

## **Waipa Networks Distributed Generation Policy**

### The Process to Connect generation to our Network:

If you intend to install distribution generation to export energy into the WNL Network, you must meet all relevant statutory and regulatory requirements, WNL Connection and Operation Standards and comply with all applicable safety standards.

### **WNL Connection and Operation Standards**

- Generators must complete the application form to start the planning process.
- WNL shall carry out an inspection of all high voltage installations to ensure they are safe, will not interfere with other network customers if they fault, and meet industry accepted practice.
- Any assets, which WNL is to own can be constructed by contractors of the generators' choice but they have to be authorized to work on the network. They must submit a proposed design which must comply with the WNL Design Manual.
- WNL can provide competitive quotations for work to the design Standard. No network related construction will commence until payment to WNL is received in full unless other arrangements for payment are made to WNL Satisfaction.

### **Testing and Inspection**

Testing should include:

- Earth mats, earth electrodes, star point earthing including earthing resistors.
- HV cables.
- Transformers.
- Regulators: Operation.
- Circuit breakers: Over Current: Earth Fault.
- Any RCD devices.
- 400V tests as per NZ AS 3000.
- Over Voltage.
- Under Voltage – including the loss of a phase.
- Under frequency.
- Input energy fluctuations and the effects on output voltage and power factor.
- Auto-reclosing.

Inspection

WNL will inspect all HV and more complex connections.

Which include:

- Safety
- Protection
- Over frequency
- Synchronisation
- Islanding
- Single phasing

- Self-excitation on loss of supply
- Shut down to allow auto reclosing
- Variations in input power and reactive power adjustments
- Operating voltages
- Speed of shutdown on loss of supply

## **Operation**

When operating the generator has an obligation to ensure the generation plant is able to:

- Have the power switched off and turned back on (auto reclosed) without damaging itself, embedded appliances and other customer's equipment.
- Isolate itself and shut down when the supply is removed.
- Not produce voltages outside the regulation limits particularly during light load times at the point of connection.
- Not produce harmonics that exceed harmonic codes.
- Not self-excite if isolated or started without supply
- Not have magnetising inrush currents that affects other customers or equipment. (Asynchronous generators can have inrush currents in the order of 7 times full load current.)
- Inhibit parallel operation unless all phases are available and within normal limits.
- Disconnect from the supply in the event of unacceptable deviations of voltage or frequency.
- Not cause interference with network protection or cause circulating currents by the way star points are connected.
- Not cause variations in voltage that cannot be tracked by regulators.
- Not cause network tap changers to operate at an excessive rate.
- Not cause fault current levels which exceed network equipment ratings.
- Not cause any adverse network effects during fault ride through events.

## **Protection**

To protect against the issues outlined above, the minimum protection to be provided shall include:

- Loss of external supply
- External system over voltage
- External system under voltage and phase balance/loss of phase
- External system over and under frequency
- Overcurrent

## **Power Factor**

To overcome congestion issues caused by low power factor WNL reserves the right to:

- Pass on, penalty charges from Transpower.
- Restrict connections in certain areas.

The majority of WNL distribution network comprises long rural overhead distribution lines that are inherently inductive causing a lagging low power factors. It is therefore important that prospective distributed generation installation are designed to have a minimal adverse impact on network power factor.

**Policies, Rules and Conditions of Distributed Generation being curtailed or interrupted occasionally in order to ensure that the distributor's other connection and operation standards are met.**

**Retailer for Site**

The DG customer must provide evidence of a retailer or electricity market participation. Normally the retailer will advise WNL that it is the retailer for the site and connection will take place once this is advised. It is an ongoing responsibility of the customer to ensure it has a retailer for input and export energy.

**Technical Standards**

WNL has an obligation to ensure the supply meets all national technical specifications at the point of connection with WNL's lines. As a consequence, the generator must advise WNL of changes to the installation as per WNL connection standards.

Where a customer refuses to respond to requests in compliance with industry codes disconnection may result.

**Non Payment**

If a generator cannot pay WNL for any amount due to WNL by the generator, including for professional services, by the due date it must advise WNL. If payment is not received, WNL may disconnect the site until all obligations are met.

**Faults**

**Loss of Supply due to Unplanned Events**

WNL shall endeavour to restore supply to generators after an unplanned event such as a storm occurs. During such events priority to restore supply is:

- Sustenance of life
- Essential services
- Minimising significant environmental and property damage

**Disconnection in Emergency Situation**

WNL shall disconnect installations in emergency situation to maintain safety or network stability. Typically, events will include:

- Force majeure events, including extensive storms
- Emergency events caused by failure of network or customer equipment
- Situations where safety to life risks need to be minimised
- Situations where damage to equipment risks need to be minimised

### **Compliance with Regulations**

You must ensure that your generation scheme will be installed to comply with the technical and Safety requirements as set out in the following Standards;

Refer to Standards, AS 4777.1, AS 4777.2, AS 4777.3 and AS/NZS 3000

Copies of these standards are available from the website [www.standards.com.au](http://www.standards.com.au) and [www.ess.govt.nz](http://www.ess.govt.nz)

For Further information [www.ea.govt.nz](http://www.ea.govt.nz)

A list of WNL approved inverters are available from the website

<http://www.solaraccreditation.com.au/products/inverters/approved-inverters.html>

If you have any further questions please contact:

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