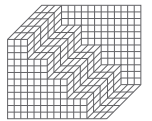


London First



Buro Happold

Cutting the Capital's Carbon Footprint - Delivering Decentralised Energy

Summary Report - October 2008



London First and its members recognise the imperative to address climate change and support the need to generate more of London's energy from decentralised sources. We believe that the 25% decentralised energy target by 2025, set out in the Climate Change Action Plan, whilst challenging, can be achieved through collaboration between the Mayor, boroughs and business. Much work has been undertaken by the Greater London Authority, London Development Agency, London Climate Change Agency and others in this area and significant progress has been made; this work must be built on, with a focus on strategic planning and project delivery.

The facts

- Decentralising a quarter of London's energy would **save 3.5 million tonnes of carbon dioxide a year**. This is **equivalent to the annual emissions from heating 1.1 million homes**
- **In the UK we waste enough heat in central power stations to heat all the buildings in the UK**
- There **is no silver bullet for delivering decentralised energy in London** but this report provides a set of recommendations for implementation to unlock the investment and potential carbon savings.

The recommendations

To unlock this potential we recommend:

1 Economic incentives which recognise the carbon savings from decentralised energy

We recommend an incentive for combined heat and power such as an obligation or minimum floor price for electricity output or support for low carbon heat supply. We welcome the ongoing work by OFGEM and BERR in this area and in particular on the distributed/decentralised generation review, the renewable energy strategy and the heat strategy.

2 Decentralised energy at district scale, where it is most efficiently delivered

Whilst small scale low carbon and renewable energy sources have a role to play in providing decentralised energy the greatest potential lies in using the waste heat from power stations energy from waste plants and new dedicated combined heat and power plants. Critically this would also serve existing buildings which is fundamental to meeting the 25% target. Existing buildings also act as anchor loads and are most energy inefficient, resulting in higher carbon savings.

3 Establishment of Energy for London (EFL) within the London Development Agency (LDA) to deliver a strategic implementation plan for decentralised energy in London

EfL would act as the public sector lead and set out a plan to meet the 25% target.

Working with boroughs, energy companies and developers, EfL would give the LDA, the boroughs and public sector bodies the expertise to develop decentralised energy schemes to serve the existing stock.

4 Development of energy masterplans for each borough

EfL and boroughs would map heat loads and assess where decentralised energy schemes should be built. Energy masterplans would identify specific decentralised energy projects (including sites for energy centres), and be incorporated into local development frameworks.

5 A partnership approach between public and private sectors for project delivery

Using project specific public private partnerships would ensure the ability of the public sector to unlock decentralised energy schemes was matched by the investment and expertise of London's businesses. This approach could deliver the £7 billion of private sector investment required to build the necessary infrastructure.

Foreword

Neil Pennell – Chair – London First Decentralised Energy Steering Group
Head of Sustainability and Engineering – Land Securities

London business takes seriously the urgent need to mitigate climate change. As well as seeking to reduce its own impact and that of its activities, business wants to work with government; nationally, regionally and locally, to find innovative and effective ways to address the challenge.

London First has brought together experts in different disciplines to find the best way of achieving the target of decentralising a quarter of London's energy by 2025; to reduce the carbon impact and improve efficiency of energy supply. We commissioned Buro Happold to assess the scale of the challenge, identify the barriers and work out how they can be overcome. They have done this by engaging the capital's and country's leading experts in the public and private sectors with support from PricewaterhouseCoopers on financing and business models. More than 90 organisations have been involved in this project. The work has been overseen by an expert steering group drawn from London's leading businesses.

This report highlights what action should be taken by whom to meet the challenge. It is clear from the work undertaken that there is no silver bullet in climate change mitigation and that the issues are complex and involve many parties including government at all levels, public sector organisations and business.

Business is ready, willing and able to play its part and to work with partners in the public sector to meet this target. In particular, we look forward to working with the new Mayor to ensure that London is the leading city in tackling climate change. The new administration has the opportunity to deliver on the ambitious targets that London has set for itself in the face of the climate change threat.



Neil Pennell

Steering Group Members

London First and Buro Happold wish to thank the members of the steering group who oversaw the development of this report

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Summary Report

Delivering the target of decentralising 25% of London's energy supply by 2025 would result in carbon emission savings of 3.5 million tonnes. Building on the progress made in developing these policies by the GLA and others, London First has identified how this challenging target can be achieved and the barriers that must be overcome.

Why decentralise energy?

Decentralised energy can reduce carbon emissions and contribute to fuel security

Enough heat is wasted in centralised power stations to replace the gas used by every gas boiler in every home in the UK. When power is generated locally heat that would normally be wasted can be used – by offices, homes and schools. By using this waste heat and reducing the distances that power must travel to reach the end consumer, over **80% of the energy content of each unit of fuel is used.** With centralised generation this figure is on average 37%. This results in carbon emission savings of up to 30% (up to 60% compared to coal-fired power stations). The reduction **in primary energy usage from decentralised energy provision also improves fuel security.**

By using **renewable fuel sources, such as waste wood or waste left after recycling, to power local decentralised energy plants larger carbon reductions can be made.** Heat networks are the only way to capture the otherwise wasted heat and squeeze the maximum energy out of these renewable fuel sources. Cooling networks could also deliver low carbon air-conditioning to the capital's workplaces. This presents the opportunity for public and private sectors to work in partnership to deliver these carbon savings.

We recommend that the GLA undertakes a **public education campaign to raise awareness** of the importance of, need for and benefits of **decentralised energy.**

London is setting the agenda

London is leading the way with its ambitious plans to tackle climate change

The Climate Change Action Plan sets a **target for 25% of London's energy supply to be decentralised by 2025, reducing carbon emissions** and boosting the capital's status as a world city with some of the most progressive environmental policies. We **welcome the new Mayor's commitment to build on and improve these policies** with a focus on outcomes not prescriptive targets.

The GLA and the boroughs, including the LDA, London Energy Partnership (LEP) and London Climate Change Agency (LCCA), **have developed policies and initiatives to address the need to radically reduce carbon emissions from the built environment**; they have shifted the agenda radically. These policies are beginning to deliver carbon savings, but not yet on the scale required.

London business supports the need to radically reduce emissions, it also recognises the complexity of the issue and the many hurdles that stand in the way of delivery. The scale of the challenge demands that public and private sectors work together to meet it. This report recommends ways to overcome the hurdles to realising the large potential for carbon emission savings.

Carbon savings

The target is ambitious and a bold statement of the GLA's policy

Meeting the 25% target translates into **combined heat and power (CHP) plants with a total electrical generation capacity of around 1800MW and a heat output of around 3400MW**, compared to a current capacity of approximately 200MW in London. This level of generation is equivalent to the electricity demand of around two million homes, or the energy output of 170 of the decentralised energy schemes being built for the Olympic Park. Cities such as Copenhagen have exceeded this level of penetration but it has taken over 30 years with strong backing from central and local government.

Hitting the target could deliver carbon savings of some **3.5 million tonnes CO₂/year, or 10% of emissions from London's buildings**. To do so would require up to **£7 billion of investment, the majority from the private sector**.

Delivering the target requires a new strategic energy infrastructure for London. This is a similar scale of challenge to the change from town gas to natural gas in the 1960-70s. The majority of our existing utility networks were built by the then state owned utilities, a different approach is required now. Action from business and all levels of government can leverage private sector investment and expertise to deliver the target.



Vision for decentralised energy supply

A vision for decentralised energy supply in the capital is being set out, delivery is now key

Our case studies show that **high levels of decentralised energy penetration are achieved by developing heat networks that connect buildings locally, adding existing and new buildings over time, and finally connecting up these networks to larger, lower cost, lower carbon heat sources.** This is a long term process taking 10-20 years. The development of heat networks in Copenhagen is a leading example, developed over 30 years but now with 97% of buildings connected, making use of very low carbon heat sources, mainly energy from waste and waste heat from large power stations. This approach is manifested in London by the Barking Power Station project in the Thames Gateway, currently being developed by the LDA. Elsewhere in the UK other **schemes have grown around 'anchor heat loads' such as industry, hospitals and civic centres.** We call for this approach to be expanded and developed with investment from business.

New opportunities of this type will need to be planned. Focusing on connecting large heat loads to sources of waste heat, such as existing or new power stations, industry and energy from waste facilities can deliver the largest chunks of the 25% target. **A new generation of dedicated low carbon energy centres serving different mixes of buildings will also need to be developed, including a significant proportion of renewable energy** (see Figure 1). New developments can be connected to such schemes, or where large enough form the backbone of new heat networks, also linked to other local buildings. **Many opportunities were identified by the GLA in the London Community Heating Development Study. These schemes must now be delivered to have any chance of meeting the Climate Change Action Plan's 25% target.**

- 1 Natural Gas Network
- 2 Central Power Station
- 3 Waste Heat
- 4 Energy Centre
- 5 Centralised System-bottom right
- 6 Decentralised System-top left
- Heat Network
- Electricity Network
- Gas Network

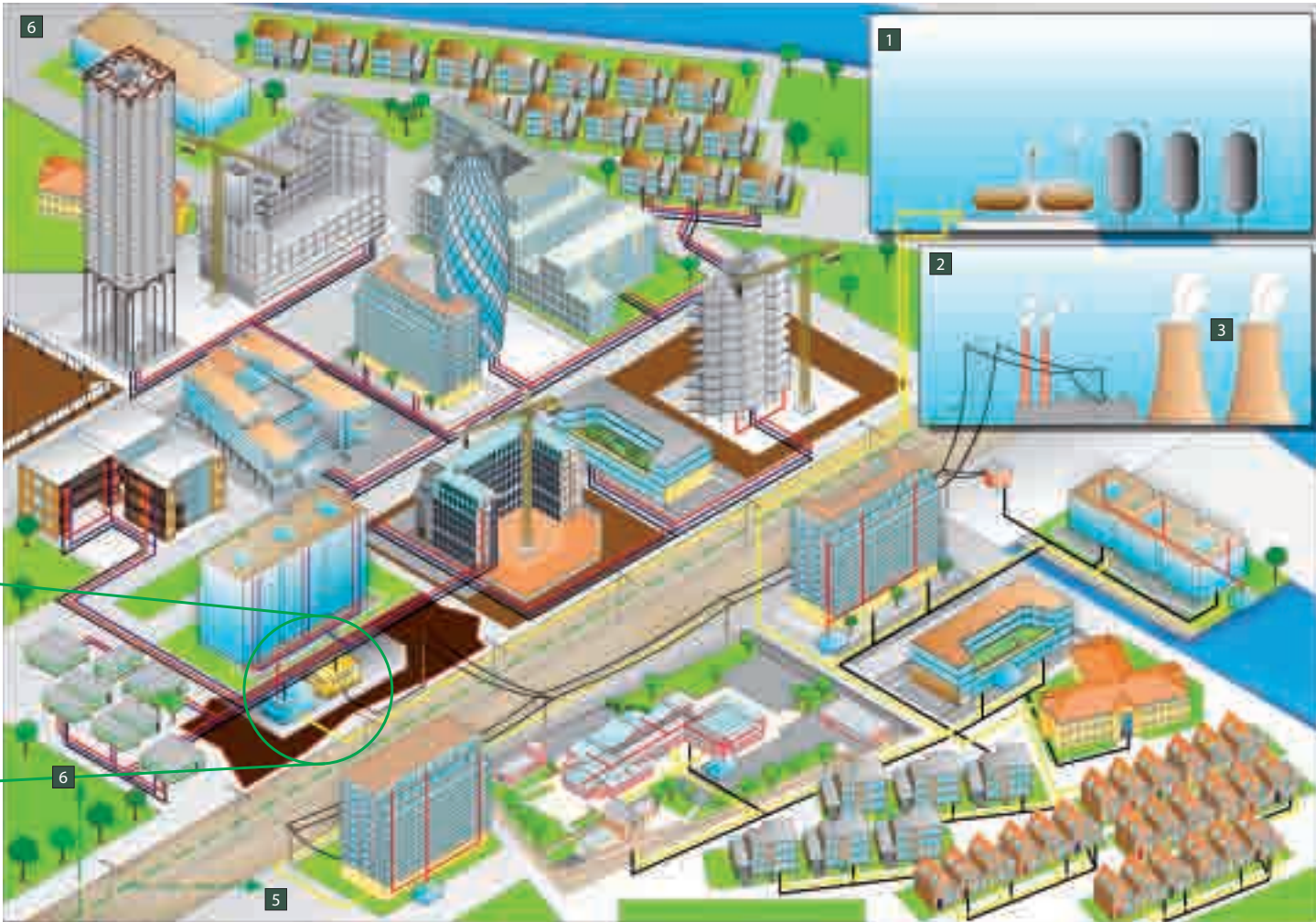
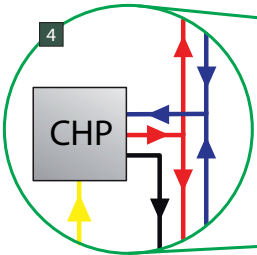


Figure 1 - Decentralised versus centralised energy supply

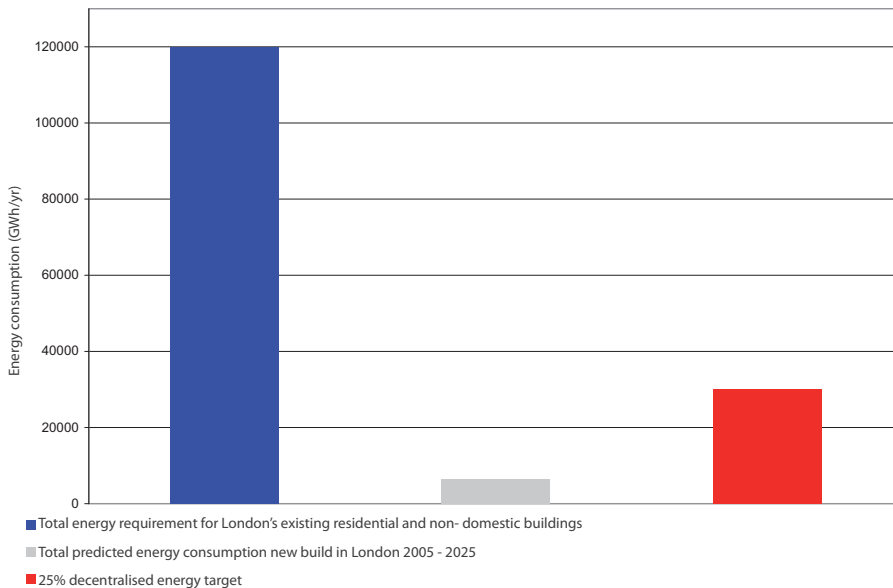


Figure 2 – Potential for decentralised energy from new development (2005-2025) versus total energy consumption for existing buildings
New development can only deliver a fifth of the decentralised energy target

Existing buildings have greatest potential for savings

So far the emphasis on delivering the target has been on new development through use of planning policy, but existing buildings must be part of the solution

Without effectively tackling existing buildings, the target will never be met. Even if all new development up to 2025 had 100% of its energy needs supplied by decentralised energy, only 5% of London's energy supply, or a fifth of the target, would be decentralised (see Figure 2). Relying on new build schemes to deliver decentralised energy in current property market conditions will not meet the 25% target. **Decentralised energy schemes based in new development will not be capable of expanding by four times to serve existing buildings and meet the remaining four-fifths of the target. New decentralised energy schemes based around serving existing buildings must be developed if the 25% target is to be achieved.**

To take advantage of the large carbon savings available from existing buildings **the challenges of retrofitting must be overcome. Existing buildings provide 'anchor tenant' heat loads critical to establishing decentralised energy systems** by providing revenues early in a project lifecycle. This is becoming increasingly important as **new building heat requirements diminish with improvements in building design.** Connecting existing buildings to heat networks would build on the work of the Better Building Partnership and other ongoing initiatives, helping to tackle fuel poverty.

Economic case for investment in decentralised energy

Business will only invest in decentralised energy if reasonable economic incentives exist

Ensuring a business case for decentralised energy is essential. Decentralised energy cuts across electricity, gas and carbon markets and involves the distribution and sale of heat. Currently the combination of incentives and pricing signals created by the markets and regulatory environment do not add up to a viable business case for decentralised energy. In particular **the reductions in carbon emissions are not sufficiently rewarded financially.**

The current carbon trading arrangements only include large scale decentralised energy schemes and **the price signal is relatively weak, compared for example with the Renewables Obligation.** The Climate Change Levy price signal is also insufficiently strong to effectively encourage decentralised energy. The effect of the Carbon Reduction Commitment is unclear and does not start until 2010.

Action is required to enable private sector investment to deliver on the 25% target. National government must review the existing market structures to ensure they adequately reward the low carbon status of decentralised energy. **We call for a support mechanism for decentralised energy** in the form of a combined heat and power (CHP) incentive or low carbon heat supply incentive. Our analysis shows that for the selected projects modelled an incentive of around £10-20/MWh improves medium scale project returns to around 10% (see Figure 3). Decentralised energy offers a low cost of carbon reduction so an alternative incentive could include a carbon floor price. Figure 3 shows that an incentive of £20/MWh for electrical outputs makes smaller scale schemes viable, though returns are still low.

The private sector can provide the investment when reasonable economic returns are married to manageable risks. **We welcome the recent and ongoing consultations by OFGEM and BERR on distributed generation of electricity and heat.** In particular we **support OFGEM's proposal of introducing 'decentralised energy supply licences' and 'short haul' cost reflective distribution charges** to create a more level playing field for decentralised energy. We also propose measures to protect consumers and to speed up the processes for agreeing to connect to decentralised energy supplies.

Further recommendations for national government include:

- Definition of 'zero carbon' for new buildings to recognise 'near-site' provision of renewable energy, even when connected via the electricity distribution network ('the grid')
- Enhanced Capital Allowances to be extended to community heating pipework and equipment
- Low cost sources of borrowing to be made available to EFL to finance strategic heat networks where market rates of returns are not available without guaranteed consumer connections
- Allow social landlords to recoup investment in energy efficiency measures, which reduce tenant outgoings, through proportionate increases in rent

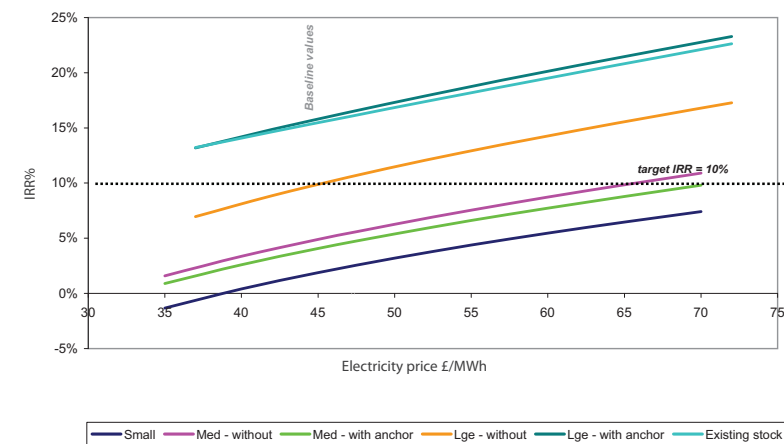


Figure 3 - Sensitivity of investment returns to price obtained for electricity produced. The scenarios modelled were: small (200 units); medium mixed use (1,500 units plus some office space), with and without a school as 'anchor tenant'; and large mixed use (10,000 units with office, retail and schools), with and without a hospital as 'anchor tenant'. Existing stock at large scale was also modelled to show the effect of higher heat loads in older buildings.

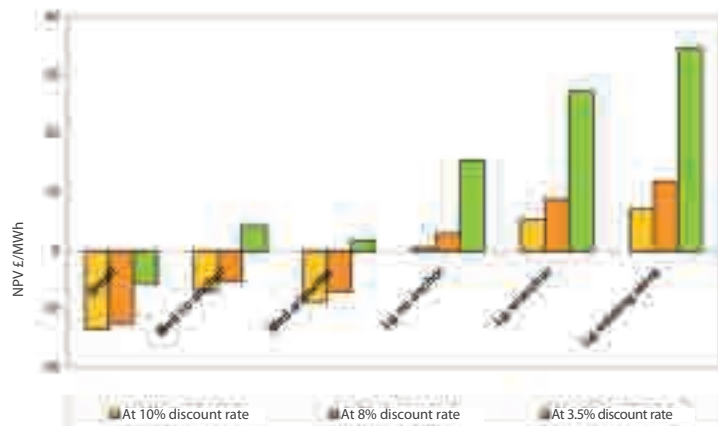


Figure 4 – Relative economic performance of new-build small, medium and large mixed use developments versus a scheme serving existing buildings. Models / scales were the same as those used in Figure 3.

Need for an efficient scale of solution

Heat networks at district level using larger, lower carbon heat sources are the most effective way of delivering the decentralised energy target

Whilst **a mixture of project scales will be required, larger scale solutions are important if maximum carbon savings are to be achieved at an effective cost.** Reports by the London Energy Partnership and International Energy Agency clearly demonstrate that **larger scale CHP is a much more cost effective way of delivering carbon savings than building based CHP.** Larger district based systems can **take advantage of diversity in heat loads and higher plant efficiencies to deliver more carbon savings at lower cost.** Larger heat networks also enable **low grade fuels such as residual waste or waste wood to be used** in the built environment which can otherwise be difficult. Our economic modelling clearly shows that **larger schemes connected to existing 'anchor heat loads' provide a more economically efficient solution with greater carbon savings** than smaller scale new development based schemes. However, higher upfront capital costs are incurred by building larger heat networks. Figure 4 shows how returns on investment per unit of electricity output improve at larger scales.

Although policy in London recognises this principle, to date the focus has been on CHP plants serving new developments, often serving only one building. **The focus needs to be on connecting existing buildings together at district level.** For smaller new developments it may be more efficient to connect to a near site decentralised energy system in the future than provide small or inefficient solutions from day one. There should be more flexibility in the planning system with respect to the viability of requiring small scale developments to include CHP plant.

Whilst current policy will deliver viable decentralised energy on larger scale new developments, without strategic planning the existing stock will not be served and the 25% target will not be met.

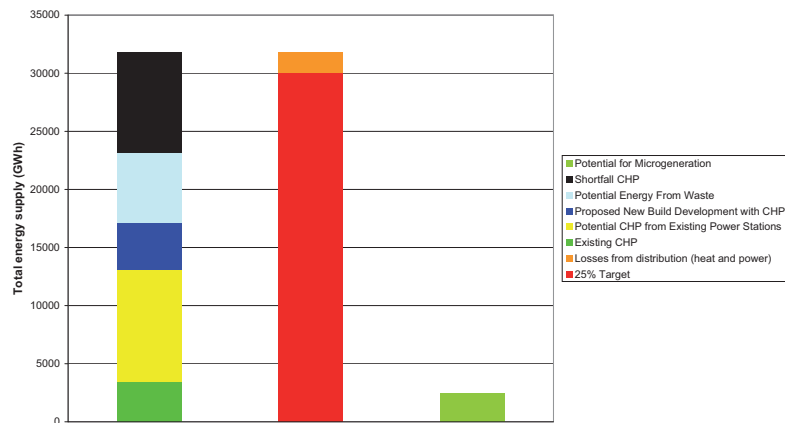


Figure 5 – Our proposal for decentralised energy delivery in London envisages a mix of CHP in new development, existing power stations and new energy from waste and gas fired CHP plants

Strategic plan

The scale of the challenge and the need for district level solutions means a planned and strategic approach to implementation is needed

Case study experience has shown that **high levels of decentralised energy provision only occur through strategic planning**. The example of Copenhagen is again useful, but new systems being installed in Barcelona and the extensive district cooling system in Paris reinforce the need for planning.

There are many reasons why strategic planning is important. High levels of penetration need larger decentralised energy schemes. **Larger schemes require detailed work to develop and plan, and are complex to implement. Connecting existing buildings takes time to plan and negotiate** as well as any retrofitting required. Although more economically attractive than individual building schemes, larger schemes have **high up front capital costs and can take three to five years to develop and build**. These schemes have an economic life of around 40 years and can take a decade or more to recoup their initial capital cost. Optimising the investment over this cycle requires a high degree of certainty that buildings will be connected.

Without a body tasked with planning such district level schemes the opportunities for more efficient schemes with higher carbon reductions and more attractive business cases will be overlooked. **We recommend that a group within the LDA, which we have called Energy for London (EFL), working in partnership with the boroughs, should be tasked with developing a strategic plan for delivering decentralised energy and heat networks**. This plan should build on work undertaken such as the GLA Community Heating Development Study and the Barking Power Station project, and identify areas of high heat density, specific projects to serve these areas and timescales for development of these projects. The work of the LCCA in identifying low carbon energy from waste schemes should be expanded and linked to heat networks. Figure 5 shows possible contributions to the 25% target from existing power plants, new energy from waste plants and gas fired CHP plants with district scale heat networks.

If waste heat can be captured and used from London's existing power stations such as Barking, Enfield, Edmonton and SELCHP, this accounts for almost a third of the 25% target, but will be challenging to realise. Currently proposed new build CHP schemes and existing CHP make up around a quarter of the target. Significant potential for using energy from waste exists. However, a shortfall remains. This shortfall could be most effectively met by district scale combined heat and power plants serving existing buildings. Microgeneration could make a contribution to meeting the target, providing very high levels of take up are achieved, but the shortfall would still require around four times as much energy from new CHP plants as microgeneration.



Energy masterplans

Heat networks need to be planned to serve areas with high heat demands; specific decentralised energy projects can then be developed around these areas

Heat mapping is a key requirement for the development of decentralised energy systems. Not all areas of London will have a sufficiently high demand for heat to justify building heat networks. We recommend that boroughs undertake heat mapping as part of their Local Development Frameworks. This work is linked to the need to plan for infrastructure under changes to PPS12. **We call for increased urgency to undertake this work**, building on work already underway by LEP and vital to the establishment of decentralised energy schemes.

The result of the heat mapping would develop into 'energy masterplans' where existing heat networks, areas of high heat demand and sources of waste heat are analysed. By identifying sites for the location of dedicated energy centres or other sources of low cost heat, such as energy from waste, **the energy masterplan would build into a project brief**, or series of briefs, within a borough. Opportunities for cross borough co-operation could be co-ordinated by EFL.

Within the borough energy masterplan, 'decentralised energy project areas' could be defined. These could tie in with the proposed Low Carbon Zones, already established by the GLA, and other areas. **Within these project areas new buildings should be required to commit to connecting to the decentralised energy scheme. In return connecting to the heat network would satisfy the 'on-site' renewable energy requirement**, even where the heat network was not yet established. Developers would pay a connection charge to connect to existing schemes, or contribute to their development via a Green Energy Fund.

We recognise that some boroughs may lack expertise to undertake energy masterplanning work in house but propose that **EFL would act as a central pool of expertise able to undertake or commission this work, in partnership with the local borough.** Funding for this work could come from the Green Energy Fund, described below, or from EFL.

Project delivery

A partnership of public and private sector is best suited to deliver and operate decentralised energy projects on the ground

Whilst the private sector can offer capital investment and management expertise for decentralised energy the public sector holds the key to unlocking and de-risking the carbon savings on offer. Much of this can be achieved with minimal investment, but does need long term commitment. We propose a public private partnership approach to delivering the projects identified by energy masterplanning.

The combination of private sector investment and expertise, together with public sector backing, could begin to deliver the scale of project required to make real reductions in London's carbon footprint. Below we outline the proposed approach and roles of public and private sectors.

Role of London's boroughs and the public sector

The role of the public sector has been critical to the success of district scale decentralised energy schemes in the UK

Typically successful projects have involved the **local authority engaging in an active and committed partnership with an energy company.** This involvement has generally required at the very least a commitment to provide anchor heat loads and in many instances to also provide land. This responds to the need for boroughs to address climate change (PPS1) and to plan for the infrastructure needed to support development (PPS12).

We recommend that in addition to heat mapping and developing energy masterplans boroughs should:

- Identify decentralised energy project zones in Local Development Frameworks
- Identify sites for energy centres
- Support the development of heat networks, including offering statutory undertaker status to operators
- Commit to connecting 'anchor tenant' heat loads such as civic centres, swimming pools and schools
- Ensure long term covenant for consumers by acting as the procuring authority and heat supplier of last resort

We also recommend that public **sector organisations embed carbon reduction targets within their procurement and operational processes,** particularly as large occupiers of commercial space. Measures specific to decentralised energy should include:

- Commitment to connect to heat networks and provide 'anchor heat load' linked to long term contracts
- Allow use of their estates to house energy centres
- Route heat networks through their estates where appropriate

Role of energy companies and utilities

We have called for action by the public sector, but this must be matched by increased investment from energy companies and utilities, building on current approaches

Delivery of decentralised energy will only happen with committed support from the private sector. **Energy companies and utilities are best placed to deliver investment and expertise in decentralised energy, but there must be a return on that investment.** Many companies across a range of sectors are already actively engaged. A more strategic and appropriate regulatory and planning framework that delivers a clear economic case with manageable risks will encourage more to join them. With this framework in place **most of the £7 billion investment required can be delivered by the private sector.**

As well as providing investment in viable projects action by energy and utilities businesses should:

- Engage with the public sector through project specific public private partnerships for delivery of decentralised energy schemes to serve the existing stock
- Develop and commit to a Code of Practice for heat supply to safeguard consumers connected to heat networks. Consumer confidence is vital to ensure the success of decentralised energy. To speed up contracting a **standard Service Level Agreement for consumer connections should be developed covering speed of response, reliability and complaints handling**
- Agree principles for **heat pricing on an 'alternative heat cost' basis** to ensure fairness and transparency for consumers, whilst allowing flexibility for project specific requirements
- Sign up to dispute resolution through the Energy Ombudsman or equivalent
- Develop **contractual 'checklists'** that build on best practice and speed up project contract agreements, these could eventually develop into standard forms of contract as the market matures
- Work with the EFL and boroughs to **develop technical standards** to enable interconnectivity of networks
- Collect and share historical data to help guide investment decisions
- Support skills development and capacity building
- Offer landholdings for heat network routes where appropriate

Role of developers and occupiers

Whilst energy generation is a relatively new business for property companies and occupiers they form a key role in providing customers, without which decentralised energy schemes cannot work

Property developers and occupiers are increasingly responding to sustainability drivers in their day to day business. **Many developers have responded positively to local requirements for on-site decentralised energy solutions**, even where these are not as efficient as a district level solution and despite the challenges involved. **New and existing occupied development can provide consumers for decentralised energy schemes** and this is recognised in the industry. **Reliable and affordable heat supply would be welcomed by developers and occupiers** looking to meet increasingly stringent environmental targets whilst not compromising asset liquidity or business critical operations. There are a number of specific recommendations which will increase delivery of decentralised energy supplies. Costs for connecting to heat networks should qualify for Enhanced Capital Allowances.

Developers should:

- Commit to connecting new development to existing or proposed reliable heat networks
- On sufficiently large schemes, work with energy companies to deliver decentralised energy schemes. We believe these are viable for mixed use developments of around 1,500 residential units or more
- Work with occupiers to reduce carbon emissions by connecting existing buildings to low carbon heat networks. The Carbon Reduction Commitment must work to encourage this
- Agree principles for heat pricing with energy companies to ensure fairness and transparency for consumers

Green Energy Fund

A developer contribution fund for enabling and delivering decentralised energy schemes would help facilitate larger, lower carbon heat sources feeding district level heat networks

The GLA is currently working on proposals for a Green or Renewable Energy Fund for developer contributions. This fund, together with the proposed Community Infrastructure Levy, represents a possible way to fund the development of heat networks.

Whilst the exact details of such a mechanism are beyond the scope of this report, we propose an outline approach:

- Within decentralised energy project areas, identified by energy masterplans, developers should commit to connecting to the decentralised energy system, whether existing or proposed. Where heat networks exist this would take the form of a connection charge. Where heat networks are proposed the developer would contribute to the Green Energy Fund
- Where not feasible or efficient to provide CHP on-site developers should contribute to the Green Energy Fund
- Contributions should be 'ring fenced' and only be spent on carbon reduction measures through decentralised energy
- Contribution levels to the fund should be set at a level no more than the cost of providing alternative carbon reduction measures to an agreed level
- The funding should contribute meaningful carbon reduction and be rated on a £/tonne CO₂ saved. This could include funding towards heat networks. Exceptions to this rule could include funding essential development work such as heat mapping or project feasibility work
- The fund should be collected and operated by the individual boroughs but GLA and EFL should be able to direct funding priorities
- Money should be spent locally within the borough if possible. If not EFL should direct the funding to the most effective carbon reduction investment

In addition to the Green Energy Fund the **high upfront capital costs of heat networks mean that some form of government financial support may be required.** This could potentially be recouped from longer term returns on investment or sale of network assets once operational. **Soft loans, a revolving investment fund or grant funding are possible options as in the JESSICA fund which is a European Commission led initiative for Urban development projects.** An investment vehicle which enables the boroughs to make ring fenced, project specific investments in heat networks outside current restrictions on borrowing should be considered. **The shadow price of carbon should be used to evaluate investments.**

Whilst grant funding was trialled under the Community Heating Fund this programme did not account for the long timescales required to develop heat networks. Whilst grants may not be the best mechanism any **funding needs to be in place with sufficient long term certainty that projects can be developed and the funding used to underwrite and lever further investment from the private sector.**

In summary, we share the ambition of the Climate Change Action Plan and the capital's businesses are now seeking to meet the challenge it sets. To achieve meaningful carbon reductions coordinated action is required across public and private sectors, working in partnership.

We have set out the potential for carbon reductions; the need for an efficient scale of system; how an economic incentive is required to deliver a business case for decentralised energy; the role of a strategic plan; and a blueprint for project delivery.

We call for the actions set out above to be implemented as soon as possible to build on the work already undertaken by London government, boroughs, BERR, OFGEM and others, and thus deliver large reductions in London's carbon footprint.



Glossary

BERR	Department for Business, Enterprise and Regulatory Reform
CCL	Climate Change Levy
CHP	Combined heat and power
CHPA	Combined Heat and Power Association
CHPQA	CHP Quality Assurance
CCHP	Combined cooling, heat and power
DE	Decentralised energy
DEFRA	Department for Environment, Food and Rural Affairs
ESCO	Energy services company/contractor
EfL	Energy for London – proposed name for new body to oversee strategic development of decentralised energy in the capital
GLA	Greater London Authority
GDP	Gross domestic product
CEP	Community energy programme
IEA	International Energy Agency
kW	Kilowatt
kWh	Kilowatt hour
LCCA	London Climate Change Agency
LDA	London Development Agency
LEP	London Energy Partnership
MW	Megawatt
MWh	Megawatt hour
PPS	Planning Policy Statement
ROC	Renewables Obligation Certificate

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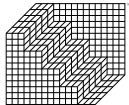
The recommendations in this report represent the views of the London First Steering Group. The views of individual members and their organisations may differ.

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London First is a business membership organisation with a mission to make London the best place in the world in which to do business. We mobilise the expertise and experience of the capital's major businesses, universities and colleges to devise and promote practical solutions to the challenges facing London. www.londonfirst.co.uk



Buro Happold

Designers of elegant, bold and sustainable engineering solutions for today's built environment Buro Happold aims to produce high quality engineering design in concept, in detail and in execution, on time, to programme and delivering excellent value for money. Our distinctive culture and ethos is still based on the same principles of care, value and elegance that were established when the practice was founded.

Buro Happold is involved in delivering a number of decentralised energy solutions in London and provides procurement advice, technical and environmental consultancy and design solutions for low carbon energy systems.

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Climate change has emerged as one of the most important political and business issues of our time. PwC has been working with policy makers and companies since 1997, helping to analyse issues and develop practical solutions for our clients. With a network of more than 200 professionals across Europe, the Americas and Asia Pacific, PwC offers a broad range of advisory, assurance and professional services that collectively guide clients through the complexities of climate change and emissions trading.

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