

Update: *Guide for the connection of small-scale inverter-based distributed generation*
GREEN Grid Industry Advisory Panel - Researchers Meeting

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DG Guideline

Summary

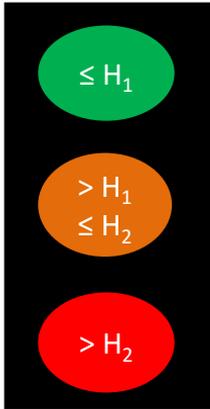
- Consultation draft published by Electricity Engineers' Association in May 2016
- Consultation feedback discussed at Network Analysis Group meeting held on 13th October 2016. Decisions were made on key issues and recommendations, including submitting a Participation Code change proposal.
- Guideline currently being revised to incorporate feedback decisions.
- Electricity (Safety) Regulations: major issue to resolve.



DG Guideline

13 October NAG meeting – some key issues and decisions

Traffic light system



- Issue: At present, DG connections applied for via the Participation Code's *fast-track* Part 1A process cannot be made to comply with the DG Guideline's *traffic light system* of connection requirements (such as requiring **inverter volt-var response** or **manual assessment**)
- Solution proposed by the Electricity Authority: auto-assessed application via Part 1A only if -
 1. Inverter has volt-var and volt-watt response modes, AND
 2. Inverter is compliant to the new inverter standard AS/NZS 4777.2 (2015), AND
 3. Manual assessment is not required (i.e. the *export power* is below the *H2 export power threshold*)
- This brings the Part 1 application process into the Guideline's *traffic light system*.
- Participation Code change proposal being submitted to the Electricity Authority by the EEA.

13 October NAG meeting – some key issues and decisions

- Proforma DG application form to undergo minor changes to cover both Part 1A and Part 1 application
- Recommendation that EDB's publish on their websites the H2 export threshold for each LV network
- Correct setting by installers of inverter protection settings, and especially the new volt response functions, was recognized at the meeting as a major issue.
- It was agreed that the EEA should consider running training courses for installers. This might involve ECANZ or polytechs.
- Make submission to Standards Australia on (a) definition of IES, and (b) that both hard and soft export limit requirements be added into the new AS/NZS 4777.2 inverter standard.

Electricity (Safety) Regulations: major issue

- Electricity Safety Regs require that a domestic installation must follow Part 2 of the AS/NZS 3000 wiring rules, which in turn requires compliance to all three parts of the old AS 4777 (2005) – *Grid connection of energy systems via inverters*.
- Strictly speaking, new AS/NZS 4777.2 (2015) compliant inverters can only be used in domestic installations if all the requirements of AS 4777.2 (2005) and AS 4777.3(2005) are present in the new AS/NZS 4777.2 (2015).
- A possible solution is that if the new 4777.2 inverter standard can be shown to not adversely affect safety, then the new standard can be considered compliant to the old standard for the purposes of the safety regs.
- A member of the EL-042 standards committee is undertaking to resolve this issue with Energy Safety – hopefully a resolution this week? EEA is also writing to Energy Safety.

Schedule 6.1, Preliminary Provisions:

1D When application may be made under Part 1A

A **distributed generator** may elect to apply to a **distributor** under Part 1A instead of Part 1 if the **distributed generation** to which the application relates—

- (a) is designed and installed in accordance with AS 4777.1; and
- (b) incorporates an inverter that
 - (i) 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
 - (ii) can perform the **inverter operational modes** that may be required according to the **distributor's connection and operation standards**; and
- (c) has protection settings that meet the **distributor's connection and operation standards**; and
- (d) has a **maximum export power** that is less than an export power threshold specified by the **distributor**, at the **distributed generation's** location. This criterion (Clause 1D(d)) does not apply if the **distributor** does not publish an export power threshold.

DG Guideline

Proposed Code change

With the following definitions added to the Code Part 1 – Preliminary Provisions:

inverter operational modes means modes of operation of an inverter which will contribute to **export congestion** management or to maintaining the power quality, in the vicinity of the **distributed generation's ICP**. These various operating modes, if available, may be enabled or disabled in an inverter and may include, but not be limited to, the following as described by AS/NZS 4777.2: (a) power quality response modes including volt-var and volt-watt, fixed power factor or reactive power mode, power response mode, and power rate limit, (b) demand response modes, and (c) multiple mode inverter operation.

maximum export power means the maximum **active power** exported into the **local network** (or **embedded network** as the case may be) at the **distributed generation's ICP**, being equal to the **nameplate capacity** minus the minimum load at the **point of connection**, or to the power export limit imposed by an active export control device, specified in Watts.

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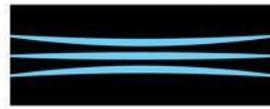
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