BERR AND OFGEM

Response of the Greater London Authority, the London Development Agency and the London Climate Change Agency to Initial Proposals for More Flexible Market and Licensing Arrangements for Distributed Energy.

Executive Summary

1. European, UK Government and London Government policies are driving the expansion of decentralised energy, since it not only saves over 25% of the fuel used but also over 35% of carbon emissions, compared with conventional electricity and heat generation;

2. A quantum leap in the number and scale of decentralised energy schemes is going to make the use of private (licence exempt) electrical distribution schemes, as they are currently applied, less appropriate for the future, since their use on a larger scale would be inconsistent with the requirements of access for competing electricity suppliers and protecting consumers through competition. Those requirements are contained both in the Electricity Directive and principles of utility regulation;

3. these requirements need not apply to very small schemes, although a case currently before the European Court has a direct bearing on how far the existing exemptions from licensing are sustainable at current or improved levels;

4. if the use of public wires for decentralised energy schemes is going to become mainstream, there must be found a basis for their use which does not involve decentralised energy suppliers having to accept costs risks and complexities associated with the central electricity market that are inappropriate for their business;

5. part of the solution is that when providing power to consumers connected to a decentralised energy site or network over public wires, decentralised energy providers should be able to treat those wires as a 'virtual private network'. This should be done through the adoption of metering systems which place the energy provider in a similar position to that associated with operation over private wires, except that competing suppliers would have access to the network;

6. a new 'short haul' use of systems charge would need to be established with Distribution Network Operators, to ensure that decentralised energy providers do not pay for more of the network than they are actually using;

7. decentralised energy providers are currently disadvantaged on the pricing of power exported from their sites or imported , because there is an inadequately competitive market in the import and export requirements of decentralised energy providers. The 'cash out mechanism' (see below) also disadvantages them on pricing. This requires investigation and action, if need be by the appointment of a special market trader for decentralised energy providers;

8. some changes will be necessary to the existing electricity market systems. Notably, the Balancing and Settlement Code will need altering so that decentralised generators are no longer unduly disadvantaged by the operation of the cash out settlement mechanism;

9. although all but small schemes will need to deliver their electricity over licensed distribution wires, there is a strong case for decentralised energy providers continuing to be able to supply their customers through a direct retail relationship, without having to manage the full costs risks and complexities of the market system;

10. that could be achieved through decentralised energy providers being able to supply electricity to their customers up to high volumes either on a supply licence exempt basis or under a simplified supply licence, involving limited interface with market systems;

11. special 'exempt supplier services' would need to be provided to decentralised energy providers supplying electricity on a licence exempt or simplified licence basis, in order to support them with necessary services to operate on the interface with the centralised electricity market;

12. although small in scale in comparison with centralised electricity supply, it is probable that a separate market for decentralised power will develop, particularly if the regulatory barriers to decentralised energy are removed. This may happen in part because of the need to appoint a special market trader for exported decentralised power output (see above); but also because the forthcoming requirement in new developments for a proportion of energy supply to come from decentralised energy of renewable or low carbon origins, is turning decentralised energy into a high volume but specialised product which the centralised electricity market may not be able to deliver;

13. it should be recognised that in some instances decentralised energy providers may wish to install networks so as, for example, to supply island generation where required. In these cases, the developer or decentralised energy provider should have sufficient flexibility to respond to the needs of the site, as if the site distribution system were a privately owned system;

14. It is unrealistic to address the regulatory status of decentralised energy on the supposition that, once exposed to the competitive supply market, its business model must adapt to operate within the costs, risks and complexities of full licence supply status. To do so would –

a) tend to confine the supply side of the decentralised energy market only to large and established energy suppliers;

b) as a result reduce the scope for a competitive market in decentralised energy; and

c) retard the growth of decentralised energy and with that its substantial potential to reduce carbon emissions.

15. There is now considerable urgency to settle the regulatory status of decentralised energy, as policy drivers escalate the need to deliver new and larger schemes. It is noted that Ofgem has announced a plan to review the regime governing the regulation of gas and electricity networks. Whilst the review is welcome, substantial progress needs to be made on the issues addressed in the consultation paper

regardless of the timing of that review, particularly since it is not planned to be concluded in under two years from now.

CONSULTATION RESPONSE

1. Background

This paper is in response to BERR and Ofgem's initial proposals for introducing greater flexibility to the market, regulatory and licensing arrangements for distributed low carbon electricity, as signalled in the Energy White Paper. It recognises that –

a) losses incurred in transmitting centrally generated electricity to the point of use can be significantly reduced by distributed energy;

b) the market is best placed to decide which technologies are most effective in supplying the UK's energy whilst also meeting our carbon reduction goals; and

c) it is for Government to ensure that the opportunities for DE are opened up so that it is a viable option for the market to consider.

Distributed energy has an important role to play in delivering the Government's agenda for combating climate change, particularly in the context of the use of decentralised energy to reduce carbon emissions in urban areas.

a) decentralised energy

For the purposes of the consultation process, the consultation paper defines distributed energy as –

'renewable energy generation which is connected directly into the local distribution network, as opposed to connecting to the transmission network ,as well as combined heat and power schemes (CHP) of any scale'.

This is a useful definition but perhaps needs some adjustment, in that CHP of *'any scale'* would include major CHP schemes which are directly connected to the National Grid or where only a small amount of the heat produced is used . Such plants do not fall within the accepted meaning of distributed generation and would not appear to share the same issues as those discussed in the consultation paper.

There is a subset of distributed energy schemes associated in particular with the reduction of carbon emissions in the urban environment, namely schemes –

i) the demand for which is driven by some or all of the policy drivers referred to in paragraph 1c) below; and

ii) often involving combined heat and power, so that heat produced in the course of electricity generation is usable and can lower the carbon emissions of premises to which it is delivered.

It is schemes of this type which are at the centre of the London Government's interest in distributed energy.

Such schemes are referred to in the London Climate Change Action Plan as decentralised energy schemes and the term is used in this paper.

b) London's objectives

The London Plan (which has been republished to include further alterations made during 2007) sets out the Mayor's targets for reducing carbon dioxide emissions within London and contains the minimum reduction target of 30% by 2025, using 1990 as the base year.

The Mayor's Climate Change Action Plan, published in February 2007, sets a target to reduce London's CO2 emissions by 60% below 1990 levels - not by 2050, but by 2025. CO2 emissions must be reduced by that amount for them to be stabilised at 450ppm and catastrophic climate change thus avoided. The ambitious target is dependent upon central Government measures being forthcoming, including necessary changes in the regulatory and economic environment for decentralised energy which are detailed in this paper.

In addition, the Mayor now has specific statutory duties under the Greater London Authority Act 2007. This includes an obligation to propose and publish a London climate change mitigation and energy strategy, to contain proposals and policies relating to minimising emissions of greenhouse gases from the use of energy in Greater London.

The Mayor's Climate Change Action Plan can only deliver the targeted carbon savings if decentralised energy is enabled to contribute substantially to the targets –

'*The Mayor's goal is to enable a quarter of London's energy supply to be moved off the grid and on to decentralised systems by 2025 and more than 50% by 2050''*

[Mayor of London's Climate Change Action Plan – 2007]

The Mayor stated in the Climate Change Action Plan that he will work with Government on delivering changes to legislation that are currently a barrier to delivering low and zero carbon energy systems.

c) the policy drivers

The decentralised energy market is now strongly policy driven. There are a range of Government initiatives driving it, including-

i) supplement to Planning Policy Statement 1, identifying measures to reduce the carbon footprint of new developments;

ii) Planning Policy Statement 22 on renewable energy;

iii) Part L of the Building Regulations and objectives to be met in respect of new developments;

iv) the (currently voluntary) Code for Sustainable Homes and DCLG policy statement - 'Building a Greener future';

v) the EU Energy Performance in Buildings Directive and the certification of the energy efficiency of buildings;

vi) the EU End – Use Efficiency and Energy Services Directive;

vii) the EU Co-Generation Directive.

In addition, in relation to London, there are the measures contained in the London Plan and the Mayor's Climate Change Action Plan which have already been referred to.

These policies will continue to strengthen. For example there is the Government's requirement that all new homes be zero carbon by 2016 and also the new PPS on climate change which states that planning authorities should expect a proportion of the energy supply for new developments to be secured from decentralised energy which is either renewable or low carbon.

2. The Regulatory and Market Barriers

'Ofgem and the Government are committed to ensuring …….that any unnecessary barriers to distributed energy are removed. In doing so however, we need to ensure that competition in the UK market remains vibrant and that distributed energy schemes can grow and thrive within a competitive framework.' [para. 1.27 Consultation Paper]

This objective is consistent with the London Government's view. However, there are barriers to achieving it and the pressures to remove them will increase, the more policies directly or indirectly drive the growth of the distributed energy market.

Ofgem already operates under the Social and Environmental Guidance issued by the then DTI in 2004.

The barriers can be summarised as follows –

a) the import costs and export of electricity

Distributed energy providers face considerable difficulties in obtaining a competitive price for the electricity they export and the price paid for top-up and stand-by supplies. There are essentially two reasons for this –

i) distributed energy plants normally buy and sell power in small packets, as and when power is required to be imported or exported. Dealing with such small quantities is unattractive to suppliers and may be seen by some as involving a disproportionate administrative cost. Existing consolidation services available in the market do not appear to have resolved this ;

ii) distributed generators normally cannot spread their balancing risk over a wide portfolio, in contrast to large centralised generators and suppliers. The result is that the electricity offered to the market by distributed energy providers is perceived to carry a higher balancing risk which depresses prices offered. There are changes to the settlement cash out mechanism that could significantly ease this burden (see paragraph 5d) below).

b) structure and complexities of the wholesale market

The structure of the electricity wholesale market imposes costs on participants which are for the most part not scaleable relative to the size of business. Some of these costs are the costs of expertise to manage the licensee's participation in the market system. Although the costs may not be the only barrier to smaller decentralised energy providers entering the licensed supply market, they are significant. The combination of internal and external costs of setting up the participation of a small decentralised energy provider (providing say 5MW(e)) as a licensed supplier in the market place is estimated at around £77,000. In addition, there are continuous operating costs of some £25,000 per annum, excluding Renewable Obligation costs which if included, bring the figure to approximately £90,000.
[Figures from a report prepared by Campbell Carr Limited for the London Climate Change Agency, September 2007].

However, apart from these expenses which are significant for a small business, the principal barrier is the complexity and risk of participating in the wholesale market. These relate primarily to –

i) participation in the trading and balancing mechanisms of the Balancing and Settlement Code. In particular, all licensed suppliers in the market take the risk of their supplies to consumers falling short of or exceeding the half hourly notifications of supply volumes they make to the market. This balancing risk is difficult to manage without a large portfolio of supply consumers, across which the risk can be spread;

ii) adherence to the Master Registration Agreement and related data transfer requirements. This is the industry agreement by which each consumer meter (identified by its 'MPAN' (meter point

administration number) is matched with a licensed supplier for market purposes. The arrangements are administratively complex and are proportionately more difficult for small operators to manage;

iii) observing obligations under the other intra industry agreements to which a licensed electricity supplier must be a party, notably –

- Connection and Use of Systems Code
- Grid Code
- Distribution Use of System Agreement with the incumbent Distribution Network Operator
- Data Transfer Service Agreement
-Supplier Agent Agreements;

(iv) in addition to market risk and the cost of complying with the market administration and trading obligations, there is an over-all 'hassle factor' which is not to be underestimated. Decentralised energy providers see the electricity market structure as belonging to large players who are well equipped to handle the complexities of its systems and its trading risks.

These are the reasons why private wire solutions have been such an influence in the design of decentralised energy systems. Those solutions are an escape from a market which is not designed to accommodate decentralised energy. The motivation is not the denial of the benefits of a competitive market to consumers. That may be a current feature of private wire but it is known to be untenable on any significant scale.

With regard to maintaining a licensed supply business, the report prepared by Campbell Carr and delivered to Ofgem states as follows –

' [taking a 5MW(e) decentralised energy scheme as an example] *there are marked economies of scale in what is essentially a process driven service where customer loyalty is difficult to create and the revenue margin only increases through repetition. In our opinion, a stand- alone licensed supply business operating on a customer base of 5000 domestic and relatively few commercial and industrial consumers and trading in the mainstream market is not sustainable in the long term.'*

Ofgem themselves report in their consultation document –

' this lack of scale has implications for anyone considering entering the supply market. As mentioned, commercial viability in the supply market is normally dependent on acquiring high volumes of customers at typically low margins. High volumes of customers are required to cover the upfront investment in systems to meet trading, billing and settlement requirements.'

3. The Principles of Reform

Much of distributed energy has been associated with the use of electricity distribution systems which are unlicensed and operated on a private basis. Until the Utilities Act 2000, electricity distribution was not an activity separately licensable from supply. After the Utilities Act a revised Class Exemption Order came into force. Industrial CHP schemes remained licence exempt in respect of their distribution

activities and tended to rely on on-site exemptions which could keep on site electricity supply out of the licensing structure up to a level of 100MW(e).

Although predominantly serving residential consumers, many community CHP schemes have tended to be small enough to be inside the exemption limits or capable of being configured to fall inside them.

However, the extension of the size of actual and planned decentralised energy schemes means that relying upon the existing Class Exemptions is much less tenable for the future, particularly for cities like London. Extending the scope of the exemptions may be possible to a limited degree; but a quantum leap in the scale of schemes is going to make the use of private wires (at least as presently defined) inconsistent with requirements for third party access by competing electricity suppliers and the principle prevalent in the energy and other utilities, of protecting domestic consumers through competition.

If the emigration of decentralised energy on to public wires is inevitable for these reasons, then the basis upon which it happens must enable decentralised energy providers to operate across licensed distribution systems. That involves decentralised energy schemes keeping the economic and operational features of the decentralised energy business model, but at the same time preserving consumer choice.

Delivery of this result should be the purpose of the current review of distributed generation.

The first step is to identify the economic features of decentralised energy which need to operate optimally over licensed electricity distribution systems.

The second step is then to determine what changes are needed to the electricity market systems and the Class Exemption Order to enable the economics of the decentralised energy business model to be accommodated, while allowing for third party access and without causing cross-subsidy from other forms of electricity production and supply.

4. Economic and Operational Features of Decentralised Energy

The features of decentralised energy which characterise its business are as follows –

a) lower energy losses and lower carbon emissions

Decentralised energy has a large role to play in enabling London to reach its carbon reduction target, because of its higher thermal efficiency (when in the form of Combined Heat and Power) and potential for reduced carbon emissions. Its growth is a response to the policy drivers already referred to and the need to reduce carbon emissions by generating low or zero carbon heat and electricity within distribution distance of its place of consumption.

b) local production and short distribution lines for electricity

Because the electricity is produced within economic distribution distance for the heat, decentralised energy schemes usually make only ‘short haul’ use of the electricity distribution system in which they

are embedded. If, as in many cases, the distribution wires between the generating station and consumers' premises are owned and operated by the decentralised energy provider, the distribution of the power –

i) does not make use of a licensed Distribution Network Operator's system;

ii) operates through a direct retail relationship between the generator of the decentralised energy and the consumer; and

iii) is invisible to the electricity market systems avoiding the costs, risks and complexities of the power being traded within the wholesale electricity supply market.

The only electricity which is visible to the electricity market system or dependent for its distribution upon the local licensed electricity distribution network, is electricity exported or imported by the decentralised energy provider off site.

c) import and export of electricity

In respect of electricity, there is a connection between the generating plant and the licensed electricity distribution network, through which standby and top-up power is imported and electricity in excess of the requirements of the site is exported.

The decentralised energy provider will bear a connection cost in respect of the connection to the licensed electricity distribution network in accordance with the Distribution Network Operator's Charging Statement. Also, the licensed electricity supplier who purchases or supplies the electricity will bear use of system charges in respect of it.

d) 'heat led'

The energy generating capacity of the scheme is typically 'heat led', that is to say the capacity of the plant is sized so as to meet the heat and heat to cooling requirements of the scheme. Any shortfall or excess in generated electricity is imported or exported as necessary via the connection point with the local electricity Distribution Network Operator's network. Two features in particular follow from that –

i) the costs of heat and power provision are to a degree inter-related. In particular the economics of the plant are dependent upon selling the heat produced. Annex 1 contains a simple spreadsheet which illustrates the interdependence of the two; and

ii) because of the need to transport heat through a fixed network, decentralised energy schemes tend to serve a defined site or definable network.

The establishment of interconnected heat networks means that the heat generating capacity of schemes need not be sized according to the initial heat demand of the site to which they are connected, but can be sized more flexibly, to include the heat demand from nearby community heating networks.

e) network characteristics

In a new development involving the installation of decentralised energy facilities, the distribution infrastructure on the site will be designed to fit the developer's requirements including if need be, island generation operation.

f) business vehicle

A decentralised energy business is typically operated by an energy services company, often with strong participation by non-industry members, such as local or public authorities and property developers, or smaller entities in the energy supply market; but some are operated by major energy utilities.

The central question is how far these characteristics which are the principal elements of the decentralised energy business model, can be replicated in a system which gives the electricity consumers access to the competitive electricity market.

It is unrealistic to address the regulatory status of decentralised energy on the supposition that its business model must adapt to operating with full supply licensed status. To do so would –

i) tend to confine the supply side of decentralised energy only to large and established energy suppliers adapted to operate in the electricity supply market;

ii) as a result, reduce the scope for competition in the supply of decentralised energy; and

iii) retard the growth of decentralised energy and with that, its substantial potential to reduce carbon.

5. The Changes

The electricity market and licensing system must be adapted to accommodate decentralised energy. That involves a bundle of solutions -

a) the'virtual private network'

Electricity distribution within decentralised energy sites should remain a licensable activity above a minimum threshold (see comments on the licence status of decentralised energy in paragraph 6 below). It is to be expected that above the threshold the incumbent Distribution Network Operator or an Independent Distribution Network Operator would operate the on-site distribution system.

Imports and exports from each decentralised energy site are netted off at the boundary of the site in question. All the market systems see is a single net import or export figure at a single exit point, rather than individual readings from the meter of each consumer. If any consumer wishes to change to a third party supplier however, the consumer can leave the single meter umbrella and be registered as an

individual consumer within the market system, to be supplied by whichever alternative electricity supplier the consumer has selected.

The same netting off could be done in a single Balancing Mechanism Unit (BMU) registered to the decentralised energy provider, assuming the provider is also licensed as an electricity supplier. However, the decentralised energy provider may not be licensed for supply (see paragraph 6 below); apart from which, although the use of a BMU for this purpose has the convenience of involving no change to the current market arrangements, it is not a solution that meets the need. That is because it involves the decentralised energy provider in the trading responsibility for all its power and the complexities of meter registration for each consumer's meter, all of which is unnecessary. The least complex and most satisfactory route is for decentralised energy suppliers not to be required to supply electricity on a licensed or fully licensed basis (see paragraph 6 below); and as at present to retain the boundary of the decentralised energy site as the interface between it and the centralised electricity market system.

The physical position mirrors the economic .The electricity generated on site and consumed there has never left it and there is no logic in applying a system to it which implies it has.

The 'virtual private network' would require special metering arrangements.

b) short haul use of system charging

The generation of electricity on a decentralised energy site and its distribution to consumers at premises on the same site does not involve the use of the local Distribution Network Operator's network, external to that site. The distribution of the energy produced is strictly 'short haul', between on-site generating station and on-site consumer.

It follows that Distribution Network Operators should be required to offer point-to-point short haul tariffs for use of their electricity system. It is a matter of cost reflectivity.

That is in contrast to electricity which is exported or imported through the boundary meter. In those cases the associated distribution costs would arise within the current duos tariff structure.

c) managing the market interfaces

The consultation paper canvasses the idea of there being appointed a market trader to act on behalf of decentralised energy providers in relation to trading and other functions. These functions include in particular the buying and selling of electricity in forward and spot markets; consolidation services and energy purchase services ('trading services').

In addition, there are included administrative services relating to the interface between decentralised energy providers and the central market system, notably registration in either the generation or supplier settlement system; energy contract notification and meter volume reallocation notification services ('administrative services').

The need for trading services and administrative services appears to be canvassed in the consultation paper on the basis that above a minimum threshold beneath which the Class Exemption Order would

confer licence exempt status, decentralised energy providers would still be required to be signatories to the Balancing and Settlement Code and other industry agreements, as licensed electricity suppliers. The effect is that decentralised energy providers remain exposed to the costs, risks and complexities of the centralised market system, saved from them only to the extent that the trading and administrative services canvassed in the consultation paper are or become available, work effectively and are affordable.

A much more effective means of removing the unacceptable costs and complexities to decentralised energy providers would be by maintaining their separation from the centralised supply market. That can be done either by raising substantially the limits on exemption from electricity supply licensing under the Class Exemption Order or by conferring on decentralised energy providers a special licensed status, as described in paragraph 6 below. That status would not require licensees to be signatories to the Balancing and Settlement Code or other industry codes, but would be directed at the protection of consumers.

As already described, third party access for competing suppliers to the consumer sites of decentralised energy providers would be secured by on site electricity distribution systems being licensed, above a threshold domestic consumer load.

However, a limited or simplified supply licensing regime of the kind described above would render decentralised energy providers dependant on Exempt Supplier Services, or their equivalent. That is described in paragraph 8 below.

d) reform of the cash-out mechanism

Although part of a wider policy processes, an important element in enabling decentralised energy providers to obtain an economic price for exported electricity and stand-by and top-up services, is reform of the cash out mechanisms within the electricity market settlement system. The mechanism discriminates against decentralised energy providers, because their small size and narrower consumer base makes them less able to manage balancing risk for both export and import than large players with well spread portfolios.

As a result, the current dual cash out system makes decentralised energy providers vulnerable to downward pressure on their export prices and upward pressure on import prices.

There is very substantial merit in the establishment of a single cash out price; or at minimum a ‘neutral zone’ in the form of a neutral cash out price for imbalances up to a maximum which is scaled so as to relieve the imbalance risk of smaller suppliers and generators at typical spill levels.

6. The Licence Status of Decentralised Energy

As is said in the consultation paper, the majority of distributed energy schemes have relied upon the 'Electricity (Class Exemptions from the Requirement for a Licence) Order 2001 to avoid licensable status in respect of the generation, supply and distribution of electricity. As also acknowledged, a strong motivation for designing schemes that fit within the Class Exemption Order, is to avoid the costs, risks and complexities of joining the electricity market system.

It has already been noted that the size and number of decentralised energy schemes will increase as a result of the policy drivers already referred to. The need to protect the interests of domestic consumers and support the competitive market for electricity supply will mean that there are severe limits to extending the operation of the class exemption system for electricity distribution. The key to effective competition is the availability of third party access to networks, but private wire systems do not normally allow for that although they could do so, particularly if third party access was feasible.

That is why this paper advocates the use of licensed distribution systems as the practical route for securing third party access.

Where private wire networks are required for technical reasons because public wires cannot meet the requirements of a site, the private wires would be required to secure third party access, unless below any licence exemption limit.

However the licensed status of decentralised energy in respect of electricity generation and supply also needs to be considered.

a) generation

The available limits for licence exempt electricity generation are controlled mainly by engineering considerations and matters of system stability. Those limits are at a level which makes them useable in respect of decentralised energy schemes of any size currently envisaged, being at 100MW(e) generation, subject to export off site not exceeding 50MW(e). These limits may need to be raised on individual schemes to take account of technical issues and already are in individual instances by the grant of individual exemptions.

Conversely, generating systems that are under the generating exemption threshold may be connected to a high voltage connection (for example 132KV) outside the boundary of the site. That feature should not prevent the plant being regulated as if it were a decentralised energy plant.

b) electricity supply

With regard to the electricity supply function, an important question is whether decentralised energy providers should operate under a licence exempt status, regardless of the scale of their operation; under a special licence status or as fully licensed suppliers. The three alternatives are discussed below.

i) licence exempt status.

The existing supply exemption limit under the Class Exemption Order could be raised to a substantially higher limit. That would not affect third party access to decentralised energy consumers, for the reasons

already explained. If this route were followed, the logical level of exemption in respect of supply would be the same as currently applies to licence exempt generation, namely 100 MW(e) on site supply, with a maximum of 50MW(e) export through its connection with the licensed distribution network.

However, it must be acknowledged that there are other aspects of consumer protection that may need to be secured, apart from the protection afforded by the availability of competing supplies. It is practical to place conditions in the terms of the Class Exemption for supply to include these, such as a requirement for an approved Code of Practice, regulation of rights of entry and other matters.

However, to include a wide range of conditions to protect consumers in effect turns an exemption document into a form of authorisation or licence and that therefore may be the more logical route to follow. If that route is followed, such exemptions could be time limited to enable decentralised energy projects to proceed now in advance of new simple licensing arrangements.

ii) special supply licence status

An alternative which is of similar outcome to outright exemption for electricity supply but enables decentralised energy supply to exist in a licensing framework, is to provide for the licensing of all decentralised energy supply on special terms. Those terms would apply necessary domestic consumer protection provisions but at the same time keep the licensee insulated from the central market systems, in the same way as licence exempt status does.

It is essential that one of the two routes outlined above is followed. Going forward on the basis of decentralised energy providers being licensable on current standard licence condition terms is not an effective solution, since it does not answer the difficulty of the unacceptable costs, risks and complexities involved.

That option is however discussed further below.

iii) full supply licence status

This status would be on the basis of decentralised energy providers being licensed (for schemes above a minimum threshold) on the same terms as all other licensed suppliers. The availability from the outset of the trading services and administrative services referred to in paragraph 5c) above would be fundamental to adopting this route, as would the effective operation of those services. However, despite that, it remains a very doubtful solution.

Decentralised energy providers would, through their fully licensed status, be forced to participate in the centralised wholesale electricity market and be dependent upon the trading and administrative services referred to earlier in this paper being available at economic cost from the outset.

7. The Class Exemption Order

There needs to remain a ‘de minimis’ level of electricity distribution and supply which remains licence exempt, on the basis of its small scale.

In addition, the current rules are both anomalous and notoriously opaque.

It is recommended as follows –

a) class exemption limits

The licence exempt limits should be standardised on a ‘per site’ basis in respect of both distribution and supply so that the rules do not discriminate between site operators on the basis of what other electricity supply or distribution activities they carry on. For distribution, that limit should be the limit currently applicable to a small distributor, of 2.5 MW(e) of domestic electrical load per site. In the case of supply the same limit should be applicable, although if licence exempt status for supply is adopted in line with the licence exempt alternative referred to above (paragraph 6 b) (i)), the limit for exempt supply would follow the recommendation in that paragraph.

b) re-drafting the existing Order

The existing order is in severe need of simplification. The London Climate Change Agency is happy to work with BERR and Ofgem in re-drafting it.

8. Exempt Supply Services

If either option i) or ii) of paragraph 6 b) (licence exempt supply or supply under a simplified supply licence) is adopted, administrative services referred to in the consultation paper relating to registration and management of exposure in the balancing and settlement system, energy contract notification, meter volume allocation and notification and other central market processes would not be needed, because decentralised energy providers would not be signatories to the Balancing and Settlement Code or other industry agreements.

There would however still be a need for ‘exempt supply services’ -

a) trading services

In either the licence exempt or simplified supply licence option, the decentralised energy provider’s interface with the central market systems would be a licensed supplier, through whom the decentralised energy provider would, as at present, export excess electricity and import top-up and stand-by requirements.

That is a function which is seen in the consultation paper as justifying investigation and if need be active steps to promote a more competitive market for the import and export requirements of decentralised energy. It is suggested as follows –

i) the cash out mechanism in the market settlement system should be reformed as a matter of urgency (see paragraph 5d) above);

ii) Ofgem should monitor the growth of consolidation services and trading services for the import and export of power to and from decentralised energy sites for the next two years. If the availability and competitive pricing of consolidation and related trading services offered by licensed electricity suppliers and consolidators remain inadequate relative to perceived demand, Ofgem should take active steps to set up a separate wholesale market. That should provide a trading platform for exports from and imports to decentralised energy sites and involve the appointment of a market operator to operate it.

It should not be forgotten that a market in decentralised energy may develop in any event and any action taken under this recommendation may become an extension of a market trend (see paragraph 9 below).

b) exempt supplier services under (old) Condition 53 of the ex – PES supply licence

The obligation on the ex PES licensed suppliers to provide these services was removed on the restructuring of the supply licence conditions in 2007. This condition should be re-instated, to enable decentralised energy providers to trade decentralised energy between its own and other sites (see paragraph 9 below – decentralised energy market).

Such services would be required by licence exempt suppliers and decentralised energy providers supplying under a simplified licensing arrangement, as described above.

It is recognised that the requirement to provide exempt supplier services was removed from the standard licence conditions for supply because there was no perceived need for the services, despite these being present in the Woking and Leicester decentralised energy schemes. To the extent that was then the case, it will not be for the future, as is apparent from the current development of decentralised energy and its prospective growth.

9. A Market for Decentralised Energy

The consultation paper raises the question of whether a separate electricity market should be established for decentralised energy. The same question in respect of heat is being addressed in the current BERR Heat Call for Evidence.

It is doubtful if decentralised energy schemes have yet grown in volume and size, to the point where a separate market for decentralised electricity could or need exist. However, it is to be expected that may change, driven by two factors –

a) achieving fair import and export prices

As explained in paragraph 8 a) above, the need for an organised market for decentralised electricity may arise if adequate and economic consolidation and related trading services do not emerge in the market to support decentralised energy providers.

b) the sale of low and zero carbon electricity to consumers on other sites and networks

The policy drivers referred to in paragraph 1c) above mean that new developments of significant size will have a low or zero carbon energy supply, with infrastructure installed to provide it. Under current DCLG policy statements and in line with the Mayor's planning policies, the energy consumed not only needs to comply with a carbon specification but also must meet other tests, namely that it is 'additional' to existing sources of low or zero carbon energy and also passes a test of proximity.

Certainly at central Government level, such requirements are still in their formative stages and the Code for Sustainable Homes remains voluntary; but the trend has become apparent. These facets and origins of decentralised electricity should in principle become tradable between sites and networks which are dedicated to the consumption of electricity of similar carbon standard and origin. That enables consumers on those sites or connected to those networks to have the benefit of competing electricity supplies, by forming a retail relationship with an alternative decentralised energy provider. The effect is that consumers are protected by competition, even though the specification of the electricity they must consume can in the main only be met by other decentralised energy providers with similar low or zero carbon energy generating capacity.

Although this prospect is still being incubated, it is the extension of policies now being formulated or implemented.

It follows that there is no basis at this stage for Ofgem constructing a separate market in decentralised electricity. However, particularly in the context of the current Heat Call for Evidence, prospective consultation on heat markets and the known economic relationship between the production of electricity and usable heat, Ofgem should be mindful of a separate decentralised electricity market developing.

10. Summary of Options and Potential Impact

Appendix II contains comments on Table 2, paragraph7.8 of the consultation paper.

11. The Consultation Questions

The specific questions asked in the consultation paper are responded to in Appendix III, the responses being a reflection of the proposals put forward in this paper and being cross referred to it where appropriate.

11th March 2008

APPENDIX I

Relationship between the Economics of Heat and Power Production

Inter-relationship between Electricity and Heat Costs

energy efficiency – electricity and heat

The example in this Annex is based upon an assumed overall energy efficiency (conversion of the energy content of the fuel into electricity and heat) of 70% [effic. 0.7]. The electrical efficiency is assumed to be 30% and the thermal efficiency 40%.

electricity

Assuming 1 kWh of energy input at 30% conversion to electricity, the electricity produced will amount to 0.3 kWh. If we assume a fuel input cost of 2p/kwh then the marginal cost of generating 1 kWh would be 6.67p

If we add to this the marginal operation and maintenance cost of 1.5p/kWh then the total marginal cost of generating 1 kWh of electricity would be 8.17p

heat / cooling

The heat output (representing 40% of the conversion of fuel into useable energy) in generating 1 kWh of electricity is determined by multiplying the unit electricity output by the heat to power ratio i.e., 0.4/0.3x1 = 1.33 kWh per kWh of electricity generated.

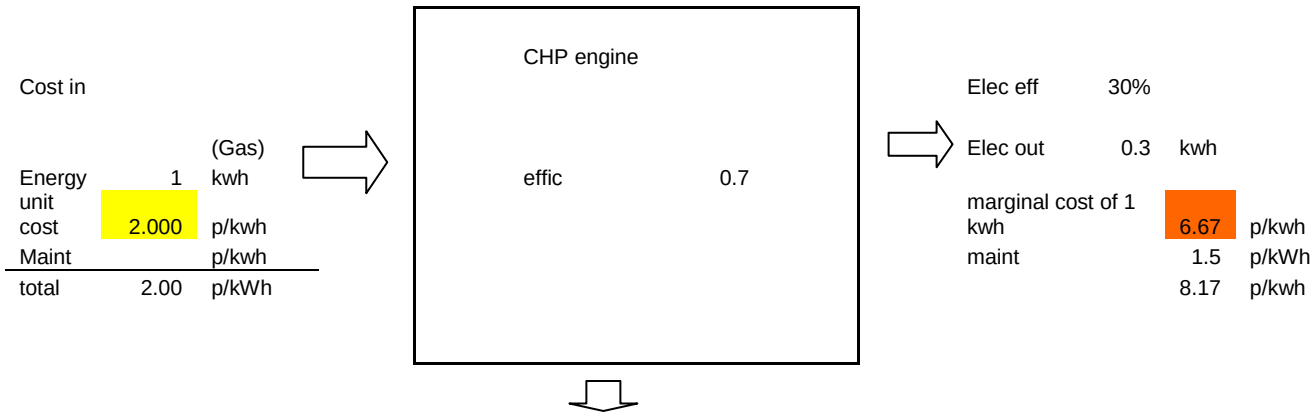
It is assumed that the value of the heat revenue is equal to the cost of 1 kWh of heat produced by means of a domestic boiler operating at 75% fuel efficiency then there is a total cost per kWh of 2.67p for domestic heat. The heat revenue from CHP in generating 1 kWh of electricity is therefore 1.33 kWh x 2.67 p/kWh = 3.55 p.

It is assumed that the scheme operator can charge a maximum sum to consumers of an amount equal to the avoided cost to consumers of obtaining their heat from the alternative conventional source, which in this case equals 2.67 p/kWh or 3.55 p/kWh per kWh of electricity generated.

combined effect

The effect of combining these two income streams is that if 4.62p (8.17- 3.55) is charged for 1 kwh of electricity and 3.55 p is charge for 1.33 kWh of heat then the marginal cost of running the machine to produce 1 kwh of electricity will be covered.

The difference between the cost of producing 1 kWh electricity and the market price *of electricity* would be the income taken by the operator to pay for his other administrative costs and recover the capital.



For every 1 kWh of electricity, you produce	1.33333	kWh of heat
The heat income for every I kWh of electricity	3.55556	p
Therefore the marginal price of electricity would be	4.61111	p/kWh

APPENDIX II

Summary of Options and Potential Impact in Table 2 of the Consultation Paper

Comments and Adjustments

The following comments are made on the assessment in the consultation paper of the potential beneficial impact on the economics of DE of the options summarised in the Table.

Wholesale Market Trading

Option 2

For reasons explained in the response to Q. 28, the impact of this option should be rated low.

Selling to a Third Party

Option 2

The introduction of a specialist energy trader to make sales and purchases of decentralised energy would be high impact, in the event that effective consolidation and other trading services do not emerge as part of market development.

Option 3

Improved forecasting capability will be of low impact, because it assumes a resource on the part of decentralised energy providers to operate in the balancing and settlement mechanisms that they mainly do not have.

Option 4

As explained in paragraph 9 above, if (as is possible) a separate market for decentralised energy arises because of the influences described in that paragraph, then its impact on the economics of DE will be high.

Operating as an Exempt Supplier

Option 1.

Where decentralised energy providers operate on a licence exempt basis or if a simplified supply licence (as recommended in paragraph 6 of this paper) is adopted, exempt supply services will be necessary and making them available will have a high impact.

Option 2

The ‘virtual private network’ is the most practical option for combining third party access with accommodating the DE business model within licensed electricity distribution. The impact of this measure would be high.

Option 5.

Cost reflective duos charges are very important to the economics of DE, as described in this paper. It is doubtful however whether DNOs have much if any incentive to develop cost reflective charges, if their brief consists only of encouragement to think about it. Therefore although the potential is high, the impact is likely to be medium to low.

Becoming a Licensed Supplier

Options 1 and 2

Both these options are low or medium, on the basis that support in market processes and cost spreading do not eliminate the major barriers of risk and complexity. Such services would also have to be costed on an economic basis and not put smaller market players at a disadvantage, simply because the associated costs (relative to the size of their businesses) cause an unacceptable reduction in trading margins.

Option 3

The impact of a review of the BSC and MRA to determine fair cost allocation although useful, is of low impact. For reasons already explained, the barriers lie in the complexity and risks of the supply market structure to DE operators, not only costs.

Option 4

We agree that the introduction of new supply licence conditions is a high impact option. See paragraph 6 of this paper.

APPENDIX III

Responses to Consultation Questions

Q.1 . Exemption limits for supply and distribution:

As explained in this paper, the solution in respect of the distribution of decentralised energy is to simulate the private wire economics by use of a 'virtual private network' (see paragraph 5a)).
The supply exemption limits could then be raised without affecting third party access; or decentralised energy providers could be licensed on a simplified basis (see paragraph 6).

Q.2. Existing per Company Exemption:

The per company maximum should be removed, allowing an over-all per site limit in respect of electricity distribution of 2.5MW for small schemes. The current position is discriminatory.(see paragraph 7).
In respect of supply exemption limits, see Q.1 above.

Q.3. Economic Size for DE Schemes:

We are happy to discuss this with you, but the issue cannot be addressed satisfactorily in a short consultation response.

Q.4. 2001 Class Exemption Order:

We are happy to assist BERR with the re-drafting of the Order

Q.5. Representation of DE Schemes in BSC Governance:

This measure would be of low impact, because the barriers to DE are not resolvable by such process solutions.

Q.5. Allocation of Funding for DE Representation in BSC Governance:

This measure will be of low impact – see Q.5 above.

Q.6. Options to Address DE Risks in Wholesale Market:

We are satisfied you have addressed all the realistic ones brought forward during the DE Working Group meetings.

Q.7. Exports from DE Schemes Undervalued by Third Party Purchasers:

This is a common complaint by DE providers, but Ofgem might usefully use its powers to request information from industry participants to gather more data on the point.

Q.8. Lack of Competition in the Market for Small Generator Output:

This follows on from the point made in Question 7 above. However, the underlying issue is the extent to which prices paid are depressed by the matters referred to in paragraph 2a) above, namely the small size of the packets of power on offer and the impact of balancing risk.

Q.9. Reasons for Lack of Development of Consolidation Services:

Broadly, you have considered the main reasons, but the underlying cause is that in the current market structure the packets of power produced by DE are not attractive to the market place (see paragraph 2a) above).

Q.10. The Case for a Specialist Energy Trader:

There is a strong case for an energy trader if the conditions described in paragraph 9 arise (a market for decentralised energy).

Q.11. Implementation of Energy Trader Role:

If an energy trader role is required and has not been produced by the market, then the role must be tendered for (see paragraph 8- trading services).

Q.12. Improving DE Forecasting Capability:

We have no clear view, but would point out that consistent with the views expressed in this paper, improvements in forecasting capability although useful, would be of limited impact.

Q.13. Dedicated Market for DE:

Such a market may arise and need regulation (see paragraph 9 – a market for decentralised energy).

Q.14. Options to Address Lack of Competition in the Market:

In principle they have been addressed, but not all of them would be effective. The proposals in this paper are based upon identifying those options which would be effective.

Q.16. Reasons for Favouring the Private Wire Option:

The reasons for favouring the private wire option are strongly influenced by the wish to avoid involvement with electricity market trading systems. However there are other considerations and in particular we are happy to discuss the cost considerations of using private wires with Ofgem and BERR.

Q.17. Availability of Exempt Supply Services:

Such services are not readily available and will be needed for the reasons set out in paragraph 8 b) above (exempt supply services).

Q.18. Obligation to Provide Exempt Supply Services:

This obligation should be confined to licensed suppliers above a stated size. The ex PES criterion is probably redundant, but is correctly based on size.

Q.19. Feasibility of Exempt Supply Services Being Provided at System Cost:

The objective would be that the cost of exempt supply services be paid for on a marginal basis, since the licensed electricity suppliers obliged to provide the services should already have the necessary infrastructure to do so.

Q.20. DE Representation on the Energy Network Association:

There is a good case for DE representation, but the costs should be funded by the industry.

Q.21. Technical Standards Discouraging Connections:

We are happy to discuss the question of technical standards with Ofgem, but it is not susceptible to answer in a brief consultation response.

Q.22. Options to Improve DE Access to the Licensed Network:

The option strongly put forward in this paper is facilitating access through a 'virtual private network'. The need to find the metering solutions to deliver that option should not be seen as a barrier.

Q.23. Costs of Start Up and Break Even Point:

We are happy to discuss this with you. It is best explained using actual business models.

Q.24. Economic Justification for Investment Over and Above Boiler System:

In principle there is clear economic justification (see the spreadsheet in Appendix I) but the issues will require clarification in the context of the Heat Call for Evidence.

Apart from direct economic justification, CHP is a cost effective means of reducing carbon.

Q.25. Restrictions on Customers Switching:

There is some benefit in that, to enable DE schemes to become established. However, this proposal does not address the main issues which are access to licensed networks and the costs, risks and complexities associated with supply licence status. That DE operators should be required to hold a full supply licence, is an unnecessary impediment (see paragraph 6).

Q. 26. What Types of Advice and Information Required by Start up DE:

Advice and information may be required in relation to the need for supply exempt services (see paragraph 8). If DE operators require a full supply licence, the advice requirement would be much more extensive. However, the impact of the advice being available would be low, because the barriers represented by the costs, risks and complexities of participation in the licensed supply market would still be present.

Q.27. A New DE Supply Licence :

A special licence status is the best solution to the issues associated with DE market exposure. See paragraph 6 above.

Q.28. The Proposed Options:

The cost of becoming a licensed supplier is only one of the barriers to licensed supply status being a viable option for DE (see paragraph 2). The most viable options are directed at limiting DE's exposure to the central electricity market. Useful options are contained in the consultation paper.

The crucial point is to identify the effective ones and take them forward. In principle, that must involve some structural change as outlined in this paper, but the change can be made within the licensing system and need not be disruptive of current electricity market arrangements.

Confining the options to process changes and enhanced advisory services does not address the underlying barriers which are structural. For example, the table headed 'Summary of Options and Potential Impact' in paragraph 7.8 of the consultation paper, attributes a 'High' potential beneficial impact upon DE economics to the option of appointing a DE representative to the BSC modifications panel. Such an option, although possibly having some marginal effect, is a process change which has no bearing on the underlying problem and is inappropriately described as a 'quick win'.