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Review of the market for exported electricity from microgeneration

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Target audience: Stakeholders in the microgeneration industry and other interested parties.

Overview:

In the 2007 Budget, the Chancellor requested Ofgem to review the effectiveness of the market for exported electricity from microgeneration. This report finds that suppliers are offering fair value export offers for households wanting to sell back surplus power. However, the market for exported electricity, which is still in its infancy, and household microgeneration in general would be improved by better provision of information to help customers find the best deal that suits their circumstances and easier access to financial incentives.

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Ofgem acknowledges the significant contribution of John Kemp Associates to this final report.

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Summary

In March 2007 HM Treasury requested Ofgem to review the market for exported electricity from domestic-scale microgeneration. The key findings are:

- suppliers are offering a range of fair value tariffs to purchase exported electricity from household microgeneration;
- it is complicated for customers to work out the best deal because suppliers' offers are not directly comparable and customers also need to look at a range of other factors, including the amount of electricity they expect to use, the fit of this to the generation profile of the microgeneration unit, costs of metering etc;
- the economic payback on household microgeneration investments, which depend on several factors, may take up to 20 years or more; and
- nonetheless, customers have responded to suppliers' offers. The 1,500 or so households signed on with suppliers to sell surplus home-made electricity is a significant increase from a year ago.

Financial incentives for microgeneration provided by the Renewable Obligation are limited because most domestic installations are small-scale. The Government's reform of the Renewable Obligation will provide additional stimulus from April 2009 but this is unlikely to be sufficient to bring forward microgeneration in the context of 2020 renewable energy targets.

The Government's commitment to thinking afresh about its preferred mechanism to support microgeneration as part of developing a new renewables strategy is timely. Ofgem will discuss the conclusions of this report with BERR as that review proceeds. In particular, the market for exported electricity, which is still in its infancy, and household microgeneration in general would be improved by better provision of information to help customers find the best deal that suits their circumstances and easier access to financial incentives.

1. Introduction

1.1. Her Majesty's Treasury wrote to Ofgem on 21 March 2007 requesting a review of the market for exported electricity from domestic scale microgeneration[1]. In particular, Treasury requested that Ofgem review whether:

- the export tariffs offered by suppliers for microgeneration are easily accessible and comparable by consumers;
- consumers are able to switch easily between energy suppliers; and
- the offers are a fair reflection of the underlying value of microgeneration.

1.2. Microgeneration is defined in the Energy Act (2004) as the small-scale production of heat and/or electricity from low carbon sources. We understand there are around 100,000 microgeneration installations producing energy at a domestic level in England, Wales and Scotland[2]. The vast majority of all microgeneration installations are thermal technologies such as ground source heat pumps and solar thermal water heating[3]; the remainder comprises a variety of electricity generating technologies such as solar panels, micro CHP and wind turbines.

Climate Change and Sustainable Energy Act 2006

1.3. The Climate Change and Sustainable Energy Act 2006 grants the Government the power, if it thinks it necessary, and following consultation, to take steps to increase the amount of electricity generated by microgeneration. Under the terms of the Act, the Secretary of State (SoS) has been granted powers to make relevant modifications to the supply and/or the distribution licenses to require suppliers to make offers to acquire electricity generated by microgeneration by their own customers. No indication as to the level of the offer is given.

1.4. The SoS has a two year period during which a decision must be made as to whether existing export offers are sufficient to increase the amount of microgeneration or whether intervention is required.[4]

1 Less than 50kW in size.
2 Source: Potential for microgeneration, EST 2005
3 DTI's Microgeneration strategy estimate d that in 2006 about 96% of microgeneration installations were thermal technologies. http://www.berr.gov.uk/files/file27575.pdf
4 The SoS has an opportunity to exercise powers to modify the supply/distribution licences under Section 8(5) of the CCSE, that is, during the period which begins with the first anniversary and ends with the third anniversary of the commencement of section 7. The CCSE Act received Royal Assent on 21st June 2006 and Section 7 came into force on 21st August

Distributed Energy Working Group

1.5. Ofgem also agreed to feedback any findings from the Distributed Energy Working Group (DEWG) on whether there are any issues with the market or regulatory arrangements that limit the development of DE which may be of relevance to microgeneration. Distributed Energy, as defined by the DEWG, is any generation connected to the low voltage network that is greater than 50kW and less than 100MW. The Group, managed by BERR and Ofgem, published a Consultation Document in December 2007 that sets out the key issues facing DE and some initial thoughts on options that may address these issues.

1.6. The key issues identified by the DEWG with the market and regulatory arrangements are not directly relevant to the debate about the development of microgeneration and we do not go into any further detail about possible policy measures in this review. That is not to say that certain options, particularly in relation to the wholesale electricity market, may have some impact on microgeneration and its value to suppliers and customers. Readers interested to know more about this workstream should refer to the DE Consultation Document[5].

Rest of this paper

1.7. In the rest of this paper we describe:

- In section 2, the background to the microgeneration debate that is being conducted by the industry and interested parties and a framework for considering suppliers' offers to microgenerators to acquire surplus electricity;
- in section 3, our findings from assessing if the tariffs offer fair value to microgenerators, whether the offers are accessible and comparable for consumers and what these and other factors mean for the financial paybacks of investing in microgeneration; and
- in section 4, our conclusions.

2006. The SoS power under section 7 therefore became exercisable on 21st August 2007 and will end on 21st August 2009.

5 The Consultation Document can currently be found under "Live Consultations" on www.ofgem.gov.uk

2. Market assessment

What level of export tariff should customers expect?

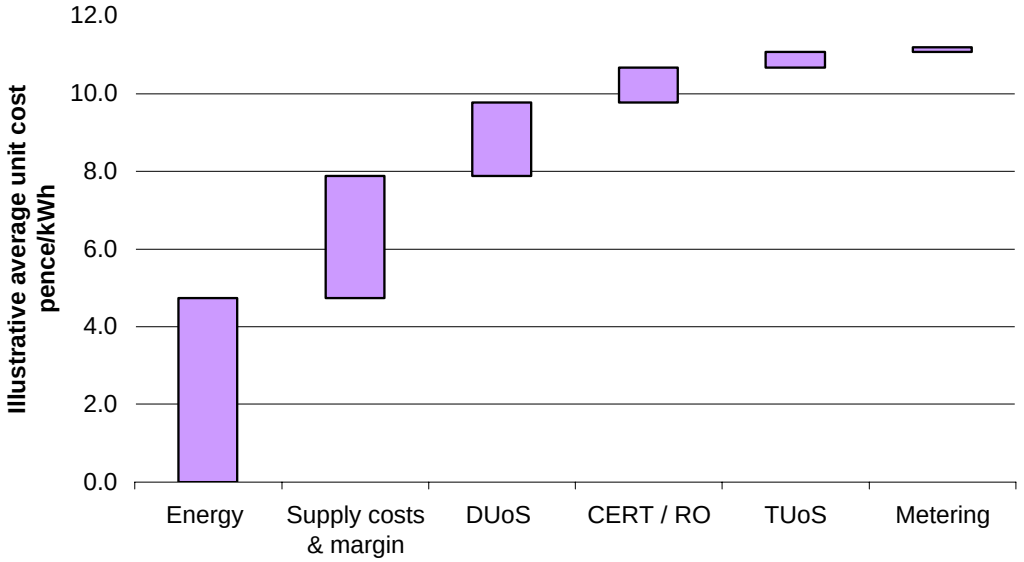
2.1. In discussions we have had with groups interested in microgeneration there has been much expectation that the export tariffs should be equivalent to the import tariffs. It has been put to us that customers should get the same price for what they sell as they pay for their consumption. With suppliers charging in excess of 10p/kWh for electricity there is an expectation that microgeneration should get the same.

2.2. This argument, however, assumes there is no difference between a wholesale and retail tariff. In most markets the price paid by customers to purchase the final product is not the same as that received by producers. Similarly, customers that choose to become producers of electricity by installing their own microgeneration would, in a normal market, receive the wholesale price for the surplus output they export.

2.3. To illustrate this in more detail we have constructed a breakdown of the retail tariff based on readily available information and an informed assessment of the costs that are not publicly available in Figure 1[6]. The breakdown indicates that the wholesale electricity is actually around half the value of that of the retail price. When supplying electricity a number of other costs are incurred that need to be paid for by the end user. These costs include transportation of the electricity on the network (transmission and distribution use of system charges and losses), metering, costs to serve (i.e. billing, answering enquiries, cash flow costs) and the costs of meeting environmental obligations such as Carbon Emissions Reduction Target (CERT) and the Renewables Obligation (RO). These costs are added on to the wholesale electricity cost to derive the price paid by customers.

6 These include the average wholesale price of electricity, costs to serve a customer and the supplier margin. Quite small changes to our underlying assumptions have a significant impact on the split between the wholesale energy cost and the supplier costs.

Figure 1: Illustrative breakdown of an average standard credit domestic bill



Source: Retail tariffs and bill breakdown, estimates by Ofgem, January 2008

Value of microgeneration to a supplier

2.4. It is difficult to determine the value of microgeneration to suppliers. First, the value of generation of any size varies. Wholesale energy costs are not regulated and change in line with fluctuations in demand, primary energy costs, and capacity margins in generation and gas storage. These factors will continue to influence wholesale prices over the longer term. Also, wholesale prices do not take into account the risks and uncertainties of trading in the wholesale markets. For these reasons, the valuation provided here can only be taken as a snapshot of current prices and an indicator of the types of issues that suppliers face in valuing small amounts of microgeneration.

2.5. Secondly, microgeneration is a developing technology and there is limited information about when and how much each technology is likely to generate. We can clearly make assumptions about solar only operating in day light hours, but wind is less certain. And for technology such as microCHP there will be variation in how much might be exported during the peak periods and how much is consumed by the householder. This is an important element in determining the value of microgeneration.

2.6. Thirdly, we have limited information about the upfront and ongoing transaction costs that suppliers incur in signing up microgeneration customers. We would expect that the upfront call centre time to get the customer up and running could be considerable with the technology in its infancy, but this may come down considerably as more installations generate greater familiarity.

2.7. Despite these many uncertainties we have attempted to illustrate the value of microgeneration to suppliers in Table 1.

Table 1: Illustration of the value of microgeneration to suppliers

Benefit / Cost p/kWh	Low	Base	High
Wholesale value of electricity	2.4	4.3	6.2
Avoided D losses	0.2	0.4	0.5
Avoided T losses	0.0	0.1	0.1
Avoided TNUoS	0.4	0.4	0.4
Avoided BSUoS	0.0	0.0	0.0
Gross microgeneration value p/kWh	3.1	5.1	7.2
Less costs £pa			
Supplier costs-to-serve	15.0	11.0	11.0
Total meter reading cost per year	15.0	5.0	2.5
Total costs £ pa	30.0	16.0	13.5
Net value at 1,000 kWh - p/kWh	0.1	3.5	5.9

Notes:
(a) Low: time weighted System Sell Price for year ending 31 December 2007 – Elexon; High: 3 year forward average peak price – Heron; Base: average of Low and High scenarios
(b) Losses assumed to be 8.5% distribution and 1.5% transmission
(c) Avoided TNUoS, Ofgem
(d) Avoided BSUoS, Ofgem
(e) Supplier costs to serve, Source: ENSG, Datamonitor
(f) Annual meter reading costs: £15, Source: ENSG; £5.00, Source: Datamonitor
(g) Costs to serve; £2.50, Source: estimate.

Wholesale value of electricity

2.8. The most likely starting point for suppliers in valuing the output for microgeneration is the price that can be realised by selling it into the Balancing Mechanism. Given the difficulty of predicting how much electricity is going to be exported by microgeneration, suppliers may argue that it is only worth the prevailing sell price in any given trading period, known as the “spill” price. The “spill” price varies depending on the conditions of the system but is also affected by the wholesale energy costs. The figure we have used in the low scenario reflects actual time weighted (i.e. not taking into account the expected timing of exports) “spill” prices throughout 2007.

2.9. However, if exports are credited to suppliers based on profiles or if some technologies become more predictable, the value to the supplier could be higher. To reflect this we have shown high and base scenarios in table 1.

Meter readings

2.10. Readings of the export meter are required to pay customers for the electricity they export and sell to a supplier. Readings of the meter measuring total generation are also be required if the supplier takes responsibility for collecting the Renewable Obligation Certificates (ROCs) that microgeneration are eligible for on all their output. At this early stage of market development, we have little information on how meter readings are collected in practice. Early adopters of the technology could have a tendency to follow the output of their investment quite closely and be in a position to provide self-reads on a regular basis.

2.11. To meet the terms of the settlement process, suppliers are required to read the export meter at least once every fourteen months. In practice we would expect suppliers to try and read the export meter as part of their normal cyclical read of the import meter. This means that the cost of reading the export meter would be marginal – perhaps similar to the cost of reading both the electricity and gas meters at the same time. There is not much publicly available information on the price of meter readings paid by the suppliers given the commercially confidential nature of the contracts so we have constructed a range of costs that reflect this uncertainty and the unknown number of readings that may be required each year:

- "Low" scenario: the ENSG[7] delivered a report on the value of microgeneration in which it assumed that a single meter reading costs £15 per annum. We are of the view that this represents a maximum estimate of the cost of a small specialist supplier that makes a special visit to read the export meter;
- "Base" scenario: Datamonitor estimates that the cost of reading customer's import meters is approximately £5 per year. It is our assessment this most likely amounts to the cost of reading all meters on average twice per year for a major supplier;
- "High" scenario: this is a rather speculative estimate that supposes that it might be possible to reduce metering costs by encouraging customers to read their own meters, by suppliers negotiating with their meter agents dual-fuel type fees for reading both import and export meters at the same time, or allow suppliers to enter deemed electricity exports from microgeneration into settlement.

2.12. Smart meters could play a part in reducing the cost of reading the export and, where necessary, the generation meter. However, at this time the detail of how this would work in practice has not been determined. Questions remain as to whether microgeneration would be settled on half hourly data or if it would be more cost effective to rely on profiles as are presently used for domestic and small business

7 The Electricity Network Strategy Group (ENSG) recently conducted similar work on valuing the exports from microgeneration – "Scheme to reward microgenerators exporting excess electricity". Where possible we have incorporated the assumptions used in that evaluation in our assessment in this review.

consumption. To avoid an on-site visit completely a supplier, also acting as the ROC agent, would require details of the total amount generated. Government is expected to make decisions shortly around smart meters including how it wants smart meters to facilitate generation.

Costs-to-serve

2.13. There is further uncertainty surrounding what the costs-to-serve might be for an export customer relative to an import customer. It is possible that microgeneration could require more customer services. There is a degree of extra complexity – or perhaps lack of familiarity - in terms of understanding export tariffs and how the payments are calculated. However, the customer is likely to also be an import customer which may provide scope for reducing average costs. As far as we can ascertain there are no cash flow implications incurred by the supplier for each microgeneration customer so they are not exposed to the normal bad debt and late payment costs as well as the costs of financing electricity purchases before receipt of paid-bills associated with import customers.

2.14. As a result of this uncertainty we have made a range of assumptions in the scenarios as follows:

- "Low" scenario: we have used the estimate generated by the ENSG that discussed this issue with the industry;
- "Base" scenario: we have taken the view that an export customer would only incur billing and contact centre costs. The cost of which, based on Datamonitor's estimates, broadly concurs with the ENSG assumption of £15 per annum;
- "High" scenario: again by way of speculation we have made the assumption that the best possible outcome in terms of reducing costs-to-serve is if the customer is also an import customer and only incurs marginal costs for billing. This perspective results in our assumption that in the best case costs-to-serve could be as little as £11.

Customer acquisition costs

2.15. It is not clear whether the microgeneration offers actually incur customer acquisition costs or whether the offers are used in themselves as a means of attracting import customers. In the first case we would add a range of acquisition costs to the other transaction costs to reflect the true value of the microgeneration to the supplier. In the second case, we would assume that the cost of providing the offer forms part of the acquisition cost of the import customer and no further costs need be accounted for in valuing the microgeneration. We have not added any acquisition costs in our assessment of the value of the microgeneration exports.

Embedded benefits

2.16. Suppliers realise a benefit by purchasing exports from microgeneration as opposed to large scale (high voltage connected) generation known as embedded benefits. This is due to the way that the market trading arrangements treat small-scale (low voltage connected) generation. The output from this size of generation is grossed up by an amount equal to the electricity that would have been lost if it had been connected on the high voltage network (i.e. normally around the expected level of losses incurred and is treated as negative demand). This gives rise to a number benefits in the form of avoided costs including transmission and distribution losses, transmission use of system charges and avoided balancing system charges. The size of the benefit depends on where the microgeneration is geographically located.

Other benefits

2.17. We have not included the value that microgeneration might deliver to DNOs in avoided network reinforcement costs. Neither have we included the value to a supplier or a customer that might be realised from the value of ROCs.

Microgeneration and settlement

2.18. To realise the level of value from microgeneration indicated in Table 1 suppliers must register the export meters in the settlement system. This ensures that any amounts exported by the microgenerator are registered against the supplier that has offered the tariff. If the supplier does not do this the value of the electricity is spread pro rata across all suppliers operating in any given region.

2.19. Of the 1,500 or so microgenerators that have signed up for export tariffs only 30 have been registered for settlement. This means that little of the benefit of microgeneration is realised by the supplier. We suspect that the direct and indirect costs of settlement provide a disincentive for suppliers to register export meters. This issue is currently being considered by the industry with two modifications to the process recently proposed[8].

[8] The BSC panel and Ofgem both rejected the modification proposal P213. A second modification proposal, P218, is currently being assessed by industry that seeks to create a mechanism to allow more microgeneration to be accounted for within Settlement. If accepted the modification would allow Suppliers to submit deemed exported electricity from microgeneration into Settlement.

3. Assessment of suppliers' export tariff offers

3.1. All the major suppliers have offers for the purchase of exports from microgenerators. These are largely characterised by three types of offers covering metered export reward, unmetered reward and payments based on the total amount generated regardless of how much is exported. Each is discussed in further detail below.

Metered export tariffs

3.2. These tariffs are paid on the metered amount of export electricity that is produced by the microgenerator. The level of the tariffs vary between 4.5p/kWh to 18p/kWh and depend on which supplier is making the offer, the region the customer lives in and the type of microgeneration technology that is installed (Appendix 1). The key features of these offers are:

- all but one of the major suppliers requires the customer to be an import customer to be eligible for the export tariffs. This has the effect of reducing the number of import/export supplier options available to the customer. It also means that the best value tariff is dependent on calculating the final bill for both electricity imports and exports. This makes identifying and switching to a cheaper supply a complex process;
- they only apply to microgeneration installations which have capacity less than 6 to 11kw depending on the supplier;
- two of the major suppliers insist that the customer appoints them as the ROC agent for their generation – a third supplier offers it as an option. The other three major suppliers leave the customers to recover the value of the ROCs themselves or use an alternative ROC agent;
- an export meter needs to be installed at a cost of between £30 and £200. For many of the suppliers meter installation can take up to 2 months.

Unmetered offers

3.3. Some suppliers are also making unmetered offers (Appendix 2) - these are either:

- a fixed annual fee payable regardless of how much is exported; or
- an amount payable based on an estimate of export volumes as determined by the level of generation or calculated on the specific characteristics of the customer (i.e. house type, microgeneration technology, etc) in any given period.

3.4. The value of unmetered exports for the major suppliers is limited. All unmetered electricity that is not directly attributable to any particular supplier is spread over all suppliers. If a particular supplier has 15% of the market in any given region then they will recover only 15% of the value of the electricity. Other suppliers also operating in that region will also benefit proportionately from the output.

3.5. We suspect that suppliers are making unmetered offers as a goodwill gesture to cover delays in obtaining and installing export meters. As we have already indicated many of the suppliers are quoting a two month wait for installation. We also understand that the transaction costs of meter registration and obtaining regular meter readings are not justified by the value of submitting into settlement the metered electricity exported by microgeneration.

Generation based offers

3.6. These offers are based on the ROC value of the total amount generated regardless of how much is exported and are dependent on the customer being an import customer. To obtain the offer customers appoint the suppliers as the ROC agent and sign-up to the associated import tariff.

3.7. The full value of the ROC is currently around 4.5p/kWh. This is reflected in the offers made by Ecotricity and by Good Energy (the latter offering twice this value) and is just above the offer made by Green Energy (Appendix 3). To reduce transaction costs customers are required to provide generation meter reads.

3.8. As with unmetered offers the non ROC value of the electricity is spread across all suppliers operating in any given region. Smaller suppliers will recover virtually none of this value.

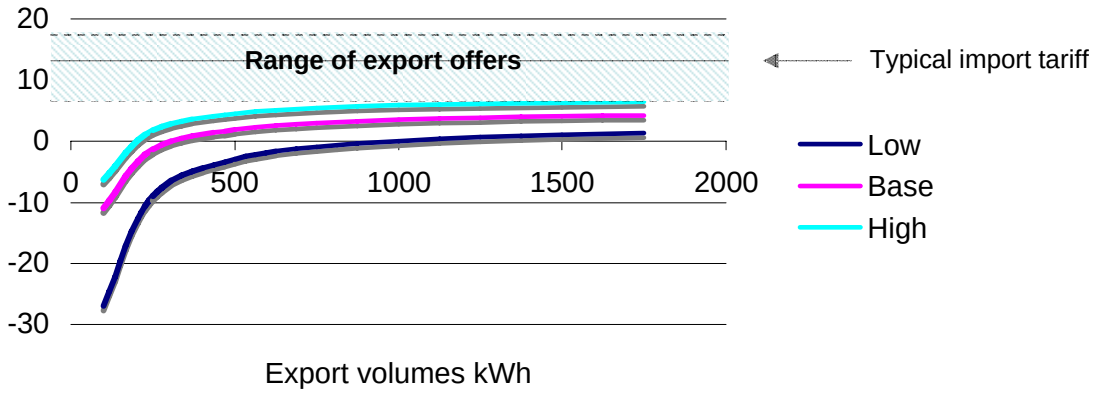
Do the offers provide fair value for microgeneration exports?

3.9. Using our assessment of the value of microgeneration to suppliers discussed in Section 2, we estimate that the range of metered export offers, shown as a band in Figure 2, appear mostly to reflect the supplier passing back to the customer more value than the supplier itself receives. In that sense they are good value. The offers range from being comparable to the import price (such as nPower) to paying the ROC value on exports only (i.e. Scottish Power).

3.10. The value of microgeneration to suppliers is dependent on the amount that is actually exported. The transaction and ongoing costs of meter reading and providing customer service, however small, need to be recovered before purchasing metered microgeneration export ceases to be loss making. Purchasing export volumes above 1MWh begins to look more attractive for suppliers. How much is actually exported by microgenerators is still an unknown quantity. The Energy Savings Trust have conducted work that suggests that a 1kW micro wind turbine[9] is likely to export around 60% of its output and a 2kW photo voltaic installation 50% of its output, delivering 900kWh and 850kWh to suppliers respectively.

9 Figures for a micro wind turbine based in a rural setting.

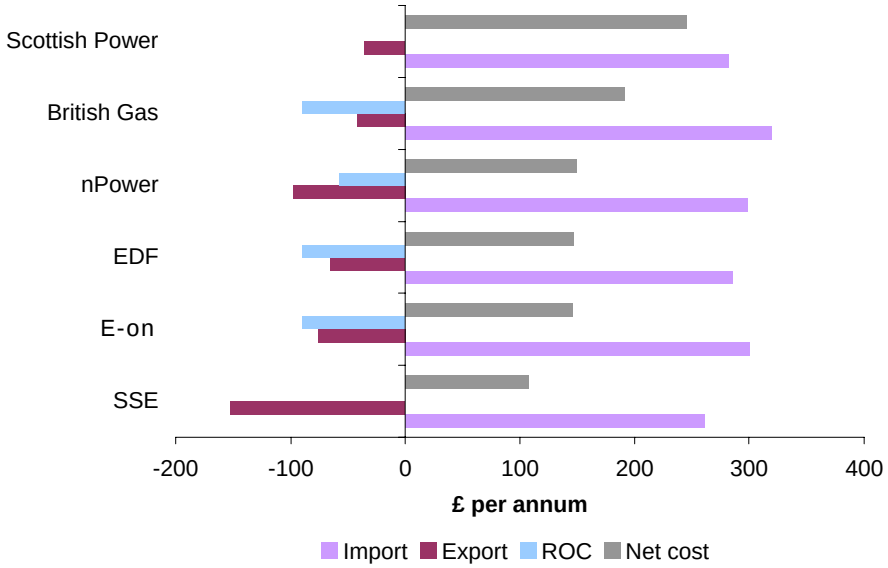
Figure 2: Microgeneration value to suppliers for a range of export volumes



Comparison of offers

3.11. To determine the best priced offer for any excess electricity from microgeneration installations, customers have to assess expected export, import and generation volumes. This is because most of the export reward offers are dependent on being an import customer as well. We have conducted the type of comparison that would be required by customers to make an informed decision about which offer is best for their needs. Figure 3 illustrates the complexity involved in this exercise for each of the export offers from the big six suppliers.

Figure 3: Net cost to customer £ per annum



Notes:
(a) All values calculated for a customer living in the East Midlands region with 2kW solar PV microgeneration installed;
(b) Import tariff assumed to be the Standard Credit tariff for each supplier (apart from nPower which stipulate that the customer has to be on the Juice tariff);
(c) Import based on 2450kWh per year; Export assumed to 850kWh pa; Generation of 1700kWh pa
(d) Export meter costs amortised over 20 years at 10%;
(e) Assumes that the customer redeems the value of the ROCs where the supplier is not the agent.

Are the export offers easily accessible and comparable for customers?

3.12. In conducting a review of the offers we found the availability of information varied between the suppliers:

- nPower, British Gas, E-on and EDF have dedicated telephone lines and information on the website
- ScottishPower has a dedicated phone line available for information and understand that they have plans to update their websites in the near future;
- the smaller specialist green energy companies provided a lot of information on their websites that was easily accessible and informative.

3.13. We found that while most suppliers provide sufficient information to support their particular offer, it is very difficult to establish all the relevant information that is

required to make a comparison between the competing offers. In particular the following questions are not consistently addressed by suppliers:

- for those offers dependent on being an import customer, it is not always clear if they are free to sign-up to the cheapest available from the supplier in question or whether must they sign up to a specific, perhaps, green tariff;
- what are the limits on the size of the installation to be eligible for the tariff;
- does the customer retain the value of the ROCs on generation in addition to being rewarded for exports or is the tariff dependent on the customer surrendering the ROC entitlement;
- what is the expected value of a ROC and whether the customer also gets a share of the cash that is refunded at the end of the compliance period from the 'Renewables Obligation buy out' fund[10];
- what are the costs of installing an export meter and how long is it likely to take.

3.14. Although the general visibility of offers has improved they are not as transparent and comparable as import tariffs. This makes it difficult for customers to identify and switch to the cheapest supplier.

Financial payback periods

3.15. Table 3 shows that solar (PV) panels and micro wind turbines (in a rural setting) take in the region of 40 and 19 years respectively before they return the initial investment. These payback periods would fall if wholesale prices were to increase or, conversely, technology costs were to fall.

10 A 'Buy Out' price is set out in legislation increasing each year with RPI and is the price paid by suppliers for every MWh that they fall short of their renewables obligation. This money is paid into a fund which is then recycled on a pro rata basis to those suppliers who presented ROCs in order to meet their obligation. While suppliers request they are appointed as the customer's ROC agent it is not clear that the customer also gets a share of the cash that is refunded.

Table 3: Financial payback periods for microgeneration

Financial payback (years)	Solar PV	Micro Wind
Base case	40	19
Wholesale price increases by 50%	36	18
Technology improves reducing capital costs by 50%	20	10
Own use 100% - instead of exporting excess	30	14
Two ROCs per MWh of output	28	15
Export tariffs – net value (Table 1)	50	31

Notes:
(a) payback calculation based on cheapest net cost supplier per annum for solar PV;
(b) assumes current tariffs remain constant during the payback period – apart from last sensitivity;
(c) it is proposed that microgeneration receive two ROCs per MWh produced from 1st April 2009;
(d) payback calculated as the total costs (microgeneration plus meter) divided by the value of the electricity (avoided import plus export plus ROCs). No financing costs and maintenance costs included.

3.16. Payback periods also depend on the characteristics of the household / site and the generation profile of the particular microgeneration technology. For example, payback would be quicker if more of the generation is consumed on-site rather than sold to a third party supplier thus avoiding the higher costs of importing electricity. This would be achieved by those that use a steady amount during the day such as schools, or by those that can modify their energy usage to match microgeneration output. In future, improvements in energy storage technologies will also allow surplus energy to be stored for use later.

3.17. The economics are also influenced (and payback periods shortened) by government schemes and initiatives to encourage their uptake. Government plans to double the ROC entitlement for microgeneration from 1 April 2009 will provide some additional benefit[11]. However, in practice the RO provides limited incentives for microgenerators because of the small scale of output involved. Small generators also face a higher administrative burden than larger generators.

3.18. As we have already indicated the export offers from most suppliers appear to be fair value. If export tariffs tended toward the net wholesale value calculated in Table 1 the payback periods would increase to 50 and 31 years for solar and wind respectively.

11 Changes to the Renewables Obligation Order will modify the existing RO mechanism through banding the RO to provide differentiated levels of support for different technologies and are proceeding under the Energy Bill.

3.19. Readers that are interested in the payback period of microgeneration technologies in terms of embedded energy and carbon should refer to "*Generating the Future: An analysis of policy interventions to achieve widespread microgeneration penetration*" recently published by the Energy Savings Trust[12].

12 See table 1 on page 18 www.energysavingtrust.org.uk/uploads/documents/aboutest/MICRO.pdf

4. Conclusions

4.1. Suppliers have raised the profile of their offers as a result of the Climate Change and Sustainable Energy Act. Not only is a range of offers available but they also appear, for the most part, to fully reflect the value to the supplier.

4.2. Some suppliers' offers are loss leaders and are probably justified on marketing and customer acquisition terms. It is possible that the tariffs may become unsustainable if the volume of take up by customers increases significantly. This would have implications for customers that have installed microgeneration on the expectation that they would receive these offers for the lifetime of their product.

4.3. Despite the availability of the offers, obtaining a set of comparable data from each of the suppliers is not straightforward. Consequently it is difficult for customers to easily compare the offers and identify the best deal. This is compounded by the other factors that need to be considered, including expected import and export volumes, ROC component and costs of the export meter. Our assessment is that the market is much less transparent than for export tariffs. This makes identifying and switching to a cheaper supplier particularly difficult.

4.4. Much of the potential economic reward of microgeneration comes from the financial support provided by government policy. At present, renewable microgeneration is expected to be eligible for two ROCs per MWh (or approximately 9p/kWh) from April 2009. This would increase the subsidy but the administratration required for ROCs are still a key consideration at this point, particularly given the metering requirements. We therefore welcome the comment from the Minister of Energy, Malcolm Wicks "*As an aspect of that [a new renewable energy strategy], we will be looking afresh at microgeneration and we are open to considering any proposals to boost microgeneration, including a feed-in tariff arrangement*."[13]

4.5. In conclusion, although suppliers are now offering reasonable value rewards while microgeneration is in its infancy, it is not clear this is sustainable. The market for export reward and household microgeneration in general would be improved with better information for customers to work out the best deal for their circumstances and easier access to financial incentives for microgeneration. We welcome the government's commitment to review microgeneration incentives as part of developing a renewable energy strategy. Depending on the outcome of this review, there may then need to be further policy measures and we will discuss this with

13 Energy Bill Committee, 19 February 2008 see http://www.publications.parliament.uk/pa/cm200708/cmpublic/energy/080219/am/80219s01.htm

BERR as their review proceeds. In the meantime, we will continue to welcome industry developing code modifications to address microgeneration barriers.

Appendices

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Appendix 1 - Metered offers for microgeneration exports

Supplier	Key features	Export tariff	Import tariff**	Meter cost
British Gas	Customer self-reads quarterly Customer claims ROCs separately	5p/kWh	12.27p/kWh	£30
EDF	Customer claims ROCs separately Limited to microgeneration less than 10kW	7.64p/kWh or 5p/kWh for small scale hydro	11.10p/kWh	£70 to £200
nPower	Limited to microgeneration less than 6kW nPower collects ROC entitlement	10.98p/kWh Rate depends on area	11.64p/kWh	£60
E-on	Customer self-reads Customer claims ROCs separately Limited to microgeneration less than 5kW Only available for solar panels	Solar: 8.79 to 11.26p/kWh depending on region	11.64p/kWh	£100
Scottish Power	Scottish Power collect ROCs but only pay out on exports	4.25p/kWh	11.20p/kWh	Free of charge
SSE	Price includes payment for exported power and ROCs Only available for solar panels	Solar: 18p/kWh	9.54p/kWh	Free of charge if an import customer

Source: Suppliers, February 2008
** Calculated from monthly direct debit two-tier tariffs (no standing charge)

Appendix 2 - Unmetered offers for microgeneration exports

Supplier	Key features	Tariff
British Gas – EcoSave Scheme	Customer claims ROCs separately	Unmetered: £18 per year
EDF – Green Tariff	Customer claims ROCs separately Limited to microgeneration less than 10kW	Unmetered: £10 per kW per year
nPower – Juice	Limited to microgeneration less than 6kW nPower collects and pays ROC entitlement on generation Import restricted to Juice tariff	Tariff: Same as follow on rate applicable in region Tariff paid on estimated volumes assuming 50% of generation is exported Customer provides two generation readings per year
E-on – Solarnet	Customer self-reads Customer claims ROCs separately Limited to microgeneration less than 5kW Currently only available for solar panels but will include microCHP	Solar: 8.18p/kWh to 10.10 p/kWh depending on region Solar (Economy 7): 9.10p/kWh to 11.19p/kWh Unmetered: Export volume estimated from customer characteristics

Source: Suppliers, February 2008

Appendix 3 - Generation based microgeneration offers

Supplier	Key features	Tariff
EDF	Customer self-reads the meter Customer paid for all generation E-on appointed as ROC agent	Metered generation: 5p/kWh for generation less than 5kW 4.5p/kWh for generation greater than 5kW
Ecotricity	Customer self-reads the meter Customer paid for all generation Ecotricity appointed as ROC agent	Metered generation: 4.5p/kWh
Good Energy – Home Generation	Customer self-reads Limited to 10kW installed generation Customer paid for all generation Good Energy appointed as ROC agent	Metered generation: 9p/kWh
Green Energy – Sell Us Your Energy (SUYE)	Green Energy appointed as ROC agent Tariffs dependent on volume of generation	SUYE A: 4p/kWh for generation and 3p/kWh for ROCs (for more than 2MWh pa generated) SUYE B: ROCs paid 3p/kWh on generation (for less than 2MWh pa generated) SUYE C: Electricity only tariff Metering: £54.75 per annum

Source: Suppliers, February 2008

Appendix 4 – The Authority's Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[14]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[15].

1.4. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[16]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[17]

[14] entitled "Gas Supply" and "Electricity Supply" respectively.
[15] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.
[16] under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.
[17] The Authority may have regard to other descriptions of consumers.

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- Promote efficiency and economy on the part of those licensed[18] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- The effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- The principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- Certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[19] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

[18] or persons authorised by exemptions to carry on any activity.
[19] Council Regulation (EC) 1/2003