

**AEMO Directions to Participants
in South Australia
in February 2020**

10 August 2020

IES Ref 6507

Final Determination

Disclaimer

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Executive Summary

IES has been appointed by AEMO as independent expert to assess claims for additional compensation related to *directed* services provided by a directed participant referred to herein as the Claimant.

During a prolonged period of separation between Victoria and South Australia between 31 January and 17 February 2020 a number of *directions* were issued for system strength and frequency control ancillary services (FCAS) including to units operated by the Claimant in South Australia. The *directions* are summarised in Table 1.

In the opinion of IES, the Claimant has followed a reasonable method and made reasonable estimates supported by invoices for gas costs in determining the amounts in the claims for additional compensation. The Claimant has also supported the estimates of variable maintenance costs and followed an established method to arrive at the estimates. Costs were supported by reference to contracted prices for parts and a reasonable estimate of exchange rates.

On 16 June 2020 IES issued a draft determination. There were no submissions made in relation to the draft determination. The amounts in the draft determination were based on the provisional compensation amounts determined by AEMO. The final determination has been updated to reflect the settlement amounts calculated by AEMO at the 20-week revision. The changes affected Billing Week 5 amounts only. The final determination amounts have been expressed in units of dollars and cents to avoid rounding issues. This resulted in a corresponding rounding adjustment to the amounts calculated in the draft determination. The final determined amount of additional compensation is summarised below.

Claim	Final determined amount of additional compensation
claims in billing week 5 – PS1	\$ 2,344,891.08
claims in billing week 6 – PS1	\$ 119,377.65 (no change from draft determination)
claims in billing week 6 – PS2	\$ 30,623.79 (no change from draft determination)
Total	\$ 2,494,892.52

Assessment of the claims was able to reconcile the amounts in the spreadsheets. The assessment uncovered a difference between the amount in the spreadsheet and that claimed in Billing Week 6 for PS2, refer to claim letter dated 24 March 2020. The variance of \$3,193 is shown in Section 3.

The directed participant has been informed of this final determination in accordance with the intervention settlement timetable.



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Notes to this report

Units and dollars

Unless otherwise specified:

Dollars refer to Australian dollars.

The claim amounts do not include interest payable to the participant.



1 Introduction

IES has been appointed by AEMO as independent expert to assess claims for additional compensation submitted by a *Directed Participant*, herein Claimant, in relation to the directions issued in Billing Weeks 5 and 6.

1.1 Background and direction to participants

At 1324 hrs 31 January 2020 the Moorabool - Mortlake 500 kV Line and the Moorabool - Haunted Gully 500 kV transmission line tripped resulting in South Australia (SA) separating from Victoria (VIC) at Heywood Terminal Station. At 1500 hrs AEMO was advised that the 2 transmission lines had suffered tower damage and would be on an extended outage. The VIC/SA separation event occurred between 31 January and 17 February 2020.

During the separation event, a number of *directions* were issued for system strength and frequency control ancillary services (FCAS) to restore and maintain the system in a secure operating state. Between 26 January and 01 February 2020 (BW5) and 02 February and 08 February 2020 (BW6), two power stations operated by the Claimant in SA were *directed* as summarised in Table 1.

Table 1 Summary of the *directions*

Directed unit	Event number	BW	Direction	Start	End
PS1	1.1	5	G1 remain synchronised	01/02/2020 04:00	01/02/2020 04:30
PS1	1.2	5	G2 remain synchronised	01/02/2020 04:30	01/02/2020 04:50
PS1	2.1	5	Enable 35MW raise 6 sec	01/02/2020 04:50	01/02/2020 07:10
PS1	2.2	5	Enable 35MW raise 6 sec	01/02/2020 10:00	01/02/2020 16:30
PS1	5.1	6	Enable 17 MW raise 6 sec, 17 MW lower 6 sec, 15 MW lower 60 sec	02/02/2020 06:00	02/02/2020 19:00
PS1	5.2	6	G2 remain synchronised	02/02/2020 22:30	03/02/2020 02:30
PS1	5.3	6	G2 remain synchronised	04/02/2020 00:30	04/02/2020 14:30
PS1	6.1	6	G2 remain synchronised	05/02/2020 09:00	05/02/2020 12:00
PS2	5.1	6	Synchronise	02/02/2020 04:40	02/02/2020 07:50
PS2	5.1	6	Synchronise	02/02/2020 04:40	02/02/2020 07:50
PS2	5.1	6	Synchronise	02/02/2020 04:40	02/02/2020 07:50

The remainder of this report is organised as follows:

Section 2 – Description of services and final determination



Section 3 – Claims for additional compensation

Section 4 – Conclusion

Where it is considered important for clarity, terms defined in the National Electricity Rules (NER) have been italicised in the report. Reference to clauses in this report is a reference to the clause in the NER unless stated otherwise.

2 Description of services and final determination

2.1 Description of services provided

The services were provided pursuant to *directions* for energy and to enable market ancillary services, summarised in Table 1.

2.2 Submissions in relation to the draft determination

The Claimant was invited to make written submissions in accordance with the intervention timetable should they wish to do so. There were no submissions made in relation to the draft determination.

2.3 Final determination of the claim for additional compensation

A *Directed Participant* is entitled, in respect of both of the above services, to submit a written claim for additional compensation in accordance with clause 3.15.7B. Submitted claims were assessed and the draft determination published on 16 June 2020 in accordance with the intervention timetable published by AEMO. There were no submissions made in relation to the draft determination. The draft determination was based on the provisional compensation amount calculated by AEMO. The final determination has been updated to reflect the settlement amounts as calculated by AEMO at the 20-week revision, summarised in Table 2. The revised amounts pertained to two events in Billing Week 5. There were no changes to other events in that week nor to events in Billing Week 6.

Table 2 Changes to DCP. 20-week revision compared to provisional compensation amounts

Directed unit	Event number	BW	Direction	DCP provisional	DCP 20-week revision	Add to positive claimed amount
PS1	1.1	5	G1 remain synchronised	\$ 11,666.17	\$ 11,722.09	-\$ 55.92
PS1	1.2	5	G2 remain synchronised	\$ 14,831.40	\$ 14,591.97	\$ 239.42

The final determined amount for Event 1.1 is reduced by \$ 55.92 and for Event 1.2 is increased by \$ 239.42 relative to the amounts in the draft determination. There were no changes pertaining to any of the other amounts except due to rounding as a result of re-expressing the

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amounts in units of dollars and cents to avoid rounding issues in calculating settlement amounts. Table 3 shows the final and draft determination amounts.

Table 3 Claims for additional compensation – final determination

Directed unit	Event number	BW	Direction	Draft determination	Change	Final determination
PS1	1.1	5	G1 remain synchronised	\$ 168,603.72	- \$ 55.92	\$ 168,547.80
PS1	1.2	5	G2 remain synchronised	\$ 261,465.63	\$ 239.42	\$ 261,705.05
PS1	2.1	5	Enable 35MW raise 6 sec	\$1,837,828.71	No change	\$1,837,828.71
PS1	2.2	5	Enable 35MW raise 6 sec	\$ 76,809.52	No change	\$ 76,809.52
PS1	5.1	6	Enable 17 MW raise 6 sec, 17 MW lower 6 sec, 15 MW lower 60 sec	Not claimed	Not applicable	Not claimed
PS1	5.2	6	G2 remain synchronised	Not claimed	Not applicable	Not claimed
PS1	5.3	6	G2 remain synchronised	\$97,108.81	No change	\$97,108.81
PS1	6.1	6	G2 remain synchronised	\$22,268.84	No change	\$22,268.84
PS2-1	5.1	6	Synchronise	\$ 9,902.47	No change	\$ 9,902.47
PS2-2	5.1	6	Synchronise	\$ 9,701.08	No change	\$ 9,701.08
PS2-3	5.1	6	Synchronise	\$ 11,020.23	No change	\$ 11,020.23

The amounts in the Table do not include the amount of interest payable to the *directed participant*.

For Billing Week 5 the final determined total amount increased from \$2,344,707.58 to \$2,344,891.08. The final determined total compensation amounts are summarised in Table 4.

Table 4 Final determination total amounts for each power station by Billing Week

Claim	Determined amount of additional compensation
claims in billing week 5 – PS1	\$ 2,344,891.08
claims in billing week 6 – PS1	\$ 119,377.65
claims in billing week 6 – PS2	\$ 30,623.79
Total	\$ 2,494,892.52



3 Claims for additional compensation

3.1 Method used in calculating the amounts claimed

The claims are set out in letters to AEMO by the Claimant. The letters are dated 17 March 2020 and 24 March 2020. The claims for additional compensation include amounts due to four items:

- Additional Net Direct Costs (Gas Costs) – per 3.15.7B(a3)(1), plus
- Additional Net Direct Costs (EOH Costs) – per 3.15.7B(a3)(2), plus
- Additional Net Direct Costs (Other Costs) – per 3.15.7B(a3)(6), less
- Compensation for the Energy and/or FCAS *direction*.

As these components are common to all the claims they are discussed next followed by a summary of the assessment of the claims.

3.1.1 Additional Net Direct Costs (Gas Costs) – per 3.15.7B(a3)(1)

The method used by the Claimant to calculate gas costs was described as follows:

(a) the calculation of an effective gas price for the relevant gas day – this is a load weighted average gas price of all the gas received on the relevant gas day via the pipelines which can deliver to the power station involved

(b) the calculation of the power station’s generation output (%) while under direction during the relevant gas day (directed generation (MWh) / total generation (MWh));

(c) the calculation of the total quantity of gas (in TJ) burned by the power station in generating on the relevant gas day;

(d) the calculation of the total quantity of gas (in TJ) burned by the power station while under direction during the relevant gas day (the value in paragraph (b) * the value in paragraph (c));

(e) the calculation of the value (\$) of the gas burned by the power station while under direction on the relevant gas day using the effective gas price for that day (the value in paragraph (d) * the value in paragraph (a)); and

(f) the calculation of a gas cost (\$) per MWh generated while under direction for the relevant gas day (the value in paragraph (e) / directed generation (MWh)).

The method as described is implemented in a spreadsheet to derive the cost of gas related to the unit carrying out the direction the *direction*.

Gas costs were supported by invoices.

This is a standard method that in the view of IES provides a fair reflection of the gas costs related to the *direction*.

3.1.2 Additional Net Direct Costs (EOH Costs) – per 3.15.7B(a3)(2)

Incremental maintenance costs in connection with the relevant generating unit, (EOH Costs) were quantified in equivalent operating hours (EOH).

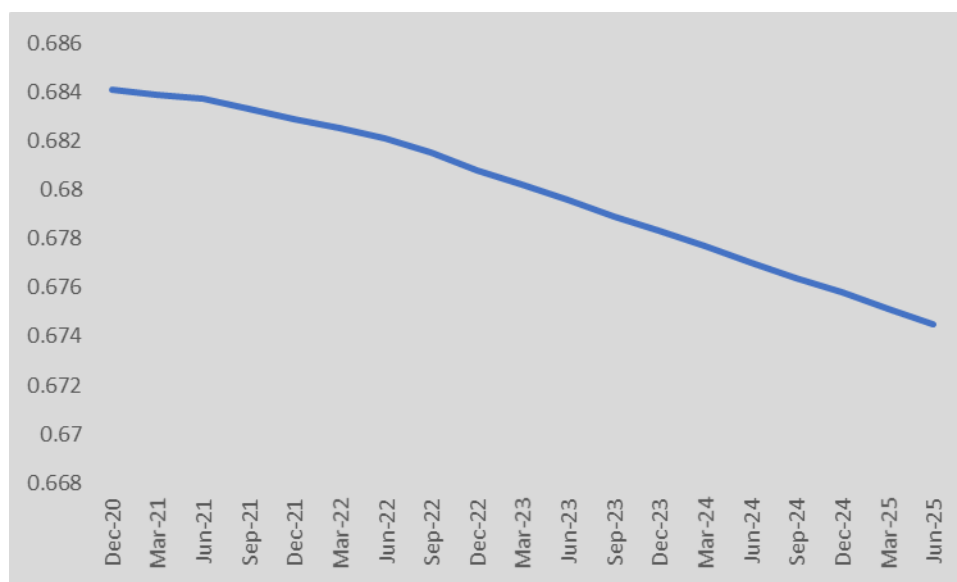
For PS1 and PS2, the Claimant estimated the EOH on a best estimate basis using the following assumptions:

- (a) exchange rate for outages in 2021 and for subsequent outages for parts priced in USD;
- (b) costs for GT parts extracted from contractual documentation;
- (c) overall outage costs used for the period 2021-2030 (inclusive) for the GT, the ST, the HRSG and the BoP over 6 cycles (3 cycles per GT); and
- (d) costs for the ST outages based on historical estimates

The costing methodology using EOH estimated over a cycle or number of cycles is an established method in the industry. The costs for PS2 include 10 effective EOH for start-up based on EOM recommendation. The O&M costs are based on historical data from the past 10 years adjusted up to and including 2019.

IES requested further supporting information from the Claimant regarding the calculation of EOH costs and the derivation of the assumptions used. In this information, the Claimant explained how the exchange rate was arrived at. Further the rate for 2021 is not relevant for PS1 as the parts subject to this exchange rate relate to work to be done later than 2021. To assess the reasonableness of the exchange rate for these future dates, IES obtained publicly available forward rates from CME, an established exchange. The chart shows that forward rates are below the estimate used. This implies that the Claimant’s assumption does not overstate the cost in Australian dollars.

Figure 1 AUD USD forward rates



Source: <https://www.cmegroup.com/trading/fx/g10/australian-dollar.html> accessed on 15 June 2020. PRIOR SETTLE column

In the further information the Claimant provided support for the EOH estimate for PS2. The estimate is worked out based on historical cost data of variable O&M for the past 10 years. To



support the reasonableness of its estimate the Claimant compared their estimates to a much higher quote (nearly 3x higher) received for unit overhaul from the OEM. The method and justification lead IES to be of the view that the EOH amount used by the Claimant represents a reasonable estimate.

3.1.3 Additional Net Direct Costs (Other Costs) – per 3.15.7B(a3)(6)

The Claimant included in its claim for additional compensation an amount to recover the FCAS charges it incurred due to carrying out the *direction*. The Claimant stated in the letters to AEMO that these charges were incurred in relation to the generating unit in order to enable it to comply with the *direction*. These charges are calculated in Excel spreadsheets provided by the Claimant with reference to the FCAS recovery amounts charged during the period of the *direction*. The calculations implemented by the Claimant reflect the portion of charges related to the output under direction. In the view of IES the calculations reflect fairly the costs incurred as a result of the *direction*.

3.1.4 Compensation for the Energy and/or FCAS direction

The compensation to which a directed participant is entitled (DCP) in the case of a direction for the provision of FCAS or energy is specified in 3.15.7(c). This is based on a formula where, simply put, the price is the 90th percentile of prices for energy or the FCAS a year immediately preceding the trading day of the *direction*. This amount has been subtracted from the sum of the foregoing three amounts and the net difference represents the amount claimed by the Claimant.

3.2 Claims relating to directions issued to PS1 in billing week 5

Table 5 Summary of claims in billing week 5 – PS1

Event Number	EOH Cost	Total Fuel Cost	FCAS Recovery	Total Costs	Total Compensation	Net cost claimed
1.1	\$ 394.50	\$ 5,313.98	\$ 174,561.41	\$ 180,269.89	\$ 11,666.17	\$ 168,603.72
1.2	\$ 263.00	\$ 6,924.19	\$ 269,109.83	\$ 276,297.02	\$ 14,831.40	\$ 261,465.63
2.1	\$1,841.00	\$ 42,028.87	\$1,898,119.79	\$ 1,941,989.66	\$104,160.95	\$1,837,828.71
2.2	\$5,128.50	\$165,138.41	\$ 200,540.73	\$ 370,807.64	\$293,998.12	\$ 76,809.52
				Total amount claimed		\$2,344,707.58

The claim for additional compensation submitted by the Claimant is the positive amount \$2,344,709. Expressing amounts in dollars and cents rather than dollars resulted in a rounding adjustment of the total claim amount to \$2,344,707.58. The amount shown in the “Total Compensation” column in Table 5 is based on the provisional compensation amount calculated by AEMO. The final determination has been updated to reflect the adjustments to settlement amounts calculated by AEMO at the 20-week revision shown in Table 4.



3.3 Claims relating to directions issued to PS1 in billing week 6

Table 6 Summary of claims in billing week 6 – PS1

Event Number	EOH Cost	Total Fuel Cost	FCAS Recovery	Total Costs	Total Compensation	Net cost claimed
1.1						(not claimed)
1.2						(not claimed)
2.1	\$10,458.00	\$182,827.17	\$249,803.90	\$ 432,631.07	\$335,522.26	\$ 97,108.81
2.2	\$ 2,241.00	\$ 31,607.27	\$ 62,873.20	\$ 94,480.47	\$ 72,211.63	\$ 22,268.84
					Total amount claimed	\$119,377.65

The claimant has claimed only for the *directions* where the compensation already received did not cover its costs. The amount of the claim is the positive amount \$119,378. Expressing amounts in dollars and cents rather than dollars resulted in a rounding adjustment of the total claim amount to \$119,377.65.

3.4 Claims relating to directions issued to PS2 in billing week 6

IES has assessed the claim and was able to reconcile the amounts in each cell in Table 7. However, the total amounts claimed in the letter dated 24 March 2020 for each unit and the grand total differ from the amounts in the spreadsheet used by the Claimant to calculate the amount to be claimed.

Table 7 Summary of claims in billing week 6 – Event number 5.1 - PS2

Unit	EOH Cost	Total Fuel Cost	FCAS Recovery	Total Costs	Total Compensation	Net cost claimed
PS2-1	\$ 3,489.17	\$ 8,371.47	\$ 108.60	\$ 11,969.23	\$2,066.76	\$ 9,902.47
PS2-2	\$ 3,489.17	\$ 8,169.84	\$ 105.94	\$ 11,764.96	\$2,063.87	\$ 9,701.08
PS2-3	\$ 3,489.17	\$ 9,861.69	\$ 127.72	\$ 13,478.58	\$2,458.35	\$ 11,020.23
					Total amount claimed	\$ 30,623.79

The amount of the claim is the positive amount \$ 30,624. Expressing amounts in dollars and cents rather than dollars resulted in a rounding adjustment of the total claim amount to \$30,623.79.

For comparison, the total for each unit is summarised in Table 8 below. This shows a difference of \$3,194.22 between the amount in the claim letter and the final determination amount.

Table 8 Summary of differences between amounts in the spreadsheet and those in the claim letter

	Amount in letter of claim	Net cost claimed (expressed as positive amount)	Final Determination
PS2-1	\$ 10,777	\$ 9,902	\$ 9,902.47
PS2-2	\$ 10,455	\$ 9,701	\$ 9,701.08
PS2-3	\$ 12,586	\$ 11,021	\$ 11,020.23
Total amount claimed	\$ 33,817	\$ 30,624	\$ 30,623.79



4 Conclusion

Claims for additional compensation, in relation to services provided in response to *directions*, submitted by the Claimant were assessed and a final determination made. In the opinion of IES, the claimant followed a method that is reasonable and in accordance with 3.15.7B. The amounts claimed were reconciled with the Claimant's calculations except in the case of the claim for PS2 in billing week 6 where a difference of \$3,194.22 was found between the amounts calculated in the spreadsheet and the corresponding amounts in the letter of claim of 24 March 2020. There were no submissions received in relation to the draft determination. The final determination of additional compensation amounts reflects the updated settlement amounts calculated by AEMO at the 20-week revision.