I-NTEM Market Operator
IES Deemed Load Profile

Information regarding consultation on this paper is contained in the Consultation Impact Statement – IES Deemed Load Profile.

Background

The deemed load profile is necessary because there will be insufficient interval metering data available for the Indigenous Essential Services (IES) load at the commencement of the Interim Northern Territory Electricity Market (I-NTEM).

The deemed load profile is based on information received from the Network Operator with regards to IES metering configuration in the Darwin-Katherine power system. This is in accordance with A6.4(a) of the System Control Technical Code (the Code).

Purpose

This paper brings to the attention of Market Participants, particularly Jacana Energy and IES, the Market Operator's intention to use a deemed load profile, as described herein, as one element in determining Jacana Energy's non-interval meter consumption, and for determining the total IES load at the Transaction Reference Point (TRP). The quantities for these Market Participants will be determined on a trading interval basis. The Market Operator is required by clause A6.4(d) of the Code to develop an algorithm for the purpose of profiling the IES load (as measure by consumption meters) into trading intervals, and to consult on that algorithm with electricity market stakeholders. This paper satisfies that requirement.

Current IES Metering Configuration

The current metering data for IES customers available to the Market Operator is a mix of statistical interval meters and individual customer consumption meters that service the IES customers.

The statistical meters are located at the entrance of some IES communities. For any one of these communities, the statistical interval meter measures the total electricity consumed within that community, as well as unmetered loads such as Telstra services, streetlights, and electrical losses. At the time of writing, three communities had statistical interval meters at the entry points. In addition to these statistical interval meters, these communities have meters installed at each premise. The premise meters use accumulation technology whose measurement is obtained from a meter reading cycle, nominally once every three months ('consumption meters').

The remainder of the communities do not have meters at their entry point. They only have premise consumption meters.

This premise consumption meter data is subject to calculated line (technical) losses between generators and the entry point (also known as the TRP), and unmetered load (non-technical) losses between the entry points and the premise meters.

Transaction Reference Point

The TRP is the connection point on the Darwin-Katherine power system where customers are connected to the electricity network, as shown in Figure 1. It is the point of sale to customers of electricity that is produced by generators. For the total IES load it is a virtual point of sale.

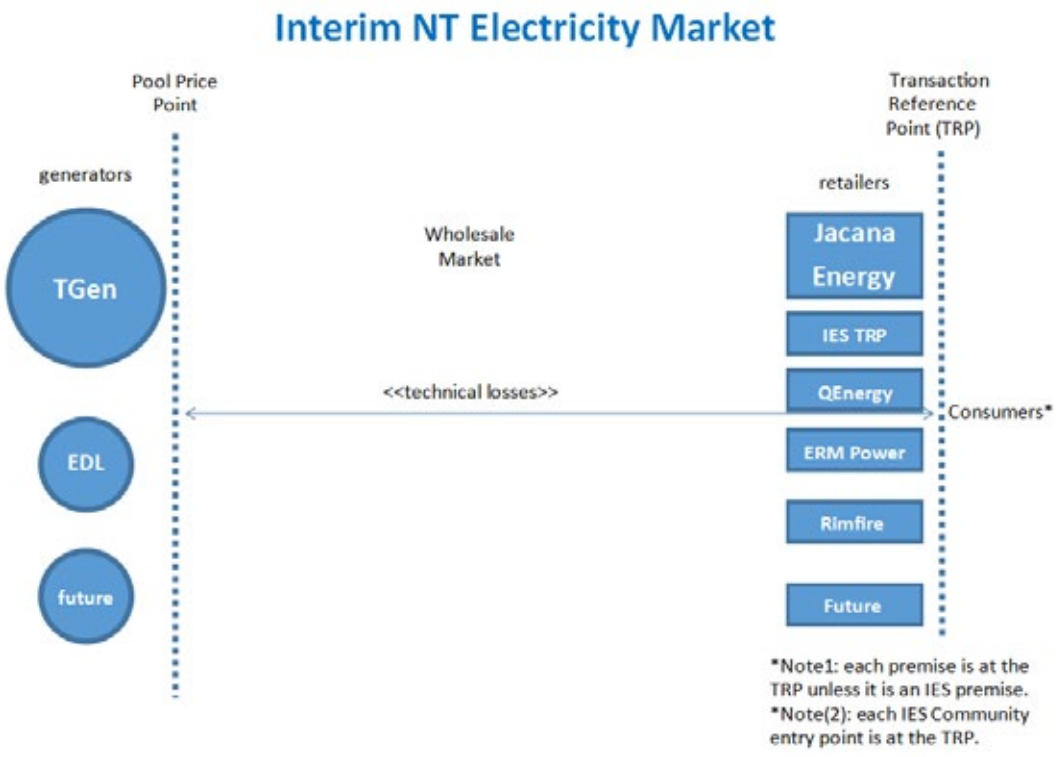

Figure 1: Transaction Reference Point in relation to Generators

In general, the TRP is significant because it plays an important role in the I-NTEM settlements process.

For IES communities it has a further significance - the entrance point to the community is the TRP, irrespective of whether a meter is installed at that point or not. The consumers within that community require their consumption meter readings to be adjusted by the unmetered loads so that their meter measurements better represent the value at the community entry point. This arrangement is shown in Figure 2.

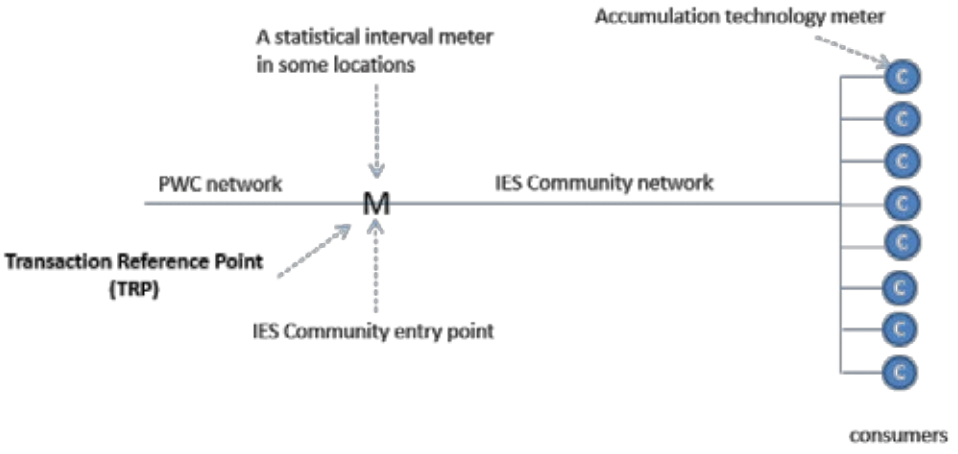

Figure 2: IES communities and their meter arrangements

For the purpose of determining Jacana Energy's total assigned load, the total IES load of all IES communities on the Darwin-Katherine power system ('the IES total load') at the TRP (in trading intervals) is added to all other interval meter consumer loads in the Darwin-Katherine power system, as measured at their TRP. The total of all interval metered consumer load at TRPs is adjusted for losses back to generators (known as the Pool Price Point) and then subtracted from the total electricity produced by generators in the Darwin-Katherine power system. The balance represents the total electricity measured by consumption meters in that power system that are not associated with IES communities. This calculated value is assigned to Jacana Energy in the settlements process, along with any interval meters also assigned to Jacana Energy.

The paper explains how the loads measured by premise meters in each IES community are to be assembled into half hour measurements (trading interval) at that community's TRP. The community's total TRP load is combined with all other community TRP loads to form the total IES load.

Deemed Load Profile Principle

The deemed load profile principle is as follows:

A single electricity measurement made over a long period can be broken down into 30 minute intervals by applying an agreed proportion of that measurement to each interval. The agreed proportion may vary from one 30 minute interval to the next in accordance with an agreed pattern of consumption behaviour, as determined using an interval meter.

A statistical interval meter provides an acceptable means for determining the agreed pattern of consumer behaviour for the IES communities ('the deemed load profile'). The statistical interval meters would be used in the following ways:

The data from the IES statistical interval meters will be used to estimate the total IES load on a trading interval basis at the TRP for the nominated month. This will be performed in the following way:

- For the community in which the statistical interval meter was deployed, as a deemed load profile to represent that community's total consumption meter readings, including energy losses.
- For the communities where no statistical interval meter was deployed, as an aggregated whole to provide an average deemed load profile which would be applied to the total of the consumption meter readings for those communities.
- For the purpose of determining the energy losses that can be then applied to the loads of the customers in communities where a statistical interval meter is not installed.

The deemed load profile principle is applied below to form the proposal presented by this paper.

Deemed Load Profile Proposal

The data from the IES statistical interval meters will be used to estimate the total IES load on a trading interval basis at the TRP for the nominated month. This will be performed in the following way:

- Where that community has a statistical interval meter at the entry point ('statistical meter community'):
  - The statistical interval data for this community will be applied directly to the IES total.
  - No adjustment for non-metered losses is required (the statistical meter incorporates these quantities).
  - No adjustment need be made for wet season and dry season since the statistical interval meter quantities will accurately represent these differences.

- A revision of the total consumption meter quantity will be performed in accordance with the settlements revision timing (13 weeks after the end of the settlements period). The statistical meter data is to remain unaltered during the revision.

- Where that community does not have a statistical interval meter at the entry point ('non-statistical meter communities'):
  - The quantities for each of the statistical interval meters are to be combined for each trading interval to produce trading intervals that in total represent the combined electricity consumed by those communities.
  - This aggregated set of trading interval data is be proportioned so that each trading interval represents a proportion of the total quantity. The proportioned values are to be known as the 'deemed load profile' for the month. Each month a new deemed load profile will be produced.
  - No adjustments need to be made for wet season and dry season since the aggregated statistical interval meter quantities will accurately represent these differences.
  - The deemed load profile is to be applied to the total consumption meter quantity for these communities to produce trading interval quantities for the combined group of communities. The total consumption meter quantity to be used at this stage of the settlements process is the quantity for the same month in the previous calendar year. This quantity is to be determined in the following:
    - The previous year's quarterly quantity is to be proportioned into each of the months represented in that quarter.
    - The deemed load profile obtained from the statistical meters for the same months of the previous calendar year is to be used to proportion the quantities in the previous calendar year.
  - Energy losses are to be applied to the trading interval quantities so that they are referenced to the TRP.
    - For any one settlements period, the energy losses are to be those losses that are calculated for the communities that have statistical meters.
    - The difference between the total quantity of the statistical interval meters and the total consumption meter quantity for the communities that deployed statistical meters is to be applied to the group of communities that do not have interval meters.
    - The losses are to be recalculated during the settlements revision process.
  - A revision of the total consumption meter quantity for these communities will be performed in accordance with the settlements revision timing (13 weeks after the end of the settlements period). The deemed load profile is to remain unaltered during the revision.
  - Rather, planning should be instigated to install statistical interval meters at the entry points for each of these communities.

Peak and off-peak periods

Monthly peak and off-peak period quantities will be produced by aggregating the relevant trading intervals in that month (refer to the Code for definitions of peak period and off-peak period).

Document History

Date of Issue	Version	Prepared By	Description of Changes
10/04/2015	V01 draft	Jodi Triggs	*Published* for consultation

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NOTE:
This document is under consultation:
Stakeholders, please send your submissions to:
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