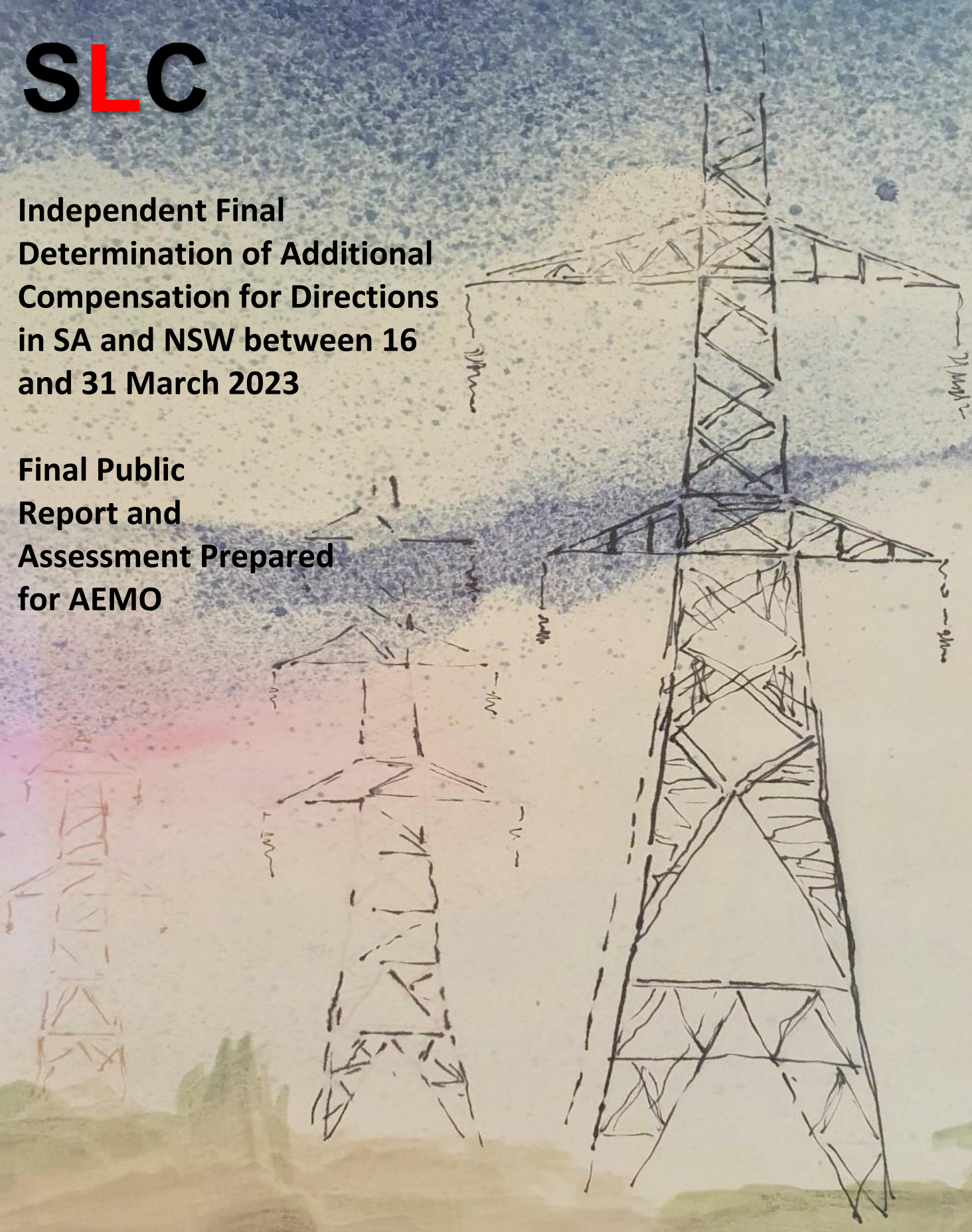
SLC

Independent Final Determination of Additional Compensation for Directions in SA and NSW between 16 and 31 March 2023

Final Public Report and Assessment Prepared for AEMO



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August 2023

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1. Introduction

This report is prepared for the Australian Energy Market Operator (AEMO) in accordance with the requirements of clause 3.12.3 of the National Electricity Rules[i] (NER).

Sam Lovick Consulting (SLC) was appointed by AEMO as an independent expert to determine clause 3.15.7B additional compensation owing for 9 *directions* to three *Directed Participants* issued in South Australia and New South Wales between 16th March 2023 and 31st March 2023, billing weeks 11 to 13. AEMO determined that these were *directions* for *system security* and *reliability* to maintain the system in a secure and reliable operating state. These are summarised in Table 1.

Table 1. Summary of *directions*

Claimant	Event	Issued at	Start date and time	End date and time	Reason	Instruction
A	276-1	22/03/2023 17:00	23/03/2023 09:00	23/03/2023 14:00	System security	Synchronise
A	277-1	23/03/2023 19:15	24/03/2023 09:00	24/03/2023 16:15	System security	Synchronise
A	278-1	24/03/2023 17:00	25/03/2023 01:30	25/03/2023 07:30	System security	Synchronise
A	278-4	25/03/2023 10:00	25/03/2023 16:00	25/03/2023 17:00	System security	Synchronise
A	279-2	29/03/2023 07:00	29/03/2023 10:30	29/03/2023 16:30	System security	Synchronise
A	280-2	29/03/2023 16:45	30/03/2023 09:00	30/03/2023 15:00	System security	Synchronise
A	281-1	30/03/2023 16:30	31/03/2023 10:30	31/03/2023 15:00	System security	Synchronise
B	272-1	16/03/2023 17:25	16/03/2023 17:55	16/03/2023 18:35	Reliability	Synchronise
C	282-1	31/03/2023 14:30	01/04/2023 08:30	01/04/2023 16:00	System security	Synchronise

1.1. Circumstances of the *Directions*

The *Directions* did not result from any particularly unusual events within the National Electricity Market (NEM) at that time. Rather, they were a result of insufficient supply of reserve generation capacity sufficient to ensure secure and reliable operation in the event of contingencies. The directions were necessary to ensure that generators capable of providing reserve synchronised (at minimum[ii]) so that reserve capacity would be available in a timely fashion.

1.2. Compensation for the *Directed Participants*

AEMO determined compensation for these directions under clause 3.15.7, which defines a formula for compensating *Directed Participants* for the provision of *energy* and *market ancillary services* based on the 90th percentile *spot price* or *ancillary service price* over the preceding year, referred to as DCP in the clause 3.15.7(c). AEMO informed the *Directed Participants* of the compensation amounts.

The *Directed Participants* sought additional compensation under clause 3.15.7B in respect of the foregoing *directions*. All these claims met the thresholds set out in clause 3.15.7B(c)(1) for referral to an independent expert.

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i The period of the *directions* was covered by National Electricity Rules version 196. The rules are available at https://www.aemc.gov.au/regulation/energy-rules/national-electricity-rules/historical-versions.

ii For some of the directed units, essentially fast start units, the minimum stable generation level is zero.

2. *Directed Participants'* claims

AEMO provided SLC with details of the clause 3.15.7 compensation claims and correspondence with the *Directed Participants* concerning their claims. In addition, SLC met with the claimants prior to preparing the Draft Public Report[iii] to review the basis of their compensation claims.

2.1. Clause 3.15.7B claims

All the directed participants provided spreadsheets detailing net direct costs incurred under each direction comprising:

- the costs of purchasing and transporting fuel to provide the directed services;
- start costs;
- operation and maintenance (O&M) costs; and
- a share of the charges levied by AEMO *market generators* to recover the costs of Contingency Raise FCAS.

In addition, Claimant B also submitted a claim for revenue lost as a result of providing the services under direction. All of these are compensable under clause 3.15.7B. For each direction, they claimed these costs and/or lost revenue, minus the amount of compensation received for directed *energy* calculated according to clause 3.15.7.

2.2. Initial submissions

The *Directed Participants* provided within the prescribed time limit a letter summarising the compensation that was sought, signed by an officer, certifying that data supplied was true and correct as required by clause 3.15.7B(b)(3). They also provided spreadsheets detailing the calculations made to determine the amount of additional compensation. The *Directed Participants* also supplied copies of invoices for fuel supplied covering the periods of the directions.

2.3. Draft determinations

On the basis of this AEMO material and the submissions, in July 2023 SLC provided a Draft Public Report and confidential draft assessments to AEMO and the directed participants.

2.4. Further submissions

SLC called for further submissions from the *Directed Participants* in response to these drafts prior to preparing this final report as required by clause 3.12.3(c)(2). Claimant A made a further written submission in response to the draft determination. Claimants B and C did not make any further written submissions. Claimant A's submission was duly considered.

[iii] Sam Lovick Consulting (July 2023) *Independent Draft Determination of Additional Compensation for Directions in SA and NSW between 16 and 31 March 2023 – Draft Public Report and Assessment Prepared for AEMO.*

3. Clause 3.15.7B compensation provisions of the NEM

Clause 3.15.7B compensates *Directed Participants* for (clause 3.15.7B(a)):

(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 3.14.5A(g) or clause 3.15.7(e); 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*.

3.1. Net direct costs

'Net direct costs' is not a defined term in the NER, but clause 3.15.7B(a3) sets out, without limitation, seven examples of net direct costs including fuel costs. It is clear from these examples that the term 'net direct costs' encompasses all costs incurred by the *Directed Participant* that would not have been incurred absent the direction, and this is the interpretation that has been adopted in the past by independent experts making clause 3.15.7B determinations.

3.1.1 Fuel costs

Fuel costs incurred to provide the directed services meet the definition net direct costs under clause 3.15.7B(a3).

3.1.2 Start costs

In all cases we are satisfied that the directed units would not have incurred the start costs involved in synchronising had they not provided the directed services. Start costs meet the definition net direct costs under clause 3.15.7B(a3).

3.1.3 O&M costs

Generators incur variable operating and maintenance costs when they generate which are not fuel related. These can include, for example, raw water costs, waste and wastewater disposal costs, chemical costs, lubricants and other consumables.[iv] Generators may also incur additional labour costs when generating, in so far as they have flexibility over staffing when not operating. We are satisfied that, but for the directions, the units would not have operated, which would have resulted in some variable O&M (vO&M) cost savings. Variable O&M costs meet the definition net direct costs under clause 3.15.7B(a3).

[iv] CAISO (2018) Variable Operations and Maintenance Cost available at http://www.caiso.com/Documents/VariableOperationsandMaintenanceCostReport-Dec212018.pdf (last viewed 23 June 2021).

3.1.4 Contingency Raise FCAS recovery

None of the seven examples of net direct costs in clause 3.15.7B(a3) exactly matches Contingency Raise FCAS recovery charges. Nevertheless, for the reasons set out in prior compensation determinations,[v] if the generators had not been directed, they would not have produced any *generator energy* and would not have been charged for Contingency Raise FCAS recovery. Accordingly, Contingency Raise FCAS recovery is a net direct cost for the purposes of clause 3.15.7B.

AEMO provided settlement data on Contingency Raise FCAS recovery charges which the claimants used to determine their compensation claims.

3.2. Claims for lost revenue

Claimant B submitted a claim for lost revenue on the basis that the direction to provide *energy* precluded the unit from operating commercially for the duration. During this time, the spot price that the unit would have earned from commercial operation was considerably higher than the compensation under clause 3.15.7, which is based on the 90th percentile price over the previous year.

Where it can be established that, but for the *direction*, the *directed participant* would have chosen to operate commercially by submitting a valid offer that would have resulted in its dispatch, then it is entitled to compensation for lost spot market revenue if that is greater than DCP.

3.3. Adjustment for revenues received

To determine total compensation, clause 3.15.7B(a)(2) requires that compensation for the directed services calculated according to clauses clause 3.14.5A and 3.15.7 is deducted from net direct costs. The market was not suspended so no revenue was earned under clause 3.14.5A. Revenue was paid to the *Directed Participants* calculated according to clause 3.15.7(c), termed DCP. The claimants appropriately calculated and deducted DCP from their additional compensation claims.

Clause 3.15.7B(a)(3) requires that revenues defined in clause 3.15.6(c) are also deducted. In previous determinations of compensation,[vi] this has been interpreted to require deduction of *trading amounts* for non-directed *market ancillary services* to determine allowable additional compensation. The claimants did not receive any *trading amounts* for *market ancillary services* during these *directions*, so no deductions were required.

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v Sam Lovick Consulting (August 2020) *Independent Expert Draft Determination of Additional Compensation 'Package 2' Directions Between February 2nd and February 9th 2020* available at https://aemo.com.au/-/media/files/electricity/nem/market_notices_and_events/market_event_reports/2020/200805-final-report.pdf?la=en.

vi *Ibid.*

4. Calculations of the claimed amounts

The *Directed Participants* submitted letters claiming additional compensation and spreadsheets and documents in support of the claimed amounts. These included copies of invoices for fuel and evidence substantiating other cost elements. Where relevant, we sought additional supporting information from claimants. Claimant A submitted additional information in response to the Draft Public Report and draft assessment.

4.1. Claimant A

Claimant A was subject to 7 directions over from 23rd March to 31st March 2023. Their additional compensation claim related solely to net direct costs comprising gas costs, gas transport costs, FCAS charges, start costs and vO&M costs.

4.1.1 Fuel costs

Claimant A's fuel and fuel transportation costs were supported by usage data and invoices from the gas suppliers. These were a sufficient basis for their estimates, which we accept.

4.1.2 FCAS recovery

We accept the Claimant A's claim for recovery of FCAS payments.

4.1.3 Variable O&M and start costs

Claimant A presented calculations of variable O&M costs and start costs supported by a spreadsheet containing inspection and overhaul costs with intervals between maintenance events expressed in terms of equivalent operating hours (EOH). These were then aggregated into $/hour and $/MWh figures. Start costs were calculated as the sum of fuel/electricity costs and wear and tear equal to vO&M costs incurred over 10 hours of operation.

The calculations included in the additional compensation claims were mathematically correct, but the data used in the calculations were poorly supported. The original submissions did not, in our view, satisfy clause 3.15.7B(b)(2), which requires that submissions contain sufficient data and information to *substantiate* each component of a claim (emphasis added). Furthermore, the claims for vO&M and start costs, in aggregate, were appreciably higher than claims from similar technologies that we have previously reviewed. We illustrated this using data from AEMO's 2022 Integrated System Plan (ISP).[vii]

In response to the draft assessment, the claimant submitted additional information sufficient to substantiate their original claim. The submitted information also showed that the 10 EOH per start rule of thumb used by the claimant resulted in a reasonable estimate of start related costs actually incurred, noting that there are alternative reasonable approaches for estimating start-related O&M costs. We accepted this rule of thumb on the basis that the claimant will apply the same rule in any future compensation claims.

The discrepancy in the costs of the claimant and the costs revealed in similar compensation claims could be the result of age differences in the technology and the directed running

[vii] AEMO (2022) *Inputs, assumptions and scenarios workbook* available at https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp.

regime, both of which were cited by the claimant. We did not investigate this further as the claimant provided comprehensive data on actual costs incurred in maintenance activities and actual running regime over several years.

No adjustments to the original claim

In the light of the claimant's submissions following the draft determination, we accept their original claims without adjustment. In the draft determination, the claim for event 277-1 fell below the threshold set out in clause 3.15.7B(a4) so was removed from the total. This is no longer the case.[viii]

4.1.4 Summary

Based on the foregoing, we assess allowable additional compensation under clause 3.15.7B for claimant A at $174,473.

4.2. Claimant B

Claimant B's additional compensation claim was unusual in that it included claims for both net direct costs, which is common, and for lost revenue, which is not. To clarify the claim, we sought additional information from AEMO and the claimant. The history of the *direction* that emerged was instructive.

At 17:30 on 16th March 2023, the claimant was directed to *make… additional capacity available for dispatch and follow dispatch targets* (Notice 106709). It appears that the claimant mis-understood the instruction largely because of its previous experience of directed operation; it synchronised and self-dispatched above 0MW contrary to instruction. As a result, the claimant received several conformance notices and a call from AEMO prior to 17:55. AEMO then issued a second direction (Notice 106717), replacing the first, to *make…* [additional] *capacity available for dispatch and follow dispatch capacity*. From 17:55 the claimant properly followed instructions.

4.2.1 Compensation for lost revenue from 17:55 to 18:35

The *direction* was not cleared until 18:35. As a result, the claimant operated under the *direction* for 40 minutes from 17:55 onward and was compensated accordingly, at DCP.

From the time when the *direction* was issued, the claimant had been in contact with AEMO to indicate its preference to operate commercially. We understand that it submitted an offer of [minus] -$1,000/MWh for the 17:55 dispatch interval and beyond consistent with that preference. The claimant provided a log of communications with AEMO in support of these events. Furthermore, AEMO informed us that its usual practice is, where possible, to rescind *directions* as soon as the directed units indicate a preference to operate commercially. This did

[viii] Following the draft determination, we discussed the proper interpretation of clause 3.15.7B(a4) with AEMO and the claimant, specifically whether the $5,000 threshold applies to the adjudicated compensation amount determined by AEMO/the independent expert or to the amount first claimed by the claimant. The claimant made no submission on the issue as it is moot given this final determination.

Nevertheless, both constructions are open. We believe that the former approach (which we adopted in the draft determination) is preferred. If the latter approach is used, claimants that have incurred uncompensated net direct costs above $0 but below $5,000 could bypass clause 3.15.7B(a4) by simply submitting an ambit claim above the threshold. This would render clause 3.15.7B(a4) inutile. We do not believe that this is the intended outcome. This could be resolved by clearer wording in clause 3.15.7B(a4).

not happen in this case despite exchanges between the claimant and AEMO. It is possible that there was some miscommunication.

Based on this sequence of events, we accept that the *Directed Participant* sought to operate commercially in the 40 minutes from 17:55 to 18:35 and submitted a valid offer to that effect but was directed otherwise. But for the *direction*, it would have been compensated at the spot energy price rather than DCP. It is therefore entitled to claim for lost revenue over that period.

4.2.2 Compensation from 17:30 to 17:55

Clause 3.15.7(a1) requires that AEMO compensate *Directed Participants* in accordance with clauses 3.15.7, 3.15.7A and 3.15.7B (the additional compensation clause) for services the *Directed Participant* was required to provide under the *direction*.

Clause 3.17.7(a2) states that *for the purpose of paragraph (a1) a Directed Participant provides energy or market ancillary services if it was directed to provide one or more of the following services: (1) energy (2) any one of the market ancillary services…* followed by other related services.

AEMO wanted the claimant to supply additional reserve. Reserve is unused capacity that can recruited rapidly to cover a contingency such as a loss of a generator or an unexpected surge in demand. In most cases, reserve is provided by units that are synchronised and dispatched at some non-zero output below their full capacity but above their minimum stable generation. In so far as AEMO needs to direct such a unit to provide reserve, it would do so with dispatch instructions to provide *energy*. Compensation under clauses 3.15.7, 3.15.7A and 3.15.7B is straight forward in such cases.

Certain fast start units including Claimant B can provide reserve by making themselves available but not providing any *energy* (i.e., dispatched at 0MW). This was the purpose of the *direction* in Notice 106709. It is not obvious that this is a direction for any of the services listed in clause 3.15.7(a2) which provide a basis for compensation under clause 3.15.7B. Rather, the wording seems to indicate compensation should be determined under clause 3.15.7A, a process that would be unwieldy and probably not intended.

The wording of these clauses is poorly suited to fast start generators that incur costs in making themselves available to provide reserve but are not dispatched to provide either *energy* or *market ancillary services*. AEMO should perhaps seek an amendment so that directions of this type are included in clause 3.15.7(a2).

Claimant B's submission makes it clear that it incurs costs in making itself available, and that clause 3.15.7B is best suited for determining any additional compensation.

Non-conformance

In the current case, the claimant produced significantly more than 0MW[ix] of *energy* and therefore was non-conforming within the meaning of clause 3.8.23. As a result, it did not provide all the reserve that AEMO was seeking, presumably necessitating reductions in dispatch elsewhere and reallocation of the reserve requirement across other generators.

[ix] We note that MW refers to power, energy is the integral of power over time. In this context, MW refers to the dispatch level of the unit for the dispatch period.

The 'penalty' for non-conformity under the rules is that the unit cannot set spot price, it does rule out compensation. We would argue that a non-conforming generator that is under a *direction* should still be eligible for compensation under clauses 3.15.7 and 3.15.7B if it provides some of the services that AEMO has requested, but not for any additional costs it incurs in providing services that AEMO has not requested.[x]

Under this interpretation, Claimant B would not be entitled to DCP for the *energy* it produced because AEMO did not direct for the supply of *energy*. Hence, AEMO correctly did not compensate Claimant B at DCP between 17:30 to 17:55, but that does not necessarily mean that other avenues of compensation should be closed.

That said, we prefer to view the additional compensation for net direct costs of making the unit available in the broader context of the adjacent directions between 17:30 to 18:35. We view the start costs and full speed no-load gas costs (net direct costs) cited by the claimant as costs necessarily incurred in responding to the second direction, to which it conformed and is entitled to recover lost revenue. By so doing, we avoid the need to address the difficulties in deciding compensation for non-conforming *Directed Participants*.

4.2.3 Assessing claims for both net direct costs and lost revenues

Should Claimant B be entitled to additional compensation for the lost revenues *and* net direct costs? The words '*aggregate of*' in clause 3.15.7B(a)(1) suggest that this is the case. But this could lead to perverse outcomes.

The purpose and meaning of clause 3.15.7B

In our view, the purpose of clause 3.15.7B is to ensure that *Directed Participants* avoid losses if they are directed. Those can be operating losses if revenue under a direction is less than operating costs. Or it can refer to opportunity losses if the direction prevents the claimant from pursuing more profitable avenues. Hence revenues from other sources, as set out in section 3.3, must be deducted from any claim for additional compensation.

In the NEM, a generator that earns revenue at spot prices for commercial operation must bear the net direct costs incurred to generate and earn that revenue; the NEM does not remunerate them the sum of spot prices *and* their generation costs. That same principle must apply to additional compensation; if additional compensation effectively increases DCP-based compensation to the level of spot price, it should not then also add generation costs to that compensation. This would result in the perverse outcome of the generator earning more under the direction than under normal commercial operation, surely not intended.

Hence, we interpret lost revenue in clause 3.15.7B(a) to be a net revenue concept, net of short-run generation costs. This achieves what we believe to be the objective of the clause, that

[x] For example, if a 100MW fast start unit was directed to make itself available to provide AEMO with 100MW of reserve, but self-dispatched to 30MW, it would still provide 70MW of reserve (i.e., some of the directed service) despite being non-conforming. It is unclear why that level of non-conformity should exclude it from additional compensation rules.

directed participants have surety that they will not make losses but equally, cannot earn greater profits than they would earn from commercial operation absent the direction.[xi]

In this case, the claimant seeks compensation for revenue losses, being revenue at spot minus DCP already paid, plus net direct costs in the form of start costs and no-load gas costs. Since these net direct costs are, in our view, necessary cost for providing the services under the second direction, we consider that they should be excluded or deducted from the lost revenue figure.

4.2.4 Other matters

There was a small discrepancy between the DCP figures provided by the claimant and the figures provided by AEMO. We have adopted the AEMO figures.

4.2.5 Summary

Based on the foregoing, we assess allowable additional compensation under clause 3.15.7B for claimant B at $221,049.

4.3. Claimant C

Claimant C was subject to 1 direction for system security on 1 April 2023. Their additional compensation claim related solely to net direct costs comprising gas costs, FCAS costs, start costs and vO&M costs.

4.3.1 Fuel costs

Claimant C supported its claimed fuel costs with usage data and invoices from the gas suppliers. The fuel costs were a weighed average of purchase costs at spot and purchase costs on contract, allocating all spot purchases to the directed generator and only consumption above spot volumes met using contract gas. The spreadsheet calculation of fuel costs was correct.

The invoices show a significant difference between spot and contract price, so the allocation approach significantly affects the compensation claim. We accept the claimant's allocation of spot purchases to the directed unit before contract purchases on the basis that the unit in question was not planning to run (hence the *direction*) and it would not appear to be appropriate to contract for fuel as if it was.

4.3.2 FCAS recovery

We accept the Claimant C's claim for recovery of FCAS payments.

[xi] Alternatively, we could adopt the position that no compensation under clause 3.15.7 (which would also exclude additional compensation under clause 3.15.7B) is allowed for non-conforming generators. We could then state that the net direct costs claimed by Claimant B were incurred in respect of the Notice 106709 *direction* while non-confirming and cannot therefore be claimed. The problem with this approach is that a *directed* generator could be non-conforming yet still providing some of the services that AEMO is requesting. The appropriate remedy in that case is not to disallow compensation, but to follow the existing procedures for dealing with the non-conformity.

4.3.3 Variable O&M costs

Consistent with prior determinations, we are not satisfied with the dated source for O&M costs included in the claim, a confidential report prepared in 2008. Accordingly, we adopt the same approach as in prior determinations and base vO&M costs on those presented in AEMO's 2022 ISP[xii] indexed by Adelaide CPI.[xiii] This reduces the vO&M claim by approximately 15%.

4.3.4 Start costs

Claimant C presented start costs derived from the same dated source, which sets out the fixed cost, electricity consumption and fuel consumption required for the type of start involved. Based on the prior running regime evidenced in dispatch data, this was a warm start with a prior off duration of no more than 36 hours.

In contrast to vO&M costs, we accepted the 2008 report as the basis for start cost calculations. We did so because the physical elements of the start costs (MWh and GJ of electricity and fuel consumption) from 2008 were unlikely to have changed much over time and may even have increased, making the claimants assessment conservative. The costs of electricity and fuel applied to these physical measures were both based on current commodity prices, not on prices from 2008 indexed by CPI, reducing the scope for biases from indexation. Energy costs of the start represented 97% of the claimed costs. Indexation since 2008 of other start costs contributes only 1% of the claimed start costs and is therefore inconsequential.

4.4. Total additional compensation

Based on the foregoing, we assess allowable additional compensation under clause 3.15.7B for claimant C at $26,139.

4.5. Total additional compensation

Based on the foregoing and in accordance with clause 3.12.3(c)(1)(B), we have determined that the total amount of clause 3.15.7B compensation payable to the *Directed Participants* in respect of the 9 *directions* is $421,661.

[xii] *Op cit* at vii.

[xiii] Available at https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia.