

The regulatory implications of domestic-scale microgeneration

A consultation document

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Summary

Microgeneration technologies, now either under development or becoming increasingly available commercially, will lead to more cases in which electricity is being produced in, and sometimes exported from, domestic and small business premises. Technical requirements and technical guidance have been amended to take account of these developments. This consultation paper considers what regulatory changes may be necessary to reflect the connection of domestic-scale microgeneration to distribution networks. This is an appropriate time for Ofgem to consult on the topic because:

- the Distributed Generation Co-ordinating Group's (DGCG's) microgeneration workstream has raised a number of the issues in the paper with Ofgem¹;
- some of the arrangements that are being suggested for purchase of exports from microgeneration might be inappropriate in the UK's liberalised electricity market; and because
- the forthcoming publication of the DTI's 'microgeneration strategy'² is likely to necessitate a corresponding regulatory response on some microgeneration issues.

The objectives of the consultation are to:

- hear stakeholders' views and to identify options;
- identify whether regulatory changes are needed and, if they are, which ones would work under the UK's liberalised arrangements for electricity supply; and to
- make clear Ofgem's intention to address microgeneration issues without extending the scope of regulation or materially increasing the regulatory burden on supply or distribution licensees.

¹ The DGCG's Technical Steering Group has managed a group of projects constituting a workstream dedicated to issues arising from domestic-scale microgeneration. The industry has been closely involved in these projects, some of which are now substantially complete. The remaining project teams are currently considering how best to address issues likely to emerge as microgeneration becomes more widely available commercially. The workstream identified a number of regulatory issues for Ofgem's consideration.

² The strategy is a requirement of the Energy Act 2004. DTI have until December 2005 to complete it.

The consultation paper invites views on a range of topics. Briefly, however, the key questions are how best to address:

- the fact that there is currently no obligation on the householder or the installer to notify the supplier of the installation of microgeneration;
- purchase or 'spill to the network³' of exported units;
- some 10 million meters that may run backwards when a microgenerator exports to the low voltage network;
- arrangements for meter change in various scenarios of microgeneration installation;
- the contractual issues raised by microgeneration;
- any desirable modifications to the Electricity Supply Licence; and
- any perceived inadequacy of consumer information.

³ 'Spill' describes the situation in which the owner of a microgenerator is not rewarded for exported units of electricity, but just 'dumps' them to the distribution network.

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1. Introduction

- 1.1. This consultation document considers the impact of the development of domestic-scale microgeneration on the regulation of the supply of electricity.
- 1.2. The advent of microgeneration technologies means that electricity is being produced in, and often exported from, domestic and small commercial properties. Statutory instruments and technical guidance documents used by the electricity industry have been amended, as appropriate, to take account of this development. The existing licensing framework was not, however, created with domestic-scale microgeneration in mind. The objective of this consultation is to identify changes that might be desirable to reflect the use of this technology in the current regulatory regime.

Background

- 1.3. The term 'microgeneration' is used to refer to electricity generation equipment of the smallest capacity. At the lower end of the range are microgenerators intended for installation in domestic and small commercial premises. The term microgeneration is used in this consultation paper to mean domestic-scale microgeneration defined as:

*"...a source of electrical energy rated up to and including 16 Amperes per phase, single or multiphase, 230/400V a.c."*⁴

- 1.4. Domestic-scale microgeneration embraces a range of technologies that are presently at varying stages of development and commercial availability. These include:
 - small-scale photovoltaic (PV) arrays;
 - micro-hydro generation;
 - small wind generators; and
 - domestic scale Combined Heat and Power (DCHP) equipment⁵.

⁴ Engineering Recommendation G83. ER G83 is available from the Energy Networks Association www.energynetworks.org

⁵ Like larger-scale CHP generators, DCHP generation is heat-led. Typically, DCHP units would provide space heating and/or hot water in a domestic or small business context

- 1.5. The electricity that microgeneration produces will usually be intended for consumption on-site. However, excess electricity may be generated such that it could be exported to the low voltage (LV) network, and may be sold to others⁶. Consequently, there are questions as to how microgeneration might change this consumer/supplier relationship.
- 1.6. In addition to evolving commercial possibilities in relation to electricity from microgeneration, significant environmental effects may result from the increasing production and installation of microgeneration equipment. Installed in large numbers, microgeneration would replace some of the electricity currently generated centrally, thereby reducing electrical losses from transmission and distribution systems. Because the majority of microgeneration is likely to be installed in dwellings, it may, depending on its economics, have social implications by reducing energy costs.
- 1.7. Since the separation of electricity supply and distribution activities further to the Utilities Act 2000, the consumer's main contact has been with his supplier. Under what has become known as the 'supplier hub' principle, the supplier takes responsibility for putting all necessary arrangements in place. These include contractual agreements with the local distribution business and obligations in relation to metering and metering services.
- 1.8. Concentrations of microgeneration may have an impact on distribution networks. However, a recent study has indicated that such impact is, for the foreseeable future, likely to be small⁷. Moreover, work undertaken on behalf of the Distributed Generation Co-ordinating Group (DGCG)⁸ is well advanced in addressing the technical issues associated with distributed generation of various sizes, including microgeneration. However, detailed issues of microgeneration and supply have yet to be systematically addressed.
- 1.9. Section 3 of this consultation paper considers the licensing of microgeneration. Section 4 looks at connection procedures, while Section 5 addresses the sale of exports from microgeneration. Section 6 comments on those who will provide

⁶ Some microgeneration equipment may be specifically designed only to produce a small excess, or perhaps not to 'spill' to the network at all

⁷ 'System Integration of Additional Microgeneration' (SIAM), DTI/Ofgem, DG/CG/00028/00/00, 2004

⁸ DGCG website address www.distributed-generation.gov.uk
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microgeneration equipment. Section 7 examines microgeneration in relation to licensed electricity suppliers, and Section 8 considers the implications for distribution network operators (DNOs). Contractual and metering issues are considered in Sections 9 and 10, respectively. Section 11 looks at access rights.

Responding to this consultation

- 1.10. Ofgem would be interested to hear from any person or organisation having an interest in issues surrounding microgeneration and electricity supply. In particular, we have asked a number of specific questions, which appear in **bold** in the text of this document, and which are listed in Section 13. Additionally, Section 12 summarises recommendations made in the body of the document. Ofgem would be interested in comments on any of these.
- 1.11. Electronic (e-mail) responses would be preferred, but Ofgem also accepts responses by post or facsimile transmission.
- 1.12. Responses will normally be published on the Ofgem website and held electronically in our Research and Information Centre. If you ask us to do so, however, we shall treat specified information as confidential. It might be helpful to put any confidential material into an appendix to the main response. Organisations whose e-mail software automatically attaches text about confidentiality would assist Ofgem by explaining the extent of the application of such text to any response to this document.
- 1.13. Responses should be received by Friday, 15 July 2005. They should be sent to:
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- 1.14. Having considered the responses to this consultation, Ofgem intends to publish a summary of responses. It is hoped that it will be possible to do so during the summer of 2005. A decision document will follow in December 2005, to coincide with the publication of the DTI's Microgeneration Strategy.

1.15. If you have any queries regarding the issues raised in this document, Arthur Cooke would be pleased to assist you.

2. Rationale

- 2.1. Ofgem considers that the implications of microgeneration for consumers and electricity supply businesses and the associated regulatory issues need to be addressed at this time.
- 2.2. In November 2001, the DGCG set up a Technical Steering Group (TSG) to manage a number of technical and technical/commercial projects related to distributed generation. One of the TSG's workstreams (Workstream 4 - Microgeneration Solutions) has given serious consideration to the implications of the future development of these small-scale generation technologies. Work has been done on the economics of microgeneration. One project team concentrated on assessing the changes that may be required to various legal documents in order that they extend to the installation of microgeneration equipment and any associated metering equipment. Workstream 4 has highlighted a number of issues that are primarily for Ofgem to address. The relevant questions are now sufficiently clear for Ofgem to engage in a wider dialogue.
- 2.3. Supply of electricity, as with the supply of many other commodities, depends on the sale and purchase of measured quantities of the product in question. In small-scale electricity supply, the measured quantity is the kWh, measured by an appropriate electricity meter⁹. Although Ofgem set out its views on best practice as long ago as March 2002¹⁰ and although modification P81 to the BSC removed the requirement for HHM from microgenerators¹¹, practical questions about implementation remain.

⁹ Larger electricity users are charged partly by reference to measurement of other characteristics, including maximum demand and reactive power. This paper is concerned with domestic scale supply where billing is primarily by measurement of the unit of electricity (kWh), sometimes by reference to the time of day at which the electricity is consumed

¹⁰ 'Distributed generation: price controls, incentives and connection charging'. Further discussion, recommendations and future action', Ofgem, March 2002. Ofgem's view was that the separate measurement of imports and exports of active power should be the minimum requirement for all distributed generation, including microgeneration

¹¹ Mod P81 took effect in September 2003

- 2.4. Various electricity industry working groups have sought preliminary dialogue with Ofgem on microgeneration. Interest has focused on the position in relation to connection and use of system and purchase of output from microgeneration.
- 2.5. Numbers of installed microgenerators are, as yet, small. However, various factors, including the development of DCHP units for domestic gas boiler replacement, increasing sales of small-scale wind generators, and the prospect of more PV arrays as an integral part of the built environment, suggest that the questions addressed in this paper will become increasingly pressing.
- 2.6. Another consideration is the need to clarify and to respond to the various issues about commercial relationships and about rights and responsibilities raised by microgenerators.
- 2.7. Possible changes to the current regulatory regime will be identified in the light of responses to this consultation (e.g. licence modifications).
- 2.8. Responsibility for electrical safety rests with the DTI's Engineering Inspectorate rather than with Ofgem. As part of any consideration of domestic-scale microgeneration, however, it is important to highlight the need to ensure that microgenerators are installed and operated in a safe manner. This is an appropriate time for manufacturers and vendors of microgeneration equipment to provide assurance that adequate, comprehensible safety information and guidance is routinely provided for those installing microgenerators. This is particularly the case where any given equipment might lend itself to DIY installation.

3. Licensing and microgeneration

- 3.1. A person who produces electricity by means of microgeneration is exempt from the requirement to hold an electricity generation licence, provided, inter alia, that the generator does not, at any time, provide more than 10 MW of electrical power¹².
- 3.2. The owner or occupier of the domestic or small commercial premises in which microgeneration takes place will have a contract with an electricity supplier, who will be registered as the supplier in the local Distribution Network Operator's (DNO's) Metering Point Administration System (MPAS). The export of electricity from such premises does not come within the definition of 'supply'. Once the relevant section of the Energy Act 2004 has been commenced, the statutory definition¹³ of electricity 'supply' to premises will refer to electricity '*conveyed to the premises wholly or partly by means of a distribution system*'. Neither own use nor output from microgeneration, exported to a DNO's network, is covered by this definition. Therefore a microgenerator will not require a supply licence.
- 3.3. A person who '*supplies electricity to any premises*'¹⁴ requires either to hold a supply licence or to be exempt from the requirement for such a licence. Ofgem considers that the licensed activity of electricity supply does not cover purchase of electricity produced by microgeneration which is not consumed by the owner or occupier of the premises in question. Depending on the circumstances, such purchase may, however, be regarded as '*commercial activities connected with ...supply of electricity*'¹⁵.

¹² The Electricity (Class Exemptions from the Requirement for a Licence) Order 2001 (SI 2001/3270)

¹³ See section 179 of the Energy Act 2004, amending section 4(4) of the Act

¹⁴ Section 4(1)(c) of the Act

¹⁵ Section 3A(1) of the Act

4. Connection procedures

Statutory requirements

- 4.1. A DNO is under a statutory obligation to make a connection between its distribution system and any premises, when required to do so, either by the owner or occupier of those premises or by a supplier acting with the consent of the owner or occupier, *“for the purpose of enabling electricity to be conveyed to or from the premises¹⁶”*. Further, a DNO must offer such person terms for connection to its system¹⁷. This is reflected in the obligations placed on the DNO in the Electricity Distribution Licence¹⁸.
- 4.2. Any person who connects a source of energy, having an electrical output not exceeding 16 amperes per phase to a DNO’s network must, in addition to other matters¹⁹, advise the DNO of its intention to use the source of energy *“before, or at the time of, commissioning the source”²⁰*. Failure by any person to comply with this notification requirement may constitute an offence punishable, on summary conviction, by a fine not exceeding level 5 on the standard scale²¹.
- 4.3. There is no statutory obligation to inform the registered supplier of electricity that microgeneration has been installed in the premises.

Engineering Recommendation G83/1

- 4.4. ER G83/1, published by the Energy Networks Association (ENA), provides guidance on the technical requirements for connection of small-scale embedded generation (SSEG) in parallel with DNOs’ low voltage (LV) networks. The definition of SSEG in G83/1 is consistent with the limit of 16 amperes per phase applicable to the statutory requirement to notify the DNO of the intention to use the energy source in parallel with the network. The full definition in G83/1 is:

¹⁶ Section 16(1)(a) of the Act

¹⁷ Section 16A of the Act

¹⁸ Condition 4B

¹⁹ Regulation 22 of the Electricity Safety, Quality and Continuity Regulations 2002

²⁰ *ibid*

²¹ Regulation 35 of the Electricity Safety, Quality and Continuity Regulations 2002
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“A source of electrical energy and all associated interface equipment, rated up to and including 16 A per phase, single or multi phase 230/400 V ac and designed to operate in parallel with a public low voltage distribution Network”.

- 4.5. For the purposes of this document, therefore, the terms ‘microgeneration’ and ‘SSEG’ are used interchangeably.
- 4.6. G83/1 recommends a two-stage procedure to facilitate such connections. A ‘Stage 1 Connection’ consists of a single installation. It will generally have a negligible impact on the operation of the LV network. There will be no need for the DNO either to carry out a network study or to perform any work on the network. In addition to the statutory notification, G83/1 recommends that the installer provides the DNO with all necessary information on the installation, within 30 days of commissioning. The content and format of the required information is given as an appendix to G83/1.
- 4.7. A ‘Stage 2 Connection’ is a multiple installation, where the proposal is to install several units in a close geographical region. G83/1 recommends that the installer discusses the installation with the local DNO at the earliest opportunity. This will permit the DNO to assess the impact that the proposed connections would have on the network, and to specify conditions for connection.

5. Selling exports from microgeneration

Purpose of this section

- 5.1. Microgeneration equipment currently available or under development is primarily intended to produce electricity for on-site use. When on-site demand is low, however, electricity may be exported to the local LV network (e.g. when a PV array generates electricity on a sunny day, but there is no demand in the premises to use it).
- 5.2. This section considers what happens to microgeneration output that is not consumed on-site.

Spilling energy

- 5.3. Some owners or occupiers of premises may regard microgeneration primarily as an energy efficiency measure, intended to reduce energy bills. For them, occasional exports to the LV network might be of little consequence. There may be no interest in securing any financial return for the exported units of electricity. In this paper, the term 'spilling' is used to describe export of electricity for which the owner/occupier receives no financial benefit.
- 5.4. Even if the owner or occupier would like to sell any excess electricity produced, he may be unable to find anyone willing to purchase units exported from the premises. In these circumstances microgeneration output received onto the LV network would also be regarded as 'spill'. It seems likely that, as the penetration of microgeneration increases and prospects for aggregation of output from very considerable numbers of microgenerators become more practicable, electricity suppliers may become increasingly interested in purchasing these exports. At present, however, Ofgem frequently receives reports of microgenerators who cannot find a purchaser for excess electricity produced by microgeneration²².

²² Ofgem understands that consolidators are presently prepared to trade for sites down to approximately 200kW (or perhaps for groups of about five 100kW generators). Below that level, the costs currently outweigh the likely returns

Selling exports

- 5.5. Ofgem considers that most people, having invested in microgeneration equipment, would be interested in securing some financial reward for units of electricity exported from the premises. For the purposes of this paper, 'selling' microgeneration output includes both securing direct payment for each unit and benefiting from reduced import tariff rates in consideration for transferring ownership of exported units to the registered supplier. In addition, in the case of generation from renewable sources, there may be financial benefit arising from eligibility for Renewables Obligation Certificates (ROCs).
- 5.6. To be traded under the existing electricity trading arrangements, microgeneration output would have to be taken into account in the volume allocation process. The appropriate volume would be allocated to the supplier (or other trader) who had purchased it. Of the two registration mechanisms allowed under the BSC, only Supplier Volume Allocation (SVA) is likely to be cost-effective for microgeneration. The alternative mechanism is known as Central Volume Allocation (CVA), but this is designed to cater for a small number of metering systems measuring material amounts of energy and is, therefore, not appropriate for domestic-scale microgeneration.
- 5.7. Under the Master Registration Agreement (MRA), only a licensed electricity supplier may register a metering point. The settlement of import and export electricity requires at least two meter registers and two corresponding Metering Point Administration Numbers (MPANs) to be registered in the settlement system. This remains the case even where a single meter measures both import and export. As the MRA defines 'related metering points' as *"two or more Metering Points (other than Export Metering Points and Pseudo Metering Points) that supply the same customer and are located at the same (or any part of the same) Premises..."* there is no requirement for both the import and export MPANs to be registered by the same supplier.
- 5.8. Taking the value of electricity alone, the cost of processing metered data for small amounts of output from large numbers of microgenerators, largely outside settlement timescales, may be seen as uneconomic, at least in advance of

investment in necessary systems. The situation might be different for output from renewable microgeneration technologies that is eligible for ROCs²³. Suppliers ascribe greater value to output from renewable microgeneration that is sold with ROCs, as they can use the ROCs towards meeting their obligations under the Renewables Obligation Order 2002 or the Renewables Obligation (Scotland) Order 2004 (“the RO”²⁴) (or can trade them).

²³ For example, PV arrays, micro-hydro and small-scale wind technologies would attract ROCs. Unless fuelled by biomass, DCHP, not being a renewable technology, would not.

²⁴ For an explanation of ROCs and eligibility for ROCs under the RO, see “Ofgem’s Administration Procedures for Generating Stations with a Declared Net Capacity of more than 50kW”, Issue 2, July 2004. Also “Ofgem’s Administration procedures for Small Generating Stations with a Declared Net Capacity of 50 kilowatts or less”, Issue 1, July 2004

6. Microgeneration providers

Installers

- 6.1 Companies intending to install DCHP equipment would like to be able to provide a 'one-stop shop' to customers, i.e. to complete all the necessary installation work by way of a single visit to the customer's home or business premises. Work involves connection to the electricity and gas installations and the fitting of any necessary metering. As many sales of DCHP units will be 'distress purchases', necessitated by failure of a gas central heating boiler, customers are likely to favour a conventional gas boiler, which can be fitted in one visit, over a DCHP unit if it cannot be installed in a day. It would be desirable to avoid restriction of the market for DCHP.
- 6.2 One obstacle to DCHP installers' providing a one-stop-shop is that they will sometimes have no authority to change the metering equipment in the premises. On the other hand, it is clearly in the customer's interest that there is assurance as to competence of those who remove and install meters.
- 6.3 Ofgem understands that, in circumstances where more than one party is involved, it may be difficult to schedule the installation of metering at the same time as the installation of the DCHP unit. Further, the costs associated with the installation of meter equipment and complexities resulting from a supplier's responsibility for metering equipment are issues that are addressed in the metering section of this paper.
- 6.4 Ofgem expects that installers of other microgeneration technologies would see advantages in being able to complete all necessary work during the course of a single visit.
- 6.5 Where a specialist installer takes responsibility for providing and commissioning microgeneration equipment, it is to be expected that the personnel involved will have sufficient knowledge to comply with the connection requirements set out in Section 4. Most importantly, such a person may be expected to notify the DNO that microgeneration equipment will be, or is about to be, commissioned, and to understand the implications for metering equipment. However, a specialist installer will not necessarily always be involved.

Manufacturers and vendors

- 6.6 Ofgem understands that some microgeneration equipment may be sold through retail outlets specialising in the 'Do-it-Yourself' (DIY) market. Some technologies, and particularly some small-scale wind turbines, are designed to be installed by the householder. There is no reason to suppose that householders undertaking this sort of installation will be aware of the statutory requirements for connection, the relevant Engineering Recommendation, or the need to ensure that the metering in circuit is appropriate to an electrical installation capable of export to the DNO's LV network. In terms of metering, and of particular interest to the registered supplier, there is the possibility that some patterns of electricity supply meter will run backwards during periods of export. This is considered in Section 10 of this paper.
- 6.7 Ofgem considers that manufacturers and retailers of microgeneration equipment should take responsibility for ensuring that the equipment is accompanied by instructions clearly setting out the legal and technical responsibilities of any person installing microgeneration equipment (e.g. by way of pre-printed notification cards for the customer to send to the DNO and to the registered supplier). This is also an appropriate time for manufacturers and vendors of microgeneration equipment to provide assurance that adequate, comprehensible safety information and guidance is routinely provided for those installing microgenerators. This is particularly the case where any given equipment might lend itself to DIY installation.
- 6.8 **Ofgem would be interested to hear from manufacturers, retailers and consumer groups regarding:**
- **the information currently provided to customers about the legal and technical responsibilities of microgeneration operators; and**
 - **any industry proposals for expanding the information and guidance currently provided.**

7. Licensed suppliers and microgeneration

Purpose of this section

- 7.1. The purpose of this section is to consider how the registered electricity supplier might be affected by the installation of microgeneration in the premises to which a supply of electricity is being given and whether certain licence conditions might require amendment to accommodate this.

Incumbent supplier and supplier change

- 7.2. In many cases, a consumer who decides to install microgeneration will decide to remain with their current supplier. In other cases, installation of microgeneration equipment will trigger a change of supplier. This may be because the microgeneration equipment is to be provided as part of an energy package offered by the new supplier or because the presence of microgeneration brings with it the possibility of contracting for supply, on more favourable terms, with a different supplier.
- 7.3. It being easier to deal with one supplier rather than two, and because there might be a saving, Ofgem expects that most consumers will choose to make any agreement for sale of microgeneration output with the supplier registered for imports. Few suppliers, at present, will be interested in microgeneration output alone. Nevertheless, and as already noted, the purchaser of exported units need not be the same as the supplier in whose name the import MPAN is registered.
- 7.4. In the case of supply to domestic premises, change of supplier takes a number of days from the date on which the customer requests the change. In other cases, the termination date will depend on the termination provision in the supply contract. In either set of circumstances, the installation of microgeneration equipment is likely to take place before the current supply contract terminates.
- 7.5. Difficulties may arise if the consumer does not intend to change supplier, but fails to notify the supplier of the installation of microgeneration. The statutory obligation is to notify the DNO. In such a case, the supplier will not have an opportunity to install an 'appropriate meter' (see Section 10 on metering).

Licence modifications²⁵

Regulatory best practice

- 7.6. The Energy Act 2004 placed a new duty²⁶ on Ofgem to have regard to the principles of best regulatory practice in carrying out its functions under the Electricity Act 1989 and the Gas Act 1986. This requires the Gas and Electricity Markets Authority to consider an approach to regulation that is transparent, accountable, proportionate, consistent, targeted only at cases in which action is needed, and any other principles which appear to the Authority to represent best regulatory practice.
- 7.7. Ofgem is committed to withdrawing from regulation, where appropriate, and would be reluctant to advocate additional licence obligations unless the need for them had been clearly demonstrated. However, there may be scope for modification of some licence conditions better to reflect current and future requirements for protecting customers who operate domestic-scale microgeneration.

Condition 1: Definitions

- 7.8. Ofgem considers that, should it become necessary to introduce any licence amendment making reference to a matter relating specifically to domestic-scale microgeneration, a definition of 'domestic-scale microgeneration' consistent with both the threshold for the relevant notification provision in the ESQC Regulations and the definition of SSEG in ER G83/1 would be appropriate. It would seem sensible to adopt the same wording as appears in the engineering recommendation.
- 7.9. A potential area of difficulty here is that the Energy Act 2004²⁷ defines 'microgeneration' as generating plant with a capacity not exceeding 50kW. The EU Cogeneration Directive (2004/8/EC)²⁸ similarly defines 'micro-cogeneration'

²⁵ Responses relating to possible licence modifications will be considered in the context of Ofgem's consultation paper "Reviewing the gas and electricity supply standard licence conditions", Ofgem (51/05) published on 18 February 2005.

²⁶ Energy Act 2004, section 178

²⁷ Energy Act 2004, section 82(8)(a)

²⁸ Directive 2004/8/EC, Article 3(m)

as a cogeneration unit with a maximum capacity below 50kW. For the purposes of this consultation paper, it would not be appropriate to use the 50kW threshold. This is because these definitions embrace generating plant too large to be used in a domestic or small-business setting. Ofgem's focus in this consultation is clarification and simplification of the relationship between generation and supply for the ordinary, small consumer.

Condition 16: Procedures for the detection and prevention of theft or abstraction of electricity, damage and meter interference

- 7.10. Condition 16 imposes on a supplier the obligation to take reasonable steps to detect and prevent theft or abstraction of electricity at premises supplied by it. The condition refers specifically to supply, so does not cover exported electricity. However, a meter without a reverse stop²⁹ would run in reverse as a result of microgeneration export, would subtract units from the import register and would therefore fail to register the total quantity of electricity supplied. While Ofgem understands that reverse running of meters is tolerated in some countries, it does not regard it as being in accord with metering practice in Great Britain.
- 7.11. The installation of microgeneration could create circumstances in which an owner or occupier of premises was knowingly benefiting from appropriating electricity due to the operation of a reverse-running meter. However, it would be difficult to prove intent in cases of this sort.
- 7.12. Ofgem considers that reverse-running meters should be addressed specifically in either Condition 16 or Condition 17.

Condition 17: Reading and inspection of meters

- 7.13. Condition 17 imposes an obligation on a licensed electricity supplier to use all reasonable endeavours to inspect non-half-hourly (NHH) meters once every two years in premises at which it has been the supplier for that full period of two years. As it is in the supplier's interest to ensure that the meter does not run in

²⁹ A 'reverse stop' or 'backstop' is a device that prevents a meter from running backwards. Its purpose is to combat illegal abstraction of electricity. Not all meters have a reverse stop. It is not possible to make a modification on site.

reverse and subtract units from the import register, an additional obligation to check for reverse running might be considered. It would accord with the intention of the existing condition. Ofgem is aware, however, that some suppliers regard the existing licence condition as onerous (e.g. where customers have contracted to submit their own meter readings or where remote meter reading arrangements are in place). Moreover, reverse running would only be apparent if the generator were operating.

- 7.14. Ofgem acknowledges that the location of some meters is such that the person conducting the inspection may neither meet the consumer nor, in exceptional circumstances³⁰, be able to see anything indicating the presence of microgeneration. Any amendment would therefore preserve the reference to 'all reasonable endeavours'.
- 7.15. The potential problems of reverse running are considered in detail later in this paper, as part of the section on metering. Extending the routine meter checks under Condition 17 to include a check for reverse running would, at best, constitute only a partial solution to the problem, but it could make a contribution to ensuring accuracy of metered data.
- 7.16. **Ofgem invites comments on modification of Condition 16 or Condition 17 to ensure identification of reverse-running meters, which Ofgem considers are not appropriate for use in the case of microgeneration.**

Condition 21: Publication of information to customers

- 7.17. This licence condition requires the supplier to inform each customer of its 'Supply Number' (MPAN). As presently worded, it clearly refers to 'supply' only. There is a reference to the MPAN as "*used by the licensee in common with all electricity suppliers*"³¹. Premises having microgeneration would also have an export MPAN, which might be registered by a supplier other than the supplier responsible for imports.

³⁰ Paragraph 6.2 in ER G83/1 requires the installer of microgeneration to provide labelling at the supply terminals, meter position and consumer unit, drawing attention to the presence of on-site generation. Only in exceptional cases might this not be easily visible

³¹ Condition 21(2)(c)

7.18. Ofgem's present view is that there may be insufficient grounds for placing suppliers under an additional obligation to notify the consumer of any export MPAN. Export is a matter separate from supply. The export MPAN may be registered by a supplier other than the 'import supplier'.

Condition 25: Efficient use of electricity

7.19. Condition 25 requires licensed suppliers to prepare codes of practice setting out the ways in which guidance is made available to consumers on measures to improve the efficiency with which they use electricity supplied to them. To the extent that they displace imported units, microgenerators may constitute an energy efficiency measure. The codes are subject to GEMA's approval.

7.20. Output from microgeneration for on-site use only is not 'supplied' to the owner or occupier of the premises. However, under Article 10 of the RO³², there will be supply by a licensed supplier (where a 'sale and buy-back agreement' has been entered into by the generator and a supplier).

7.21. Ofgem considers that, for the purposes of Condition 25, supply should include arrangements made under Article 10 of the RO, and that licensed suppliers should review their codes of practice on the efficient use of electricity with a view to including information on microgeneration. This would require modification of Condition 25.

Condition 32: Duty to supply domestic customers

7.22. Condition 32 applies only to those licensed suppliers in whose licences the Domestic Supply Obligations in Section C are 'switched on'. It places an obligation on the licensee to respond to a request for an offer to supply electricity to domestic premises.

7.23. Some individuals and organisations with an interest in promoting the penetration of microgeneration have suggested that this aim could be furthered by imposing, on licensed suppliers, a similar obligation to offer to enter into a contract for the purchase of microgeneration output. Ofgem is not persuaded that creating such

³² Where ROCs are claimed in respect of the output from renewable microgeneration
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an obligation would be desirable, but would be interested to hear views on the issue.

- 7.24. As the Energy White Paper of February 2003³³ pointed out, it is a desirable objective to ensure that every home is adequately and affordably heated. This is a legitimate social policy objective of government to which the regulatory framework can contribute. The duty to supply contributes directly to ensuring that all domestic customers have access to a supply of electricity. A secure supply of electricity is a social necessity; exporting electricity from domestic premises is not.
- 7.25. Ofgem considers that a new licence obligation to make an offer to purchase microgeneration output might tend to distort the electricity market. It might impose unjustified costs on licensed electricity suppliers. Moreover, additional regulatory requirements should be created only where absolutely justified.

Condition 36: Code of practice on the use of prepayment meters

- 7.26. A modification to licence condition 36 could be made such that it would refer specifically to domestic-scale microgeneration. However, minor modifications to suppliers' codes of practice on the use of prepayment meters could suffice to take account of domestic-scale microgeneration. The Authority has the power to require licensed suppliers to review these codes, with a view to determining whether any modification should be made to them³⁴.
- 7.27. Not being constructed to measure both imports and exports, prepayment meters are not regarded as altogether suitable for use with installations to which microgeneration is connected³⁵. Nevertheless, there may be circumstances in which requirements of debt management and recovery will oblige the supplier to consider giving supply through a prepayment meter.
- 7.28. Should the credit on a prepayment meter be used up and the supply automatically interrupted, the microgenerator would react as it would to any loss

³³ Energy White Paper, 'Our energy future: creating a low carbon economy', DTI, February 2003

³⁴ Condition 27(4) in the Electricity Supply Licence

³⁵ It might be feasible to install a prepayment meter and an export meter, but the requisite space might not be available at the meter position. Associating microgeneration with a prepayment meter might also create opportunities for fraud. In practice, it might often be difficult to provide a satisfactory prepayment meter installation for a consumer with microgeneration

of mains such that the microgenerator would shut down. Methodology and tests for loss of mains protection, for each microgeneration technology, are set out in the annexes to G83/1.

- 7.29. Another potential problem in using a prepayment meter with microgeneration is that prepayment meters tend to have more effective anti-tamper features than do credit meters. As the occurrence of reverse energy is a possible indication of meter tampering, prepayment meters will react to it by triggering a reverse energy flag. Some meters will, additionally, open the load switch, such that the consumer will need to report a fault. This would result in an inspection visit. This constitutes a further reason why prepayment metering is currently unsuitable for use with microgeneration.
- 7.30. **A modification to the licence condition could be made such that it would refer specifically to domestic-scale microgeneration. However, minor modifications to the codes of practice on use of prepayment meters could suffice to give consumers the relevant information. Ofgem would be interested to hear the views of suppliers, consumer representatives and manufacturers of metering and microgeneration equipment on what the content of such modifications should be.**

Condition 41: Terms for supply of electricity incompatible with licence conditions

- 7.31. Condition 41 applies only to those licensed suppliers in whose licences the Domestic Supply Obligations in Section C are 'switched on'. It prohibits the licensee from entering into or offering either a domestic supply contract or deemed contract otherwise than on terms compliant with the licensee's obligations under the Electricity Supply Licence.
- 7.32. The terms of any contract for the purchase of microgeneration output would be unregulated. It seems likely that, in the majority of cases, the 'import supplier' would be the person entering into a contract for purchase of microgeneration output from the premises. It has been suggested that this creates a situation in which contractual terms for export might be used to deprive a domestic customer of protection under the supply licence. An example might involve the obligation on the licensee to notify the domestic consumer of an increase in

prices³⁶. A supplier offering prices for both import and export might seek to agree terms evading this requirement. Ofgem is not persuaded that such an attempt would succeed³⁷, but there might be a case for a licence modification specifically to rule it out.

- 7.33. **Condition 41 could be modified to cover a contract dealing with, inter alia, supply of electricity to domestic premises incompatible with the licensee's supply obligations under the Electricity Supply Licence. Ofgem would welcome views as to the desirability of such a modification.**

Scope for a Distribution Connection and Use of System Code (DCUSC)

- 7.34. The Distribution Commercial Forum is presently considering whether there would be merit in establishing a DCUSC or some similar commercial governance framework. Such a code would refer to connections and, perhaps, to the Meter Operator Code of Practice Agreement (MOCOPA). In so doing, it might reflect microgeneration requirements.
- 7.35. Should a DCUSC be established, a new licence condition would be considered, requiring compliance with it.

³⁶ Condition 44(6)

³⁷ Condition 42 provides that every supply must be under either a domestic supply contract or a deemed contract. The requirements of Condition 41 (Domestic Supply contracts) apply
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8. DNOs and microgeneration

Purpose of this section

- 8.1. This consultation is about the supply implications of microgeneration. The implications for DNOs are largely outside its scope. However, there are certain obligations on DNOs which have implications for the supplier/customer relationship.

Notification of installation/commissioning

- 8.2. The statutory obligation on those who commission microgeneration equipment is to inform the DNO that a microgenerator will be connected to the DNO's network (see paragraph 4.2). There is no statutory obligation to inform the registered supplier. Ofgem is considering whether suppliers should be informed of microgeneration installation and, if so, how notification should be effected.
- 8.3. Ofgem has been involved in preliminary discussions as to whether the MRA might require the DNO to pass information relevant to the metering point to the registered supplier. Relevant to these discussions is the possibility of using the 'meter timeswitch code' component of the MPAN to label the premises as having microgeneration.

Obligations as to metering

- 8.4. The Electricity Distribution Licence envisages circumstances in which the DNO may be required to make an offer in respect of the installation of appropriate metering³⁸. This obligation is considered in the section of this consultation dealing with metering.

³⁸ Condition 4B(3)(c)
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Metering point administration

- 8.5. Amongst the distribution services obligations imposed on DNOs in respect of their distribution service areas is the establishment and operation³⁹ of a Metering Point Administration Service (MPAS) under the MRA⁴⁰. MPAS must maintain “a register of technical and other data as is necessary to facilitate supply by any electricity supplier to all premises connected to the licensee’s distribution system”⁴¹ including the identity (where required) of the registered electricity supplier responsible under the BSC for the metering point at the premises and the type of metering equipment installed at the premises. As the presence of a microgenerator could cause certain patterns of electricity supply meter to run backwards, knowledge of its commissioning could come within “technical and other data necessary to facilitate supply”.
- 8.6. Clause 52.1 of the MRA requires the DNO to maintain certain data items, as set out in Schedule 2 to the MRA, in respect of ‘Embedded Exemptible Generation Plant’ (EEGP) connected to its distribution system. EEGP is distributed generation exempt from the requirement to hold a generation licence. This would include microgeneration.
- 8.7. Condition 38 of the Electricity Distribution Licence imposes obligations on the DNO in respect of the establishment and maintenance of a data transfer service. This electronic data transfer service includes communication between the MPAS operator and the electricity supplier (or the supplier’s agent). Amongst the data transfers specified are those reasonably required “for the supply of electricity to customers”⁴².
- 8.8. This leaves the practical question as to when the export MPAN would be created. **Ofgem would be interested to know whether current practice of DNOs is to create an export MPAN on receipt of notification of commissioning of a microgenerator (in accordance with the ESQC Regulations 2002), or when a licensed supplier seeks to register as responsible for exports from the premises under the BSC in the MPAS.**

³⁹ Alternatively, the licensee may procure the establishment, operation and maintenance of an MPAS

⁴⁰ Condition 37 of the Electricity Distribution Licence

⁴¹ Condition 37(2)(a)

⁴² Condition 38(4)(e)

8.9. As noted in Section 7, the supplier is under a licence obligation to notify the consumer of the import MPAN⁴³. There may be a case for imposing a licence obligation on DNOs to inform the consumer of any export MPAN created in respect of the premises. It might be appropriate to make such notification a DNO responsibility because:

- the statutory requirement on the commissioner of microgeneration equipment is to notify the DNO of use;
- the DNO, as MPAS operator, creates the export MPAN; and because
- the DNO may, in certain circumstances⁴⁴, arrange for the installation of appropriate metering for microgeneration.

8.10. **Ofgem would welcome views as to whether there should be a new licence obligation on DNOs to notify owners or occupiers of premises of any export MPAN created in respect of those premises. Should this be further extended to notification to the registered supplier (in case the absence of a reverse stop may mean that the meter is no longer 'appropriate')?**

⁴³ Condition 21 of the Electricity Supply Licence

⁴⁴ Paragraph 3(c) of condition 4B of the Electricity Distribution Licence
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9. Contractual issues

Purpose of this section

- 9.1. The purpose of this section is to comment on how microgeneration may be understood in relation to the contractual framework for the supply of electricity and in relation to any contract for the purchase of microgeneration output.

Domestic supply contracts and the provision of goods and services

- 9.2. A licensed electricity supplier can only supply electricity to domestic premises under a domestic supply contract or a deemed contract (see below)⁴⁵.
- 9.3. The Electricity Supply Licence envisages that a domestic supply contract may additionally provide for the provision of goods and services. Charges for these two components must be separately identified⁴⁶. The supply element of the contract does not cover matters relating to export of electricity from the premises. However, a supplier may contract to provide services in respect of exported electricity (e.g. consolidation services, facilitating the trading of output in the electricity market, or the lease of a microgenerator and associated equipment).
- 9.4. The provisions in the Electricity Supply Licence governing the termination of domestic supply contracts cover the termination of the electricity supply component of the contract⁴⁷. Those terms of the contract covering the provision of goods and services, and which may relate to the export of units of electricity, may continue to have effect. On termination of the supply element of the contract, a different supplier would become responsible for imports to the premises, having registered the import MPAN.
- 9.5. There is no reason why the person supplying electricity to premises must also purchase any exported units from those premises.

⁴⁵ Condition 42(2)

⁴⁶ Condition 42(5)

⁴⁷ Condition 42(3)

Deemed contracts, change of ownership and microgeneration

- 9.6. On change of ownership of property, the current supplier of electricity is likely to have a deemed contract⁴⁸ with the new owner or occupier. The deemed contract exists until such time as the owner or occupier asks a different supplier to register the metering point (import MPAN). Schedule 6 to the Act refers to the Electricity Code, which specifies that a deemed contract is “*for the supply of electricity*”. There is no provision for a deemed contract to cover exported units of electricity. In any event, the existing supplier could not purport to include terms, covering either purchase of exports or the provision of goods or services relating to microgeneration, without revising the scheme for determining the terms and conditions of the deemed contract⁴⁹. A copy of any such revision would have to be sent to Ofgem and to energywatch⁵⁰.
- 9.7. Circumstances of change of tenancy of property in which a microgenerator is installed could vary widely. The outgoing owner may be the owner of the microgeneration equipment, in which case the outcome would depend on the terms of the contract of sale of the property, subject to the law as to what may constitute fixtures or fittings. Alternatively, the operator of the microgenerator may have leased the equipment, from the registered electricity supplier or from some other person. There may, or may not, be a contract for sale of exported units. The purchaser of property in which a microgenerator is situated should address these issues.

⁴⁸ Paragraph 3(1) of Schedule 6 to the Act

⁴⁹ Paragraph 3(7) of Schedule 6 to the Act

⁵⁰ Paragraph 3(10) of Schedule 6 to the Act

Standard terms of connection

- 9.8. Even if a connection is to be used for both import and export, one connection agreement suffices. There may need to be specific reference to microgeneration. As standard terms of connection are contemplated for domestic and small business consumers, and as microgeneration equipment can be installed relatively quickly and inexpensively, Ofgem considers that all standard connection agreements should make provision for microgeneration.
- 9.9. A project managed by the TSG's Workstream 4 (Microgeneration solutions)⁵¹ has noted that progress on agreeing standard terms of connection for domestic and small business customers has been slow. Change was necessitated by the separation of the supply and distribution businesses of the former Public Electricity Suppliers under the Utilities Act 2000. It appeared sensible to make provision for microgeneration in the new, standard connection agreements.
- 9.10. The project has noted that, at present, there is a range of connection agreements in place. Any given domestic or small business customer may have:
- a standard connection agreement put into place by a supplier, on behalf of a distributor, broadly between the opening of the competitive supply market in 1998 and implementation of business separation under the Utilities Act 2000;
 - connection terms in a new (i.e. post-separation) supply contract, probably along the lines suggested by a DNO;
 - former 'tariff customer' connection terms (applicable to those who, having never been supplied under contract terms, were transferred to 'deemed contracts' under the Utilities Act⁵²);
 - a special connection agreement entered into to meet some particular set of circumstances; or
 - no connection agreement at all, the requirement having been overlooked.

⁵¹ TSG Workstream 4, Project 1 (Connection Terms)

⁵² 'deemed contracts' are silent on the terms of connection
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9.11. The Distribution Commercial Forum (DCF), which is chaired and facilitated by Ofgem, will be taking forward work on the agreement of standard connection terms for distributed generation. Ofgem will consider the outcome of Workstream 4's suggested text covering the connection of microgeneration as part of this work, in due course.

Use of system (UoS) agreements

9.12. In addition to a connection agreement, microgeneration will mean that a generation UoS agreement with the DNO may need to be in place. This is the case whether exported electricity is sold or spilled onto the network. In the case of sale, the purchaser would contract with the DNO for UoS. In the case of spill, the UoS agreement would be between the DNO and the microgenerator. Where the import supplier is also purchasing the export, a single UoS agreement (between registered supplier and DNO) would suffice.

9.13. A UoS agreement for spill only might provide for the microgeneration operator to inform the DNO of the amount of electricity to be spilled to the system. Alternatively, the DNO might quote for the installation of appropriate metering⁵³. Outside any such contractual agreements, there may be no more specific requirement on a microgeneration operator that spills export units.

9.14. The DCF will be taking forward work on standard UoS terms for distributed generation. Ofgem considers that it would be sensible for this to cover domestic-scale microgeneration.

⁵³ Paragraph 3(c) of Condition 4B of the Electricity Distribution Licence
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10. Metering issues

Purpose of this section

- 10.1. Ensuring that the metering installation is appropriate for premises in which microgeneration is installed presents a number of difficulties. This is because neither the design of most of the meters currently in use in domestic and small business premises nor the regulatory and contractual framework is specific to microgeneration.
- 10.2. This section of the paper considers what operators of microgenerators may wish to do, how their desired outcomes may be achieved under existing rules and practice for metering, and where change may be required.

Meeting consumers' requirements

- 10.3. If a registered supplier were to sell microgeneration equipment to a current customer, installation of generation equipment and appropriate metering on the same day would be unlikely to be problematic.
- 10.4. The situation would not be so straightforward if installation of the microgeneration equipment were to be part of a package involving change of supplier⁵⁴, as the new supplier would not gain control of the metering installation until the supplier change procedure had been completed. In this sort of case, the consumer might well be put to the inconvenience of making a second appointment for meter installation. Manufacturers of DCHP equipment see this as a particular disincentive to take-up of their product, which will often be installed as a 'distress purchase' on failure of a conventional gas central heating boiler.

⁵⁴ This would be the situation where, for example, the owner or occupier had signed an Energy Service Company (ESCo) contract
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- 10.5. Another possibility would be installation of a microgenerator by an organisation having no electricity supply licence and no supplier affiliation. The installer might not know the identity of the electricity supplier, while the supplier might be unaware that microgeneration equipment had been installed⁵⁵.
- 10.6. Some owners or occupiers of premises may purchase and fit microgeneration themselves. Those interested in securing some value for exports will be likely to contact either the incumbent supplier or another to whom they would like to sell exported units. These consumers will require import/export metering.
- 10.7. There may be operators of microgeneration who see the equipment in terms of energy efficiency alone and who intend to do no more than spill units onto the network. There is little incentive for them to make arrangements for meter change.

Meter approval and certification

- 10.8. Schedule 7 to the Act relates to the certification of meters for the purposes of supply (i.e. import meters). The schedule does not apply to export meters. Schedule 7 provides that the customer of an authorised supplier must, if charged wholly or partly by reference to the quantity of electricity supplied, be supplied by means of an ‘appropriate’ meter⁵⁶.
- 10.9. Schedule 7 refers to meters that are ‘appropriate’, ‘certified’ and ‘approved’. A meter is:
- ‘appropriate’ if *“it is of a pattern or construction which, having regard to the terms on which the supply is to be charged for, is particularly suitable for such use.”*⁵⁷;
 - ‘approved’ if it is approved by or under regulations made under paragraph 2 of Schedule 7⁵⁸; and

⁵⁵ The statutory obligation on the installer is to notify the DNO, not the supplier

⁵⁶ Paragraph 1(1) of Schedule 7 to the Act

⁵⁷ Paragraph 1A(6) of Schedule 7 to the Act

⁵⁸ See the Meters (Approval of Pattern or Construction and Manner of Installation) Regulations 1998 (SI 1998/1565) (as amended)

- ‘certified’ if it has been certified by a meter examiner, or other duly authorised person, as being of an ‘approved’ pattern or construction and conforming to any prescribed standards, including margins of error⁵⁹.

10.10. Ofgem has no statutory remit in respect of export meters. However, meter examiners appointed by it have the power to approve and certify the import functions of meters and to ensure that the export function does not compromise the import registers. The approval does not include the accuracy or function of the export measurement. There is nothing to prevent suppliers from installing meters without reverse stops at ‘import only’ sites. In such cases, the subsequent installation of microgeneration would result in reverse running.

10.11. Supplying electricity through a meter that is not ‘approved’ or ‘certified’ may constitute a criminal offence⁶⁰.

10.12. Should a customer refuse or fail to take its supply through an ‘appropriate’ meter, otherwise than in prescribed circumstances (which do not relate to export), a supplier may refuse to give, or may discontinue, supply⁶¹.

Best practice

10.13. Having consulted widely on the issue in 2001 and 2002, Ofgem has indicated that best practice requires the separate measurement of imports and exports of active power for all distributed generation, including microgeneration⁶². To make import/export metering the norm for microgeneration will ensure that there is sufficient accurate data for the production of reliable profiles for sales of exports and, with increased microgeneration penetration, will ensure that DNOs have such data as they may require to manage the network. Consumers will have access to the information they need to make informed choices about energy management in their premises.

10.14. Ofgem’s aim is for a workable framework to exist in respect of microgeneration, including appropriate metering, with it assisting with the development of

⁵⁹ Paragraph 5 of Schedule 7 to the Act

⁶⁰ Paragraph 3.

⁶¹ Paragraph 1(5)

⁶² ‘Distributed generation: price controls, incentives and connection charging. Further discussion, recommendations and future action’, Ofgem, March 2002, section 6

standardised arrangements with licensees. The main driver for this is the prospect of the installation of many thousands of DCHP units.

10.15. The BSC requires the installation of import/export metering in circumstances in which the microgeneration operator intends to sell exported units. Many microgeneration installations will have minimal electricity to export. Ofgem recognises that some microgeneration operators will not be interested in trading 'spill' units. In these cases, it might only be the DNO (and then only exceptionally, at first) who would have an interest in data from the export register. The mechanism by which the DNO might arrange for the installation of an import/export meter is set out in the Electricity Distribution Licence⁶³. Ofgem anticipates that, in these cases, DNOs would levy appropriate charges. As noted in the section on access, however, a DNO would have no right of access in respect of metering equipment without the possession of a warrant of entry signed by a magistrate⁶⁴.

10.16. Further, in order that a meter is 'appropriate', it is necessary that export of microgeneration output from the premises does not cause the supply meter to run in reverse. Reverse running is discussed in greater detail in the following paragraphs. For domestic and small-business applications, the additional cost of import/export metering over import metering alone is now small.

Reverse running

10.17. When on-site demand is less than the output of the microgenerator, electricity will be exported from the premises to the DNO's LV system. An import/export meter is designed to accommodate this situation. Import meters, unless they are fitted with a 'reverse stop', will run backwards during periods of export such that the meter register will subtract units from the register. In these cases, the number of units supplied to the premises will be incorrectly recorded⁶⁵.

⁶³ Condition 4B(3)(c)

⁶⁴ See the Rights of Entry (Gas and Electricity Boards) Act 1954

⁶⁵ Reverse energy in three-phase meters may present additional complexities, although relatively few domestic-scale microgenerators (which are single-phase devices) will be connected to premises having three-phase supplies

- 10.18. Reverse stops were incorporated in meter design to combat methods of meter tampering that cause the supply meter to run backwards. Not all meters have a reverse stop. Reverse stops cannot be retro-fitted to a meter on site.
- 10.19. In October 2004, Ofgem conducted a survey of meters without reverse stops. In many instances, it is not altogether clear whether the meter has a reverse stop. Out of a population of some 26 million meters, there may be some 10 million that either are known to have no reverse stop or may have no reverse stop. There would be a risk of reverse running if microgeneration were installed in premises supplied through these meters. There is nothing to prevent a meter without a reverse stop from being removed, refurbished and recycled.
- 10.20. Section L 2.1.1 of the BSC requires the registrant of each metering system to ensure that the meter is installed, maintained and operated in accordance with the relevant metering codes of practice. Code of Practice 9 (6.1) states that, "*No register shall be permitted to decrement in the event of energy flow in the opposing direction*". Code of Practice 9 covers only import/export metering for NHH settlement purposes. Code of Practice 8, which governs import metering for NHH settlement purposes, is silent on the point of reverse running. The BSC does not, therefore, address reverse running in circumstances in which the microgeneration operator does not want to be rewarded for exports.
- 10.21. If the import meter may run in reverse, it is clearly not an 'appropriate' meter to measure the amount of supply to premises in which microgeneration is installed. In that case, Schedule 7 of the Act would not be complied with. In such circumstances, the supplier would be under an obligation to change the meter, at least for one that has a reverse stop. This makes it desirable to supplement the statutory notification to the DNO of commissioning of microgeneration with notification to the registered supplier.
- 10.22. Where the consumer does not want to sell exports and there is no incentive to install import/export metering, the supplier may be unaware of the presence of the microgenerator. One solution might be for DNOs, who are able to identify the registered supplier, to pass information relevant to the metering point to the supplier. Data protection requirements would have to be taken into account in considering this solution.

- 10.23. **It would be helpful to receive views from DNOs as to the extent to which they would be able, both administratively and legally, to advise the registered supplier of the commissioning of microgeneration in any premises.**
- 10.24. Current non-half-hourly data flows do not signal whether an MPAN is export or import. Profile class data does not form part of the core MPAN. Ofgem has been involved in preliminary discussions as to whether there should be a requirement for the MPAN to be 'labelled' in such a way as to highlight the presence of microgeneration. In principle, Ofgem is supportive of this idea.

Metering for ROCs/SROCs

- 10.25. Renewable microgenerators may be eligible for ROCs. Where electricity generated and consumed by the operator of the generating station is the subject of a 'sale and buy-back' agreement with a licensed supplier⁶⁶, eligibility does not depend on these microgenerators being connected to a DNO network.
- 10.26. Because a 'sale and buy-back' agreement creates a 'supply' to the premises of the microgeneration operator, the gross generation meter⁶⁷ must currently comply with Schedule 7 of the Act. The involvement of a supplier in these arrangements makes it unlikely that reverse-running supply meters will be problematic for renewable microgeneration.
- 10.27. One difficulty with metering for ROCs/SROCs is that operators of renewable microgeneration may generate and use power at direct current (dc). No dc energy meters have been approved by Ofgem to date. Moreover, there are few such meters available that would be suitable for generation metering of renewable microgeneration. Ofgem is aware of this situation and is considering whether and, if so, how dc meters should be approved⁶⁸. **Ofgem would welcome responses from any who might wish to use a dc meter for the registration of ROCs. It would be particularly useful to receive information on the additional costs likely to be incurred if an approved dc meter were not available.**

⁶⁶ Article 10 of the Renewables Obligation Order 2002 and of the Renewables Obligation (Scotland) Order 2004

⁶⁷ The generation meter measures total generator output for Renewables Obligation purposes. This is distinct from the measurement of imports and exports to and from the premises

Meter change

- 10.28. Ofgem understands that some suppliers of microgeneration equipment intend that their installers should be suitably trained and accredited to effect meter change. However, the installer of microgeneration equipment would still often be unable to change metering equipment. To do so, the installer would either have to be the appointed accredited meter operator or to be acting on behalf of the appointed accredited meter operator. Unless appointed to do so, no new meter operator should deal with another's meter.
- 10.29. An incumbent supplier, aware that the installation of microgeneration will be accompanied by loss of the customer (supplier change), will have no incentive to effect a meter change, as to do so would be in the interest of a competitor.
- 10.30. Ofgem considers that existing provisions would permit relatively prompt meter change, albeit perhaps not on the same day as the commissioning of the microgeneration unit. There are two situations to consider. Either the meter is known to have a backstop (and therefore known to be 'appropriate' as an import meter in the presence of microgeneration the exported output from which is not being traded) or there is the certainty, or the possibility, that the meter is of a construction that will run backwards.
- 10.31. If the meter already installed in the premises has a reverse stop, it will be 'appropriate'. It would also be "relevant metering equipment" within the meaning of condition 7 of the Electricity Supply Licence. In these circumstances, the existing supplier would be obliged to offer terms for use of the meter to any supplier seeking to take over the supply to the premises. Time would be of the essence in compliance with this obligation⁶⁹.

⁶⁸ Paragraph 3(1A) of Schedule 7 to the Act

⁶⁹ "The licensee shall offer terms for agreements in accordance with paragraph 1 as soon as practicable after the receipt of an application containing all such information as it may reasonably require for the purpose of formulating the terms of the offer."

- 10.32. In circumstances in which the meter either did not have a reverse stop or in which its propensity to run backwards was unknown, the incumbent supplier, on becoming aware of the existence of a microgenerator, would be under an obligation to change it to an appropriate meter. The question of whether the customer should be charged for meter change is a contractual matter. It would be open to providers of microgeneration equipment to negotiate arrangements with suppliers for the installation of import/export metering.
- 10.33. Despite the general application of the ‘supplier hub principle’, the Electricity Distribution Licence envisages circumstances in which the DNO may be required to make an offer in respect of the installation of appropriate metering⁷⁰. This licence condition envisages a situation in which “...*the installation of appropriate meters (if any) required to enable the licensee to measure electricity being accepted into the licensee’s distribution system...*” is to be carried out by the DNO. This implies a situation in which there are technical, network reasons for ascertaining the number of kWhs being exported from the premises and in which exports may not be subject to metering by any other party.
- 10.34. Where provision of metering forms part of the DNO’s offer of terms for connection and use of system, the DNO may, subject to the terms of the contract, charge for providing the metering.
- 10.35. **There is some anecdotal evidence that suppliers and domestic-scale microgenerators occasionally encounter difficulty in securing the installation of export metering and that the costs quoted can vary considerably, depending on the region. Ofgem would be interested to hear about instances in which difficulties have been experienced.**

⁷⁰ Paragraph 3(c) of condition 4B of the Electricity Distribution Licence
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Meter reading

- 10.36. As already noted, condition 17 of the Electricity Supply Licence imposes an obligation on suppliers to read NHH meters⁷¹. There is no direct statutory or licence obligation to read export meters⁷², although, where export units are being sold to the registered supplier, it would clearly be in that supplier's interest to do so.
- 10.37. It is in suppliers' interests to have robust arrangements in place to ensure that readings are correctly associated with import and export⁷³, from the point of data capture to the production of billing.
- 10.38. **Ofgem would be interested to learn from suppliers whether the data-capture units and check data available to meter readers are such as to enable them accurately to identify and record readings from import/export meters and whether mechanisms exist reliably to transfer this data into the billing process.**
- 10.39. Suppliers have an incentive to co-operate with microgeneration installers in exercising some control over the process of meter change. There is scope for billing disputes arising from meter change. Such disputes can create costs for suppliers that considerably exceed the cost of meter change itself. Ofgem considers it to be good practice, wherever possible, to agree closing readings from the outgoing meter and opening readings on the new meter with the consumer. Ideally, the consumer should sign the meter change certificate. The register of the new meter will not necessarily read zero.

⁷¹ Condition 17(2)(a)

⁷² There may be an indirect requirement, under Condition 10, to read non-half-hourly export registers. Paragraph 2.2 of Annex S-1 of the BSC requires suppliers to settle a percentage of their total energy in each GSP Group based on Annualised Advances at each reconciliation run. In order to create an Annualised Advance, the supplier will require a number of meter readings or "customer's own readings".

⁷³ In accordance with metering Code of Practice Nine, paragraph 6.3.2.

11. Access rights

Purpose of this section

- 11.1. This section reviews the current rights of access to metering equipment located in consumers' premises, commenting on the possible implications of the installation of microgeneration.
- 11.2. An important consideration is ensuring that adequate protection of the consumer's interest is maintained, particularly in the case of access to the homes of elderly or vulnerable people.

Suppliers' rights of access

- 11.3. 'The Electricity Code'⁷⁴ accords to electricity suppliers reasonable rights of access to premises to which electricity is being supplied⁷⁵. Access may be for the purpose of meter reading or for the inspection, removal or replacement of an electricity meter. The supplier would have statutory rights of access to, inter alia:
- inspect a supply meter (e.g. to ascertain whether it might run backwards);
 - replace a supply meter with a meter known to have a backstop;
 - install an import/export meter; or to
 - install a 'generation meter' for a renewable microgenerator seeking to claim ROCs/SROCs in respect of on-site consumption⁷⁶.
- 11.4. The Electricity Code provides that, where access to premises is gained in accordance with its provisions, the premises must be left secure and any damage must be paid for⁷⁷.

⁷⁴ Schedule 6 of the Act

⁷⁵ Paragraph 7(2).

⁷⁶ Under Article 10 of the RO, a sale and buy-back agreement would require 'generation metering' to measure total generation whether consumed on site or exported

⁷⁷ Paragraph 10(3)(a) and (b)

- 11.5. The Rights of Entry (Gas and Electricity Boards) Act 1954 applies to the exercise of rights of entry under the Electricity Code⁷⁸. Often regarded as conferring rights on suppliers and DNOs, the 1954 Act also contains important safeguards for consumers. It was passed to prevent abuse of pre-existing rights of entry⁷⁹, which have continued, in modified form, in subsequent utility legislation.
- 11.6. Condition 24 of the Electricity Supply Licence requires the licensee to prepare a code of practice setting out the principles and procedures that it will follow in respect of any person acting on the licensee's behalf who requires access to consumers' premises. Although the condition refers to any person requiring access on the licensee's behalf, it is clear from the context that the code of practice is intended to relate solely to access to premises for purposes of supply.
- 11.7. A supplier, or any other person, seeking access solely to an export meter would have no right of access, but would be reliant on the permission of the owner or occupier. Having given permission to enter the premises the owner or occupier might have some protection under the general law, but would not be protected by the provisions of either the Electricity Code or the 1954 Act. Condition 24 in the Electricity Supply Licence would not cover such instances of permissive access.

DNOs' rights of access

- 11.8. DNOs have rights of reasonable access to their electrical line and plant in premises at which a distribution connection is being maintained⁸⁰. This right does not, however, extend to any metering equipment.
- 11.9. Despite the responsibility to install metering that a DNO may acquire under Electricity Distribution Licence⁸¹, there would appear to be no accompanying right of access. Unless the DNO was authorised to act as agent for the supplier, access would have to be by agreement with the owner or occupier of the premises or under a warrant⁸².

⁷⁸ Paragraph 10(1) of Schedule 6 to the Act

⁷⁹ The Electric Lighting Act 1882, s. 24 and The Electric Lighting Act 1909, s.16

⁸⁰ Paragraph 7(1) of Schedule 6 to the Act

⁸¹ Paragraph 3(c) of section 4B

⁸² Rights of Entry (Gas and Electricity Boards) Act 1954

12. Summary of recommendations

- 12.1. Ofgem considers that, should it become necessary to introduce any licence amendment making reference to a matter relating specifically to domestic-scale microgeneration, a definition of 'domestic-scale microgeneration' consistent with both the threshold for the relevant notification provision in the ESQC Regulations and the definition of SSEG in ER G83/1 would be appropriate. It would seem sensible to adopt the same wording as appears in the engineering recommendation. (7.8)
- 12.2. Ofgem's present view is that there may be insufficient grounds for placing suppliers under an additional obligation to notify the consumer of any export MPAN. (7.18)
- 12.3. Ofgem considers that, for the purposes of Condition 25, supply should include arrangements made under Article 10 of the RO, and that licensed suppliers should review their codes of practice on the efficient use of electricity with a view to including information on microgeneration. This would require modification of Condition 25. (7.21)
- 12.4. The Distribution Commercial Forum will be taking forward work on standard UoS terms for distributed generation. Ofgem considers that it would be sensible for this to cover domestic-scale microgeneration. (9.14)
- 12.5. Ofgem is supportive of the idea that MPANs be 'labelled' in such a way as to highlight the presence of microgeneration. It would be helpful to build on the preliminary discussions that have taken place. (10.24)
- 12.6. Ofgem considers it to be good practice, wherever possible, to agree closing readings from the outgoing meter and opening readings on the new meter with the consumer. Ideally, the consumer should sign the meter change certificate. The register of the new meter will not read zero. There is scope for billing disputes arising from meter change. Such disputes can create costs for suppliers that considerably exceed the cost of meter change itself. (10.39)

13. Summary of questions

- 13.1 Ofgem would be interested to hear from manufacturers and retailers regarding:
- the information currently provided to customers about the legal and technical responsibilities of microgeneration operators; and
 - any industry proposals for expanding the information and guidance currently provided. (6.8)
- 13.2 Ofgem invites comments on modification of Condition 16 or Condition 17 of the Electricity Supply Licence to ensure identification of reverse-running meters, which Ofgem considers are not appropriate for use in the case of microgeneration. (7.16)
- 13.3 A modification to the licence condition 36 could be made such that it would refer specifically to domestic-scale microgeneration. However, minor modifications to the codes of practice on use of prepayment meters could suffice to give consumers the relevant information. Ofgem would be interested to hear the views of suppliers, consumer representatives and manufacturers of metering and microgeneration equipment on what the content of such modifications should be. (7.30)
- 13.4 Condition 41 could be modified to cover a contract dealing with, inter alia, supply of electricity to domestic premises incompatible with the licensee's supply obligations under the Electricity Supply Licence. Ofgem would welcome views as to the desirability of such a modification. (7.33)
- 13.5 Ofgem would be interested to know whether current practice of DNOs is to create an export MPAN on receipt of notification of commissioning of a microgenerator (in accordance with the ESQC Regulations 2002), or when a licensed supplier seeks to register as responsible for exports from the premises under the BSC in the MPAS. (8.8)
- 13.6 Ofgem would welcome views as to whether there should be a new licence obligation on DNOs to notify owners or occupiers of premises of any export MPAN created in respect of those premises. Should this be further extended to

notification to the registered supplier (in case the absence of a reverse stop may mean that the meter is no longer 'appropriate')? (8.10)

- 13.7 It would be helpful to receive views from DNOs as to the extent to which they would be able, both administratively and legally, to advise the registered supplier of the commissioning of microgeneration in any premises. (10.23)
- 13.8 Ofgem would welcome responses from any who might wish to use a dc meter for the registration of ROCs. It would be particularly useful to receive information on the additional costs likely to be incurred if an approved dc meter were not available. (10.27)
- 13.9 There is some anecdotal evidence that suppliers and domestic-scale microgenerators occasionally encounter difficulty in securing the installation of export metering and that the costs quoted can vary considerably, depending on the region. Ofgem would be interested to hear about instances in which difficulties have been experienced. (10.35)
- 13.10 Ofgem would be interested to learn from suppliers whether the data-capture units and check data available to meter readers are such as to enable them accurately to identify and record readings from import/export meters and whether mechanisms exist reliably to transfer this data into the billing process. (10.38)
- 13.11 Ofgem would welcome other views on any of the issues covered in this paper.