Lyndhurst Ltd in association with MORI and Upstream on behalf of London Renewables, December 2003

Integrating renewable energy into new developments: Toolkit for planners, developers and consultants prepared by Faber Maunsell on behalf of London Renewables, September 2004

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Working as an independent body, the London Energy Partnership uses the power of partnership to enable London to respond to the challenges of climate change, security of energy supply and fuel poverty. The London Energy Partnership steering group members and observers include representatives from Argent Group Plc, Business Councils for Sustainable Energy UK, Carbon Trust, EDF Energy, Energy Saving Trust, RBC Capital Markets, Greater London Authority, Government Office for London, London Borough's Energy Group, London Climate Change Agency, London Development Agency, London Sustainability Exchange, Renewable Energy Association, London South Bank University and Thames Gateway London Partnership.