

IN THE DISPUTE RESOLUTION PANEL AT MELBOURNE

(Constituted for a determination as to compensation under Rule 3.16.2 of the National Electricity Rules)

BETWEEN:

Synergen Power Pty Ltd (ABN 66 092 560 819) (**Synergen**)

and

Australian Energy Market Operator Limited (ABN 94 072 010 327) (**AEMO**)

DECISION OF THE DISPUTE RESOLUTION PANEL

1. The Australian Energy Market Operator (AEMO) published a Market Event Report on 26 August 2010 (*Scheduling Error Affecting Dispatch of Mintaro Gas Turbine Station*) in which AEMO determined that a scheduling error had occurred under Rule 3.8.24(a) (2) of the National Electricity Rules. A constraint equation, known as S>NIL_NIL_MNWT, was intended to maintain flow on the Mintaro to Waterloo 132kV transmission line in South Australia below its continuous rating. The stated cause of the scheduling error was that this constraint equation had been incorrectly formulated. AEMO states that the scheduling error occurred for those dispatch intervals in which this constraint equation bound during the period from 19 May 2009 to 14 January 2010.
2. AEMO states that the scheduling error affected the dispatch of Mintaro Gas Turbine Station in South Australia. AEMO does not consider that other Generators would have been constrained on or constrained off because of the scheduling error.
3. Synergen Power Ltd, which owns the Mintaro Gas Turbine Station, initiated a claim for compensation for a net loss as a result of the scheduling error. In a Joint submission to the Panel, Synergen and AEMO have agreed on all the facts of this matter. Synergen seeks compensation to cover its loss of \$246,858.78. AEMO agrees with the calculation of this loss.
4. The Dispute Resolution Adviser (Adviser) issued a notice on 21 September 2010 to the Dispute Management System Contacts to notify them of the claim for compensation and seek interest from any other participant that may have been affected by the error. No responses were received.

5. A hearing was conducted on 24 September 2010.
6. As noted, AEMO stated that it had determined that a scheduling error had occurred pursuant to Rule 3.8.24(a)(2) which states

A scheduling error [includes a circumstance where] AEMO declares that it failed to follow the central dispatch process set out in this rule 3.8.

7. AEMO states in the Market Event Report that “AEMO understands that the essence of the scheduling error concept is that it is a failure to follow the central dispatch process rather than a failure to achieve a particular result. In determining when this scheduling error occurred, AEMO’s processes for formulating constraint equations are considered to be part of the central dispatch process.”
8. It is the Panel’s view that AEMO must exercise this power reasonably having regard to the fact that Market Participants contribute to the Participant Compensation Fund and that in a competitive market, any compensation payments are likely to be borne by consumers. For this reason the Panel reviewed whether a scheduling error had occurred
9. In considering whether a scheduling error occurred there are many rules that are relevant. The Joint submission set out the background to the scheduling error including AEMO’s role in the National Electricity Market, the regulatory framework, the process of central dispatch, the impact of power system security on dispatch, and the use of constraint equations in the National Electricity Market Dispatch Engine (NEMDE).
10. Central to the question of scheduling error in this case is Rule 3.8.10 (b) which states:

.....AEMO must determine and represent network constraints in dispatch which may result from limitations on intra-regional or inter-regional power flows and, in doing so, must use a fully co-optimised network constraint formulation.

11. The Panel agrees with AEMO, that it did not determine and represent network constraints in dispatch resulting from limitations on intra-regional power flows in the manner required by Rule 3.8.10 (b) and therefore that it has appropriately made a determination that a scheduling error has occurred in accordance with Rule 3.8.24(a)(2). In coming to this finding the Panel has had regard to the following:
 - a. AEMO states that S>NIL_NIL_MNWT was originally developed because a change in the power system configuration had led to contingency violations on certain

transmission lines in South Australia. In order to deal with those violations, several constraint equations were formulated.

- b. S>NIL_NIL_MNWT was created to ensure that flow on the Mintaro-Waterloo line remained less than the continuous rating in a variety of post-contingent circumstances.
 - c. AEMO stated that other system normal constraint equations had been formulated for post-contingency circumstances for use following specific contingencies using 15-minute ratings. When S>NIL_NIL_MNWT (which covered an array of contingencies) was formulated, it was anticipated it would not bind under system normal conditions however it bound during January, May and November 2009 and January 2010.
 - d. In May 2009, AEMO undertook a review of constraint equations used to manage network flows in the vicinity of Mintaro-Waterloo line in preparation for commissioning of Clements Gap Wind Farm.
 - e. This review was completed on 19 May 2009 and resulted in a change to the constraint equation to manage flows on the Mintaro-Waterloo transmission line for loss of the Brinkworth to Para 132kV line.
 - f. However, S>NIL_NIL_MNWT was not changed at this time despite this being inconsistent with AEMO's procedures to formulate a co-optimised constraint formulation, having regard to the fact that the constraint equation had been binding during system normal conditions. It was at this point the scheduling error occurred.
12. The Panel considered the time period over which the scheduling error was claimed to have occurred.
13. S>NIL_NIL_MNWT was originally formulated on 23 July 2008. As noted above, AEMO changed the constraint equation on 19 May 2009. Binding constraints occurred on each day between 27 and 31 January 2010, as shown in Figure 2 of the Market Event Report. The Panel considered the possibility that the scheduling error could have occurred earlier than 19 May 2009. There could have been gains, losses (or no impact) in spot market revenues relating to Mintaro dispatch between 27 and 31 January 2009. If there had been gains made by Synergen in relation to Mintaro and the circumstances were such that a scheduling error had occurred, then taking account of these gains would result in a lesser compensation amount being appropriate.

14. AEMO stated that Rule 3.8.24(a)(2) provides it with determinative powers in regard to establishing a scheduling error including when it had occurred. The Panel notes this view but considers that AEMO's determinative powers should not be exercised unreasonably.
15. The AEMO stated that the error (not to change S>NIL_NIL_MNWT) occurred following the review conducted in May 2009 as a result of, what the Panel understands to be, a new factor in the market, being preparation for commissioning of Clements Gap Wind Farm. That is, the error did not occur when the constraint was originally formulated, in different circumstances, on 23 July 2008.
16. AEMO also noted that the instances of binding constraints that occurred from 27 to 31 January 2009 were in the context of market disruptions caused by the Victorian bushfire event. Therefore these binding constraints occurred during non normal conditions, when it is expected that there may be binding constraints.
17. The Panel has not received a counter position and therefore accepts the Joint submission that the scheduling error occurred on 19 May 2009.
18. Synergen seeks compensation to cover its loss during the scheduling error period of \$246,858.78. AEMO does not dispute this calculation.
19. The Panel has reviewed the amount of loss claimed by Synergen. The amount of loss is calculated using the following formula for each dispatch interval in which the constraint equation bound:

$$\text{Loss} = \text{net reduction in income from the spot market} - \text{avoided fuel cost}$$

which can also be stated as

$$\text{Loss} = ((\text{expected output} - \text{actual output}) * \text{loss factor} * \text{spot price}) - \text{avoided fuel cost}$$
20. The net reduction in income from the spot market was calculated to be \$248,442.77 and avoided fuel costs were calculated as \$1,583.99 giving a total loss of \$246,858.78.
21. The (expected output – actual output) term was determined by AEMO recalculating the dispatch outcome (in MW) with the correct constraint equation substituted for the incorrect constraint equation and comparing this to the original dispatch outcome (in MW). The Panel agrees with this method.
22. The information provided in the Joint submission demonstrating the calculation of the amount of loss was as follows:

- a. The results of the calculation of (expected – actual output) was set out for every (five minute) dispatch interval in Schedule 2
 - b. The loss factor is assumed to be 0.969 in accordance with those published by AEMO for the financial year 2009/2010 and 0.9664 for the financial year 2008/2009.
 - c. In accordance with Rule 3.16.2(h) the calculation of loss used the actual Spot price in each dispatch interval
 - d. The avoided fuel cost as result of the incorrectly formulated constraint equation was, as noted, \$1,583.99 but no details were provided as to how this amount was determined, in the Joint submissions.
23. The calculations to determine the net reduction in income from the spot market (steps a, b and c above) were undertaken by AEMO and then reviewed by AEMO with Synergen. At the hearing the Panel made enquiries into how these calculations were undertaken. The Panel notes the calculations were reviewed by Synergen and is satisfied that AEMO followed appropriate internal processes to ensure the calculations are accurate. A copy of the further information is attached as Appendix A. The Panel accepts the calculation of the net reduction in income from the spot market.
24. The Panel requested further details of the avoided fuel cost calculation (step (d) in paragraph 22) and was provided with a confidential spreadsheet. The Panel made enquiries to provide an assurance that the avoided fuel costs had been calculated appropriately and were not understated. A copy of the further information is attached as Appendix B. The calculations to determine avoided fuel costs were undertaken by Synergen and then reviewed by AEMO. The Panel considered the methodology used for calculating the avoided costs; the inputs to the methodology (being actual gas costs, incremental heat rates and incremental output); and noted the internal processes undertaken by Synergen and the external review undertaken by AEMO. The Panel accepts the calculation of avoided fuel costs.
25. Accordingly the Panel accepts the claim for compensation of \$246,858.78.
26. In determining the amount of compensation to be paid to Synergen, Clause 3.16.2 requires a Panel to
- a. to determine the manner and timing of payments from the Participant Compensation Fund

- b. to take into account the current balance of the Participant Compensation Fund and the potential for further liabilities to arise during the year and to recognise that the aggregate liability in any respect of scheduling errors can exceed the balance of the Participant Compensation Fund
27. The Panel determines that the full amount of compensation should be paid to Synergen as soon as practicable having regard to the following factors set out in the Joint submission: that as at 16 September 2010 the Participant Compensation Fund has a balance of \$3,280,280.77; that there have been no other formal claims for compensation for scheduling errors since the last payment; that AEMO has not declared any further scheduling errors; that no future claims have been advised to the Adviser as at 23 September; and that if the full compensation amount is paid the balance in the Participant Compensation fund would be \$3,033,421.99.
28. Synergen has not claimed interest and the parties have agreed that each should bear their own costs and share the costs of the Panel and the Adviser equally. The Panel has no reason to depart from these arrangements.

Date: 1 October 2010



Geoff Swier

APPENDIX A

IN THE DISPUTE RESOLUTION PANEL AT MELBOURNE (Constituted for a determination as to compensation under Rule 3.16.2 of the National Electricity Rules)

SUPPLEMENTARY SUBMISSION TO THE DISPUTE RESOLUTION PANEL

Synergen Power Pty Ltd (ABN 66 092 560 819)
(Synergen)

and

Australian Energy Market Operator Limited (ABN 94 072 010 327)
(AEMO)

A. Glossary

1. A number of terms and acronyms are used throughout these submissions.
2. Many of the terms used in these submissions are defined in the National Electricity Rules (Version 38) (**Rules**) and these are italicised for ease of reference.
3. Unless the context dictates otherwise, terms defined in the *Rules* have the same meaning in these submissions as in the *Rules* and a reference to a 'Rule' followed by a number means a provision of the *Rules*.

B. Background

4. AEMO has determined under Rule 3.8.24(a)(2) that a *scheduling error* occurred from 19 May 2009 until 14 January 2010. The *scheduling error* affected the Mintaro Gas Turbine Station in South Australia.
5. Synergen is and was, at all material times, registered as a *Market Generator* and a *Scheduled Generator* in respect of the Mintaro Gas Turbine Station.
6. Rule 3.16.2 permits Synergen to apply to the Dispute Resolution Panel (**DRP**) for a determination as to compensation in respect of the *scheduling error*. The matters to be determined by the DRP are:
 - (a) whether compensation is payable;
 - (b) the amount of compensation to be paid to Synergen for its loss from the *Participant compensation fund*,¹ and
 - (c) the manner and timing of that payment.²

¹ Rule 3.16.2 (b) and (d)

² Rule 3.16.2(i).

7. On 21 September 2010, AEMO and Synergen made a joint submission to the DRP in relation to the matters referred to in paragraph 6 (**Joint Submission**).

C. Question from DRP

8. The DRP asked the following questions, which AEMO has been requested to confirm in a supplementary submission:

Internal process check

In relation to the calculations of Synergen's loss (para 57 and Schedule 2) could AEMO provide information on its internal process, (such as a quality assurance processes, internal procedures etc) to ensure the calculations are correct.

Avoided Fuel costs

Could further details of the calculation of avoided fuel cost (para 62) be provided. As above, it is appropriate to be assured that the amount is not understated.

- a. If actual costs, has AEMO undertaken any checks to determine the amount is reasonable, if so what are they?
- b. If not already undertaken, is it possible to provide a high level sense check to determine that this amount is reasonable? For example, what is the fuel cost per MWh produced by dividing the avoided fuel cost amount by the difference in actual and expected sent out generation? How does this compare to accepted benchmarks for fuel cost per MWh.

D. Response to questions

Internal process check

1. AEMO used specialist employees and on "off-line" version of NEMDE to rerun the central dispatch process with the correct constraint equations substituted in the off-line version.
2. The results were then subject to a peer review by another employee who independently reran the off-line NEMDE and the two results compared
3. Any differences between the two sets of results were reconciled before a final set of results were presented to Synergen.
4. AEMO and Synergen employees then met to review the analysis, including a number of questions raised by Synergen about the results. These questions were answered and a joint position on the lost revenue has been presented to the DRP, using AEMO's original estimate of the error.

Avoided fuel costs

5. AEMO reviewed the calculations provided by Synergen.

- 6 AEMO has no particular expertise in relation to fuel costs and heat rates. At a high level, however, they seemed to AEMO to have been determined on a reasonable basis.

DATED: 30 September 2010

Authorised by: Tony Snell

APPENDIX B

IN THE DISPUTE RESOLUTION PANEL AT MELBOURNE
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SYNERGEN SUPPLEMENTARY SUBMISSION
TO THE DISPUTE RESOLUTION PANEL

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¹ Rule 3.16.2 (b) and (d)

² Rule 3.16.2(i).

C. Question from DRP

8. The DRP asked the following questions, which Synergen has been requested to confirm in a supplementary submission:
 - a. *Could further details of the calculation of avoided fuel cost (para 62) be provided. Has the amount been determined based on actual costs or some other basis?*
 - b. *What checks were done to determine of the amount of the avoided fuel cost was reasonable?*

D. Response to questions

9. Synergen calculated the avoided fuel cost based on actual price of gas for the Mintaro Gas Power Station during the period of the scheduling error and an estimate of the difference of fuel usage in changing between different loading levels with the unit being in service.
10. The gas price used in the calculation is the actual price of gas for the Mintaro Gas Power Station during the period of the scheduling error. The formula for calculating the MWh fuel cost is the product of the incremental heat rate of the Mintaro Gas Power Station and the gas price. The difference between the Mintaro Gas Power Station's actual output and expected output (in MW) was taken from AEMO's re-run data for the period of the scheduling error. This was then converted into MWh for each 5 minute dispatch interval by dividing the MW difference by 12, giving the incremental MWh benefit. After the conversion, the incremental avoided fuel cost was then calculated as a product of incremental MWh benefit multiplied by the MWh fuel cost. These figures were then summated to provide a total avoided fuel cost for the scheduling error period.
11. The formulae and calculations were then checked for quality assurance by the regulatory manager to verify the formulation and approach that was adopted in calculating all costs were correct. The gas contract prices was also verified by checking the actual invoices during the scheduling period to check that the gas price used in the calculations was the actual price being charged in the invoices.
12. The avoided fuel cost is \$919.03. The avoided fuel cost set out in the Joint Submission was \$1,583.99. The difference is due to the gas price not being appropriately increased from 1 January 2010. There was no change in the methodology for this calculation. While the revised avoided fuel cost is more favourable to Synergen, it is confirmed that Synergen's claim is for the amount set out in the Joint Submission and not an increased amount to reflect the revised avoided fuel cost.

DATED: 28 September 2010