Embedded Network Fact Sheet

Fact Sheet

This fact sheet provides a high-level overview of how embedded networks operate within the National Electricity Market (NEM), as of Mar 2025. This information can be used to understand how settlement calculations work for the sites within embedded networks, for settlement dates after the implementation of the IESS rule change on 2 June 2024.

What is an embedded network?

Embedded networks are private electrical networks, rather than the transmission or distribution networks that most sites are connected to. They consist of a parent connection point (sometimes referred to as the Gate Meter) and then children connection points, which are connected only within the embedded network, each with their own meter. For more detail see:

https://aemo.com.au/-/media/files/electricity/nem/retail_and_metering/accreditation/guide-to-embedded-networks.pdf?la=en

How can embedded network sites be identified?

MSATS has two fields to hold the NMI standing data relating to these sites. They are "Embedded Network ID (Parent)" and "Embedded Network ID (Child)". These fields contain an alpha numeric string of up to 10 characters to identify each embedded network, with the children belonging to a parent having the same ID value.

Are there different types of embedded network child NMIs?

Child NMIs stored in MSATS can be either on-market or off-market, with the off-market child NMIs identified with the NMI Status Code of "N" and on-market child NMIs having a standard NMI Status Code such as "A". Additional off-market child sites may exist within the embedded network without being stored in MSATS. Only on-market children are considered in AEMO settlement calculations.

What relationship exists between the FRMP of the Parent NMI and the Children?

Child NMIs stored in MSATS should always have the FRMP of the Parent NMI/s listed as their LR.

How complicated can embedded networks be?

There are a limited number of embedded networks that are connected to the transmission network and/or that contain registered market generators as child sites. There can be embedded networks with more than one parent NMI and it is also possible for an embedded network to exist inside another embedded network, where a child NMI of one embedded network is also the parent NMI of a separate embedded network.

Who is responsible for managing the set up or correction of the child NMI data?

The Embedded Network Manager (ENM) is responsible for maintaining the NMI Standing Data for their Child NMIs. This includes allocating the embedded network IDs and assigning the Distribution Loss Factors (DLF). For more details on the ENM role please see:

https://aemo.com.au/-/media/files/electricity/nem/power-of-choice/faq/poc-fact-sheet-3---role-of-the-embedded-network-manager.pdf?la=en

How are embedded network sites settled?

Child NMIs are settled the same as any other non-embedded network NMI, with their metered energy settled against the FRMP of that NMI. Parent NMIs however are settled under a "settlements by difference" methodology, where the energy of the on-market child NMIs are subtracted from the parent NMI(s) energy.

Where are the settlements by difference calculations performed?

Since the implementation of the IESS rule change on 2 June 2024, the netting of the child reads from the parent reads occurs in the Meter Data Management system. Prior to IESS, the settlements by difference calculations were performed within the settlements system, utilising the LR provided on the reads from the metering system.

Is the treatment of Loss Factors and UFE any different for embedded network sites?

No, these calculations are performed the same way as for other sites. The distribution loss factor (DLF) is applied in the Meter Data Management system, with the DLF adjusted energy volumes then used in all calculations. Note that in most cases the DLF is consistent across all sites within an embedded network. The transmission loss factor (TLF) is applied in the settlement calculation of the final settlement amount. Again, in most cases the TLF will be consistent across all sites within an embedded network.

Unaccounted for energy (UFE) is allocated to all distribution connected embedded network parent and on-market child NMIs, based on the consumed energy that they are responsible for. There is no difference in their treatment.

What does a settlement by difference calculation look like in a simple embedded network?

If we assume the embedded has no generation recorded against any of the meters and the metered consumption of the parent NMI is 10MWh, with only two children NMIs with metered consumption of 5MWh and 3MWh and all NMIs having a DLF of 1.01 the calculation will be:

$$\text{Parent Consumption} = 10 \times 1.01 - (3 \times 1.01 + 5 \times 1.01) = 2.02\text{MWh}$$

What happens if there is generation present in an embedded network?

When there is generation present, the calculation differs depending on where the generation is located and the resulting meter reads. If in the above example the parent NMI consumption read was only 4MWh, then the combined consumption of the children being larger than the parents, must mean that generation without an on-market child meter is present in the embedded network. The same calculation would then result in a negative value, which would be stored in the meter data as generation instead, as calculated by:

$$\text{Parent Generation} = 4 \times 1.01 - (3 \times 1.01 + 5 \times 1.01) = -4.04\text{MWh}$$

In this example, should the parent NMI (only) have had some generation recorded in its meter data, then that value would be added to the above calculated value to provide the total generation of the parent.

The convention of moving negative calculated values to the opposite 'stream' also applies to the generation stream in cases where there is metered generation at the parent and/or child sites. If in the above example we assumed the parent NMI has 1MWh and the first child NMI has 2MWh of generation recorded, the calculation is:

$$\text{Parent Consumption} = [1 \times 1.01 - (2 \times 1.01 + 0 \times 1.01)] \times -1 = 1.01\text{MWh}$$

Where is data available for embedded network sites?

In the published Settlements data, the embedded network sites are not treated separately to any other data of sites that have the same Meter_Type field value. This means that the energy allocated to the parents and the child reads may be aggregated together with non-embedded sites owned on the same TNI.

The meter data of the parent and child NMIs is available via MSATS in the RM21 and RM27 reports. The RM16 report now contains the Parent read after the child NMIs have been subtracted. Participants will still be able to reconcile the RM16 with settlements values in statements but will no longer be able to reconcile the RM16 against the RM21/27 reports, without first performing the embedded network parent calculations.

Can I access the data of all the child NMIs in an embedded network where I am the FRMP of the parent NMI only?

Yes, to be able to calculate the energy that the parent is responsible for, the FRMP of the parent NMI is provided access to the meter data of all the on-market children of that embedded network.