

ELECTRICITY INDUSTRY ACT 2004

ELECTRICITY INDUSTRY (WHOLESALE ELECTRICITY
MARKET) REGULATIONS 2004

WHOLESALE ELECTRICITY MARKET RULES

Market Procedure for: Determining Loss Factors

Commencement: This Market Procedure is to have effect from 8:00am (WST) on the same date as the Wholesale Electricity Market Rule, in which this procedure is made in accordance with, commences.

Market Procedures Published by the Minister

I, FRANCIS LOGAN, Minister for Energy for the State of Western Australia, under regulation 9(2) of the *Electricity Industry (Wholesale Electricity Market) Regulations 2004* hereby approve the publication of the Loss Factors Procedure contained in this document.

This Market Procedure is to have effect from 8:00am (WST) on the same date as the Wholesale Electricity Market Rule, in which this procedure is made in accordance with, commences.

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Dated at Perth this day of 2006.

1. Loss Factors Procedure

The Loss Factors Procedure covers the process for determining Loss Factors. The methodology to be applied by Network Operators in calculating Loss Factors is described. The procedure includes steps to be followed by Network Operators and the IMO, and the process for Market Participants seeking a reassessment of a Loss Factor.

This procedure is made in accordance with Market Rule 2.27.6.

1.1 Interpretation

In this procedure, unless the contrary intention is expressed:

- (a) terms used in this procedure have the same meaning as those given in the Wholesale Electricity Market Rules (made pursuant to the Electricity Industry (Wholesale etauric35585(n)-2.70898

- 2 By 1 June of each year, Network Operators must calculate Loss Factors, based on its annual revised data, and provide these to the IMO. (Market Rule 2.27.1)
- 3 To the extent that there is a change of more than 0.025 in any Loss Factor compared to the Loss Factor of the previous year, the Network Operator is to provide the IMO with a written explanation of the change. The written explanation is to be provided to the IMO at the same time as the Loss Factor to which it pertains. The Network Operator may, but is not required to, provide to the IMO a written explanation to accompany any other Loss Factor calculated. The written explanation provided under this clause will have the confidentiality status of Public.
- 4 Network Operators are required to calculate Loss Factors for any Facility, Dispatchable Load and Non-Dispatchable load. (Market Rule 2.27.1)
- 5 The majority of the Connection Points outlined in Step 4 will use average Loss Factors. The same Loss Factor will apply to groups of Non-Dispatchable Loads less than 10,000kVA Peak Demand. The Network Operator may group Non-Dispatchable Loads less than 10,000kVA Peak Demand by Reference Service or equivalent method.
- 6 A single Loss Factor is to be determined for each Connection Point. The Network Operator may specify a separate transmission Loss Factor and distribution Loss Factor for each Connection Point. The single Loss Factor for the Connection Point is calculated by multiplying the applicable transmission Loss Factor by the applicable distribution Loss Factor.
- 7 In calculating Loss Factors, Network Operators must apply the principles outlined in Market Rule 2.27.2 and the methodology outlined in Section 1.5 of this procedure.

1.4 Procedure steps to be followed by the IMO

This section applies to annual review and interim publication of loss factors.

- 1 As soon as practicable, but no later than two Business Days after receiving Loss Factors from Network Operators, the IMO must publish the Loss Factors on its website. (Market Rule 2.27.3) In the event that the IMO also receives a written explanation from the Network Operator accompanying the Loss Factors, the IMO will publish the explanation on its website.
- 2 In addition to the Loss Factors, the IMO must publish the Trading Day on which the relevant Loss Factors will commence. In determining the commencement date, the IMO will have regard to the time requirements for Market Participants to identify and update

1. Western Power must calculate a system wide average Loss Factor for the Distribution System
2. Western Power must calculate uniform average Loss Factors for the following Reference Services:
 - a) A1 – Anytime Energy (Residential) Exit Service
 - b) A2 – Anytime Energy (Business) Exit Service
 - c) A3 – Time of Use Energy (Small) Exit Service
 - d) A4 – Time of Use Energy (Large) Exit Service
 - e) A5 – High Voltage Metered Demand Exit Service
 - f) A6 – Low Voltage Metered Demand Exit Service
 - g) A9 – Streetlighting Exit Service
 - h) A10 – Un-Metered Supplies Exit Service

Uniform distribution loss factors are to be determined by allocation of the measured annual losses on the distribution network to each of the reference services based on their relative use of the various network assets.

3. Where required, an individual distribution loss factor for an exit point is to be calculated using the following methodology:
 - (a) The Network Operator must determine the line losses assuming the distribution exit point was not there and assuming feeder maximum load;
 - (b) The Network Operator must determine the line losses assuming only the distribution exit point was there and assuming feeder maximum load;
 - (c) The Network Operator must determine the total line losses assuming all the distribution connection points are there (including the distribution exit point for which the loss factor is being determined) and assuming feeder maximum load;
 - (d) The Network Operator must allocate a share of the total line losses calculated under step (c) to the distribution exit point for which ~~the loss factor~~ must all

4. Where required, a individual distribution loss factor for an entry point is to be calculated using the following methodology:
- (a) The Network Operator must determine the line losses assuming the distribution entry point was not there and assuming feeder maximum load;
 - (b) The Network Operator must determine the total line losses assuming all the distribution connection points are there (including the distribution entry point for which the loss factor is being determined) and assuming feeder maximum load;
 - (c) The Network Operator must calculate the loss decrease or increase for the distribution entry point for which the loss factor is being determined by subtracting the result of step (b) from the result of step (a);
 - (d) The Network Operator must calculate the loss factor for the distribution entry point by applying the following formula:

$$LF_{Entry} = 1 + \frac{A}{B}$$

where —

- A (in kW) is the loss increase or decrease calculated for the distribution entry point under step (c);
- B (in kW) is the declared sent-out capacity for the distribution entry point.

1.6 Reference Node

For the purpose of this procedure and in accordance with the Market Rules, the Transmission System Reference Node shall be the Muja 330 bus-bar.

For calculating loss factors in Tprice, the nominated swing bus shall be the 200MW G6 machine at Kwinana Power Station.

1.7 Notional Wholesale Meters

For Connection Points on the Distribution System operated by Western Power the following rules apply in determining the applicable transmission Loss Factor:

a) For an Exit Point contracted on any of the following Reference Services the system wide average must be applied as the transmission Loss Factor:

- i) A1 – Anytime Energy (Residential) Exit Service
- ii) A2 – Anytime Energy (Business) Exit Service
- iii) A3 – Time of Use Energy (Small) Exit Service
- iv) A4 – Time of Use Energy (Large) Exit Service
- v) A5 – High Voltage Metered Demand Exit Service
- vi) A6 – Low Voltage Metered Demand Exit Service
- vii) A9 – Streetlighting Exit Service
- viii) A10 – Un-Metered Supplies Exit Service

or

b) For an Exit Point on the Distribution System not contracted onto the Reference Services listed in section 1.8.1(a) with Peak Demand less than 1,000 kVA the system wide average must be applied as the transmission Loss Factor; or

c) For an Exit Point on the Distribution System not contracted onto the Reference Services listed in section 1.8.1(a) with Peak Demand greater than or equal to 1,000 kVA and the:

- i) associated substation identified in an Access Contract; or
- ii) the electrically closest substation (if a substation is not identified in the Access Contract)

is in the Urban and CBD pricing zones the urban average must be applied as the transmission Loss Factor; or

d) In all other instances the transmission Loss Factor is the transmission Loss Factor assigned to the

- i) associated substation identified in an Access Contract; or
- ii) the electrically closest substation (if a substation is not identified in the Access Contract)

1.8.2 Distribution Loss Factors

For Connection Points on the Distribution System op

1.8.3 Changes in Nominated Reference Service

When the nominated Reference Service for a Connection Point is changed the Network Operator must re-determine the transmission and distribution loss factors in accordance with sections 1.8.1 and 1.8.2. The new transmission and distribution loss factors apply from the date the Reference Service change is effective.

1.8.4 Individually Calculated Distribution Loss Factors

This section applies where an individual distribution loss factor is required under section 1.8.2 (d), (e) or (f).

If a new Connection Point is commissioned during the year and is:

- (a) eligible for an individual distribution loss factor under section 1.8.2 (d) or (e); or
- (b) the Market Participant elects an individual distribution loss factor under section 1.8.2 (f)

the Connection Point will be assigned the distribution loss factor calculated by the Network Operator and the commencement date will be determined by the later of:

- (a) the first trading day following commissioning of the Connection Point; or
- (b) the trading day determined by the IMO under section 1.4 (2).

The IMO will publish the new loss factor in accordance with section 1.4.

The Network Operator must review individual distribution loss factors during annual reviews in accordance with this market procedure.

The cost of calculating and annually reviewing individual distribution loss factors will be borne by the Network Operator except where a Market Participant has elected to apply an individual distribution loss factor under section 1.8.2 (f). In this instance loss factor calculation and reviews (including annual) will be at the expense of the Market Participant.

1.9 Re-assessment of Loss Factors (Market Rule 2.27.4)

Where a Market Participant reasonably believes that

a date by which the Market Participant is to comply with the request. Such a date will be no less than five Business Days from the date of the IMO notification.

- 3 The IMO may, as it sees fit, institute any one or more of the following levels of audit:

Level 1 – reviewing the reasons provided by the notifying Market Participant for believing the Loss Factor should be a different value and/or reasons provided by the Network Operator for the Loss Factor value as calculated;

Level 2 – reviewing or analysing the data used to calculate the Loss Factor;

Level 3 – reviewing, replicating, or rerunning the models or calculation processes used to calculate the Loss Factor.

- 4 The IMO may, at its discretion, aggregate its audit of Loss Factor calculations that are the subject of Market Participant notifications, provided the IMO adheres to the timing parameters outlined in the Market Rules and this procedure for each individual Market Participant notification.

Network Operator Cooperation

- 5 The relevant Network Operator is required to cooperate with an IMO audit of any Loss Factor calculation, including provision of access to the data, systems, calculations and personnel used in producing the Loss Factor.

Discovery of Error

- 6 Where an audit reveals an error in a Loss Factor calculation, the IMO will direct the relevant Network Operator to recalculate the Loss Factor. The IMO may also direct the Network Operator to recalculate any other Loss Factors, where the IMO is of the view that a recalculation is warranted.
- 7 The Network Operator must provide the recalculated Loss Factor, or Loss Factors as the case may be, as first

