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# Declared Wholesale Gas Market – Intervention Report

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**August 2020**

Notice of threat to system security

A report into the notice of threat to system security issued on 4 August 2020

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# IMPORTANT NOTICE

## **Purpose**

AEMO has prepared this report pursuant to rule 351 of the National Gas Rules, using information available as at 12 August 2020, unless otherwise specified.

## **Disclaimer**

AEMO has made every effort to ensure the quality of the information in this report but cannot guarantee its accuracy or completeness. Any views expressed in this report are those of AEMO unless otherwise stated, and may be based on information given to AEMO by other persons.

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# 1. Introduction

AEMO issued a notice of a threat to system security in the Victorian Declared Wholesale Gas Market (DWGM) for gas day 4 August 2020. This event was due to actual gas demand during the day tracking higher than forecast which indicated a potential breach of the minimum operating pressure at Dandenong City Gate (DCG).

When pressures within the Declared Transmission System (DTS) are forecast to fall below minimum operating limits, AEMO will notify the market that there is a threat to system security and out-of-merit-order injections may be scheduled to maintain system security.

AEMO scheduled 35 TJ of out-of-merit-order Dandenong LNG injections at the 2.00 pm schedule, resulting in approximately \$80,000 of additional ancillary payments and corresponding uplift payments.

Rule 351 of the National Gas Rules (NGR) requires that AEMO investigate and prepare a report following an event which is or may be a threat to system security. Rule 351 also requires that AEMO assess and advise on:

- the adequacy of the provisions of the NGR relevant to the event or events;
- the appropriateness of actions taken by AEMO in relation to the event or events; and
- the costs incurred by AEMO and Registered participants as a consequence of responding to the event or events.

This report is published in accordance with rule 351(2) of the NGR. All times used in this report are AEST.

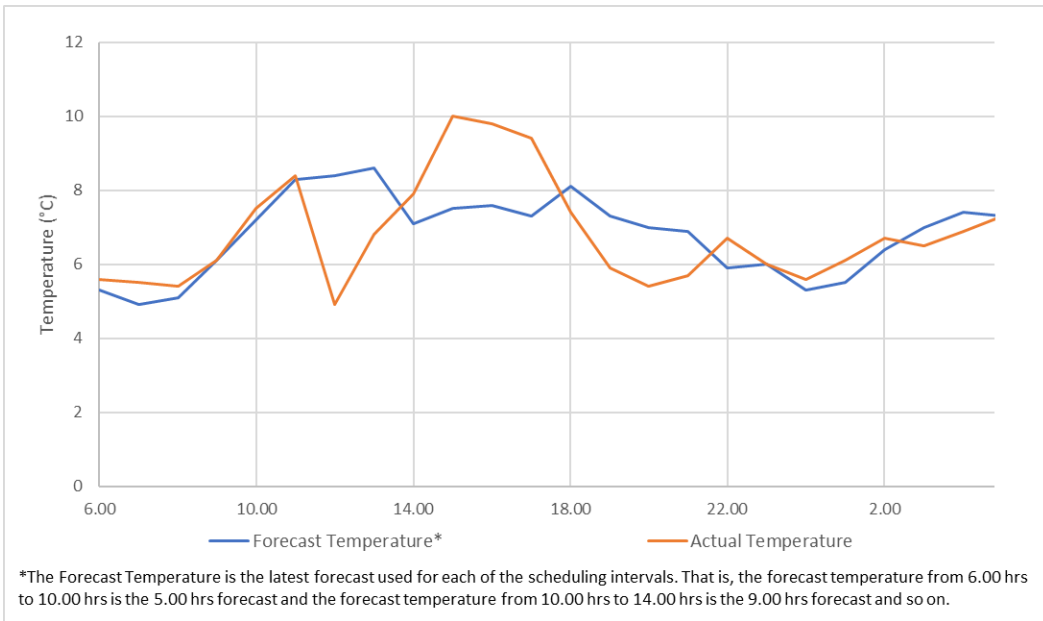
## 2. Event Summary

The event for the 4 August 2020 gas day involved changes to weather conditions, profiling of demand, demand forecast and actual demand.

### 2.1 Weather conditions

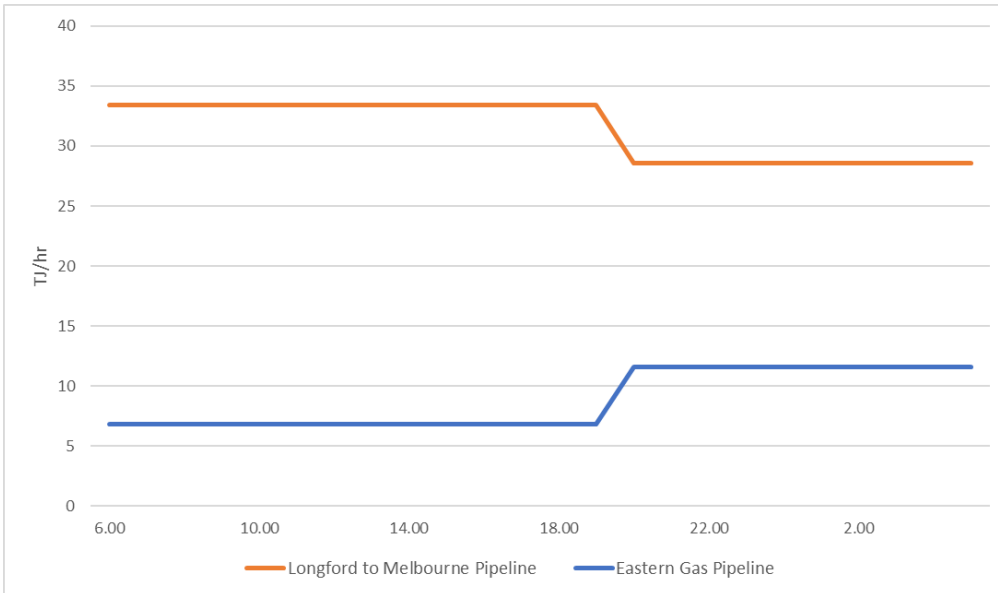
Cold temperatures had been forecast for Victoria for 4 August 2020, with a maximum forecast of 9°C in Melbourne. As observed in **Figure 1** the actual temperatures deviated from the forecast between 12.00 hrs and 22.00 hrs. The temperature dropped to around 5°C (2 degrees lower than forecast) as a cold front passed through between 12.00 hrs and 14.00 hrs and then increased to 10°C (2 degrees above forecast) between 14.00 hrs and 16.00 hrs. The timing of these temperature changes across the day had an impact on demand forecasts.

**Figure 1 Forecast Temperature compared with Actual Temperature**



In the day-ahead schedule for 4 August 2020, demand forecasts indicated a demand of in excess of 1,150 TJ. Forecasts of this high level are a trigger for AEMO to profile injections from Longford to assist in maintaining linepack levels. For 4 August, AEMO coordinated with Jemena and Esso to profile injections from Longford, refer **Figure 2**.

**Figure 2 Longford profiled injections**



## 2.2 Changes in demand trends

As a result of increased numbers of people working from home, AEMO has observed a change in the typical demand trends which during cold weather can result in a sustained higher demand throughout the day. Prior to COVID-19 restrictions, the demand profile on a typical cold day would consist of a high morning and evening demand with a dip in the middle of the day. This change in demand trend has been a challenge to forecast for both AEMO and Market Participants. As a result of the limited data set available since restrictions

began, the change to demand profile was even more uncertain due to the stage 4 restrictions<sup>1</sup> that had just been introduced.

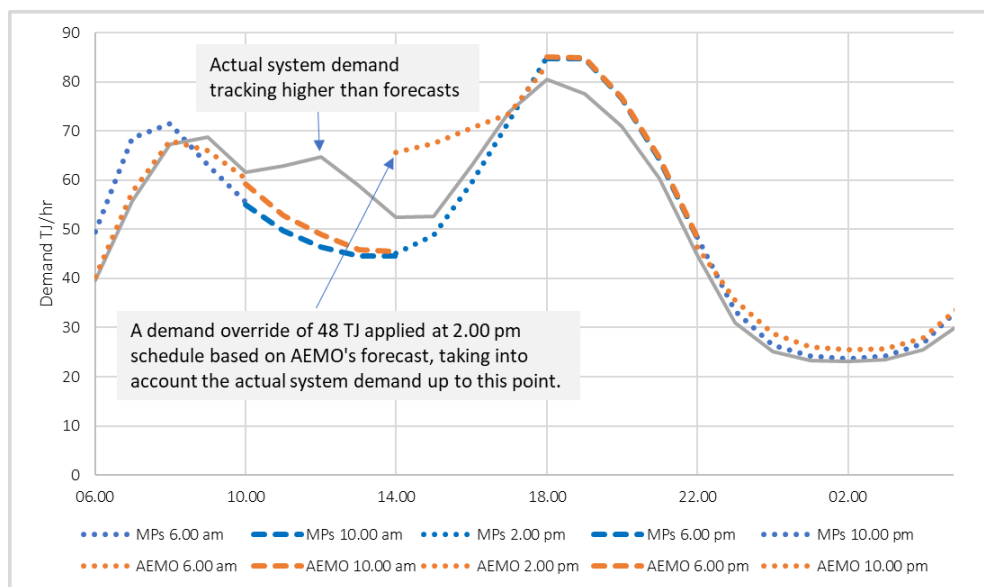
AEMO has analysed available data from winter 2020 to adjust hourly demand forecast profiles taking account of recent changes to demand. Profiling demand is further refined by the sensitivity to changing weather conditions. As it was forecast for three hours of sunshine and intermittent rain for 4 August 2020, an average COVID-19 demand profile was selected.

## 2.3 Actual system demand

The demand forecast for AEMO and Market Participants can be seen in **Figure 3**. This comparison of hourly forecasts, updated at each scheduling interval, with actual demand show that both AEMO and Market Participants under-forecasted the 10.00 am scheduling interval. Further, AEMO subsequently over-forecasted the 2.00 pm scheduling interval.

Market Participants had forecast, in aggregate, a daily system demand of 1,221 TJ at the 6.00 am schedule. Only minor updates to these aggregate forecasts were made at subsequent scheduling intervals. AEMO's 6.00 am forecast was 1,206 TJ. While some inaccuracies in AEMO's forecasts are observed, the forecasts were updated based on current-day observational changes and COVID-19 profile.

**Figure 3 Comparison of forecast system demand and actual system demand by schedule**



Actual demand on 4 August 2020 was approximately 1,238 TJ. Forecasts for Gas-fired Power Generation (GPG) did not change materially across the day, and actual GPG usage was in-line with these forecasts accounting for around 30 TJ of the daily demand.

The cold and varied weather across the day, combined with the COVID-19 adjusted demand profile, resulted in demand tracking higher than forecasts from around 10.00 hrs through to 14.00 hrs.

**Figure 3** also highlights:

- The current difficulties faced in correctly forecasting the demand profile on a cold and varied weather day
- Market Participant forecasts are more aligned to a typical non-COVID impacted profile
- The varying weather temperatures compounding these difficulties for accurate forecasts with residential demand more sensitive to variations in weather. The actual demand tracks higher than AEMO's forecast between 10.00 hrs and 14.00 hrs, and tracks lower from 14.00 hrs.

<sup>1</sup> DHHS. Stage 4 restrictions, 2 August 2020. Available at <https://www.dhhs.vic.gov.au/stage-4-restrictions-covid-19>. Viewed: 13 August 2020.

AEMO's modelling, conducted at 12.15 hrs and updated at 13.24 hrs, forecast that there could be system security issues with system pressure potentially breaching limits at DCG inlet in the 6.00 pm scheduling interval if the demand continued to track above forecast. This modelling indicated that action needed to be taken at the 2.00 pm schedule, therefore it was not possible for AEMO to call for a market response given it would not be possible to wait until the 6.00 pm scheduling interval to act.

Consequently, AEMO notified the market of a threat to system security at 13.51 hrs. To avoid the potential breach of system pressures at DCG inlet, AEMO intervened and took the following actions at the 2.00 pm schedule:

- applied a demand forecast override of 48 TJ in accordance with the Demand Override Methodology<sup>2</sup>
- scheduled 35 TJ of out-of-merit-order Dandenong LNG injections. Even though there had been a 48 TJ demand override, Dandenong LNG injections were still above the market price.
- profiled injections from Iona Close Proximity Point (Iona CPP), increasing injections between 15.00 hrs and 21.00 hrs to support South West Pipeline (SWP) demand. These profiled injections were from gas that was already scheduled at Iona CPP and were not out-of-merit-order injections.

The scheduled LNG was reduced to 25 TJ, of which 6 TJ was out-of-merit, and the profiled injections from Iona CPP was no longer required at the 6.00 pm schedule, and AEMO notified the market that the threat to system security had ended at 21.11 hrs.

A chronology of events is included in appendix A1.

## 3. Assessment of event

This event was triggered due to the demand being higher than forecast throughout the day. The decision to issue a notice of a threat to system security was made for the following reasons:

- Gas demand exceeding transmission system capacity
- There was the potential for a pressure breach at DCG

### 3.1 Adequacy of Part 19 of the NGR

In respect of this event, AEMO has assessed the application and adequacy of the NGR, with a primary focus on the following provisions:

- NGR 206 Gas scheduling
- NGR 341 Notice of threat to system security
- NGR 351 Intervention reports
- NGR 208 and 215 Demand forecasts

#### 3.1.1 Gas scheduling

Under NGR 206, AEMO is required to schedule injections of gas into and withdraw gas from the DTS in accordance with bids, and AEMO must comply with the gas scheduling procedures<sup>3</sup>. The gas scheduling procedures specify that AEMO will notify Market Participants of changes to various constraints, including Supply Demand Point Constraints (SDPCs), by sending out a System Wide Notice (SWN). AEMO did not send out SWNs relating to any of the constraints that applied in this event including:

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<sup>2</sup> AEMO. Demand Override Methodology. Available at <https://www.aemo.com.au/-/media/files/pdf/demand-override-methodology.pdf>

<sup>3</sup> AEMO. Gas Scheduling Procedures. Available at <https://aemo.com.au/-/media/files/gas/dwgm/2020/wholesale-market-gas-scheduling-procedures-victoria.pdf>

- Profiling of Longford injections
- Dandenong LNG injections in the 2.00 pm and 6.00 pm schedules
- Iona profiling occurring from the 2.00 pm schedule

These SWNs should have been notified to the market and AEMO is reviewing its internal processes to avoid a reoccurrence of this.

### 3.1.2 Notice of threat to system security

NGR 341 requires that if AEMO believes there is a potential threat to system security, it must notify Registered participants, without delay, the details of that threat to system security.

At 13.51 hrs AEMO notified the market of the threat to system security.

If AEMO reasonably considers that a threat to system security is unlikely to subside without intervention (NGR 343), AEMO must intervene in the market by taking any measures it believes are reasonable and necessary to overcome the threat to system security. The Dandenong LNG facility had been notified earlier in the day that there was a possibility of LNG being scheduled and AEMO had taken pre-emptive actions in profiling Longford injections from 6.00 hrs. Dandenong LNG received the final notification at 13.53 hrs to inject gas in response to the threat to system security. This gas was profiled to be injected at a higher rate to assist in alleviating the threat. AEMO also profiled Iona storage injections at higher rates to commence from 15.00 hrs.

AEMO notes that NGR 343 specifies some of the options available to AEMO when intervening in the market are:

- Curtailment in accordance with the emergency curtailment list
- Increasing withdrawals
- Requiring gas to be injected which is available but not bid into the market
- Injecting off-specification gas
- Requiring Registered participants to do any reasonable act or thing that AEMO believes necessary in the circumstances.

In this event, the issue of a potential pressure breach at DCG Inlet could be resolved by;

- a combination of scheduling out-of-merit-order (injection bids above the market price) gas from Dandenong LNG<sup>4</sup> and profiling these injections, and
- profiling existing injections from Iona CPP at the 2.00 pm schedule.

### 3.1.3 Intervention Report Timing

NGR 351 places an obligation on AEMO to publish an Intervention Report within 10 business days after the event. AEMO has previously raised this as a concern given the limited time this placed on AEMO to conduct a thorough investigation, given the requirement to assess:

- the adequacy of the Rules;
- the appropriateness of actions taken by AEMO; and
- the costs incurred by AEMO and Registered participants as a consequence of responding to the event or events.

AEMO has reviewed this and AEMO intends to adopt the following approach to reporting on these events, wherever possible:

- Investigate and publish a report based on immediately available data within 10 business days of the relevant event.

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<sup>4</sup> The bids at Dandenong LNG are scheduled in merit order, however, they are not in merit order when considering the market-wide bids, i.e. they are constrained on.



- Where not all information necessary to complete the required assessment is available, that report will be flagged as preliminary, with a final report to be published once the additional information is received and analysed.

For the purposes of this report, AEMO believes it has all necessary information and does not intend to publish a subsequent report.

### 3.1.4 Demand Forecasts from Market Participants

On 4 August 2020 AEMO applied a demand override of 48 TJ at the 2.00 pm schedule and this action assisted in alleviating the threat to system security.

NGR 208 requires Market Participants to submit demand forecasts for the amount of gas that they expect to withdraw in each hour of the gas day, updated for each schedule. For the purposes of producing operating schedules, as per NGR 215, AEMO must use these demand forecasts. The exception is when AEMO makes a demand forecast override. A demand forecast override is an adjustment made by AEMO, in accordance with the gas scheduling procedures, for the purpose of ensuring system security in the preparation of operating schedules.

AEMO notes that there were high levels of differences between actual and forecast demand for both AEMO and Market Participants on 4 August 2020. AEMO has been updating demand forecasts and profiling on an ongoing basis in response to the changing circumstances both for COVID-19 impacts and weather. Based on the differences between demand forecasts submitted by Market Participant for each scheduling interval, it is not clear that Market Participants have been adjusting their demand forecasts to account for these changes in forecast profiles.

## 3.2 Appropriateness of actions taken by AEMO

AEMO's objectives during this event were to:

- Operate in accordance with the NGR and the Wholesale Market Procedures;
- Limit the risk of involuntary curtailment to customers including Gas-fired Power Generation;
- Alleviate the threat to system security and return the DTS to normal operating conditions.

NGR 206 requires that AEMO schedule injections into and withdrawals from the DTS in accordance with bids and must:

- Comply with the gas scheduling procedures; and
- Use its reasonable endeavours to operate within the system security procedures.

AEMO's modelling indicated a potential breach of pressures at DCG could occur after the 6.00 pm schedule due to higher demands that had occurred throughout the day, despite taking earlier action in profiling Longford injections.

In this event AEMO took all reasonable steps to assess the forecasts, however, AEMO failed to notify Market Participants, in accordance with the gas scheduling procedures, of various constraints that had been applied. AEMO continues to monitor the changing demand profile and make corresponding adjustments to its forecasts and will review internal processes with regards to the failure of sending out the required SWNs.

# 4. Costs of intervention

In response to the notice of a threat to system security issued for gas day 4 August 2020, AEMO scheduled 35 TJ of out-of-merit-order Dandenong LNG injections at the 2.00 pm schedule and 6 TJ of out-of-merit-

order Dandenong LNG injections at the 6.00 pm schedule. This was consistent with the approach outlined in the market notice issued to Market Participants.

The market impact resulting from the out-of-merit-order gas was in the form of additional ancillary payments, and corresponding uplift payments, of \$79,331.

## 5. Conclusion

AEMO issued a notice of threat to system security in the Victorian Declared Wholesale Gas Market for gas day 4 August 2020. AEMO scheduled 35 TJ of out-of-merit-order LNG injections at the 2.00 pm schedule and profiled injections from Iona CPP as a result of higher than forecast demand. Subsequently, LNG injections were reduced to 25 TJ (including out-of-merit-order injections of 6 TJ) and the profiled injections from Iona CPP were no longer required at the 6.00 pm schedule. The constrained-on LNG resulted in \$79,331 of additional ancillary and uplift payments.

AEMO has assessed the application and adequacy of associated NGR provisions and finds that these provisions were applied correctly. AEMO failed to notify the market participants via a SWN regarding various constraints that had been applied. AEMO continues to monitor the changing demand profile and adjusting forecasts however, as discussed above, it is not clear that Market Participants have been adjusting their demand forecasts to account for these challenging times.

Please direct any feedback or questions regarding this report to [GasMarket.Monitoring@aemo.com.au](mailto:GasMarket.Monitoring@aemo.com.au).

# A1. Chronology

Date/Time (AEST)	Event/ Action	Details
3 August 2020 7.07 hrs	AEMO forecast	AEMO notifies the market that the total gas demand forecast for 4 August 2020 is 1,150 TJ. This is an automatically generated email if the total gas demand forecast is greater than 1,150 TJ/day, after the publication of each Day+1 schedule. Subsequent notifications indicate gas demand forecast to be as high as 1,206 TJ.
3 August 2020 14.30 hrs	Longford profiling	As demand is forecast above 1,150 TJ this is a trigger for requesting profiling of gas from Longford to provide additional gas during the day. AEMO confirms with Jemena and Esso that Longford will inject 2 TJ/hour additional for the first 14 hours of gas day 4 August 2020.
4 August 2020 12.15 hrs	AEMO forecast	AEMO forecasting indicates that DCG Inlet pressure will breach at around 20.00 hrs.
4 August 2020 12.35 hrs	APA confirmation	AEMO confirms with APA the Directional Flow Point Constraint (DFPC) that has been applied at Culcairn.
4 August 2020 12.52 hrs	AEMO NEM Control Room	AEMO gas control room confirms with AEMO NEM control room the forecast of GPG.
4 August 2020 13.10 hrs	APA confirmation	AEMO confirms with APA the available rate of injection for Dandenong LNG.
4 August 2020 13.24 hrs	AEMO forecast	AEMO demand forecast revised up following higher than anticipated demand from 10.00 hrs. AEMO determined 35 TJ of LNG would be required from 15.00 hrs to 21.00 hrs and profiled injections from Iona CPP would be required from 15.00 hrs to avert the threat.
4 August 2020 13.35 hrs	Lochard confirmation	Lochard Energy confirmed that Iona Storage would be able to accommodate profiled injections by 15.00 hrs.
4 August 2020 13.51 hrs	AEMO market notice	AEMO issued market notice of the threat to system security.
4 August 2020 13.53 hrs	APA confirmation	APA confirmed LNG injections can commence at 15.00 hrs at the specified rates.
4 August 2020 13.53 hrs	2.00 pm schedule approved	2.00 pm operating and pricing schedules were approved.
4 August 2020 16.45 hrs	AEMO forecast	AEMO determined that LNG can be reduced to 25 TJ and profiled injections from the Iona CPP can be removed at the 6.00 pm schedule
4 August 2020 17.25 hrs	6.00 pm schedule approved	6.00 pm operating and pricing schedule were approved
4 August 2020 21.11 hrs	AEMO market notice	AEMO issued market notice advising end of threat to system security.