Aurora
ENERGY LIMITED

Guide to Connection of Small Scale Distributed Generation

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DELTA
THINK.INFRASTRUCTURE

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1 PURPOSE AND SCOPE OF THIS DOCUMENT

As required by the *Network Connection Requirements* policy, this document details the requirements and procedures for the connection of Small Scale Distributed Generation. This document does not apply to stand-alone generation systems, not connected to the network.

2 DEFINITIONS

"*AC*" means alternating current.

"*CoC*" means a Certificate of Compliance issued in accordance with the Regulations

"*Code*" means the Electricity Industry Participation Code.

"*DC*" means direct current.

"*ESC*" means an Electrical Safety Certificate issued in accordance with the Regulations

"*Generator*" means the owner of the SSDG system, and/or their appointed agent / installer / contractor

"*ICP*" means Installation Control Point and is further defined in the Code.

"*JAS-ANZ*" means the Joint Accreditation System of Australia & New Zealand.

"*Regulations*" means the Electricity (Safety) Regulations 2010, as amended from time-to-time

"*Regulated Terms*' means Schedule 6.2 of the Code

"*Small Scale Distributed Generation (SSDG)"* means distributed generation with a total generation capacity of 10kW or less.

3 REFERENCES

3.1 Standards and Legislation

AS 4777.1:2005 - Grid Connection of Energy Systems via Inverters: Part 1, Installation Requirements

AS 4777.2:2005 - Grid Connection of Energy Systems via Inverters: Part 2, Inverter Requirements

AS 4777.3:2005 - Grid Connection of Energy Systems via Inverters: Part 3, Grid Protection Requirements

AS/NZS 3000:2007 – Electrical Installations (AS/NZ Wiring Rules)

AS/NZS 5033:2012 - Installation and safety requirements for photovoltaic (PV) arrays

Electricity Industry Participation Code 2010

Electricity Act 1992

Electricity (Safety) Regulations 2010

3.2 Aurora Guides, Standards, and Forms

Available from Aurora's website at
http://www.auroraenergy.co.nz/content/distributedgeneration.php.

Guide to Connection of Small Scale Distributed Generation (this guide)

Distributed Generation Technical Requirements

Form F1712 - Small Scale Distributed Generation Connection Application

Regulated Terms for Connection of Distributed Generation

List of Accepted Inverters

Available from Aurora's website at
http://www.auroraenergy.co.nz/content/gettingconnected.php.

Network Connection Requirements

4 CONNECTING SMALL SCALE DISTRIBUTED GENERATION

4.1 General

This guide is intended for use by Generators when proposing to connect SSDG systems to Aurora's network. SSDG systems are usually, but not always, single-phase, and are likely to be installed in residential or small commercial premises.

SSDG is normally derived from an intermittent source (solar, wind, micro-hydro) and usually generated at DC. The DC source is fed into a grid-tied inverter, which commutates the energy into AC and synchronises it to the network. Most SSDG systems do not incorporate battery storage, with energy being imported or exported as required or available. Storage may become more prevalent in the future, as battery technology develops and costs decline.

The information provided in this guide is designed to assist with connecting SSDG systems to the network. It does not provide advice on system selection, as that is a matter that Generators should discuss with SSDG system vendors/installers.

4.2 Equipment Requirements

4.2.1 Inverters

Where the SSDG system incorporates inverters, the proposed inverter must comply with AS4777.2:2005 and, unless a separate grid protection device is installed (see s4.2.2 below), AS4777.3:2005.

A list of inverters accepted for use within Aurora network areas is available from the Aurora website (refer s3.2).

4.2.2 Anti-Islanding and Grid Protection Devices

SSDG systems must incorporate anti-islanding protection, which isolates the SSDG system from the network in the event of a network outage.

Where SSDG systems generate at AC, specific anti-islanding protection will generally need to be provided, unless integral to the generator controller. Full details of the protection scheme will need to accompany the application to connect.

Where SSDG systems generate at DC, a grid protection device complying with AS4777.3:2005 must be installed. In most cases, the grid protection device will integral to the inverter (grid-tied inverter), however, in the case of micro-inverters, it is common for the grid protection device to be separate.

4.3 Application

Generators proposing to connect SSDG systems to Aurora's network must make application to do so, using *Form F1712 Small Scale Distributed Generation Connection Application*. This form is available from Aurora's website (refer s3.2).

Where an inverter is proposed that is not currently listed as accepted for use on the Aurora website, the applicant must provide a declaration of conformity issued by a laboratory listed on the JAS-ANZ register (www.jas-anz.org), attesting that the inverter complies with AS4777.2 and AS4777.3. Inverter vendors should be able to provide this documentation.

The applicant must provide the name of the electricity retailer that has agreed to purchase any excess energy exported into the Aurora network. A copy of the application form, once approved, will be sent to the nominated retailer in order to minimise delays in having appropriate metering fitted. If no retailer has been nominated, the approved form will be sent to the retailer identified on the electricity registry as responsible for the ICP.

Applications are to be sent to:

Network Connections Manager
Delta Utility Services Limited
PO Box 1,404
DUNEDIN 9054

By email: networkconnections@thinkdelta.co.nz

Fax: 03 474 9361

The preferred method of submitting an application is by email. If an email address is not provided, application processing may take longer, particularly if additional information is required.

4.3.1 Application Fee

No application fee is required for the connection of SSDG.

4.4 Application Processing

Applications will be assessed, and within 10 working days of the application being received, the Generator will be advised in writing that either:

1. the application is approved; or
2. the application is not approved; or
3. The application is incomplete.

If the application is not approved, the Generator will be given reasons why the application is declined, along with the steps that may be taken to allow approval to be given (if any).

If an application is considered to be incomplete, the Generator will be advised of the information that is required to allow the application to be processed.

4.5 Installation

Installation of SSDG systems is high risk prescribed electrical work, which must be undertaken by a licensed electrical worker and inspected by a registered electrical inspector.

SSDG installation must comply with AS/NZS3000:2007, AS/NZS 5033:2012, and AS4777.1:2005.

4.6 Metering

It is the Generator's responsibility to arrange with their preferred electricity retailer for import / export metering to be fitted, and for the retailer to purchase excess energy exported into the distribution network.

Retailers may ask for evidence that the SSDG system has been approved by Aurora before they will arrange for import / export metering to be fitted. In response, Generators should forward a copy of the approved application form to the retailer as evidence.

4.7 Network Inspection

Aurora requires the SSDG installation to be inspected by an Authorised Network Inspector, to verify that the generation meets, or continues to meet, the requirements for connection. A fee of $60 plus GST may be charged for network inspection the SSDG installation.

4.8 Terms of Connection

SSDG will be deemed to be connected under the Regulated Terms which are reproduced on the Aurora website (refer s3.2).

5 DISPUTE RESOLUTION

Schedule 6.3 of the Code prescribes a dispute resolution process in the event that:

1. It is alleged that either party (Generator or Aurora) has breached any of the Regulated Terms, and the allegation is disputed; or
2. there is any other dispute regarding an alleged breach of any other of the provisions of Part 6 of the Code.

The following dispute provisions apply:

1. The disputing party must give written notice of the dispute to the other party; and
2. Both parties must attempt, in good faith, to resolve the dispute; and
3. If the parties cannot resolve the dispute, either party may complain in writing to the Electricity Authority.

6 RECORDS

The Generator shall provide the following post-connection documentation:

1. A copy of the CoC, issued by the installer in respect of the SSDG installation; and
2. A copy of the ESC, where applicable, issued by the installer in respect of the SSDG installation.