

ENERGY LOSS FACTORS: COMPLIANCE REVIEW SUMMARY OF FINDINGS AUGUST 2004

Background

1. In February 2003, the Commission advised both the Power and Water Corporation and NT Power Generation Pty Ltd ("NT Power") of its intention to review the methodology used by the Power and Water Corporation's power networks business unit ("PWN") to calculate the energy loss factors which were applied to NT Power by the Power and Water Corporation's system control business unit for the purposes of section 82(2A) of the *Electricity Networks (Third Party Access) Code* ("the Code") during the period from 15 April 2000 to 31 August 2002.
2. The essential issue was whether the energy loss factors derived by PWN were established in accordance with the requirements of the Code, and in particular the requirements of Schedule 13 to the Code. As the Commission's focus was on the derivation of transfer loss factors (reflecting transmission losses), the relevant requirements were those in paragraph 2 of Schedule 13.

Outline of review process

3. The Commission appointed Electric Power Consulting Pty Ltd ("EPC") as its technical adviser for the purpose of this review.
4. The Commission issued an information request to PWN under section 25 of the *Utilities Commission Act* on 4 July 2003. The Commission received PWN's initial response to its information request on 11 August 2003. This information was provided to EPC to assist in the preparation of its advice to the Commission.
5. EPC's initial analysis and advice was received by the Commission on 29 August 2003. This initial analysis and advice was reviewed by the Commission and a final form of EPC's analysis and advice was received by the Commission on 10 September 2003.
6. The Commission issued its draft findings to the parties on a confidential basis in October 2003.
7. PWN responded to the Commission's draft findings in a letter to the Commission dated 1 December 2003.
8. To assess PWN's response, the Commission requested that EPC assess the further information provided by PWN.
9. The Commission released EPC's further analysis to the parties prior to a conference with the parties held in Sydney on 16 July 2004.
10. The parties provided final submissions to the Commission by end-July 2004.

Commission's interpretation of paragraph 2(2) of Schedule 13

11. Paragraph 2(2) of Schedule 13 of the Code sets out the method by which the transfer energy loss factor for a connection point (hereafter "transfer loss factor" or "TLF") is to be established.

12. Paragraph 2(2) provides:

"The factor applying to each specific location during a financial year is to be derived from simulations of forecast network load and generation conditions for multiple energy usage periods reflecting actual conditions experienced in the preceding 12 months and anticipated changes to demand and generation location and output." (underlining added for emphasis)

13. As the methodology specified in paragraph 2(2) is expressed in a descriptive rather than a precise or mathematical manner, this methodology gives rise to elements of discretion and judgment as to:

- how the directive given in paragraph 2(2) is to be applied in any given situation; and
- whether a resulting calculation is within the range of possible outcomes permitted by paragraph 2(2).

14. The Commission considered that:

- the interpretation to be given to paragraph 2(2) of Schedule 13; and
- the judgment to be made as to whether a network provider has in fact calculated a TLF in conformity with paragraph 2(2) of Schedule 13,

are to be guided by a number of interpretive principles.

15. First, it is implicit from paragraph 2(2) that TLFs to be derived using the methodology specified in that paragraph must be *reasonably based*. Where the Code confers a power on the network provider to exercise a function under the Code in accordance with a generally-specified methodology, but does not specify precisely how that function is to be performed, there is a presumption that the Code requires that the methodology adopted be reasonable.

16. Secondly, where there is any ambiguity in the interpretation of a provision of the Code, a construction is to be favoured which would *promote the objects of the Code and Act* rather than one which would not. The underlying principles of the Code are stated in clause 2. Clause 2(2) directs the regulator when undertaking any of the functions assigned to the regulator by the Code (and any arbitrator appointed under the Code) to take into account the matters listed therein in deciding on the terms and conditions of access. The provisions of Chapter 9 of the Code concerning charges for out-of-balance energy services (which apply Schedule 13) are contained in Part 3 of the Code. The objectives of price regulation under Part 3 are stated in clause 63 of the Code. Those principles and objectives do not provide direct guidance as to the proper interpretation of paragraph 2(2) of Schedule 13. The principles and objectives do, however, suggest that the Code is intended to operate in a fair and reasonable manner.

17. Thirdly, since the Code is dealing with technical matters in the electricity supply industry, regard should be had to *applicable general electricity industry practice* in resolving any ambiguity in the meaning of words used in the Code or in their application in any given situation. The Code itself contains a definition of 'good electricity industry practice' and uses that concept for various purposes. The Commission considered that:

- in interpreting the meaning of paragraph 2(2) of Schedule 13; and
- in determining whether the TLFs established by the network provider have been calculated in accordance with the methodology specified in paragraph 2(2),

regard may be had, in resolving ambiguities, to good electricity industry practice generally. That is, regard may be had to the exercise of judgment and the application of relevant methodologies evident among a significant proportion of operators of comparable facilities in the electricity supply industry.

Overview of Commission’s analysis and findings

18. PWN indicated that it had applied two different methodologies for calculating the TLFs during the period covered by this review. They were:

- a methodology to calculate the TLFs which applied during the period from 15 April 2000 to 30 June 2001 (hereafter referred to as the “initial methodology”); and
- a methodology to calculate the TLFs which applied during 2001-02 and subsequent financial years (hereafter referred to as the “revised methodology”).

Did the initial methodology comply with Schedule 13?

19. The Commission considers that PWN’s derivation of the relevant TLFs using the initial methodology cannot be said to have been done in accordance with the requirements of paragraph 2(2) of Schedule 13, as:

- the initial methodology was not derived by the required ‘simulations’ either in terms of using data for the relevant preceding 12 month period, or in terms of using forecast network loads in future periods;
- the initial methodology was flawed by the use of only November 1999 load data; and
- the initial methodology did not reflect the actual conditions experienced in the preceding 12 month period.

20. Moreover, the Commission considers that paragraph 2(2) of Schedule 13 required PWN, in using the methodology specified in that paragraph, to apply that methodology in accordance with good electricity industry practice. The Commission concludes that good electricity industry practice at the time would have involved the adoption of an approach to the calculation of TLFs that was similar in approach to that used in the national electricity market at that time (here termed “a NEM-based methodology”).

21. The Commission considers that it was not reasonable for PWN to adopt the initial methodology as compared to a NEM-based methodology in the first year because:

- the initial methodology was not consistent with good electricity industry practice, or a reasonable interpretation of Schedule 13; and
- a NEM-based methodology would have been consistent with good electricity industry practice, and a reasonable interpretation of Schedule 13.

22. The Commission therefore considers that the initial methodology did not comply with the requirements of paragraph 2(2) because the methodology was not applied in a manner that was in accordance with good electricity industry practice.

23. Finally, the Commission considers that PWN’s use of an alternative to a NEM-based methodology could not be regarded as being in compliance with the methodology specified in paragraph 2(2) unless that alternative methodology was applied in a reasonable manner.

24. The Commission considers that the requirements of reasonableness in the application of any alternative to a NEM-based methodology required:

- the estimation of energy losses on a whole-of-system basis ‘with’ and ‘without’ Mt Todd power station rather than a methodology that effectively assumed load supplied by NT Power is physically supplied with electricity generated from the Mt Todd power station; and
- the use of a method capable of approximating actual losses if assumed conditions ultimately were to eventuate.

25. The Commission therefore considers that PWN’s use of the initial methodology did not comply with the requirements of reasonableness implicit in paragraph 2(2) of Schedule 13.

26. Notwithstanding these various conclusions, the Commission found no evidence that would suggest that the decision by PWN not to adopt a NEM-based methodology in the first year was intended to harm NT Power or advantage the Power and Water Corporation. In the Commission’s assessment, the officers involved in the calculation of the TLFs using the initial

methodology continue to hold a genuine belief – albeit one that the Commission considers incorrect – that the approach taken was both:

- that intended under Schedule 13 of the Code; and
- consistent with the original basis of out-of-balance pricing in the Code.

Commission’s findings:

- (a) That use of the initial methodology in 2000-01 was in technical breach of Schedule 13 of the Code as it did not reflect good electricity industry practice observable at the time.
- (b) That there is no evidence that the breach in 2000-01 involved bad faith on the Power and Water Corporation’s part.

Did the revised methodology comply with Schedule 13?

27. The Commission is satisfied that the revised methodology applying after June 2001 is a significant improvement on the initial methodology that applied between April 2000 and June 2001, in that it represents a reasonable approximation – in the NT circumstances – of a NEM-based methodology.

28. EPC contrasted the revised methodology with a technically-superior methodology (which it labeled Methodology 3). However, being technically superior to any NEM-based methodology, this Methodology 3 also goes beyond currently-observed electricity industry practice. In the circumstances, the Commission cannot find that the revised methodology did not represent a reasonable effort in the NT circumstances to replicate the outcome of a NEM-based methodology. EPC agreed with this assessment.

Commission’s finding:

- (c) That use of the revised methodology in 2001-02 did not involve a breach of Schedule 13 as it did not materially diverge from good electricity industry practice observable at the time.

Did this non-compliance cause financial hardship to NT Power?

29. EPC estimated that, had the revised methodology been used in 2000-01 rather than the initial methodology, energy losses applying to NT Power’s use of the network would have been calculated to amount to 6.62% of energy sent out that year. The initial methodology, which was the one actually applying in 2000-01, suggested that energy losses applying to NT Power’s use of the network represented 6.70% of energy sent out. On this basis, EPC estimated that the initial methodology resulted in an over-recovery of transfer losses in respect of 2000-01 of around 0.08% of energy sent out. This implies that use of the initial methodology to calculate energy loss factors resulted in an error of 1.3% against the factors calculated using the revised methodology.

30. In material terms, EPC considered this over-estimation of transfer losses to be modest and generally within the accuracy limits of power system modelling.

31. On this basis, the Commission could not find that PWN’s non-compliance with Schedule 13 in the 2000-01 year caused financial hardship to NT Power, or that there are grounds for the parties to come to a commercial arrangement to offset any financial hardship.

Commission’s finding:

- (d) That the adverse impact on NT Power of the breach in 2000-01 was not significant in magnitude, as evident by the insignificant difference implied if the revised methodology had been applied also in 2000-01.

Does Schedule 13 require amendment?

32. Clause 82(2A) of the Code provides that the energy losses which are to be taken into account by the power system controller are energy losses:

- (a) estimated in accordance with Schedule 13; or
- (b) as otherwise determined from time to time by the regulator.

33. In the period covered by this review, there was no operative determination by the Commission as the regulator under clause 82(2A)(b) of the Code. The Commission considers that clause 82(2A)(b) operates only prospectively, and therefore does not enable the Commission to make a determination that energy losses for an earlier period are to be calculated in accordance with a method specified by the Commission.

34. This review has satisfied the Commission that a determination under clause 82(2A)(b) of the Code providing clearer guidance on the calculation of energy loss factors than Schedule 13 is called for. This should include a process whereby the under- or over-estimation of losses by calculated loss factors in one year would be recovered by an adjustment to the loss factors used in a subsequent year. The Commission will commence the development of such a determination shortly.

Commission's finding:

(e) That the Commission needs to develop alternative provisions to Schedule 13 that clearly set out the desired outcomes (or characteristics) to be met by the methodology used by the network provider in future to calculate energy losses in the NT context.

Utilities Commission
27 August 2004