9 February 2017

Part 6 – distributed generation applications

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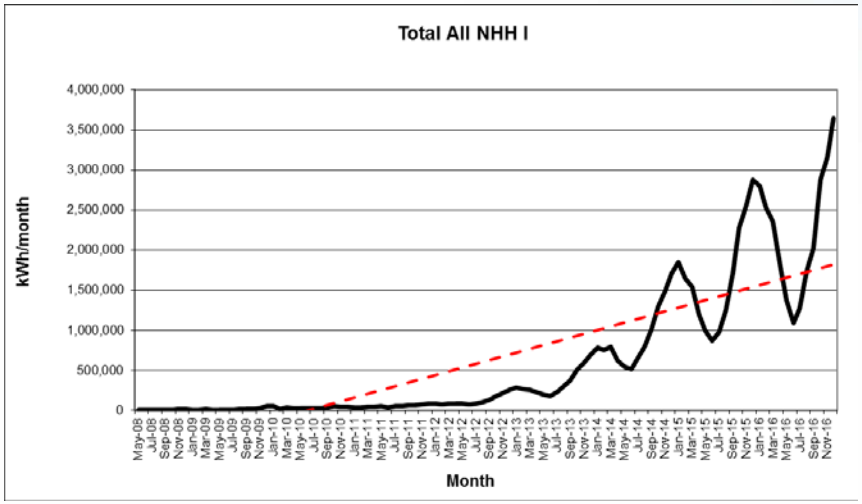
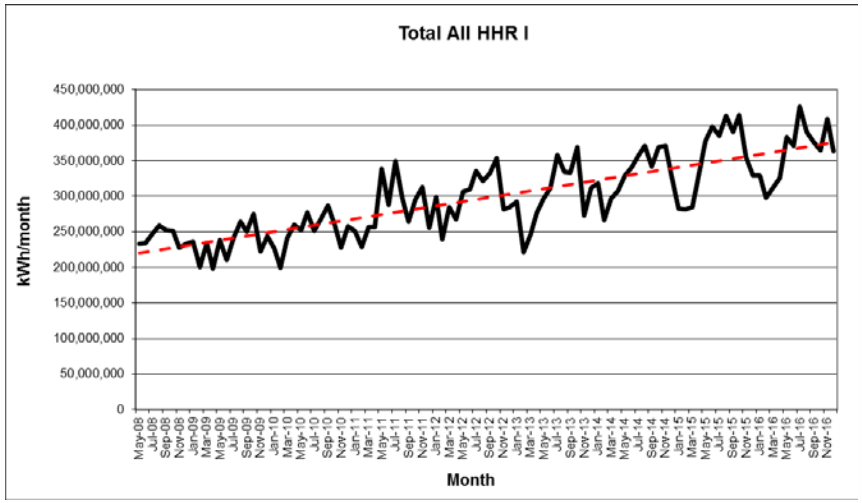
COMPETITION • RELIABILITY • EFFICIENCY

EMBEDDED GENERATION TRENDS





Embedded generation			
Fuel type	ICP identifiers	Installed capacity in MW	% of total capacity
Bio-mass	5	8.00	0.66%
Fresh water	95	288.24	23.85%
Geothermal	6	144.30	11.94%
Industrial processes	9	137.70	11.39%
Liquid fuel	123	103.40	8.56%
Natural gas	11	95.90	7.94%
Other	29	119.76	9.91%
Solar	12,215	46.86	3.88%
Undefined	10	0.02	0.00%
Wind	79	264.34	21.87%
Electric vehicle	-	-	0.00%
Tidal	1	0.00	0.00%
Total	12,583	1,209	

- Part 6 of the Code regulates connection requirements
- The Code requires all electricity conveyed to be measured (unless gifted)

ACT DEFINITIONS

- "participant" under the Electricity Industry Act 2010 (Act)

  ***industry participant**, or **participant**, means a person, or a person belonging to a class of persons, identified in section 7 as being a participant in the electricity industry*

- Section 7 of the Act lists who is a participant

  7 Industry participants

  (1) The following are industry participants for the purposes of this Act:

  (a) a generator:

  …

  (g) a person, other than a generator, who generates electricity that is fed into a network:

- definitions of "generator" and "generation" in Act

  ***generator** means a business engaged in generation*

  ***generation** means the generation of electricity that is fed into the national grid or a network*

- So, under the Act, a person or class of persons that has generation on their premises that can inject electricity into a network is a participant and can be regulated in the Electricity Industry Participation Code 2010 (Code)

DEFINITIONS UNDER PART 1 OF THE CODE

- "distributed generator" definition

  distributed generator**, for the purposes of Part 6, means a person who owns or operates, or intends to own or operate, **distributed generation

- "distributed generation" definition

  ***distributed generation** means **generating plant** that is **connected**, or proposed to be **connected**, but does not include—*

  *(a) **generating plant connected** and operated by a **distributor** for the purpose of maintaining or restoring the provision of **electricity** to part or all of the **distributor's distribution network**…*

  *(b) **generating plant** that is only momentarily **synchronised** with the **distribution network** for the purpose of switching operations to start or stop the **generating plant***

- "generating plant" definition

  generating plant** means equipment collectively used for generating **electricity

- "embedded generator" definition

  embedded generator** means a **generator** who owns or operates 1 or more **embedded generating stations

DISTRIBUTED GENERATORS ARE PARTICIPANTS

Accordingly, a distributed generator is an industry participant under section 7(1)(g) of the Act and must comply with the Code if it is

- directly connected to a distribution network
- connected to a consumer installation that is connected to a distribution network

Under Part 6 of the Code, a distributed generator must obtain approval from the distributor before:

- connecting new DG whether on regulated terms or other agreed terms
- continuing an existing connection if:
  - a connection contract has to be extended or has expired
  - there is no existing connection contract and the regulated terms do not apply
  - the distributed generator wants to change the nameplate capacity or fuel type of the distributed generation

KEY CODE OBLIGATIONS #1

- Purpose of Part 6 – clause 6.2: to enable the **connection** and continued **connection** of **distributed generation** if **connection** is consistent with **connection and operation standards**

- Part 6 of the Code sets out:
  - 3 different application and approval processes for connecting DG of different nameplate capacities:
    - Part 1 of Schedule 6.1(≤10kW)
    - Part 1A of Schedule 6.1 (simpler process for ≤10kW in specified circumstances)
    - Part 2 of Schedule 6.1(>10kW)
  - default terms of connection (the regulated terms)
  - a dispute resolution process
  - pricing principles and information disclosure guidelines (though the parties can contract out of these by mutual agreement)

- Parts 10, 11 and 15 place additional obligations on distributors and traders

KEY CODE OBLIGATIONS #2

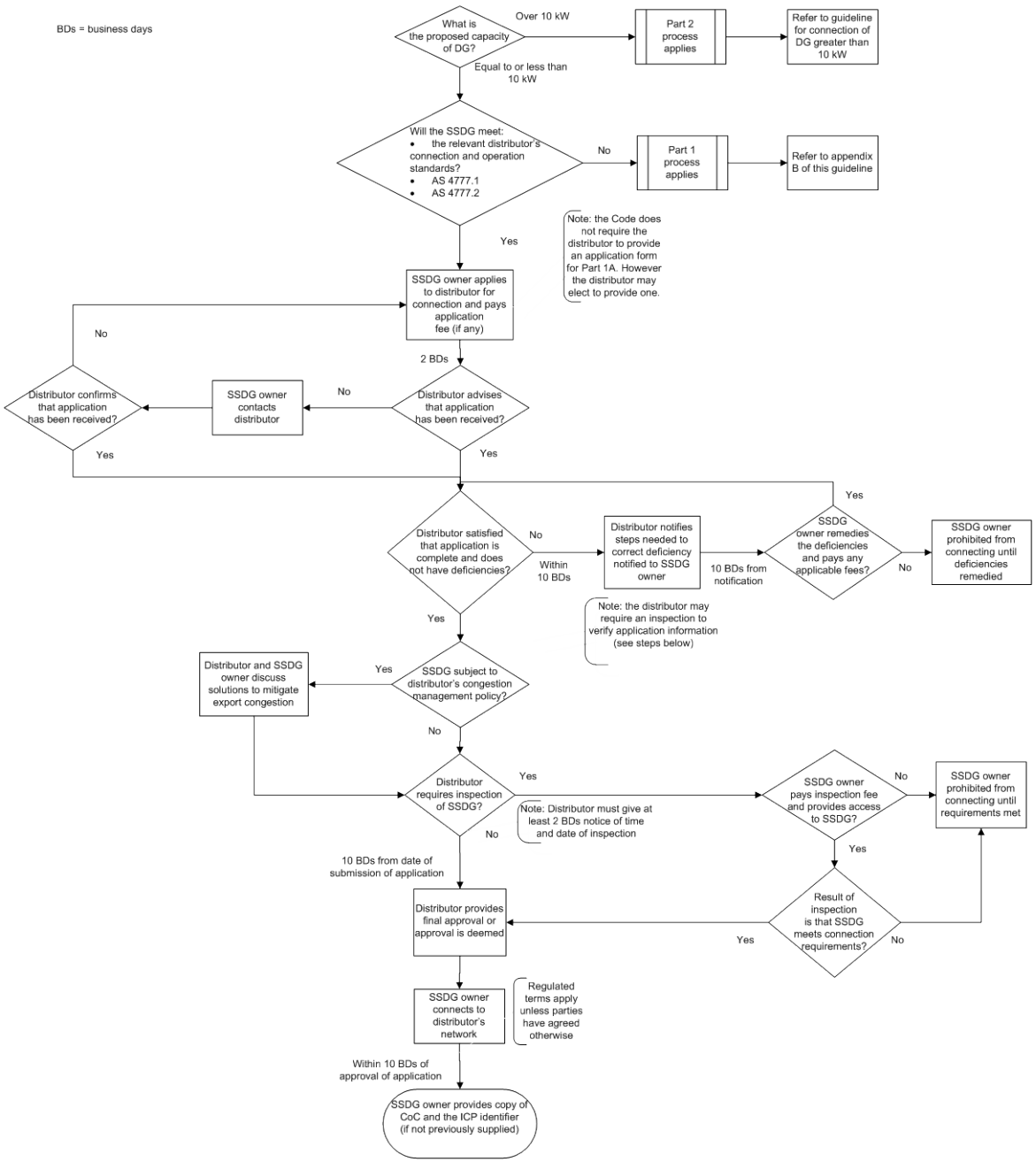
- Clause 6.3: distributor must make listed information publicly available (at website and office), including:
  - distributor's **connection and operation standards**, which are:
    - ***distributor's*** *requirements in publicly available policies and standards relating to the* ***connection*** *of* ***distributed generation*** *and the operation of the* ***distribution network***
    - *include requirements relating to the planning, design, construction, testing, inspection, and operation of* ***assets*** *that are, or are proposed to be,* ***connected****; and*
    - *must reflect, or are consistent with,* ***reasonable and prudent operating practice****; and*
    - *includes the* ***distributor's congestion management policy***
  - *a list of all locations on its* ***distribution network*** *that the* ***distributor****—*
    - *knows to be subject to* ***export congestion****; or*
    - *expects to become subject to* ***export congestion*** *within the next 12 months*
  - *a list of the makes and models of inverters that the* ***distributor*** *has approved for* ***connection*** *to its* ***distribution network****;*

KEY CODE OBLIGATIONS #3

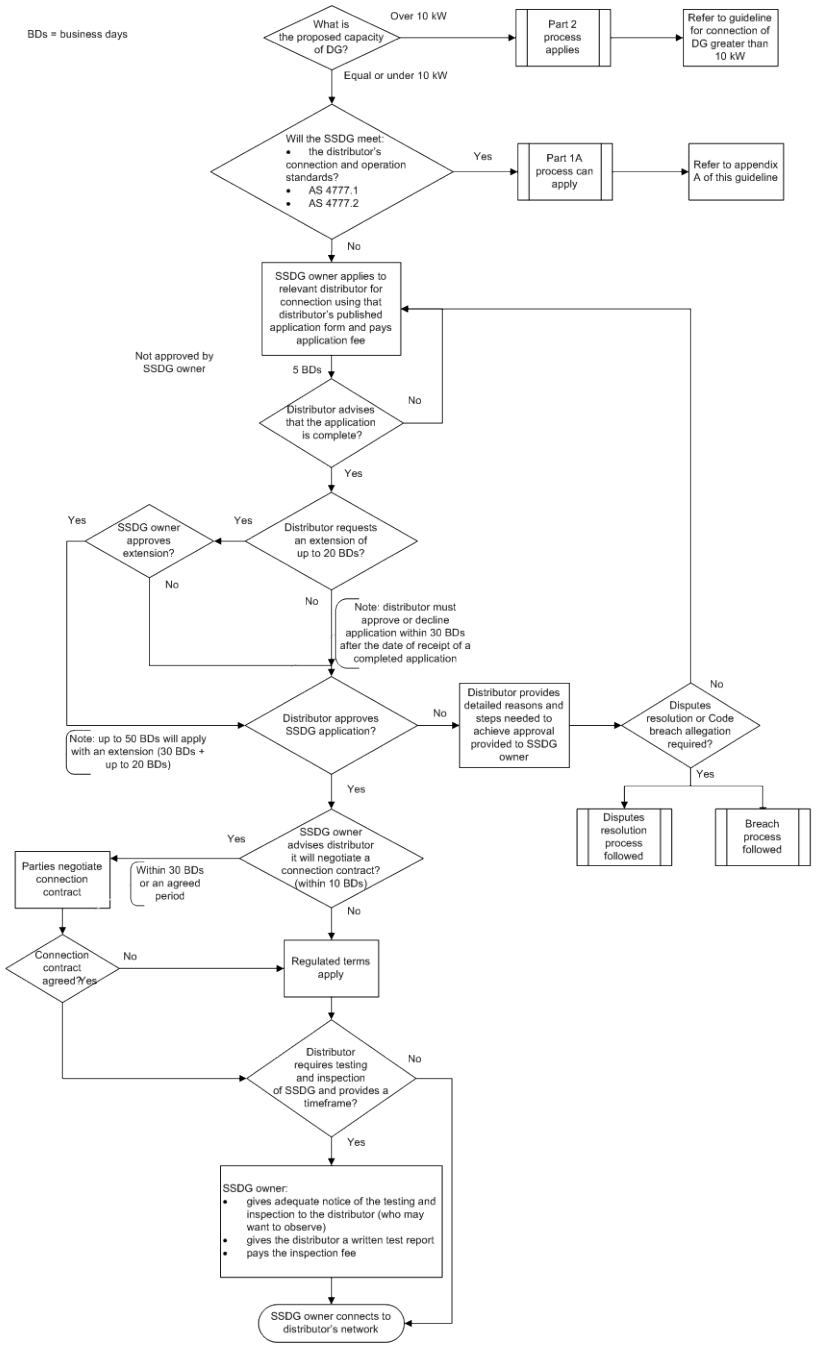
Managing **export congestion** on a network:

- according to distributor's congestion management policy, which must reflect **reasonable and prudent operating practice**
- clause 9D of Schedule 6.1: for distributed generators applying to connect DG or continue an existing connection of DG under Part 1A of Schedule 6.1 to a location on the distributor's network that is on distributor's list of congested areas:
  - distributor may advise the distributed generator that the distributed generation may be subject to export congestion as set out in the distributor's congestion management policy; and
  - distributor must take reasonable steps to work with the distributed generator to assess whether solutions exist to mitigate the export congestion.

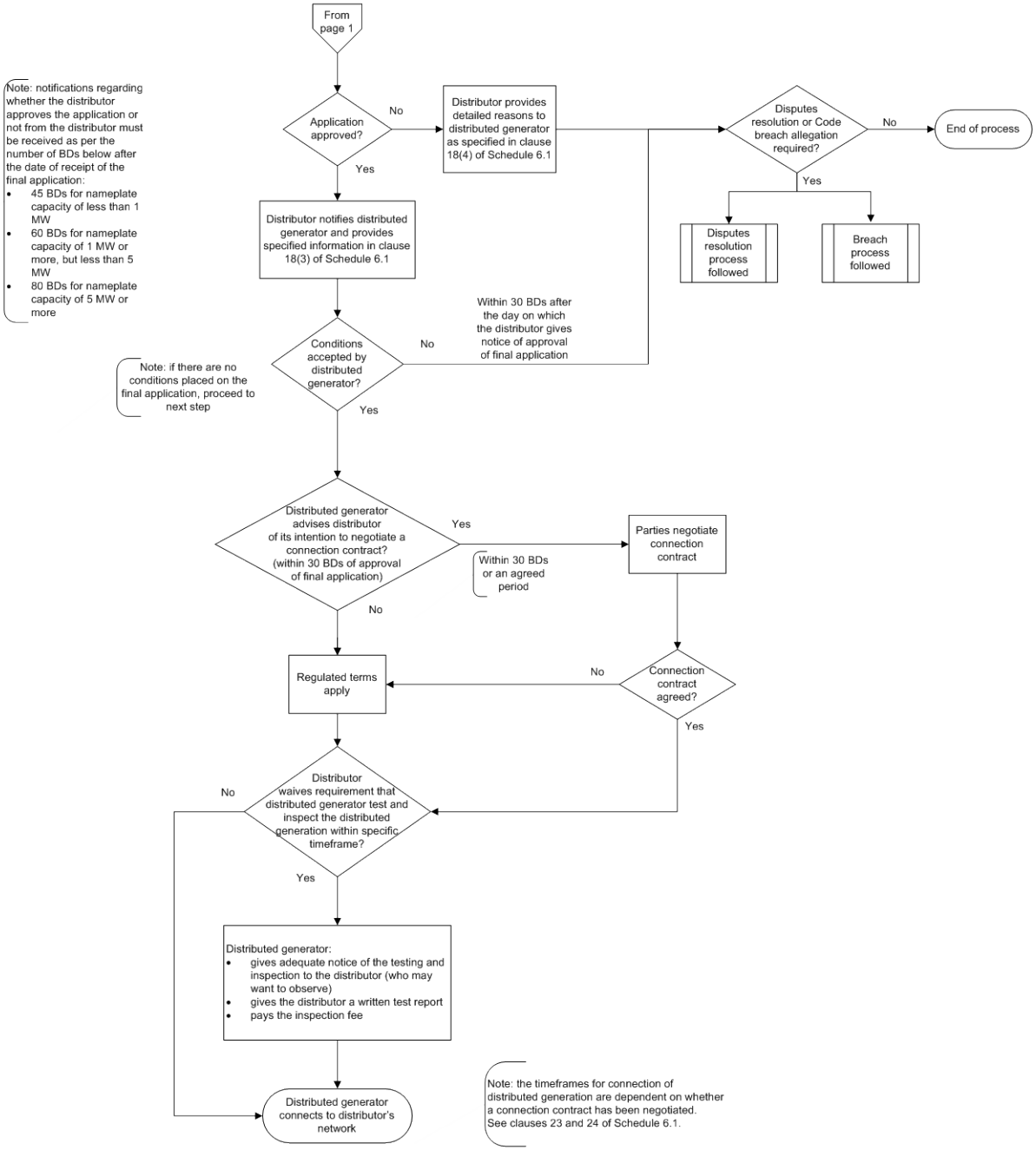
Connection of small scale distributed generation (equal to or less than 10 kW) to a distributor's network under the Part 1A process



Connection of small scale distributed generation (equal to or less than 10 kW) to a distributor's network under the Part 1 process



Connection of distributed generation greater than 10 kW to a distributor's network under the Part 2 process



DG METERING REQUIREMENTS

- Clause 4 of Schedule 6.2 of Part 6 of the Code states

4 Installation of meters and access to metering information

(1) [Revoked]

*(2) The **distributed generator** must give the **distributor**, at the **distributor's** request, the interval data and cumulative data recorded by the **metering installations** at the **point of connection** at which the **distributed generation** is **connected** or is proposed to be **connected**.*

*(3) The **distributed generator** must provide **reactive** metering if—*

*(a) the **meter** for the **distributed generation** is part of a **category 2 metering installation**, or a higher category of **metering installation**; and*

*(b) the **distributed generator** is required to do so by the **distributor**.*

*(4) The **distributor's** requirements in respect of metering measurement and accuracy must be the same as set out in Part 10 of this Code.*

- Distributed generation must be metered in accordance with the metering requirements in Part 10

DG METERING REQUIREMENTS

- Part 10 of the Code states

10.13 Electricity conveyed

*(1) A **participant** must use the quantity of **electricity** measured by a **metering installation** for a **point of connection** as the **raw meter data** for the quantity of **electricity** conveyed through the **point of connection**.*

*(2) Subclause (1) does not apply to **electricity** that is—*

(a) estimated in accordance with this Code; or

*(b) supplied by an **embedded generator** who has given the **reconciliation manager** a notification under clause 15.13.*

*(3) A **metering equipment provider** must, for each **point of connection** at which it is the **metering equipment provider**, ensure that all **electricity** conveyed through the **point of connection** is measured by a **metering installation** or **metering installations**, in accordance with this Part.*

*(4) Despite subclause (3), a **metering equipment provider** is not required to measure **electricity** conveyed through a **point of connection** if the **electricity** is—*

*(a) **unmetered load**; or*

*(b) supplied by an **embedded generator** who has given the **reconciliation manager** a notification under clause 15.13.*

- Clause 15.13 has no maximum quantity, and no measurement means no payment

- Despite 10.13(2) and (4), a distributor may require an embedded generator to measure electricity injected into its network and report it in its EIEP returns

IF STORAGE BATTERIES INJECT ELECTRICITY INTO A NETWORK

- Meets the definition of a participant under section 7(1)(g) of the Act and is "distributed generation" under the Code

Section 7 of the Electricity Industry Act 2010

(1) The following are industry participants for the purposes of this Act:

…

(g) a person, other than a generator, who generates electricity that is fed into a network:

Part 1 of the Code definitions

***distributed generation** means **generating plant** that is **connected**, or proposed to be **connected**, but does not include—*

*(a) **generating plant connected** and operated by a **distributor** for the purpose of maintaining or restoring the provision of **electricity** to part or all of the **distributor's distribution network**……..*

*(b) **generating plant** that is only momentarily **synchronised** with the **distribution network** for the purpose of switching operations to start or stop the **generating plant***

generating plant** means equipment collectively used for generating **electricity

IF STORAGE BATTERIES INJECT ELECTRICITY INTO A NETWORK

- Storage batteries that inject electricity into a network must:
  - follow the connection process set out in Part 6 of the Code
  - be metered in accordance with Part 10 of the Code
  - if the point of connection for the battery is new, the battery is a distributed generator and there is an ICP at the point of connection, and
    - the requirements of clause 1 of Schedule 11.1 apply

      1 ICP identifiers

      *(1) A **distributor** must create an **ICP identifier** for each **ICP** on each **network** for which the **distributor** is responsible in accordance with the following format:*

    - the requirements of clause 10.31 apply

      10.31 Electrically connecting ICP that is not NSP

      *Despite clause 10.28(4), a **distributor** must not **electrically connect** an **ICP** that is not an **NSP** unless—*

      *(a) the **trader** trading at the **ICP** has requested the **connection**; or*

      *(b) the **metering equipment provider** who has an arrangement with the **trader** trading at the **ICP** has requested **temporary energisation** of the **ICP**.*

IGNORE THE BELOW

CONNECTING DG UNDER PART 1 OF SCHEDULE 6.1 (≤10KW)

- Part 1 of Schedule 6.1

CONNECTING DG UNDER PART 1A OF SCHEDULE 6.1 (≤10KW IN SPECIFIED CIRCUMSTANCES)

- distributed generators may apply to connect DG under the Part 1A process: if the DG installation
  - is designed and installed in accordance with AS 4777.1; and
  - uses an inverter that has been tested and issued a Declaration of Conformity with AS/NZS 4777.2 by a laboratory with accreditation issued or recognised by International Accreditation New Zealand; and
  - has protection settings that meet the distributor's connection and operation standards.
- distributed generator applies using distributor's publicly available application form and must:
  - provide any information required by the Code (distributor must give written notice within 5 BDs to the distributed generator advising if application complete)
  - pay the application fee (if any) specified by the distributor in accordance with the Code
  - give the distributor a copy of the installation Certificate of Compliance and the ICP identifier within 10 BDs of distributor's approval.
- Unless parties agree otherwise, regulated terms apply after distributor's final approval

CONNECTING DG UNDER PART 2 OF SCHEDULE 6.1 (>10KW)

- 2 stage application process applies to DG that has a nameplate capacity over 10kW

- Stage 1
  - DG provides initial application to using distributors publicly available application form
    - uses distributors publicly available application form
    - provides any information required by the Code or distributor
    - pay the application fee (if any) specified by the distributor in accordance with the Code
    - within 5 business days distributor must give written notice to the applicant advising if the application is complete or not
  - Distributor has
    - 30 business days from receipt of a completed initial application to give the distributed generator information specified in Clause 12 of Sch 6.1
    - 10 business days from the date of request from the distributed generator further information reasonably necessary

CONNECTING DG UNDER PART 2 OF SCHEDULE 6.1 (>10KW)

- Stage 2
  - If the DG wishes to proceed must make final application it must no later than 12 months after receiving information from the distributor, unless
    - parties agree that a final application is not required, and
    - there are no persons notification is required to under clause 16 of Schedule 6.1
  - If distributor receives a final application deliver an approval or decline notice to the DG after the date of receipt of the final application, no later than
    - 45 BDs if distributed generation has a nameplate capacity <1 MW; or
    - 60 BDs if distributed generation has a nameplate capacity > 1 MW but <5 MW
    - 80 BDs if distributed generation has a nameplate capacity > 5 MW
  - If the DG wishes to proceed
    - DG must give the distributor written notice within 30 BDs
    - DG and generator can either
      - agree to use regulated terms, or
      - have 30BDs to negotiate a contract or regulated terms apply