

Avoided Transmission Use of System Methodology

This document outlines the methodology Essential Energy will use to calculate Avoided Transmission Use of System payments for eligible customers

September 2022



Background

Essential Energy's distribution network connects to TransGrid's and other Transmission Network Service Providers' (TNSPs) transmission networks at multiple connection points. Essential Energy must pay prescribed Transmission Use of System (TUOS) charges to TransGrid and other TNSPs for use of transmission services at these connection points.

Prescribed TUOS charges can broadly be separated into three components: a common service charge, a non-locational charge, and a locational charge.¹ TransGrid's charges by connection point can be found on its website at the following link:

<https://www.transgrid.com.au/about-us/regulatory-framework/network-pricing>

Avoided TUOS refers to the savings which Essential Energy makes in the locational component of the TUOS charges as a result of an eligible embedded generator (EEG) being connected (and injecting electricity) to Essential Energy's distribution network.

Clause 5.3AA (h) of the National Electricity Rules (NER) requires Essential Energy, as a distribution network service provider (DNSP), to pass on those savings to the EEG, as avoided TUOS payments. The purpose of this document is to explain the methodology Essential Energy uses to calculate avoided TUOS payments for each eligible EEG.

How are avoided TUOS payments calculated?

According to clause 5.3AA (i) of the NER, where prices for the locational component of prescribed TUOS services were in force at the relevant transmission network connection point throughout the relevant financial year, Essential Energy is required to:

1. Determine the costs for the locational component of prescribed TUOS services that would have been payable by Essential Energy to the TNSP had the EEG not injected any energy at its connection point,
2. Determine the amount by which the charges calculated above exceed the amount of locational component of prescribed TUOS actually payable.
3. Pay the amount calculated in part 2 to the EEG.

The cost for the locational component of prescribed TUOS services is calculated as the prescribed TUOS locational price (\$/kW/month) at the relevant connection point multiplied by the actual monthly maximum demand.

Eligibility requirements

To receive avoided TUOS payments, an EEG must have a connection agreement with Essential Energy.

Clause 5.3AA (a)(2) of the NER specifies that avoided TUOS payments will apply to the following parties:

- i) An Embedded Generator registered with the Australian Energy Market Operator²,
- ii) A Market Network Service Provider³, or

¹ For the regulatory period 2018/19 – 2022/23, these three components can be found in table 7 of TransGrid's pricing methodology: https://www.aer.gov.au/system/files/TransGrid%20-%20TransGrid%20Pricing%20Methodology%202018_2023%20-%20January%202017.pdf

² Cl.5.3AA(a)(2)(i) of the NER creates eligibility for a registered embedded generator. This is because chapter 10 of the NER defines "Embedded Generator" as "A Generator who owns, operates or controls an embedded generating unit". Chapter 10 also defines a "Generator" as a person who "... is registered by AEMO as a Generator..."

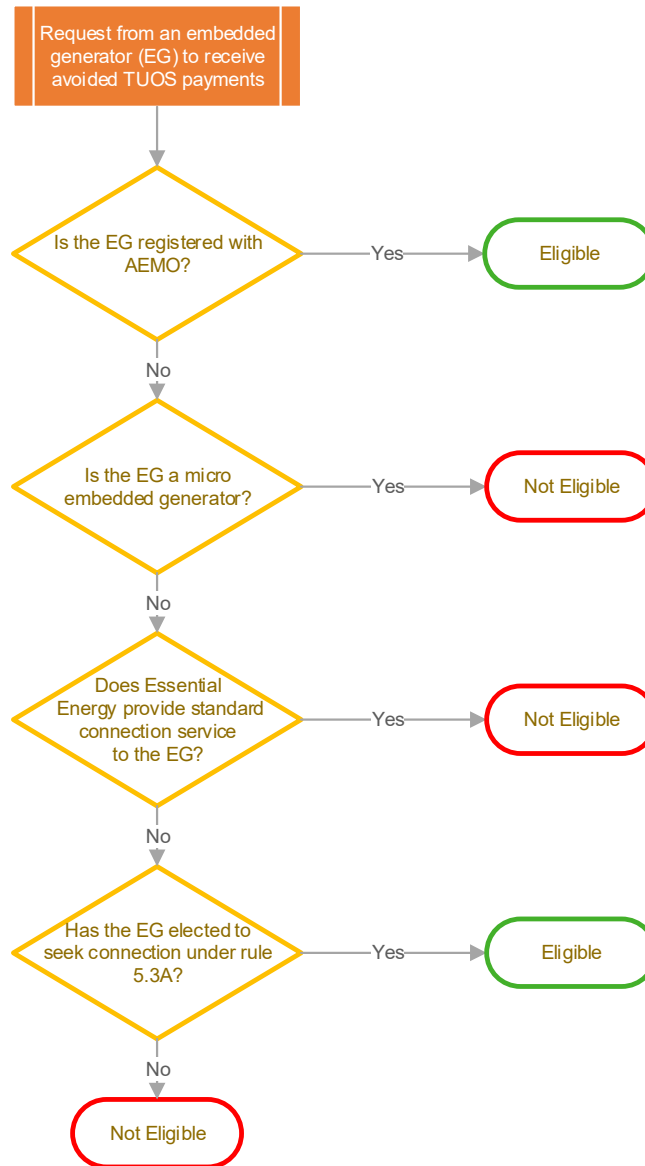
³ Basslink is currently the only Market Network Service Provider in the NEM, and it is not connected to Essential Energy's distribution network

- iii) A non-registered embedded generator who makes an election for clause 5.3A of the NER to apply for a connection instead of Chapter 5A.

For the non-registered generators, this category will include generators who have capacity above 5MW, and have applied to AEMO for, and obtained, an exemption from the requirement to register.

Avoided TUOS payments are required to be paid in instances where the injection of electricity by an EEG has actually reduced Essential Energy’s locational TUOS payments, therefore no EEG can receive avoided TUOS payments if they did not inject energy into our distribution network during the relevant interval or period.

Figure 1 – Decision tree to determine eligibility



Calculation methodology

In calculating the amount of avoided TUOS payments, Essential Energy takes the following steps:

1. Assign the EEG to the transmission connection point where load will be reduced by the EEG's injection of energy
2. Calculate the maximum amount of avoided TUOS payment as the sum of the avoided demand charge, calculated as:

$$(\text{DEMAND}_{\text{without}} - \text{DEMAND}_{\text{with}}) \times \text{DEMAND USAGE CHARGE}$$

Where:

DEMAND_{without} is the maximum monthly demand at the EEG's assigned transmission connection point without the EEG's output capacity,

DEMAND_{with} is the maximum monthly demand at the EEG's assigned transmission connection point with the EEG's output capacity, adjusted for distribution losses

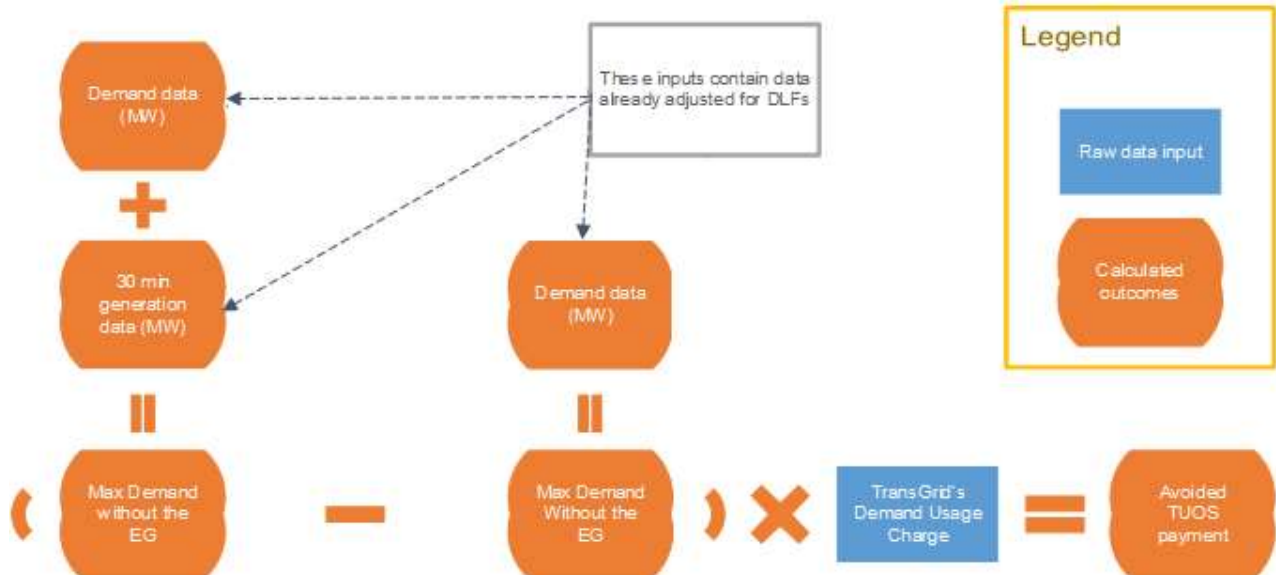
DLF is the site specific distribution loss factor for the EEG, and

DEMAND USAGE CHARGE is the TransGrid demand usage charge for that connection point.⁴

The current DLFs for each financial year are published on AEMO's website.⁵

If more than one EEG is allocated to the same terminal substation, the avoided TUOS payment for each EEG will be calculated separately, as illustrated in the next subsection:

Figure 2 – The calculation procedure



⁴ A list of DLFs can be found here:

https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/loss_factors_and_regional_boundaries/2021-22/distribution-loss-factors-for-the-2021-22-financial-year.pdf?la=en

⁵ DLFs for 2022/23 financial year are available at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/loss_factors_and_regional_boundaries/2022-23/distribution-loss-factors-for-the-2022-23-financial-year.pdf?la=en

Worked example

The following example would apply to two different embedded generators connected to Transmission Connection Point A:

To calculate the avoided TUOS payments for generator A:

DEMAND_{without} = 36,626 kW

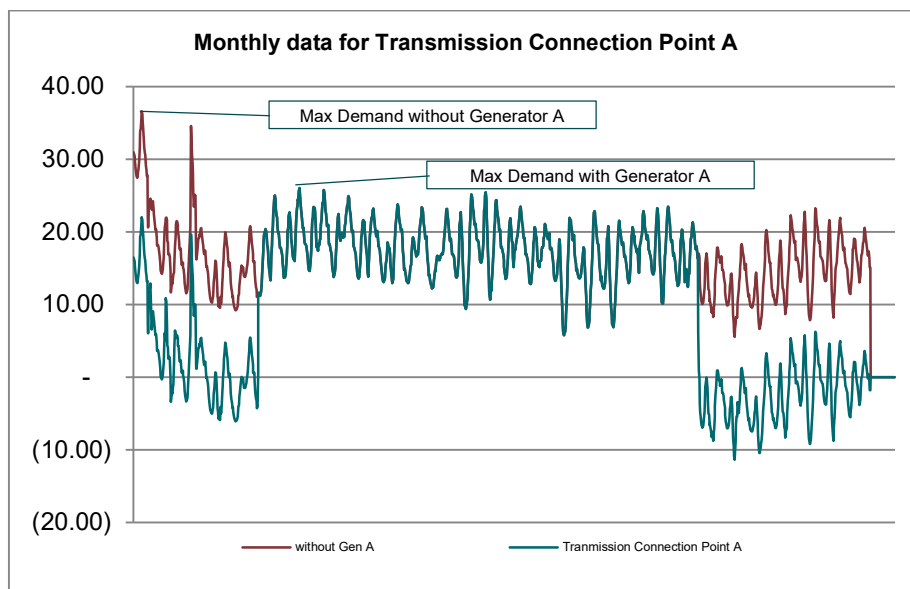
DEMAND_{with} = 26,037 kW

DLF at the connection point is 10.59

DEMAND USAGE CHARGE = \$6.335/kW/month

$$\text{Avoided TUOS payment} = (36,626 \text{ kW} - 26,037 \text{ kW}) * \$6.335/\text{kW}/\text{month} = \$67,081.31/\text{month}$$

Figure 3: Monthly data for Transmission Connection Point A, with and without generator A



To calculate the avoided TUOS payments for generator B:

DEMAND_{without} = 26,037 kW

DEMAND_{with} = 26,037 kW

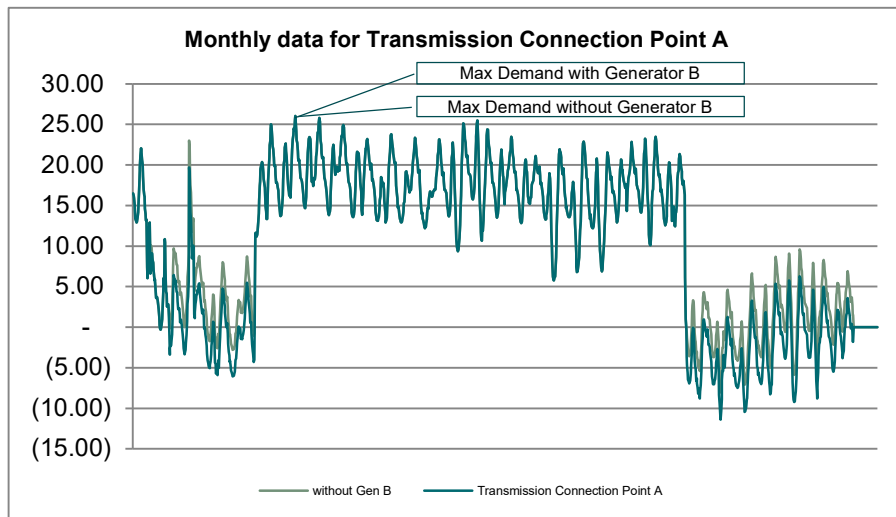
DLF at the connection point is 10.59

DEMAND USAGE CHARGE = \$6.335/kW/month

$$\text{Avoided TUOS payment} = (26,037 \text{ kW} - 26,037 \text{ kW}) * \$6.335/\text{kW}/\text{month} = 0$$

As generator B, by itself, does not reduce the monthly maximum demand at Transmission Connection Point A, generator B would not be paid an avoided TUOS payment.

Figure 4: Monthly Data for Transmission Connection Point A, with and without generator B



Payment of Avoided TUOS

Avoided TUOS payments to EEGs will be calculated retrospectively at the end of every calendar month. At the end of every quarter in a financial year, EEGs will receive a letter notifying them of the calculated amount and a request for the issuance of tax invoices. Payment will be made via electronic funds transfer following receipt of the tax invoice.

Recovery of Avoided TUOS charges

In accordance with the NER, Essential Energy can recover costs associated with avoided TUOS through designated pricing proposal charges in our network tariffs. Where avoided TUOS payments are made, the payment amount is recovered as part of the TUOS volume charges passed through to all customers.