



**Additional compensation claims arising
from AEMO directions during billing weeks
13 to 16, 2022
FINAL DETERMINATION**

An independent expert report for AEMO

3 October 2022

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1 Introduction

Synergies Economic Consulting (Synergies) was appointed by the Australian Energy Market Operator (AEMO) as an independent expert to determine additional compensation claims for a *directed participant* under clause 3.15.7B of the National Electricity Rules (NER) in relation to billing weeks 13 to 16 in 2022.

AEMO is required by the NER to use reasonable endeavours to complete all obligations, including final settlement, no later than 30 weeks after the end of the Direction(s). For the *directions* relating to billing weeks 13 to 16, the intervention timetable requires that an independent expert's draft determination be delivered no later than 3 August 2022 and a final determination by 3 October 2022. This will allow AEMO to complete the intervention settlement process by the required deadline of 20 October 2022, 27 October 2022, 3 November 2022, and 10 November 2022 for *directions* occurring during billing weeks 13 to 16.

In accordance with the Intervention Settlement Timetable, Synergies is issuing this final determination on 3 October 2022.

1.1 Structure of the report

In the remainder of this report, we set out the basis for our final determination regarding additional compensation claims resulting from these directions under the NER, as follows:

- Section 2 summarises the circumstances of the *directions* and the additional compensation claim provisions of clause 3.15.7B relevant to the Claim;
- Section 3 provides details of the *directions* made and initial compensation amount determined;
- Section 4 provides an overview of the additional compensation amount claimed by the directed participant as a result of the *directions*;
- Sections 5 provides our analysis of the reasonableness of the additional compensation amount under the Claim; and
- Section 6 provides our final determination.

2 Claims under clause 3.15.7B

This section summarises the circumstances of the *directions* and sets out the additional compensation claim provisions of clause 3.15.7B relevant to the Claims.

2.1 Basis of the *directions*

Section 116 of the NEL and clause 4.8.9 of the NER establish that AEMO may direct a *Registered Participant* to take relevant actions to maintain or restore the security or reliability of the power system.

During billing weeks 13 to 16 in 2022, AEMO issued several *directions* (refer to Table 1 in section 3.1 of this determination) to a South Australian *market participant* to maintain the system in a secure operating state. In response, this *market participant* modified the operations of its generating units.

As a result of the operational responses to the *directions*, the *directed participant* incurred costs and is entitled to compensation under clause 3.15.7 of the NER, which sets out compensation based upon:

- the amount of the relevant market service which the *directed participant* has been enabled to provide in response to the *direction*; and
- the 90th percentile price of the relevant market service over the preceding 12 months.

In line with the Intervention Settlement Timetable, AEMO calculated *directed participant* compensation and notified the *directed participant* of the compensation payable under clause 3.15.7.

In addition to the additional compensation claims that we have assessed, other claims were also made due to the *directions*. However, they were not assessed as part of this determination as any claims under \$20,000 are not required to be assessed by an independent expert under clause 3.12.2(1)(2) of the NER.

2.1.1 Managing system strength

Following changes to the NER in 2017¹, the South Australian region faces system strength issues (i.e., adequate fault currents) that are being and/or will be principally managed by:

¹ AEMC (2017) *National Electricity Amendment (Managing power system fault levels) Rule 2017*, 19 September.

- AEMO identifying fault level shortfalls at critical nodes in the network;
- Transmission Network Service Providers (TNSPs) performing the role of system strength service provider, with responsibility to procure system strength services, including from scheduled generators, to address fault level shortfalls as determined by AEMO; and
- AEMO directing specific scheduled generators to synchronise or remain online where necessary to ensure adequate system strength is maintained.

While these arrangements may in time prove sufficient to ensure system strength requirements are met in the future, the process of TNSPs procuring system strength services remains ongoing². In the meantime, AEMO has been ensuring adequate fault levels are maintained by applying operational procedures regarding permissible combinations of generators. Where the optimal supply solution determined by the NEM dispatch engine (NEMDE) is inconsistent with these permissible combinations, AEMO overrides the solution and directs specific generators to take actions to ensure the permissible combination of generators is operating.

2.2 Clause 3.15.7 of NER

AEMO must compensate each *directed participant* for the provision of energy or market ancillary services pursuant to a *direction* to be determined in accordance with the following formula:

$$DCP = AMP * DQ$$

Where:

- DCP is the amount of compensation the *directed participant* is entitled to receive.³
- AMP is the price below which are 90% of the spot prices or ancillary service prices (as the case may be) for the relevant service provided by Scheduled Generators, Semi-Scheduled Generators, Scheduled Network Service Providers or Market Customers in the region to which the direction relates, for the 12 months immediately preceding the trading day in which the *direction* was issued.

DQ is either:

² For instance, in South Australia, ElectraNet installed two synchronous condensers at Davenport substation and two at Robertstown substation, all operational from October 2021. See <https://www.electranet.com.au/strength-reliability-boost-to-south-australias-electricity-network/>

³ DCP is calculated in accordance with NER Clause 3.15.7(c).

- (a) the difference between the total adjusted gross energy delivered or consumed by the *directed participant* and the total adjusted gross energy that would have been delivered or consumed by the *directed participant* had the *direction* not been issued; or
- (b) the amount of the relevant market ancillary service which the *directed participant* has been enabled to provide in response to the *direction*.

2.3 Clause 3.15.7B(a) of NER

A *directed participant* that is entitled to compensation under clause 3.15.7 and 3.15.7A of the NER may make a claim for additional compensation under clause 3.15.7B, which confines compensation (under clause 3.15.7B (a)) to:

1. the aggregate of the loss of revenue and additional net direct costs incurred by the *directed participant* in respect of a scheduled generating unit, semi-scheduled generating unit or scheduled network services, as the case may be, as a result of the provision of the service under direction; less
2. the amount notified to that *directed participant* pursuant to clause 3.15.7(c) or clause 3.15.7A(f); less
3. the aggregate amount the *directed participant* is entitled to receive in accordance with clause 3.15.6(c) for the provision of a service rendered as a result of the *direction*.

In broad terms, clause 3.15.7B (a) entitles a *directed participant* to claim additional compensation to cover loss of revenue and net direct costs minus *trading amounts* for *energy* and *market ancillary services* and minus any compensation for directed services that has already been determined by AEMO.

The *directed participant* in this case has made a claim for compensation for additional net direct costs pursuant to clause 3.15.7B (a)(1) arising from its response to *directions* issued during billing weeks 13 to 16 in 2022.

3 The directions and initial compensation

3.1 The Claim *directions*

AEMO issued the following *directions* commencing 26 March and ending 16 April 2022.

Table 1 AEMO's *directions* to the Claimant

Directed unit	Event Number	Issued date/time	Effective date/time	End date/time	Reason
UNIT 1	96-1	26/03/2022 15:00	27/03/2022 7:30	27/03/2022 15:30	System strength
UNIT 2	96-2	26/03/2022 15:00	27/03/2022 8:00	27/03/2022 14:00	System strength
UNIT 2	97-1	28/03/2022 16:30	29/03/2022 10:00	29/03/2022 17:35	System strength
UNIT 2	98-1	29/03/2022 16:30	30/03/2022 1:00	1/04/2022 8:00	System strength
UNIT 1	98-2	29/03/2022 16:30	30/03/2022 8:30	2/04/2022 12:30	System strength
UNIT 3	98-3	31/03/2022 16:30	1/04/2022 8:00	2/04/2022 15:30	System strength
UNIT 1	99-1	6/04/2022 18:00	7/04/2022 9:30	7/04/2022 14:30	System strength
UNIT 1	100-1	8/04/2022 17:00	9/04/2022 1:00	9/04/2022 14:30	System strength
UNIT 3	100-2	8/04/2022 17:00	9/04/2022 1:30	9/04/2022 14:30	System strength
UNIT 3	101-1	9/04/2022 16:30	10/04/2022 1:00	10/04/2022 14:30	System strength
UNIT 1	101-2	9/04/2022 16:30	10/04/2022 1:30	10/04/2022 14:00	System strength
UNIT 2	102-1	11/04/2022 10:00	12/04/2022 9:00	12/04/2022 8:00	System strength
UNIT 3	103-4	13/04/2022 9:45	13/04/2022 10:45	13/04/2022 14:30	System strength
UNIT 1	104-1	13/04/2022 17:00	14/04/2022 9:00	14/04/2022 6:50	System strength
UNIT 2	105-1	14/04/2022 17:00	15/04/2022 2:00	15/04/2022 14:30	System strength
UNIT 1	105-2	14/04/2022 17:00	15/04/2022 9:00	15/04/2022 14:30	System strength
UNIT 2	106-1	15/04/2022 17:00	16/04/2022 4:00	16/04/2022 14:30	System strength
UNIT 1	106-2	15/04/2022 17:00	16/04/2022 8:30	16/04/2022 14:30	System strength

Source: AEMO

3.1.1 Initial compensation

In accordance with the above NER provisions, AEMO calculated settlement compensation for the above *directions* as summarised in Table 2.

Table 2 AEMO's settlement compensation amounts

Directed unit	Event number	Issued date/time	Compensation entitlement (DCP)	Retained trading amounts (RTA)	Initial settlement compensation (DCP – RTA)
UNIT 1	96-1	26/03/2022 15:00	\$34,380	-\$1,422	\$35,802
UNIT 2	96-2	26/03/2022 15:00	\$25,608	-\$4,014	\$29,622
UNIT 2	97-1	28/03/2022 16:30	\$38,551	\$13,801	\$24,750
UNIT 2	98-1	29/03/2022 16:30	\$245,284	\$29,506	\$215,778
UNIT 1	98-2	29/03/2022 16:30	\$326,834	\$11,302	\$315,532
UNIT 3	98-3	31/03/2022 16:30	\$141,463	\$12,522	\$128,941

Directed unit	Event number	Issued date/time	Compensation entitlement (DCP)	Retained trading amounts (RTA)	Initial settlement compensation (DCP – RTA)
UNIT 1	99-1	6/04/2022 18:00	\$22,809	-\$2,077	\$24,886
UNIT 1	100-1	8/04/2022 17:00	\$63,295	\$32,770	\$30,525
UNIT 3	100-2	8/04/2022 17:00	\$60,961	\$30,570	\$30,391
UNIT 3	101-1	9/04/2022 16:30	\$60,056	\$29,799	\$32,524
UNIT 1	101-2	9/04/2022 16:30	\$62,323	-\$6,098	\$66,154
UNIT 2	102-1	11/04/2022 10:00	\$0	\$0	\$0
UNIT 3	103-4	13/04/2022 9:45	\$18,295	\$8,703	\$9,592
UNIT 1	104-1	13/04/2022 17:00	\$0	\$0	\$0
UNIT 2	105-1	14/04/2022 17:00	\$70,381	\$71,075	-\$694
UNIT 1	105-2	14/04/2022 17:00	\$27,174	\$10,512	\$16,662
UNIT 2	106-1	15/04/2022 17:00	\$58,547	\$34,791	\$23,755
UNIT 1	106-2	15/04/2022 17:00	\$28,876	\$4,670	\$24,206

Source: AEMO

The amount of compensation a *directed participant* is entitled to receive (DCP) is calculated in accordance with Clause 3.15.7(c) of the NER. The Retained Trading Amount (RTA) is calculated in accordance with Clause 3.15.6(b) for the additional energy produced, which would have been included in the settlement amount indicated in the Preliminary Billing statement. Since invoices are issued weekly and the intervention period spanned four billing weeks, the compensation calculations for all units are presented for each relevant billing week.

Initial settlement compensation is determined as DCP minus RTA and included in the Final Billing statement.

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4 Claims for additional compensation

This section presents the *directed participant's* claims for additional compensation in relation to the *directions* received during billing weeks 13 to 16 in 2022.

4.1 Additional compensation in respect of the Claim

Table 3 presents the *directed participant's* claimed costs.

Table 3 Summary of additional compensation claim estimates for the Claim

Directed unit	Event number	Direction date/time	Gas fuel cost (1)	FCAS (2)	Start cost (3)	Variable operating & maintenance (4)	Cost of Direction (COD) (1+2+3+4)	Compensation entitlement (DCP)	Add. comp amount (COD – DCP)
UNIT 1	96-1	26/03/2022 15:00	\$56,529	-\$33	\$15,404	\$970	\$72,871	\$34,380	\$38,491
UNIT 2	96-2	26/03/2022 15:00	\$40,937	-\$26	\$15,279	\$728	\$56,919	\$25,608	\$31,311
UNIT 2	97-1	28/03/2022 16:30	\$66,293	-\$40	\$22,241	\$920	\$89,414	\$38,551	\$50,863
UNIT 2	98-1	29/03/2022 16:30	\$402,716	-\$455	\$0	\$6,672	\$408,933	\$245,284	\$163,649
UNIT 1	98-2	29/03/2022 16:30	\$573,512	-\$863	\$20,586	\$9,219	\$602,454	\$326,834	\$275,620
UNIT 3	98-3	31/03/2022 16:30	\$262,693	-\$503	\$28,945	\$3,821	\$294,957	\$141,463	\$153,494
UNIT 1	99-1	6/04/2022 18:00	\$45,024	\$30	\$23,658	\$607	\$69,318	\$22,809	\$46,509
UNIT 1	100-1	8/04/2022 17:00	\$116,595	\$92	\$0	\$1,638	\$118,325	\$63,295	\$55,030
UNIT 3	100-2	8/04/2022 17:00	\$111,705	\$79	\$0	\$1,577	\$113,361	\$60,961	\$52,400
UNIT 3	101-1	9/04/2022 16:30	\$109,931	\$37	\$0	\$1,516	\$111,484	\$60,056	\$51,428
UNIT 1	101-2	9/04/2022 16:30	\$116,412	\$39	\$0	\$1,638	\$118,089	\$62,323	\$55,766
UNIT 2	102-1	11/04/2022 10:00	\$0	\$0	\$34,368	\$0	\$34,368	\$0	\$34,368
UNIT 3	103-4	13/04/2022 9:45	\$34,720	\$10	\$7,522	\$455	\$42,707	\$18,295	\$24,412
UNIT 1	104-1	13/04/2022 17:00	\$0	\$0	\$23,893	\$0	\$23,893	\$0	\$23,893
UNIT 2	105-1	14/04/2022 17:00	\$116,548	\$73	\$0	\$1,516	\$118,137	\$70,381	\$47,756

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Directed unit	Event number	Direction date/time	Gas fuel cost (1)	FCAS (2)	Start cost (3)	Variable operating & maintenance (4)	Cost of Direction (COD) (1+2+3+4)	Compensation entitlement (DCP)	Add. comp amount (COD – DCP)
UNIT 1	105-2	14/04/2022 17:00	\$43,873	\$10	\$20,857	\$667	\$65,407	\$27,174	\$38,233
UNIT 2	106-1	15/04/2022 17:00	\$91,784	\$75	\$0	\$1,274	\$93,133	\$58,547	\$34,586
UNIT 1	106-2	15/04/2022 17:00	\$47,201	\$13	\$20,666	\$708	\$68,588	\$28,876	\$39,712
Total additional compensation claimed			\$2,236,474	-\$1,461	\$233,419	\$33,926	\$2,502,358	\$1,284,837	\$1,217,521

Source: The Claimant.

5 Synergies' assessment regarding the Claim

This section analyses the reasonableness of the Claim and sets out Synergies' final position on each component of claimed costs.

5.1 Gas cost

The following method was applied by the Claimant to calculate the additional gas fuel costs for each of the *directions*:

- The volume of gas used by the directed unit during the *direction* was calculated by taking the directed megawatts of electrical production by that unit (supported by dispatch data) and applying the relevant heat rate⁴ to convert to gigajoules per hour;
 - this provides the gas consumed by the directed unit per hour (divided by twelve to derive per trading interval consumption).
- The gas used was sourced from one gas supply contract with the corresponding price applied to gas transported through two different pipelines (Moomba to Adelaide Pipeline System and SEA Gas Pipeline).⁵
 - Explanation for the approach taken to sourcing gas to meet these *directions* was provided by the Claimant and as such, has been accepted.
 - The gas supply contract price was supported by a copy of the confidential invoice from the relevant gas producer.

Converting the directed megawatts to gas gigajoules using an appropriate relevant heat rate for the direct unit provides an accurate calculation of gas consumed.

Based on the evidence provided and the method applied, Synergies accepts the gas fuel cost claimed due to the *directions* in this final determination.

5.2 Variable operating and maintenance (VOM) costs

The Claimant's method to calculate the VOM costs was as follows:

- A per 5-minute interval VOM cost was calculated based on a historical VOM cost estimate, which was then adjusted for inflation by using an annual inflation rate of 2.5%.

⁴ Heat rate is one measure of the efficiency of electrical generators/powers that convert a fuel into heat and into electricity. The heat rate is the amount of energy used by an electrical generator/power plant to generate one kilowatt hour (kWh) of electricity.

⁵ The Claimant is not claiming additional gas transportation costs in relation to these *directions*.

- The VOM rate was applied to every interval that each generating unit was operating under AEMO's *direction*.
- Then, the 5-minute interval VOM costs were summed across the period for which each generating unit was operating under *direction*.

The VOM costs identified by the Claimant relate to the operating and maintenance costs driven by the hours of operation of the plant. VOM costs can only be considered avoidable costs (i.e., costs incurred due to the *directions*) if there is clear evidence that the generating units would have been off-line but for the *directions*.

The need for the *directions* arose from AEMO's consideration of forecasts of plant dispatch based on forecast demand and the prices that generation was being bid in future periods. As per previous similar determinations, Synergies is satisfied that the directed generating units would not have been in operation during the directed periods but for the *directions*.

We accept the VOM costs claimed for all units have been reasonably substantiated for this final determination, including with supporting documentation.

5.3 Start Costs

Start costs were claimed for most of the *directions* in this claim.

The Claimant's method for calculating the start costs is as follows:

- The Claimant identified the start as following a period off-line of 36 hours duration.
- The Claimant then took a historical estimate of the cost of a 'cold' start and adjusted the estimate for inflation by using an approximate annual inflation rate of 2.5%.
- To derive the final start cost, the cost of electricity for internal loads (priced at the average market price over the start-up period) was added to the cost of gas fuel to heat the generator (using the same \$/GJ price as that which was claimed for the gas fuel costs).

Additionally, there were two directions which were cancelled by AEMO after the directed plant had started. These directions, which occurred on 11 and 13 April, did not incur any gas, FCAS or VOM costs, but start costs have been claimed given the plant was directed to start.

The costs were supported by confidential data provided by the Claimant.

Synergies accepts the start cost estimates in this claim for additional compensation.

5.4 Frequency Control Ancillary Services (FCAS)

The Claimant's method to calculate the additional costs incurred due to its increased Frequency Control Ancillary Service (FCAS) Raise liabilities⁶ is as follows:

- The Claimant first determined the total liability of the power station in respect of contingency FCAS Raise services for the relevant period during the gas day of the *direction*.
- The Claimant then determined the contribution of the directed units to the total power station output during the relevant period.
- Next, the generating unit's proportional share of power station output was multiplied by the power station's total FCAS Raise liability for each relevant interval on the gas day.
- Finally, this value was summed for the period.

The Claimant has previously shown workings and detailed FCAS cost assumptions for the power station provided by AEMO. Synergies has verified this data by reviewing the calculations and FCAS Raise unit costs provided by AEMO and as such, accepts the FCAS costs claimed for this final determination.

5.5 Claim results

Based on our review, Synergies is satisfied with the Claimant's cost estimation methodologies used to calculate the additional costs that it incurred to comply with the *directions* in billing weeks 13 to 16 in 2022.

⁶ The costs recovered from the Claimant in respect of contingency raise costs, allocated in accordance with the FCAS causer pays formulation.

6 Conclusion

In this final determination, the Claimant's additional costs to comply with the *directions* have been accepted as claimed and it is entitled to additional compensation of **\$1,217,521**.

The *directed participant* has been informed of the final determination outcome, our reasons, and the amount of additional compensation accepted.