

## **CONNECTION CONSIDERATIONS FOR SMALL SCALE EMBEDDED GENERATORS**

### **A Guide for property owners and Installers**

#### **BACKGROUND**

If you are considering installing some form of small scale embedded generator (SSEG) and want to operate it in parallel with WPD's distribution system you will need to make us aware at the time of commissioning. This guide will help you understand what information we need as part of that notification process.

A SSEG is defined as 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 WPD's low voltage distribution system.

This guide only covers situations where the SSEG is connected via the customer's installation to WPD's low voltage distribution system. (The SSEG is operated "in parallel" with WPD's system.) A SSEG connected in parallel may support part or all the electrical load used in the customer's installation. It may also export energy into WPD's distribution system.

A SSEG typically could provide electrical energy from renewables such as wind, water turbine and solar PV (photovoltaic) or perhaps a gas driven engine operating in conjunction with a domestic central heating system (these technologies are just examples and are not exclusive).

Where a small generator is operated completely separately to WPD's distribution system, then we are only concerned with approving any changeover systems where the installation is normally supplied from WPD's distribution system and is transferred to the generator for emergency purposes. In these cases, please contact us for further advice.

Before investing in any form of SSEG a property owner should seek professional advice from a qualified installer who will ensure the installation meets current UK standards and best practice recommendations. All installations must comply with relevant British Standards and Codes of Practice.

An installer may wish to survey the property first to establish whether it is suitable for the type of SSEG intended. It is also best to check with the local authority first. The requirement to obtain planning permission is dependent on the size and nature of the SSEG installation. There may also be restrictions placed in conservation areas or on listed buildings.

#### **PROCESS FOR INFORMING WPD**

All SSEGs should comply with Engineering Recommendation G83/1 entitled "Recommendations for the Connection of Small-Scale Embedded Generators (up to 16A per phase) in Parallel with Public Low-Voltage Distribution Networks". It is published by the Energy Networks Association and sets out the technical requirements for the connection of SSEG units.

For further information visit the ENA web-site ([www.energynetworks.org](http://www.energynetworks.org)). The ENA will charge for providing a copy however, any reputable installer should be familiar with this document and will follow the process outlined within it.

If just one SSEG is to be installed at the property the installer simply has to tell us about the SSEG installation within 28 days from the time of commissioning and then ensure all relevant technical details of the SSEG unit are provided within 30 days of commissioning.

We will assess the information provided and either, acknowledge the commissioning and operation of the SSEG unit or, where the data is incomplete or unsatisfactory, we will request further information. Please note, where satisfactory data is not provided we can give notice to disconnect the SSEG unit until we are satisfied that the provisions of G83/1 are met.

Please ensure you obtain a copy of our acknowledgment from the Installer for your own records.

## METERING

When a generator is connected, the existing import meter may no longer be appropriate and therefore may need changing. You are advised to contact your electricity supplier (the "Supplier") who will investigate whether the meter is still suitable.

When the SSEG is producing electrical energy, depending on its output and the electricity consumed in the premises at the time, it will either result in reduced consumption of energy from the WPD distribution system, or electrical energy flowing into WPD's distribution system. If the SSEG is designed and required to export energy and you want recompense for this, it is necessary for you to enter into an agreement with a Supplier.

It is not a legal requirement to have an export meter fitted. You should speak to Suppliers and find out what are the best terms for your situation. Three options are commonly available:

- The Supplier will pay you a fixed sum based on the capacity of the generator;
- The Supplier will arrange for an authorised Meter Operator to supply and fit an export meter so the nett energy exported can be traded through the normal settlements process. To do this we will need to issue to you a unique Supply Number which you will in turn need to give to your Supplier;
- The Supplier will not utilise the normal settlement process. Instead they will pay you an agreed rate for the nett energy exported. Under this arrangement you may need to purchase your own meter and have it fitted by an authorised Meter Operator. You will remain responsible for the export meter and need to ensure it is maintained.

In addition, you may also be paid for the gross generation (regardless of how much of it you use). This is an arrangement under ROCs (Renewables Obligation Certificate). This is measured by a Gross generation meter and usually can be installed by the installation contractor. More information can be obtained from the Ofgem website (see below).

Please note, regardless of the arrangement offered you must have your existing meter checked to ensure it is compatible for use when energy is exported.

## ROLES AND RESPONSIBILITIES

The table below summarises the roles and responsibilities of various parties involved in the installation of a SSEG.

Designer / Installer	It is the Designer/Installer who designs, specifies, provides and installs all the necessary equipment forming the SSEG. Each task could be provided by different parties. WPD does not provide any of these services and is, due to competition rules, unable to recommend any specific organisations carrying out these activities.
Distribution Network Operator	Western Power Distribution (WPD) operates public low voltage distribution networks in South Wales and South West of England and is responsible for considering and approving the customer's or installer's application to operate a SSEG.
Electricity Supplier (Supplier)	If you want to be paid for the energy you export through the electricity connection you will need to enter into an agreement with a Supplier. This may be the same or different Supplier to the one presently responsible for providing imported energy.  WPD is not a Supplier, but can provide a list of licensed Suppliers - please call WPD on (01209) 616888. Please note: not all Suppliers may wish to offer a contract for SSEG exported energy and WPD's list will not specifically show those Suppliers who do cater for SSEGs. Alternatively, you can contact Energywatch, on 0845 9060708 (or visit the Ofgem website, <a href="http://www.ofgem.gov.uk">www.ofgem.gov.uk</a> )
The Meter Operator	Your appointed Supplier will arrange for a Meter Operator to install suitable metering to cater for nett exported energy, where this is to be traded through the settlement process.  (WPD no longer provides non-half hourly metering services to customers in the South West and South Wales. A list of Meter Operators can be obtained from energywatch or the Association of Meter Operators, <a href="http://www.meteroperators.org.uk">www.meteroperators.org.uk</a> )

## **EMBEDDED GENERATION WITH A RATING GREATER THAN 16A PER PHASE UP TO 42A PER PHASE**

You may not install a generator with a rating greater than 16A per phase without our prior agreement although for larger generators (up to 42A per phase) we may employ a similar process to that described under G83/1 where we consider it appropriate to do so. You must contact us in advance of commissioning the generator (ideally at your earliest opportunity) and provide full details so that we may establish whether or not certain requirements of G83/1 can be applied. Consent will be at our discretion and given on a case by case basis. An application form is available on our website.

It is important you contact us in advance as we will need to assess what impact the generator may have on our distribution system and its effect on other customers of ours. If it is likely the generator will cause problems we may not allow it to be connected until we reinforce our distribution system. You will be expected to pay for the cost of reinforcement subject to our current charging methodology.

If we decide G83/1 is inappropriate you shall be expected to follow Engineering Recommendation G59/1 – Recommendations for the connection of embedded generating plant to the regional electricity companies' distribution systems. We normally require for our engineer to witness the tests detailed under G59/1, including the first synchronising run of the generator and will charge you for carrying out this activity.

### **ADDITIONAL INFORMATION FOR INSTALLERS (relating to SSEG's <16 A per phase)**

In accordance with Regulation 22 (2) (c) of the Electricity Safety, Quality and Continuity Regulations 2002 you must inform us of the SSEG installation within 28 days of commissioning. You can do this by submitting;

- ✓ An Installation Commissioning Confirmation form;

In accordance with G83/1 you have 30 days from commissioning to provide us with relevant details of the SSEG. The relevant information is:

- ✓ A manufacturer's type verification test report;
- ✓ A copy of the circuit diagram;
- ✓ A computer print out (where possible) or other schedule of protection settings; and

We recommend you send the Confirmation Commissioning form together with the rest of the relevant information.

If we are satisfied that all information is correct we will dispatch a letter acknowledging the commissioning and operation of the SSEG.

You will be expected to provide, adjacent to the installation:

- ✓ Safety labelling at the fused cut-out, meter position, consumer unit and at all points of isolation within the customer's premises to indicate the presence of a SSEG;
- ✓ A circuit diagram showing the circuit wiring, including all protective devices, between the SSEG and WPD's fused cut-out. The diagram must show by whom all apparatus is owned and maintained;
- ✓ A summary of the protection settings incorporated within the equipment.

Our acknowledgment is given on the basis that you will comply with these requirements. For further information consult paragraph 6.0 of G83/1.

### **CONNECTION OF PLANNED MULTIPLE SSEG UNITS**

In the case of a planned installation project where the proposal is to install multiple SSEG units in a close geographic region we will need to assess the impact that these connections will have on our distribution system and may need to specify conditions for connection.

You should contact us at the earliest opportunity to discuss the installation project and submit an Application for Connection form prior to installation and commissioning of the planned SSEG units.

We shall carry out an investigation and make an assessment of the possible impact of the installation project on the distribution system. If we assess there will be no significant impact on our distribution system we shall notify you by counter-signing the Application for Connection form and returning it to you.

Where reinforcement of the existing distribution system is required we shall submit an Offer to carry out the work.

You must submit an Installation Commissioning Confirmation form for each SSEG installation.

The Installation Commissioning Confirmation form and Application for Connection form shall be submitted in a form as laid out under G83/1. A WPD version is available on request. Copies can be downloaded from the WPD website.

## **CHANGE OF OPERATING CHARACTERISTICS**

If during the lifetime of the SSEG it is necessary to replace a major component of the SSEG, it is only necessary to notify us if the operating characteristics of the SSEG or the interface protection have been altered when compared against the unit that was originally commissioned.

The protection settings shall only be altered following written agreement between WPD and the customer or his agent.

## **DECOMMISSIONING OF SSEG's**

It is the customer's responsibility to notify us in the event that a SSEG unit is to be decommissioned and will no longer operate as a source of electrical energy in parallel with WPD's distribution system. Such notification should be submitted in a form as laid out under G83/1. A Decommissioning Confirmation form is available on request. Copies can be downloaded from our website.

## **Useful Websites and Telephone Numbers:**

Further information is available on our website: [www.westernpower.co.uk](http://www.westernpower.co.uk)  
(Follow the link from the "New Connections" page)

Should you wish to discuss any of the items contained in this guide, or require application forms, please contact WPD.

Western Power Distribution (South West):	Tel 0845 601 2989
Western Power Distribution (South Wales):	Tel 0845 601 3341

The following websites may also provide some guidance:

[www.westernpower.co.uk](http://www.westernpower.co.uk)

[www.ofgem.gov.uk](http://www.ofgem.gov.uk)

[www.energynetworks.org](http://www.energynetworks.org)

[www.dti.gov.uk/energy](http://www.dti.gov.uk/energy)

[www.distributed-generation.gov.uk](http://www.distributed-generation.gov.uk) (DGCG)

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