



CM0003

Applications and Standards for Connection to a Distributed Generation of 10kW or Less in Total

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CM0003 Applications and Standards for Connection to a Distributed Generation of 10kW or Less in Total

Overview

Document purpose	The purpose of this document is to assist those wanting to connect small scale distributed generation of 10kW or less in total to Unison's network.													
Intended audience	This document applies to anyone wanting to connect small scale distributed generation to Unison's network.													
Document contributors	<table border="1"> <thead> <tr> <th>Contributors</th><th>Name and Position Title</th><th>Approval Date</th></tr> </thead> <tbody> <tr> <td>Owner</td><td>Máirín Gallagher Customer Experience Manager</td><td>23/01/2025</td></tr> <tr> <td>Authoriser</td><td>Gaganpreet Chadha General Manager – Networks and Operations</td><td>12/01/2026</td></tr> <tr> <td>Approver</td><td>Jason Larkin General Manager – Customer, Commercial and Regulatory</td><td>26/01/2026</td></tr> </tbody> </table>		Contributors	Name and Position Title	Approval Date	Owner	Máirín Gallagher Customer Experience Manager	23/01/2025	Authoriser	Gaganpreet Chadha General Manager – Networks and Operations	12/01/2026	Approver	Jason Larkin General Manager – Customer, Commercial and Regulatory	26/01/2026
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	<p>Recommended renewal period – annually, or earlier, if any of the following occur:</p> <ul style="list-style-type: none"> • changes to legislation, regulation or best practice • continuous improvements • system changes • audit findings, or • user feedback that impacts this document. 													
Referenced Documents	<p>Legislation</p> <ul style="list-style-type: none"> • Electricity Industry Participation Code 2010 • Electricity (Safety) Regulations 2010 • Electricity Act 1992 • Health and Safety at Work Act 2015 <p>Standards</p> <ul style="list-style-type: none"> • AS/NZS 4777.1:2024 Grid connection of energy systems via inverters Part 1: Installation requirements • AS/NZS 4777.2:2020 Grid connection of energy systems via inverters Part 2: Inverter requirements 													

Referenced Documents
(cont)

- AS/NZS 5033:2021 Installation and safety requirements for photovoltaic (PV) arrays
- AS/NZS 3000:2018 Electrical Installations (known as the Australian/New Zealand Wiring Rules)

Unison Policies

- FC0021 Capital Contributions Policy
- FC0043 Conflicts of Interest, Gifts and Hospitality Policy

Unison Standards

- CM2001 Network Connection Standard
- NK1408 Applications and Standards for Connection to a Distributed Generation Greater than 10kW in Total
- NK8011 Technical Requirements for Connecting Distributed Generation under 500kVA
- NK8010 Technical Requirements for Connecting Distributed Generation over 500kW

Unison Forms

- Small Scale Distributed Generation Commissioning and Test Report Template

Other documents

EEA Guide *Connection of Small-Scale Inverter-Based Distributed Generation*, 2018.

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Definitions

Applicant	An applicant applying for the connection of distributed generation facility that could be owned by the applicant or by a third party, e.g. an electrician or installer can apply to install distributed generation on a customer's behalf.
Code	Electricity Industry Participation Code 2010.
Competitive bids	Where there is a final application received within 20 business days of another final application that would affect the approval of the first (pursuant to clause 17, Part 2 or Part 6 of the Code).
Congestion/ congested	<p>Congestion in the network occurs if an additional unit of electricity injected into the network would:</p> <ul style="list-style-type: none"> • cause a component in the network (e.g. a circuit or a transformer) to operate beyond its rated maximum capacity, or • give rise to an unacceptably high level of voltage at the point of connection to the network.
Customer	An electricity distribution customer who is connected to Unison's distribution network. This is the person or company listed for billing purposes against the Installation Control Point (ICP).
DG	Distributed generation – electrical power generation by any means, including from stored electricity, which is interconnected to Unison at a Point of Common Coupling. All generation that is connected to the Unison network is distributed generation.
DG hosting capacity	<p>The maximum active export power (in watts), per ICP with DG installed on a LV network, which can be tolerated without causing voltage or current limits to be exceeded in the network, for a given DG penetration level.</p> <p>See the EEA Guide <i>Connection of Small-Scale Inverter-Based Distributed Generation</i>, 2018.</p>
DG penetration level	The proportion of ICPs in a given LV network that have export-capable DG installed.
Distribution service	All services required by or provided to a customer pursuant to the approved Tariff Schedules.

Distribution system	All electrical wires, equipment, and other facilities owned or provided by Unison for the provision of electricity to customers.
Embedded generation	Same as distributed generation (DG).
Emergency	An actual or imminent condition or situation, which jeopardises Unison's distribution system integrity or safety of persons.
Generator	An individual electrical generator or generating system (including required equipment, protective equipment and structures) that generates electricity.
Hosting Capacity	Calculated maximum allowable injection limit at a specified location.
ICP	Installation Control Point - this is the individual number allocated to each point where customer power usage is measured for billing by the retailer.
Metering	The measurement of electrical power flow in kWh, both from the network (import) and injecting back into the network (export).
Metering equipment	All equipment, and hardware including meter cabinets, conduit, etc that is necessary for metering. The metering equipment is managed by the retailer.
Network company	Unison is a network company and is also referred to as the <i>Electricity Lines Business or Lines Company</i> . Network companies are regulated by the Commerce Commission. The Commission sets rules for the delivery prices the company can charge, and target levels of network reliability.
Point of common coupling	This is the point on the network where a consumer's ICP is connected to other consumers.
SSDG	Small Scale Distributed Generator – capacity does not exceed 10kW.
Retailer	An Electricity Retailer – the company that supplies electricity to consumers with installations connected to the distributor's network.

1. Distributed Generation Overview

1.1 What is distributed generation?

Distributed generation is a small-scale power generator (SSDG) installed at a residential or small commercial premises with an existing electricity connection (ICP) to a distribution network. Small generation systems are likely to include photovoltaic (solar cells), micro hydro, and micro wind.

1.2 Why Unison must be informed of a generation connection

The Electricity Industry Participation Code 2010 (the Code) requires Distributors (Unison) to be informed if a generation is to be connected to electrical circuits. This is a requirement as distributed generation is connected to the network and could result in electricity flowing into the network. Distributors must be informed:

- for reasons of safety associated with the generation and network, and
- to ensure the integrity of market reconciliation.

If you intend to connect distributed generation or make changes to existing distributed generation, you will need to notify Unison and gain approval.

1.3 How to gain approval

To gain approval for the connection, you must comply with the requirements of this document. Even if your power generation is very small you must gain approval from Unison to ensure:

- it can be operated safely, and
- it meets electricity market requirements of the Code.

1.4 Processing of applications to be Arm's Length

When considering and processing applications to connect distributed generation, Unison will deal with all applicants in the same way (without the perception for or actual influence of a conflicted party). Where there is a conflict of interest then this will be properly identified and managed in accordance with Unison's **FC0043 Conflicts of Interest, Gifts and Hospitality Policy**.

All applications will be processed on a 'first in, first served' basis.

Where Unison considers that applications are competitive bids then 'first in, first served' will prevail (unless Unison determines that the purpose of Part 6 of the Code justifies a different variance from this principle).

1.5 When Unison does not need to be notified

Unison does not need to be notified if your generation system is:

- stand-alone, and
- not connected to an electrical installation connected to Unison's network.

1.6 DG larger than 10kW

For generation larger than 10kW, complete the application form **DG2 – Initial Application to Connect Distributed Generation of 10 kW or More**. This form is available on Unison's website www.unison.co.nz.

1.7 Information on selecting your system

For...	Information can be...
renewable energy sources	found on the Energy Efficiency and Conservation Authority (EECA) website http://www.eeca.govt.nz/
solar energy generation	obtained from EECA.
identifying, selecting and installing an appropriate Distributed Generation system	obtained from your electrician, electricity retailer or electrical equipment supplier.

1.8 Before purchasing a system or changing an existing system

It is **important** that before choosing your system you have either:

1	<ul style="list-style-type: none"> • determined that your system is eligible for application under Part 1 of the Code including: <ul style="list-style-type: none"> - being less than or equal to 10kW in capacity, having an inverter on the list of approved inverters, and - being in an area of Unison's network not identified as subject to congestion. • completed the online DG1 Form: Application to Connect Distributed Generation ≤ 10KW • complied with Unison's Network Connection Standard (CM2001) • complied with the technical standards and safety requirements detailed in Section 2 – Safety and Standards of this document and • received consent from Unison.
2	<ul style="list-style-type: none"> • determined that your system is eligible for application under Part 1A of the Code including: <ul style="list-style-type: none"> - all of the above under Part 1, and - being less than the hosting capacity (see <i>point 5.6 – Hosting capacity</i> below).

2. Safety and Standards

2.1 Overview

Electricity can cause serious harm, injury and damage, and should only be handled by certified electricians or electrical engineers.

Before making any applications, you should ensure that your electrician (or engineering specialist) is involved before any financial commitment has been made.

2.2 Technical standards and safety requirements

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:

- AS/NZS 4777.1:2024 Grid connection of energy systems via inverters Part 1: Installation requirements, except from voltage compliance level in section 4.2, where the compliance level of 230V +/- 10% stated in the Electricity (Safety) Regulations 2010 would apply for installations in New Zealand
- AS/NZS 5033:2021 Installation and Safety requirements for photovoltaic (PV) arrays, and
- AS/NZS 3000:2018 Electrical Installations (known as the Australian/New Zealand Wiring Rules).

Note

Standards can be purchased from Standards New Zealand on their website www.standards.govt.nz.

2.3 System safety

To ensure your system is safe, the system itself must comply with AS/NZS 4777.2:2020 Grid connection of energy systems via inverters Part 2: Inverter requirements.

2.4 Certificate

The vendor of the equipment you intend to use will need to provide you with a certificate. The certificate must show that the equipment:

- has been tested by an independent test organisation in New Zealand (or Australia), and
- meets the above standards.

SAA Approvals is accredited by the Joint Accreditation Service of Australia and New Zealand (JAS-ANZ) as a third party certification body.

A list of inverters currently meeting the standards and approved for connection to Unison's network can be found on Clean Energy Council's website www.cleanenergycouncil.org.au.

3. Procedure to Connect and Install a Small-Scale Distributed Generator (SSDG)

3.1 When to use Use this procedure when you want to install and connect a small-scale distributed generator (SSDG) to your electrical installation at your property.

3.2 Before you begin Before you begin this process, ensure that you have read and understood these guidelines.

3.3 Steps Follow the steps below to connect and install a SSDG.

Step	Action
1	<p>Select the system you wish to install and connect.</p> <p>Note It is important to make sure that the generator you purchase has:</p> <ul style="list-style-type: none"> • complete manufacturer's installation instructions • design specification details, and • certification from the vendor that verifies: <ul style="list-style-type: none"> – it complies with AS/NZS 4777.2:2020, and – it has been tested against the standards by an independent test organisation in New Zealand or Australia. See <i>point 2.4 Certificate</i> above.
2	<p>Select an electricity specialist to help you with your installation.</p> <p>Note This may be your electrician, an electrical engineer, or your electrical contractor.</p>
3	<p>Complete and submit the DG1 Form online to connect distributed generation at your property.</p> <p>For applications to be considered the application must be:</p> <ul style="list-style-type: none"> • fully completed, and • the terms and conditions acknowledged.

Step	Action
3 (cont)	<p>What is Required to Complete the Application Form</p> <p>To fill out the form you will need to know:</p> <ul style="list-style-type: none"> the name and contact details of the distributed generator and, if applicable, the distributed generator's system installer the installation control point (ICP) identifier that applies to the SSDG, if it is known at the time of application the physical location (i.e. the location of the SSDG within the premises) of the SSDG installation the nameplate capacity of the SSDG the SSDG fuel type (e.g. solar, wind, hydro or liquid fuel) the make and model of the inverter to be installed and information as to whether: <ul style="list-style-type: none"> (i) the inverter is: <ul style="list-style-type: none"> - included on the distributor's published list of approved inverters, or - not included on the distributor's published list of approved inverters. In this case the application must include a copy of the inverter's Declaration of Conformance with AS/NZS 4777.2:2020, and (ii) the inverter conforms with the protection settings specified in the distributor's connection and operation standards, and any other relevant information.

Result

Based on the information provided with the application, Unison will determine the appropriate connection process established under the Code to be followed. Either:

- Part 1A – SSDG **complies** with AS/NZS 4777, part 1 and part 2, and Unison's connection and operation standard, and the SSDG capacity is **lower than the specified hosting capacity** (see *point 5.6*) or
- Part 1 – SSDG **complies** with AS/NZS 4777, part 1 and part 2, and Unison's connection and operation standard.

Step	Action						
4	<p>Submit the completed DG1 form online on Unison's website www.unison.co.nz or email dist.gen@unison.co.nz for any application queries.</p> <p>The date of your final application will be the date a sufficiently completed application is received by Unison.</p> <p>Acknowledgement</p> <p>Once Unison receives your application, Unison will acknowledge the receipt of the application:</p> <ul style="list-style-type: none"> • within two business days of receiving the application under Part 1A, and • within five business days of receiving the application under Part 1. <p>All applications received by Unison will be recorded and logged, and progress will be monitored.</p> <p>Application Approval</p> <table border="1"> <thead> <tr> <th>If Unison...</th><th>then Unison will...</th></tr> </thead> <tbody> <tr> <td>approves your application</td><td> <ul style="list-style-type: none"> • return the approved DG1 form following receipt of the application fee payment, and • provide notification of the approval to connect to your nominated electricity retailer. <p>The latest application fee schedules are available on Unison's website:</p> <p>https://www.unison.co.nz/i-need-to/get-connected/to-distributed-generation/dg1-form/</p> </td></tr> <tr> <td>cannot connect your generation for technical reasons</td><td>notify you of the estimated costs of modifications to the connection to enable connection of the proposed distributed generation.</td></tr> </tbody> </table>	If Unison...	then Unison will...	approves your application	<ul style="list-style-type: none"> • return the approved DG1 form following receipt of the application fee payment, and • provide notification of the approval to connect to your nominated electricity retailer. <p>The latest application fee schedules are available on Unison's website:</p> <p>https://www.unison.co.nz/i-need-to/get-connected/to-distributed-generation/dg1-form/</p>	cannot connect your generation for technical reasons	notify you of the estimated costs of modifications to the connection to enable connection of the proposed distributed generation.
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cannot connect your generation for technical reasons	notify you of the estimated costs of modifications to the connection to enable connection of the proposed distributed generation.						
5							
<p>Contact your electricity retailer:</p> <ul style="list-style-type: none"> • to advise them of your intention to install distributed generation at your property, and • to negotiate: <ul style="list-style-type: none"> – the metering costs to provide export metering if this is not already in place, and – any payment arrangements for any excess electricity that you may generate. <p>Note</p> <p>The installation and connection of generation equipment must:</p> <ul style="list-style-type: none"> • be completed by qualified electrical tradespeople, and • comply with all the appropriate regulations, codes and standards. 							

Step	Action
6	<p>Check metering is in place capable of measuring the electricity exported by the distributed generation (injected) into the network.</p> <p>Note This must be in accordance with the:</p> <ul style="list-style-type: none"> • Electricity Industry Participation Code 2010, Part 10 – Metering, and • Unison's Pricing Policy available on Unison's website www.unison.co.nz. <p>Your electrician will be able to explain the requirements to you.</p> <p>Your electrician must guarantee the installation also meets the requirements of AS/NZS 4777.1:2024 and AS/NZS 4777.2:2020. This is to ensure:</p> <ul style="list-style-type: none"> • there is no risk to safety, and • damage does not occur to Unison's network.
7	<p>Arrange for the installation of your generator.</p> <p>Note After installing your generator, your electrician will:</p> <ul style="list-style-type: none"> • complete a testing and commissioning report containing the information identified in <i>Appendix C – Small Scale Distributed Generation Commissioning and Test Report Template</i> • issue a Certificate of Compliance (COC) for the installation with a copy to be provided to Unison • arrange for an electrical inspector to inspect the installation as required for high-risk prescribed electrical work, as defined in the Electricity (Safety) Regulations 2010 • live the connection to your generator, allowing you to generate, and • return a copy of the completed testing and commissioning report including the applied inverter settings (e.g. power quality mode and protection settings) and COC to Unison within 10 business days of connection.

3.4 Warning! Your DG will not be permitted to be connected to Unison's network if it:

- does not meet the applicable standards and legislation, or
- does not match the information provided with your application form.

Unison may request to inspect the distributed generator should there be reason for concern. In the event Unison needs to undertake an inspection, a fee for DG inspection is applicable as provided for in the Code.

4. Connection Costs

4.1 What will you have to pay?

An application fee applies for all applications to connect distributed generation. These fees are a requirement under Part 6 of the Code.

If Unison needs to undertake an inspection of the DG, a fee for DG inspection is applicable as provided for in the Code. The latest application fee schedules are available on Unison's website:

<https://www.unison.co.nz/tell-me-about/electricity/solar-energy/distributed-generation/>

These standards for connection of DG of 10kW or less apply to the connection of DG to a customer's installation connected to the network. The applicable delivery charges associated with the customer's network connection are listed in Unison's pricing schedule available on its website www.unison.co.nz.

As you are likely to require a change in metering equipment to measure surplus electricity generated and injected back into the network, your retailer may charge you additional fees for the import-export meters.

Unison may require a capital contribution towards the cost, if it identifies it must augment any part of its system to provide additional network capacity for a distributed generator applying to be connected in areas of known congestion. Any capital contribution will be determined in accordance with:

- Unison's Capital Contributions Policy (available at www.unison.co.nz), and
- the pricing principles contained in Part 6 of the Code.

If required, Unison will notify you when they have responded to your application. Unison will get your acceptance of these costs prior to any work being carried out.

4.2 Price changes

Unison's pricing is subject to regulation, and the level and structure of our charges may change. Unison reserves the right to make changes to prices in accordance with its terms and conditions.

5. Terms, Conditions, and Technical Requirements of Application and Connection

5.1 Compliance

The distributed generation must comply with:

- all the requirements described in this document, and
- the requirements of NZ Standards and Regulations applicable to distributed generation (see *Section 2 – Safety and Standards*).

5.2 Completion of application form

To avoid delays, it is important all parts of the application form are completed fully by the customer and their electrician.

Unison cannot process application forms if the information supplied is inadequate to progress the connection. In this instance:

- you will be asked to provide further information, and
- the response timeframe may be extended.

5.3 Protection and anti-islanding settings

Protection requirements must comply with AS/NZS 4777.2:2020 Grid connection of energy systems via inverters – Part 2 Inverter requirements, including the following protection and anti-islanding settings.

The inverter automatic disconnection device must incorporate passive anti-islanding protection with the set point values indicated in the tables below. Refer also to AS/NZS 4777.2:2020.

Protective function	Protection function limit	Trip delay time (seconds)	Maximum disconnection time (seconds)
Undervoltage 2 (V <<)	70V	1s	2s
Undervoltage 1 (V <)	180V	10s	11s
Overvoltage 1 (V >)	265V	1s	2s
Overvoltage 2 (V > >)	275V	-	0.2s

Table 1: Passive anti-islanding voltage limit values

5.3
Protection
and anti-
islanding
settings
 (cont)

Under-frequency 1 ($F <$)	Protective function limit value	45Hz
	Trip delay time	1s
	Maximum disconnection time	2s
Over-frequency 1 ($I >$)	Protective function limit value	55Hz
	Trip delay time	-
	Maximum disconnection time	0.2s

Table 2: Passive anti-islanding frequency limit values

Region	Default setpoint
New Zealand	249V
Allowable range	244V to 258V

Table 3: Settings for $V_{nom-max}$

Once the system has been installed, and commissioned by the certified installer or electrician, the protection or anti-islanding settings must **at all times** remain compliant with:

- protection requirements incorporated in AS4777.2:2020, and
- the requirements of this document.

5.4 Power
quality modes

5.4.1 Overview

All inverters must have the power quality modes Volt/VAr and Volt/Watt enabled by default according to AS/NZS 4777.2:2020.

The power quality modes adjust the real power and reactive power of the inverter to support the network voltage, e.g. the inverter absorbs reactive power when the grid voltage is high which then reduces the voltage rise (Volt/VAr). This benefits both the network and the customer. The customer can inject more real power with the help of reactive power and the network has dynamic control not to exceed regulatory voltage limits.

The second mode (Volt/Watt) only reduces real power at higher voltages, when the Volt/VAr mode was not sufficient to suppress the voltage. The advantage is that it only limits export if the voltage is high.

The benefit of power quality modes is they avoid the inverter tripping on overvoltage and, therefore, continue to export power.

For multiple mode inverters with connected energy storage, an additional Volt/Watt mode must be enabled to limit charging of the energy storage from the grid at peak times. This ensures energy storage charging does not cause network undervoltage.

5.4 Power quality modes (cont)

5.4.2 Volt-Watt response

The New Zealand settings for Volt-Watt control are provided in the table below. Refer to AS/NZS 4777.2:2020.

Default value	V_{w1}	V_{w2}
Voltage	242V	250V
Inverter maximum active power output level (P) % of S rated	100%	20%

Table 4: Volt-Watt response default set-point values

5.4.3 Volt-VAr response

The New Zealand settings for Volt-VAr control are provided in the table below. Refer to AS/NZS 4777.2:2020.

Default value	V_{v1}	V_{v2}	V_{v3}	V_{v4}
Voltage	207V	220V	235V	244V
Inverter reactive power level (Q) % of S rated	60% supplying	0%	0%	60% absorbing

Table 5: Volt-VAr response set-point values

Note

Inverters may operate at a reactive power level with a range up to 100% supplying or absorbing.

5.5 Multi-mode inverters with battery storage

The Volt-Watt response modes for inverters with energy storage when charging is detailed in the table below. Refer to AS/NZS 4777.2:2020.

Default value	V_{w1-ch}	V_{w2-ch}
Voltage	216V	224V
$P_{charge}/P_{rated-ch}$	20%	100%

Table 6: Volt-Watt response set-point values for multiple mode inverters with energy storage when charging

Note

P_{charge} refers to power input level through the grid-interactive port.

$P_{rated-ch}$ refers to the rated active power input through the grid-interactive port used for charging the energy storage.

5.6 Hosting capacity

Hosting capacity is the capability of the network to host distributed generation. It is based on an average capacity on the LV network.

Unison has adopted a default 10kW limit for single phase applications in addition to the prescribed 5kW in AS/NZS 4777.1:2024. This does not overwrite the prescribed hosting capacity limitation where identified.

Distributed generators, which have a maximum export less than the prescribed hosting capacity, can connect to the network under the streamlined process under **Part 1A** of the Code. They must:

- comply with Inverter requirements under AS/NZS 4777.1:2024 and AS/NZS 4777.2:2020
- comply with all the operational requirements described in this document, and
- provide evidence of power quality modes settings and Certificate of Compliance.

Notes

- Distributed generators with a maximum export above the prescribed hosting capacity will need to be assessed by Unison and follow the process under **Part 1** of the Code. All other applications shall apply through the **Part 1A** process. Distributed generation capacity above 10kVA follow the process under **Part 2** of the Code. Please submit a **DG2** form, available on our website: <https://www.unison.co.nz/i-need-to/get-connected/to-distributed-generation/dg2-form/>.
- The capacities are estimated on average numbers of ICPs per transformer size. Approximately half the transformers of a given capacity have a higher number of ICPs, therefore, the transformer hosting capacity is exhausted before the stated PV penetration is reached.

5.7 Effects on other customers

Normally, a small generator complying with the standards required by this document is unlikely to cause problems for Unison or other customers on the network.

Unison may require the generation to be disconnected, if the distributed generation system:

- causes power quality, voltage fluctuation, flicker, transient voltage damage, or
- is a nuisance to other customers at the Point of Common Coupling,

This will ensure Unison can maintain the network operational service levels and power quality in line with its obligations under the Electricity Act 1992. In such an event Unison will:

- investigate the cause, and
- work with the distributed generator to identify any issues with the distributed generation.

Unison will not provide any compensation should this be necessary.

5.8 Interruption

If any fault occurs on a distribution network, any distributed generator must, through their own protection systems, automatically disconnect from the network. The customer has sole responsibility for the safety of their generating plant and equipment under such conditions.

5.9 Regulated terms for connection of distributed generation

The terms for connection of distributed generation to Unison's network are the **Regulated terms for connection of distributed generation** found in Part 6 of the Electricity Industry Participation Code 2010, Schedule 6.2.

Appendix A – Congestion Management, Curtailment and Interruption Policy for Distributed Generation of 10kW or less

Congestion

Unison's network is primarily designed and established for electricity flows in one direction. Increasing numbers of distributed generation could introduce bi-directional electricity flow on the network. This may lead to congestion of Unison's low voltage and high voltage networks.

Network congestion occurs if an additional unit of electricity injected into the network would:

- cause a component in the network (for example, a circuit or a transformer) to operate beyond its rated maximum capacity, or
- give rise to an unacceptably high level of voltage at the point of connection to the network.

Managing congestion

Unison manages its network congestion by:

- ensuring distributed generation connection is in unconstrained areas or accompanied by appropriate network upgrade, and
- implementing real-time operational curtailment rules and arrangement on case-by-case basis.

Appendix B – Small Scale Distributed Generation Commissioning and Test Report Template

Small Scale DG Commissioning and Test Report



Installation Test by: _____ Date of Completed Test: _____

Loss of Network Supply Auto-Isolation Test Proven: Yes/No

Auto-isolation Disconnection Speed (seconds): _____

Auto-restoration (existing generator) after Specified Delay Proven: Yes/No

MEM earth test results (ohms):

R-N (ohms): _____ W-N (ohms): _____ B-N (ohms): _____

Protection Settings (attached details if required)

Voltage and Frequency Protection Settings

Parameters	Minimum Acceptable Setting	Maximum Acceptable Setting	Maximum Disconnection Time (seconds)
Over-voltage (greater than 230V) ¹			
Under-voltage (less than 230V)			
Over-frequency (greater than 50Hz)			
Under-frequency (less than 50Hz)			

Other Protection Settings Comply with AS/NZS 4777.2:2020: Yes/No

Electrical Inspection to AS/NZS 3000:2018 and Electricity (Safety) Regulation 2010 completed: Yes/No

Name of Electrical Inspector: _____

Other Test Specified by Unison: _____

A Certificate of Compliance (COC) and Record of Inspection (ROI) from a registered electrician/licensed electrical inspector that the DG complies with the Electricity (Safety) Regulations 2010 should accompany this report.

Completed report including COC must be forwarded to:

New Connections
Unison Networks Limited
1101 Omahu Road
PO Box 555
Hastings 4156
dist.gen@unison.co.nz

Report completed by: _____

Address: _____

Date: _____

¹ Single-stage over-voltage protection

Appendix C – Summary of Document Changes

Date	Version No.	Changes to Document	Owner	Authoriser	Approver
09/06/2006	1.0	New document	Policy & Practice Manager	Customer Relations Manager	GM – Networks & Operations
26/06/2007	1.1	Addition of Appendix A Application Form	Commercial Manager	GM Networks & Operations	CEO
05/08/2014	2.0	<p>Full review and update to new template.</p> <p>Document renamed to Applications and Standards for Connection to a Distributed Generation Less than 10kW.</p> <p>Update to references and links to Unison's information and Application process for connection of DG.</p> <p>External website links updated.</p> <p>Specific reference added; connection being under regulated terms for connection of distributed generation, Part 6 of The Electricity Industry Participation Code 2010 – Schedule 6.2.</p>	Commercial Manager	GM Commercial	GM Commercial
12/12/2016	3.0	<p>Full review to reflect:</p> <ul style="list-style-type: none"> updates effective October 2016 to the Electricity Industry Participation Code 2010 to incorporate the updated standard, AS4777.2:2015 (Grid connection of energy systems via inverters – Part 2 Inverter requirements), and Part 1 A process for DG applications. <p>Update to form in Appendix A.</p> <p>Addition of Appendix B and C.</p>	Commercial Manager	GM Commercial	GM Commercial

Date	Version No.	Changes to Document	Owner	Authoriser	Approver
19/12/2018	4.0	<p>Full review.</p> <p>Reference to fax removed from procedure as a means of contacting/sending form</p> <p>Form updated in Appendix A.</p> <p>Review period for document set to 12 months to ensure document complies with current Code obligations and reflects current processes. The Electricity Authority are consulting on some potential changes to inverter standards, approval processes, and congestion management requirements. Once this consultation process is completed and the Authority's decision is published these will be included in the document over the next 12 months.</p>	Commercial Manager	GM Commercial	GM Commercial
10/08/2020	5.0	Document reviewed with no changes made. Unison waiting decision from Electricity Authority on changes to Part 6 of Code, including inverter standards, settings and congestion management. This decision is expected in 2021. Document to be reviewed once decision has been made.	Commercial Manager	GM Commercial	GM Commercial
22/09/2021	6.0	Document reviewed with no changes made. Unison waiting decision from Electricity Authority on changes to Part 6 of Code, including inverter standards, settings and congestion management. This decision is expected in late 2021. Document to be reviewed and updated once decision has been made.	Commercial Manager	GM Commercial	GM Commercial

Date	Version No.	Changes to Document	Owner	Authoriser	Approver
26/01/2026	7.0	<p>Full review.</p> <ul style="list-style-type: none"> Updates to incorporate release of AS/NZS 4777.2:2020 and AS/NZS4777.1: 2024. New definitions: DG hosting capacity; DG penetration level. New Point 1.4 Processing of applications to be Arm's Length Section 5 updated, in particular points 5.3, 5.4 and 5.5. New point 5.6 Hosting capacity Updated to reflect 10kW single phase default limit External website links updated. References to DG1 form updated to reflect its change to an online form. Appendix B Form updated. 	Customer Experience Manager Future Constraints Team Leader	GM Networks and Operations	GM Customer, Commercial and Regulatory