



**ELECTRICITY INDUSTRY
GUIDELINE No. 15**

**CONNECTION OF EMBEDDED
GENERATION**

Issue 1

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**ELECTRICITY INDUSTRY
GUIDELINE No. 15**

Enquiries concerning the currency of this guideline should be addressed to –

The Essential Services Commission
Level 2, 35 Spring Street
Melbourne, 3000

Telephone: (03) 9651 0222

Facsimile: (03) 9651 3688

AMENDMENT RECORD

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1 SCOPE AND APPLICATION OF THIS GUIDELINE

1.1 Objective

1.1.1 The objective of this guideline is to provide clarity and transparency about arrangements for *connecting embedded generating units* to *distribution systems*, in particular in respect of:

- (a) the way in which distributors negotiate connection agreements with embedded generators [see clause 2];
- (b) the charges under, and other terms and conditions of, *connection agreements*, including principles *distributors* must observe in setting those charges and other terms and conditions [see clause 3];
- (c) the payment to *embedded generators* of a share of *distributors' avoided distribution system costs* [see clause 4]; and
- (d) the payment to *embedded generators* of *distributors' avoided customer TUOS usage charges* [see clause 5].

1.1.2 By regulating these arrangements, the *Commission* also intends to make it clear that, if a dispute arises between a *distributor* and an *embedded generator*, that dispute must be resolved in accordance with the procedures specified by the *Commission* in the *distributor's distribution licence*, in this guideline and in *guideline 14*.

1.2 Distributors must comply with this guideline

This guideline is a relevant *guideline* for the purposes of clauses 10.3 and 11.1 of *distributors' distribution licences*.

1.3 When this guideline commences

This guideline commences with effect from 1 August 2004.

1.4 Other relevant regulations

The relationship of this guideline with other regulations is described in schedule 1.

2 NEGOTIATING CONNECTION AGREEMENTS

2.1 Distributors must negotiate generator access arrangements with embedded generators in good faith

If requested by an *embedded generator*, whether as part of:

- (a) a *connection enquiry*;
- (b) an application to *connect*;
- (c) an offer contemplated by clause 6 of the *distributor's distribution licence*; or
- (d) the subsequent negotiation of a *connection agreement*,

a *distributor* must negotiate in good faith with the *embedded generator* to reach agreement in respect of the *generator access* arrangements sought by the *embedded generator*.

2.2 Distributors must provide embedded generators with reasonable information

As a basis for negotiations under clause 2.1, a *distributor* must provide to the *embedded generator* in a timely way such information as is reasonably requested to allow the *embedded generator* to fully assess the commercial significance of the *generator access* arrangements sought by the *embedded generator* and offered by the *distributor*.

2.3 Application fees

- (a) Without limiting clause 2.2, within 4 weeks of a *connection enquiry* a *distributor* must provide an *embedded generator* with information on the amount of the application fee which is payable on lodgement of an application to *connect*.
- (b) The amount of any such application fee may not be more than necessary to cover the reasonable costs of all work anticipated to arise from investigating the application to *connect* and preparing the associated offer to *connect*.
- (c) A *distributor* must not charge for any information that the *distributor* provides to an *embedded generator* prior to the *embedded generator* lodging an application to *connect*.

2.4 Commission's role in resolving disputes arising from distributors' negotiations with embedded generators

Any question as to whether a *distributor* has negotiated in good faith as required by clause 2.1, as to whether a *distributor* has provided information in a timely way as required by clause 2.2 or as to the reasonableness of a request for information as contemplated by clause 2.2 is to be determined by the *Commission* on the basis of the *Commission's* opinion of the matter.

3 CHARGES UNDER, AND OTHER TERMS AND CONDITIONS OF, CONNECTION AGREEMENTS

3.1 Background - Embedded generation services are excluded services

3.1.1 Clause 5.7.3(m) of the *Tariff Order* provides that the following charges are charges for an *excluded service*:

charges for distribution services and system augmentation required to receive energy from an embedded generator ...

3.1.2 As such, *embedded generation services* and *embedded generation charges* are further regulated by clause 5 of *guideline 14*.

3.1.3 The *Commission* has decided that, for the purposes of clause 5 of *guideline 14*, *embedded generation services* are non-contestable *excluded services*.

3.2 Distributors must have a fair and reasonable standard connection agreement for small embedded generators

3.2.1 The *Commission* has or will require each *distributor* to submit to the *Commission* proposed *embedded generation charges* and terms and conditions for *embedded generation services* provided to *small embedded generators*, for approval by the *Commission* under clause 16 of the *distributor's distribution licence* and clause 5.4.1 of *guideline 14*.

3.2.2 Under clause 5.6.1 of *guideline 14*, the *Commission* will not approve a statement of a *distributor's* proposed *embedded generation charges* and terms and conditions for *embedded generation services* provided to *small embedded generators* unless the *Commission* decides the proposed *embedded generation charges* and terms and conditions are fair and reasonable.

3.2.3 The *Commission* will assess the fairness and reasonableness of a *distributor's* proposed *embedded generation charges* and terms and conditions for such *embedded generation services* on the basis of the principles included in clause 5.6.2 of *guideline 14* as well as the additional principles included in clause 3.3.2(b).

3.2.4 To the extent of any inconsistency between a principle included in clause 5.6.2 of *guideline 14* and an additional principle included in clause 3.3.2(b), insofar as they both may apply to a *distributor's* proposed *embedded generation charges* and terms and conditions for *embedded generation services* provided to *small embedded generators*, the additional principle prevails.

3.2.5 If a *small embedded generator* requests an offer as contemplated by clause 6 of a *distributor's distribution licence*, the *distributor* must offer to enter into a *connection agreement* including the relevant approved *embedded generation charges* and approved terms and conditions, adapted only to reflect the particular circumstances of the *small embedded generator*.

3.3 Charges and other terms and conditions of connection agreements and related offers

3.3.1 Clause 5.5(f) of the *National Electricity Code* contemplates a *distributor* and an *embedded generator* reaching agreement on the following aspects of their *connection agreement*:

- (a) a *connection services* charge;
- (b) a *use of system services charge*;
- (c) amounts payable in relation to costs incurred by the *distributor* in providing *generator access*;
- (d) compensation to be provided by the *distributor* to the *embedded generator*, or by the *embedded generator* to the *distributor*, when certain constraints occur.

3.3.2 Without limiting clause 10 of a *distributor's distribution licence* or any other provision of this guideline, a *distributor* must ensure that any offer contemplated by clause 6 of the *distributor's distribution licence* and any *connection agreement* to which it is party:

- (a) provides for:
 - (1) the matters contemplated by clause 5.5(f) of the *National Electricity Code*; and
 - (2) the *distributor* to pass through to the *embedded generator* a share of the *distributor's avoided distribution system costs* [see clause 4] and all of the *distributor's avoided customer TUOS usage charges* [see clause 5]; and
- (b) includes *embedded generation charges* and terms and conditions for the *distributor's embedded generation services* that are fair and reasonable and reflect the following principles:
 - (1) despite clause 5.5(f)(2) of the *National Electricity Code*, the *use of system service charge*:
 - (A) may include an amount referable to the difference between:
 - (i) the present value of the incremental capital costs the *distributor* will incur in undertaking *shallow augmentation* at an earlier date as a result of the *embedded generator* having *connected* to the *distributor's distribution system*; and

- (ii) the present value of the incremental capital costs the *distributor* would otherwise incur in undertaking that *shallow augmentation* at a later date, if the *embedded generator* had not *connected* to the *distributor's distribution system*; and
 - (B) may not include any amount referable to *deep augmentation*; and
 - (2) the amount of any compensation to be provided by the *embedded generator* to the *distributor* for failing to provide network support services as and when required must be fair and reasonable having regard to:
 - (A) related costs incurred by the *distributor*;
 - (B) the impact, if any, on the service adjustment applicable to the *distributor* under clause 2.3 of the *Price Determination*; and
 - (C) immunities the *distributor* may be entitled to under the *Act* and the National Electricity Law.
- 3.3.3 The present value calculations required under clause 3.3.2(b)(1)(A) are to be made using a discount rate equal to the pre tax weighted average cost of capital (i.e., WACC) applying in respect of the relevant *distributor's distribution tariffs* under the *Price Determination*.

3.4 Commission's role in resolving disputes about connection agreements and related offers

Without limiting clause 10 of a *distributor's distribution licence* or any other provision of this guideline, any question as to the fairness and reasonableness of an *embedded generation charge* under, or a term or condition of, any offer contemplated by clause 6 of the *distributor's distribution licence* or any *connection agreement* to which the *distributor* is party is to be decided by the *Commission* on the basis of the *Commission's* opinion of the fairness and reasonableness of the *embedded generation charge*, term or condition.

4 AVOIDED DISTRIBUTION SYSTEM COSTS

4.1 Background

In making the *Price Determination*, the *Commission* decided that *distributors* should pay a fair and reasonable amount of *avoided distribution system costs* to *embedded generators*.

4.2 Distributors must pass through a share of avoided distribution system costs to embedded generators

4.2.1 A *distributor* must pass through to an *embedded generator* a share of an amount calculated in accordance with clause 4.2.2 for *avoided distribution system costs*.

4.2.2 To calculate the amount of *avoided distribution system costs* in a relevant financial year, a share of which is to be passed through to an *embedded generator* in accordance with clause 4.2.1, a *distributor* must:

- (a) determine the *distribution system* costs that would have been incurred by the *distributor* for the relevant financial year if the *embedded generator* had not injected any energy at its *connection* point during that financial year;
- (b) determine the amount by which the *distribution system* costs calculated in clause 4.2.2(a) exceed the *distribution system* costs actually incurred by the *distributor* during that financial year; and
- (c) deduct from the amount calculated under clause 4.2.2(b) the amount of incremental operating and maintenance costs incurred by the *distributor* during that financial year that are associated with the *distributor's connection* assets for the *embedded generator's generating units*.

The amount determined under clause 4.2.2(c) will be the relevant amount for the purposes of clause 4.2.1.

4.3 Matters to be negotiated and information to be provided

4.3.1 Without limiting clause 2.1, each of the following is to be negotiated between a *distributor* and an *embedded generator*:

- (a) whether the amount of the *avoided distribution system costs* in each relevant financial year is to be calculated by the *distributor* before or after the end of that financial year and, if it is to be calculated before the end of that financial year, the basis on which adjustments are to be made to reflect differences between amounts forecast by the *distributor* and the corresponding actual amounts; and
- (b) the share of the *avoided distribution system costs* to be passed through to the *embedded generator*; and

- (c) when the *distributor* will pass through to the *embedded generator* the negotiated share of the *distributor's avoided distribution system costs*. This may depend on the outcome of negotiations under clause 4.3.1(a).
- 4.3.2 Without limiting clause 2.2 and as a basis for negotiations under clause 4.3.1, a *distributor* must provide to the *embedded generator* reasonable information on how the distributor has calculated the amount of its *avoided distribution system costs* under clause 4.2.

5 AVOIDED CUSTOMER TUOS USAGE CHARGES

5.1 Background

5.1.1 Clause 5.5(i) of the *National Electricity Code* requires a *distributor* to pass through to an *embedded generator* the *distributor's avoided customer TUOS usage charges*.

5.1.2 As part of the Maximum Transmission Revenue control under clause 3.3.2 of the *Price Determination*, the amount a *distributor* expects to pay *embedded generators* in respect of *avoided customer TUOS usage charges* is included as part of the maximum revenue the *distributor* is allowed to receive from its transmission tariffs from all customers, but only where the payments have been verified as compliant by the *Commission*.

5.2 Avoided customer TUOS usage charges to be calculated under the National Electricity Code

For the purposes of clause 3.3.2 of the *Price Determination*, a payment to an *embedded generator* will only be verified as compliant by the *Commission* if the amount of it is calculated in accordance with clause 5.5(i) of the *National Electricity Code*.

6 DEFINITIONS

In this guideline, unless the context otherwise requires:

- (a) terms which appear *like this* and which are not otherwise defined in this guideline have the same meaning as in each *distributor's distribution licence*; and
- (b) *avoided customer TUOS usage charges* in respect of a *distributor* and an *embedded generator*, has the same meaning as in the *National Electricity Code*;

avoided distribution system costs in respect of a *distributor* and an *embedded generator*, means *distribution system* costs that would have been incurred by the *distributor* had the *embedded generator* not been *connected* to the *distributor's distribution system*;

connection agreement means an agreement between a *distributor* and an *embedded generator* by which the *embedded generator* is or will be *connected* to the *distributor's distribution system*;

connection enquiry means a connection enquiry of the sort contemplated by clause 5.3.2 of the *National Electricity Code*;

deep augmentation in respect of *embedded generation services*, means any *augmentation* of the *distribution system* other than *shallow augmentation* in respect of the *embedded generation services*;

distributor means a person who holds a *distribution licence* under the *Act*;

embedded generation charge means a charge for *distribution* services and *distribution system augmentation* required to allow a *distribution system* to receive energy from an *embedded generator*;

embedded generation services means *distribution* services and *distribution system augmentation* required to allow a *distribution system* to receive energy from an *embedded generator*;

embedded generator means:

- (1) a *generator* whose *generating units* are *connected* to a *distribution system*; or
- (2) a person who has made application or intends to make application for a *generation licence* or for an exemption under the *Act* proposing to have *generating units* which will be *connected* to a *distribution system*;

generator access means the *power transfer capability* of the *distribution system* in respect of an *embedded generator's generating units* at a *connection* point;

guideline 14 means the *Commission's* Electricity Industry Guideline No. 14 – Provision of Services by Electricity Distributors;

power transfer means the instantaneous rate at which active energy is transferred between *connection* points;

power transfer capability means the maximum permitted *power transfer* through a *distribution system* or part thereof;

Price Determination means the *Commission's* Electricity Distribution Price Determination 2001–05, as varied by the *Commission's* 2001 Electricity Distribution Price Review Re-Determination, and any subsequent determination made by the *Commission* in respect of charges for *connection* to, and the use of, any *distribution system*;

shallow augmentation in respect of *embedded generation services*, means the installation of *connection* assets and any *augmentation* of the *distribution system* up to and including the first transformation in the *distribution system* in respect of the *embedded generator*;

small embedded generator means an *embedded generator* meeting either or both of the following conditions:

- (a) the *embedded generator* has or proposes to have *generating units* at a *connection* point with *power transfer capability* of not more than 2kW;
- (b) the *embedded generator* has or proposes to have *generating units* that meet the standards for the grid connection of energy systems via inverters prescribed in Australian Standard AS4777;

Tariff Order means the Victorian Electricity Supply Industry Tariff Order made under section 158A of the *Electricity Industry Act* 1993 on 20 July 1995 and published in the Government Gazette on 30 Jun 1995, as that Order is amended and in force from time to time, or any Order made under section 15A of the *Act* which replaces that Order, as that other Order is amended and in force from time to time; and

use of system service charge means that component of the *embedded generation charges* to be paid by an *embedded generator* in relation to any related *augmentation* required to be undertaken in respect of the *distribution system*.

Schedule 1

RELATIONSHIP OF THIS GUIDELINE WITH OTHER REGULATORY INSTRUMENTS¹

1 Electricity Distribution Licences

The *Commission* is responsible under section 19 of the *Act* for issuing licences which authorise the *distribution* of electricity, an activity which may otherwise be prohibited by section 16 of the *Act*.

Under section 20(2) of the *Act*, a *distribution licence* is subject to such conditions as are determined by the *Commission*.

Distribution licences include the following conditions which are relevant to the provision by *distributors* of *embedded generation services*:

- (a) clause 6, which obliges *distributors* to offer *connection services* to *embedded generators*;
- (b) clause 10, which sets out requirements for such offers. In particular, clause 10.3 requires the offer to include a price and other terms and conditions which are fair and reasonable and consistent with any relevant *guidelines*. This guideline is such a relevant *guideline*;
- (c) clause 11.1, which sets out requirements for other excluded services. In particular, clause 11.1 requires that the application fee, as contemplated by clause 2.3 of this guideline, must be fair and reasonable and consistent with any relevant *guidelines*. This guideline is such a relevant *guideline*.
- (d) clause 16, which provides for the approval by the *Commission* of *distributors' excluded services* charges and terms and conditions.

The Commission monitors *distributors' compliance* with their *distribution licences* and, among other things, is able to serve *enforcement orders* on *distributors* that have contravened their *distribution licences*. The ultimate sanction for breach of a *distribution licence* is revocation of the *distribution licence*.

¹ This schedule 1 is for convenience or information only and does not affect the interpretation of this guideline.

2 Victorian Electricity Supply Industry Tariff Order

The *Tariff Order* was made in June 1995 by the Governor in Council under section 158A of the *Electricity Industry Act 1993*. The *Tariff Order* continues to operate by reason of clause 6(1) of schedule 4 of the *Electricity Industry (Residential Provisions) Act 1993*, regulating future *Price Determinations* and the provision of *excluded services*.

In particular, in clause 5.7.3(m) the *Tariff Order* regulates as an *excluded service*:

charges for distribution services and system augmentation required to receive energy from an embedded generator ...

Therefore the regulation of *embedded generation services* in this guideline stems from the *Tariff Order*.

3 Electricity Industry Guideline No. 14 – Provision of Services by Electricity Distributors

Clause 5 of *guideline 14* also regulates the provision of *excluded services*. The regulation of *embedded generation services* in this guideline needs to be read together with clause 5 of *guideline 14*.

4 Electricity Distribution Price Determination 2001–05

The *Commission* is responsible for determining the price controls that apply to charges for the use of and *connection* to *distribution systems*. The existing regulation of electricity *distribution* charges is set out in the *Price Determination*.

The *Price Determination* also regulates the pass through of transmission tariffs levied on *distributors*. A *distributor* cannot charge above transmission tariffs which have been verified as compliant by the *Commission*. The *Commission* applies a Maximum Transmission Revenue control when considering whether or not to verify as compliant a *distributor's* proposed transmission tariffs. Clause 5 of this guideline concerns that control.

5 National Electricity Code

Rules governing activities in the National Electricity Market are laid down in a *National Electricity Code*.

Under the *National Electricity Code* there are five State jurisdictions in the National Electricity Market:

- Australian Capital Territory.
- New South Wales.
- Queensland.

- South Australia
- Victoria.

The *Commission* has regulatory responsibilities in the National Electricity Market, prescribed by the *National Electricity (Victoria) Act 1997* and the *National Electricity Code* itself.

Chapter 5 of the *National Electricity Code* provides a framework for *connection* to a *distribution* network and access to the networks forming the national grid. In particular, clause 5.5 regulates access arrangements for *embedded generators*.

Parts D and E of Chapter 6 of the *National Electricity Code* include regulatory requirements as to the general level of *distribution* service prices and the aggregate annual revenue requirement for *distribution* services, as well as to the pricing of prescribed *distribution* services for *distribution* networks.

However:

- (a) under the jurisdictional derogations in clause 9.7.4 of the *National Electricity Code*, it is provided in effect that:
 - (1) notwithstanding anything to the contrary elsewhere in the *National Electricity Code*, the *Commission* is responsible for the regulation of *connection* to *distribution systems*. It is partly on that basis that the *Commission* is regulating in this guideline arrangements for *connecting embedded generating units* to *distribution systems*; and
 - (2) if a dispute arises in relation to *connection* to a *distribution system*, then that dispute must be resolved in accordance with procedures specified by the *Commission* (i.e., under *distribution licences* and under this guideline and *guideline 14*). Therefore the dispute resolution provisions of clause 8.2 of the *National Electricity Code* will not apply to such a dispute; and
- (b) the arrangements in Parts D and E of Chapter 6 of the *National Electricity Code* recognise the ongoing role of the existing Victoria *distribution* service pricing regime and the role the *Commission* has in formulating guidelines and rules to apply to *distribution* service pricing within the Victorian jurisdiction.

6 Electricity Distribution Code

The *Electricity Distribution Code* regulates technical aspects of the provision of *distribution services* and *connection* to the *distribution system* by *embedded generators* and end users. It prescribes standards for the quality and reliability of supply, information to customers, complaints handling, and other matters.

7 Chapter 7 of the National Electricity Code, the Metrology Procedure and Electricity Customer Metering Code

Each of these regulatory instruments deals with the measurement of electrical energy from a *distribution system* to an *embedded generator's electrical installation* and from an *embedded generator's generating units* to a *distribution system*.

8 Australian Standard AS4777

This Australian Standard prescribes standards for the grid connection of energy systems via inverters. It includes requirements relating to installation, inverters and grid protection.