Investigation Report

Compliance with dispatch instructions - Babcock and Brown Power

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AUSTRALIAN ENERGY REGULATOR

Contents

Summary

This report completes the Australian Energy Regulator's (AER) investigation into events occurring at the Playford power station in South Australia on 11 February 2009 and Braemar power station in Queensland on 17 March 2009 respectively. Both Playford and Braemar power stations are owned by Babcock & Brown Power Limited (BBP). In this report, these two entities will be referred to as BBP.

On 11 February 2009, a combination of increasing wind generation and generation from Playford resulted in a violation of a constraint on the Whyalla to Cultana transmission line. Despite receiving repeated instructions from the market operator, NEMMCO (referred to as AEMO in this report) to reduce output, Playford continued to generate electricity well above its dispatch targets for approximately one hour.

On 17 March 2009, Powerlink (the local transmission network service provider) was undertaking planned maintenance work in the Braemar switchyard. This planned outage led AEMO to limit output from Braemar unit 1 to zero until 1.05 pm. When informed by Powerlink that the work had been completed, Braemar Unit 1 synchronised at 12.47 pm and generated up to 106MW even though AEMO had not issued a start instruction or an above zero dispatch target.

Clause 4.9.8(a) of the National Electricity Rules (Electricity Rules) requires a registered participant to comply with an AEMO dispatch instruction, unless, in the registered participant's reasonable opinion, to do so would be a hazard to public safety or would materially risk damaging equipment.

Following the investigation into the events of these two days, the AER alleged that Playford and Braemar power stations breached clause 4.9.8(a) of the Electricity Rules. Two infringement notices were issued for the alleged breaches on 13 September 2009.[1]

BBP subsequently elected to pay the infringement penalties. Under the National Electricity Law (Electricity Law), payment of the penalty does not indicate an admission of a breach of the Electricity Rules.

AEMO has separately issued an incident report on the system security violation that occurred on 11 February 2009 in South Australia. The AEMO report made a series of recommendations, which the AER understands have been implemented.

This report also covers compliance with the Electricity Rules in regard to the requirement to advise AEMO, without delay, of any event that is likely to change the operational availability of participants' plants. This relates to the timeliness of advice given to AEMO by BBP on the increase of availability at Playford on 11 February 2009. Although an infringement notice was not issued in respect of this requirement, the AER obtained a commitment from BBP regarding the improvements it will make to its systems in this area to address the AER's compliance concerns.

[1] The infringement notices were issued to Flinders Operating Services Pty Ltd (FOS) in respect to the alleged Playford breach and Braemar Power Project Pty Ltd (BPP) in respect of the alleged Braemar breach as the registered participants.

1 Introduction

Section 15 of the Electricity Law sets out the functions and powers of the AER. These functions include:

- monitoring compliance by registered participants and other persons with the Electricity Law, the Regulations and the Electricity Rules and

- investigating breaches or possible breaches of provisions of the Electricity Law, the Regulations or the Electricity Rules.

To fulfil its role, the AER monitors the operation and performance of the National Electricity Market (NEM) and conducts special investigations in response to market outcomes and/or specific events.

This report sets out the results of the AER's investigation into whether BBP failed to follow dispatch instructions on 11 February and 17 March respectively. The report also examines whether the AER considers that the conduct of BBP with respect to not immediately notifying AEMO of a likely increase in Playford's operational availability constitutes a breach of the Electricity Rules.

In this report:

- Part 2 provides a description of the matters that were under investigation

- Part 3 provides an analysis of the conduct of Playford and Braemar with respect to the relevant Electricity Rules provisions.

- Part 4 details the outcomes of the investigation.

2 Description of the matters

2.1 Playford

Playford is located in Port Augusta, approximately 330km north of Adelaide. It can generate up to 240MW and comprises four 60MW coal-fired steam generators. Unlike the majority of coal fired generators in the NEM, the station consists of a range of smaller boilers that can supply steam to any combination of the generators. Most other generators have one boiler supplying steam to one generator.

In the early hours of 11 February 2009, BBP took a decision to return boilers to service at its Playford Power Station which eventually increased Playford's operational availability by 40MW. The AER understands that the first occasion that AEMO was advised of this likely change in operational availability was through a rebid at 5.56 am for the 6.05 am dispatch interval.

Later the same morning, a combination of increasing wind generation and generation from Playford resulted in the violation of a network constraint. The relevant constraint guards against an overloading of the Whyalla to Cultana transmission line in the event that the Davenport to Playford line fails unexpectedly.

To manage this system security issue, AEMO issued dispatch targets to Playford to reduce its output. However, Playford did not follow the issued dispatch instructions. For nine of twelve dispatch intervals between 5.55 am and 6.50 am inclusive on 11 February 2009, Playford exceeded its dispatch targets by up to 18 MW. The AER also received transcripts of a series of phone calls between AEMO and BBP, during which AEMO repeatedly instructed BBP to reduce Playford's output.

A Power System Incident Report published by AEMO concluded that if Playford had followed its dispatch targets, the network would have remained in a secure state.

The AEMO report also made recommendations directed towards ElectraNet, the local transmission network service provider responsible for the operation and maintenance of the Whyalla to Cultana transmission line. The report recommended that by the end of July 2009, ElectraNet should reinforce with its staff the importance of following its operating instructions. Further, it recommended that ElectraNet investigate the feasibility of automatically adjusting the output from Mt Millar and Cathedral Rocks wind farms to maintain power system security in the event of any transmission line outages in the area.[2] The AER understands that these AEMO recommendations have been implemented.

A further recommendation in the report was for AEMO online staff to receive training in the management of this event as part of the internal Power System Incident review process. AEMO has confirmed that this recommendation has also been implemented.

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[2] Australian Energy Market Operator, *Incident Report – Violation of the secure operating state for the network in the Cultana system*, 23 June 2009.

2.2 Braemar

Braemar power station is located in the Darling Downs, around 200km west of Brisbane. Commissioned in 2006, the 504MW power station comprises three 168MW open cycle gas turbines.

On 17 March 2009, a planned network outage occurred due to work being undertaken by Powerlink in the Braemar switchyard. To manage this outage, AEMO imposed a constraint on Braemar Unit 1 for energy and frequency control ancillary services, which limited its output to zero. This constraint was in place until the dispatch interval ending 1.05 pm.

At approximately 12.40 pm, Powerlink notified BBP of the completion of the work in the switchyard. At this time, the constraint limiting Braemar Unit 1 to an output of zero was still in place. Despite the zero dispatch target, Braemar Unit 1 synchronised at 12.47 pm and was generating up to 106 MW above its zero dispatch target between 12.50 pm and 1.00 pm. It also continued generating above its dispatch target in the 1.05 pm and 1.10 pm dispatch intervals.

3 Compliance assessment

3.1 Relevant provisions of the Electricity Rules

The AER's investigation into the events of 11 February 2009 and 17 March 2009 was focused on the general responsibilities of scheduled generators under clauses 4.9.8(a) and 4.9.9 of the Electricity Rules.

Under the Electricity Rules, AEMO is responsible for the operation and administration of the wholesale electricity market. AEMO coordinates a central dispatch process to manage the spot market, which involves matching generator offers to demand in real time. Every five minutes, AEMO issues dispatch instructions, based on participants' bids and system and generator capabilities to produce the quantity of electricity that will meet demand at the lowest available cost, while maintaining the technical security of the power system.

The key Electricity Rules of relevance to this investigation are:

- clause 4.9.8(a) which requires a registered participant to comply with a dispatch instruction given to it by AEMO unless, in the registered participant's reasonable opinion, to do so would be a hazard to public safety or would materially risk damaging equipment.

- clause 4.9.9 which requires a scheduled generator to notify AEMO without delay of any event which has changed or is likely to change the operational availability of any of its scheduled generating units, whether the relevant generating unit is synchronised or not, as soon as the Scheduled Generator becomes aware of the event.

These clauses are civil penalty provisions under the Electricity Law.

3.2 Playford – Rule 4.9.8(a)

The AER identified that Playford was generating above its dispatch targets between 5.55 am and 6.50 am inclusive on 11 February. For nine of the twelve dispatch intervals Playford exceeded its dispatch targets by up to 18MW. Details of Playford's non-compliance with dispatch targets issued by AEMO are presented in figure 1[3].

[3] The ramp rate offered for the plant at the time was only 1 MW/minute. This meant that the target would only ever be a maximum of 5 MW below its recorded output at the start of the interval.

Figure 1: Periods in which Playford generated above targets issued by AEMO

Dispatch Interval	Dispatch Target Issued	Recorded Generation
05.55	108MW	115MW
06.00	110MW	120MW
06.05	115MW	130MW
06.10	125MW	143MW
06.15	138MW	151MW
06.30	133MW	138MW
06.40	127MW	132MW
06.45	127MW	132MW
06.50	127MW	129MW

3.2.1 Information provided by BBP

BBP acknowledged that it failed to follow the dispatch instructions for Playford issued by AEMO and provided reasons for Playford's non-compliance. BBP noted that the network constraint imposed by AEMO on 11 February was the first time that the constraint had bound in a significant way. This constraint imposed requirements on Playford that made it difficult to operate the plant.

Further, BBP argued that the inflexibility of the plant to be able to respond to changing output from intermittent wind generation and the network constraint was exacerbated by not being provided with a long term expectation for Playford's generation.

3.2.2 AER Assessment

The market arrangements provide forecasts to allow participants to manage expected changes in the power system into the future. These forecasts rely on quality information being submitted by market participants and network service providers.

In turn, the AEMO dispatch process runs on a five minute cycle that relies on market participants following dispatch instructions. AEMO can only manage system security if it can be assured that participants will follow instructions.

In view of this, the AER alleges that BBP contravened clause 4.9.8(a) during the dispatch intervals ending 6.00 am. to 6.55 am as BBP did not follow instructions given by AEMO to reduce the output being generated by Playford.

The AER notes that BBP has since introduced a system to monitor the constraints in the area and uses this information to assist in deciding on the commitment of its units.

3.3 Playford – Rule 4.9.9

On the morning of 11 February 2009, Playford successfully returned two boilers to service which increased its operational availability by 40MW. The AER is aware that it takes several hours to prepare the boilers to be able to commence generation. Therefore, the AER is of the view that BBP would have been aware of the likely increase in operational availability well before the 5.56 am rebid that increased the availability immediately.

The AER considers that BBP did not notify AEMO without delay of this likely increase in Playford's operational availability on 11 February 2009.

3.3.1 Information provided by BBP

BBP suggested that its failure to immediately notify AEMO of the boilers returning to service was due to the unreliability of Playford's boilers during this period. In the week prior to 11 February 2009, Playford had been unable to meet its forecast availability due to repeated technical challenges during the start up process. BBP also explained that during the summer of 2009 failure rates when attempting to restore boilers to service was approximately 50 per cent.

Consequently, BBP traders temporarily adopted a work around process which resulted in submitting bids only after the plant successfully completed the start up process. Consequently, on 11 February traders did not bid Playford into the market until the plant had successfully completed the start up process.

3.4 Braemar – 4.9.8(a)

On 17 March, Braemar generated above its targets between 12.50 pm and 1.10 pm on 17 March. Details of Braemar's non-compliance with dispatch targets issued by AEMO are presented in figure 2.

Figure 2: Periods in which Braemar generated above targets issued by AEMO

Dispatch Interval	Dispatch Target Issued	Recorded Generation
12.50	0MW	23.MW
12.55	0MW	64MW
13.00	0MW	107MW
13.05	77MW	148MW
13.10	148MW	152MW

3.4.1 Information provided by BBP

BBP acknowledged that Braemar Unit 1 did not follow the dispatch instructions issued by AEMO. It indicated that the decision to generate was based on an assumption that AEMO had been advised and had updated the market systems, as Powerlink had advised BBP that the network outage had been restored.

According to BBP, when Powerlink obtained system security clearance from AEMO to energise the relevant asset, Powerlink informed BBP the constraint was lifted and Braemar unit 1 was permitted to generate. BBP claimed that AEMO failed to undertake the necessary administrative tasks to update its market data to reflect that the constraint had been lifted.

BBP also suggested that there was a failure of process between AEMO and Powerlink regarding the implementation of standard operating procedures around the completion of maintenance work being completed in the Braemar switchyard.

Documents provided by BBP confirm that Powerlink does not have delegated authority from AEMO to instruct Braemar to begin generating.

3.4.2 Information provided by AEMO

AEMO confirmed that it does not have a relationship with Powerlink whereby Braemar can begin generating after receiving clearance from Powerlink, particularly when AEMO has not issued a dispatch instruction above zero.

3.4.3 AER Assessment

This investigation highlights the critical nature and possible implications of not following dispatch instructions issued by AEMO. Commencing generation without the necessary instructions from AEMO can have significant implications on the security of the power system.

Further, notwithstanding any potential agreement between Powerlink and AEMO regarding the procedure to be followed at the completion of network outages, a generator must follow the dispatch targets issued by AEMO in order to be compliant with clause 4.9.8(a). On this occasion Braemar Unit 1 did not receive a dispatch target above zero until 1.05 pm.

Accordingly, the AER alleges that BPP contravened clause 4.9.8(a) during the dispatch intervals ending 12.50 pm to 1.10 pm because Braemar Unit 1 began synchronising at 12.47 pm while the zero limit constraint was still in place

The AER considers provision 4.9.8(a) to be one of the more serious obligations and will continue to monitor it closely.

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4 Outcomes of the investigation

4.1 AER Views

The AER is of the view that despite the many, often complex factors faced by participants in the NEM, a participant's statutory obligations under the Electricity Rules are not relieved. AEMO must be assured that at all times generating units will follow dispatch instructions, other than in the limited circumstances allowed by the Electricity Rules. This enables AEMO to assess its security management options based on accurate information including where necessary, issuing directions to participants to maintain power system security.

It is also important that market participants fulfil their responsibility to provide timely information on their availability to AEMO. This enables all parties to respond appropriately to forecast system security issues.

Therefore, the AER formed the view that both Playford and Braemar contravened clause 4.9.8(a) of the Electricity Rules.

4.2 Enforcement options

The AER considers a number of factors when deciding whether to take enforcement action and which enforcement option to adopt. In general, the AER aims for a proportionate enforcement response taking into account the impact of the breach, the circumstances the breach and the participant's compliance programs and compliance culture.

If the AER considers that a participant has breached the provisions, it is able to issue infringement notices. The infringement penalty for a breach of a relevant civil penalty provision is $20 000 for a body corporate. It is also open to the AER to institute Court proceedings under section 61 of the National Electricity Law (Electricity Law), in which case the maximum penalty is up to $100 000. The court may also make other orders.

In this instance, the AER opted to issue two infringement notices under section 74 of the Electricity Law rather than instituting court proceedings. This decision recognises that BBP cooperated with the AER's inquiries in this investigation. It also recognises that BBP has undertaken a review of its procedures in relation to compliance and has progressed the implementation of identified improvements to its compliance program to address the AER's concerns.

On September 13 2009, the AER issued two infringement notices, seeking penalty payments totalling $40 000.

The AER notes that the breach of a civil penalty provision is not an offence; and the payment of an infringement penalty by a participant is not an admission of the alleged breach or liability.

In December 2006, the AER published a compliance bulletin that described how the AER enforces compliance with the Electricity Rules relating to compliance with dispatch instructions. Among other things, the compliance bulletin confirms the

AER's close monitoring of registered participants' general responsibilities to comply with a dispatch instruction issued by AEMO. The compliance bulletin also states that where a participant fails to follow dispatch instructions, the AER will investigate and consider all options at its disposal to enforce this provision including, where appropriate, infringement notices and legal proceedings.

4.3 Decision with respect to Playford – Notifying AEMO

The AER is of the view that BBP allegedly breached clause 4.9.9 of the Electricity Rules by delaying notifying AEMO of the likely increase in Playford's operational availability until the 5.56 am rebid. As noted earlier, BBP was aware of the likely increase in Playford's operational availability well before 5.56 am.

The AER considers that the previous unpredictability in successfully returning boilers to service at Playford – a range station – is an unusual event and goes some way to explaining the trader's decision. On the other hand, if the change in availability had been provided to AEMO then the impacts of that increase in availability on the network limitations at the time may have been better managed by all parties. The AER emphasises that participants must notify AEMO of any event that has or is likely to change their operational availability without delay in order to comply with clause 4.9.9. In this case, the AER considers that BBP's decision to return boilers to service is such an event.

The AER determined that the most appropriate response in this instance was to seek a commitment from BBP regarding improving systems to ensure future compliance with clause 4.9.9. BBP has since implemented a new compliance system to fulfil this commitment.

To assist in the future compliance by all participants, the AER will be issuing a compliance bulletin on advising AEMO of availability data in due course.

4.4 AEMO Recommendations

AEMO has advised the AER that ElectraNet has completed a review of their systems for automatically adjusting the output of Mt Millar and Cathedral Rocks. The outcome of the review was that automatic Supervisory Control and Data Acquisition (SCADA) limits would be implemented on Mt Millar and Cathedral Rocks wind farms for critical outages. This means that ElectraNet would be able to control the output generated by wind farms during a constraint violation or outage. ElectraNet has advised AEMO that this work has been completed.

AEMO has also confirmed that they have implemented the recommendation for AEMO on-line staff to receive training in the management of the violation of this event as part of the internal power system incident review process.

Glossary

AER means the Australian Energy Regulator.

AEMO means the Australian Energy Market Operator.

National Electricity Law means the National Electricity Law (a Schedule to the *National Electricity Act*).

National Electricity Act means the National Electricity (South Australia) Act 1996 (South Australia).

National Electricity Rules (Electricity Rules) means the rules as defined in the *National Electricity Law*.

NEM means the National Electricity Market.

NEMMCO means the National Electricity Market Management Company (referred to as AEMO in this report).

Registered Participant means Scheduled Generators, Semi-Scheduled Generators or Market Participants.

Non-scheduled generating unit means a generating unit that is not scheduled by AEMO as part of the central dispatch process.

Supervisory control and data acquisition (SCADA) means the equipment used to collect power system data.