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# Declared Wholesale Gas Market – Intervention Report

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**September 2020**

Notice of threat to system security

A report into the notice of threat to system security issued on 22 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 27 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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- are not liable (whether by reason of negligence or otherwise) for any statements or representations in this report, or any omissions from it, or for any use or reliance on the information in it.

# Contents

<b>1.</b>	<b>Introduction</b>	<b>4</b>
<b>2.</b>	<b>Event Summary</b>	<b>4</b>
2.1	Weather conditions	4
2.2	Changes in demand trends	6
2.3	Actual system demand	6
<b>3.</b>	<b>Assessment of event</b>	<b>7</b>
3.1	Adequacy of Part 19 of the NGR	8
3.1.1	Notice of threat to system security	8
3.1.2	Intervention Report Timing	8
3.1.3	Demand Forecasts from Market Participants	9
3.2	Appropriateness of actions taken by AEMO	9
<b>4.</b>	<b>Costs of intervention</b>	<b>9</b>
<b>5.</b>	<b>Conclusion</b>	<b>10</b>
<b>A1.</b>	<b>Chronology</b>	<b>11</b>

# 1. Introduction

AEMO issued a notice of a threat to system security in the Victorian Declared Wholesale Gas Market (DWGM) for gas day 22 August 2020. This event was due to actual gas demand tracking higher than forecast during the day 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 indicate to 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 20 TJ of out-of-merit-order Dandenong LNG injections at the 6.00 pm schedule, resulting in approximately \$42,000 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

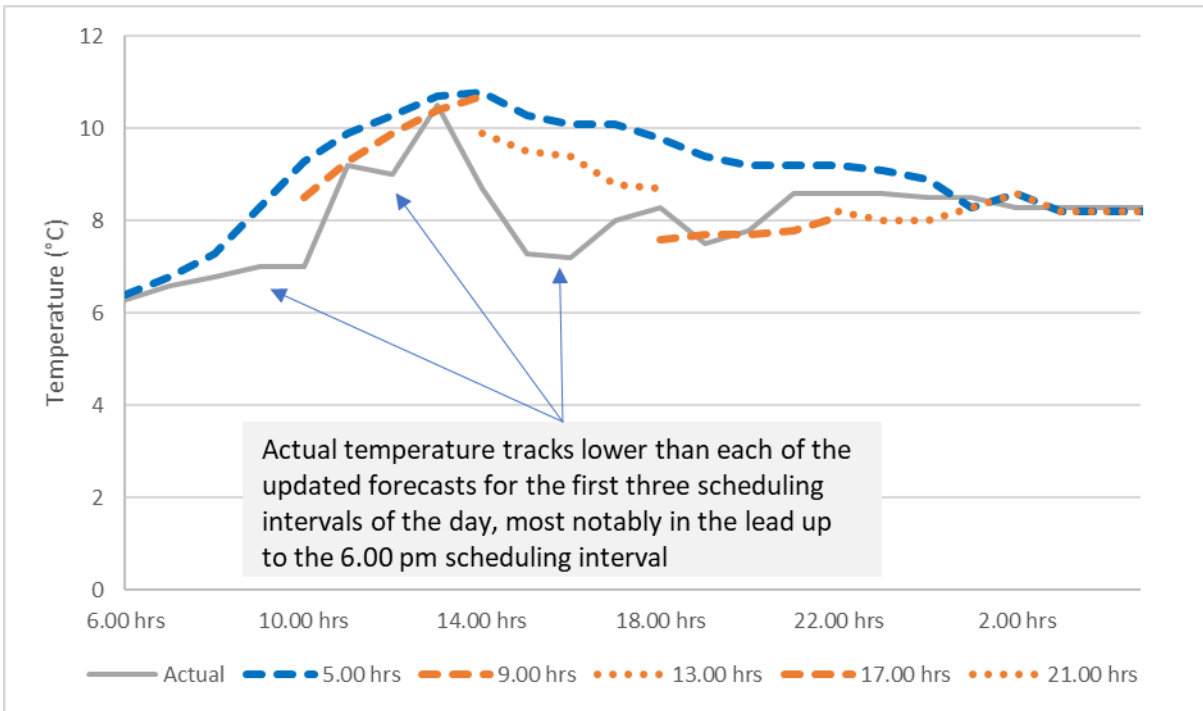
The event for the 22 August 2020 gas day involved changes to weather conditions, customer behaviour due to COVID-19 restrictions which has changed the hourly demand profile and demand forecast compared with actual demand.

### 2.1 Weather conditions

Cold temperatures had been forecast for Victoria for Saturday 22 August 2020, with a minimum forecast of 6.4°C and a maximum forecast of 10.8°C in Melbourne. As observed in **Figure 1** the actual temperatures tracked lower than the forecasts for the first 12 hours of the day particularly when a cold front reached Melbourne that saw temperatures decline sharply leading in to the 6.00 pm schedule.

The timing of cold fronts on days where there is a higher degree of variability, can lead to difficulties in accurately forecasting the upcoming schedule.

**Figure 1 Forecast temperature compared with actual temperature**



In the day-ahead schedule for 22 August 2020, forecasts indicated a demand of 1,098 TJ. While forecasts below 1,150 TJ are not usually a trigger for AEMO to profile injections from Longford to assist in maintaining linepack levels, the cold weather forecast and the unusual daytime demand due to COVID-19 restrictions were also considered. Consequently, for 22 August 2020, 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 being at home in Victoria due to the COVID-19 restrictions, AEMO continues to observe a change in the typical demand trends which during cold weather results in sustained higher demand during 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 trends has been a challenge to forecast for both AEMO and Market Participants, as there is a limited data set available to accurately predict what the demand profile will be.

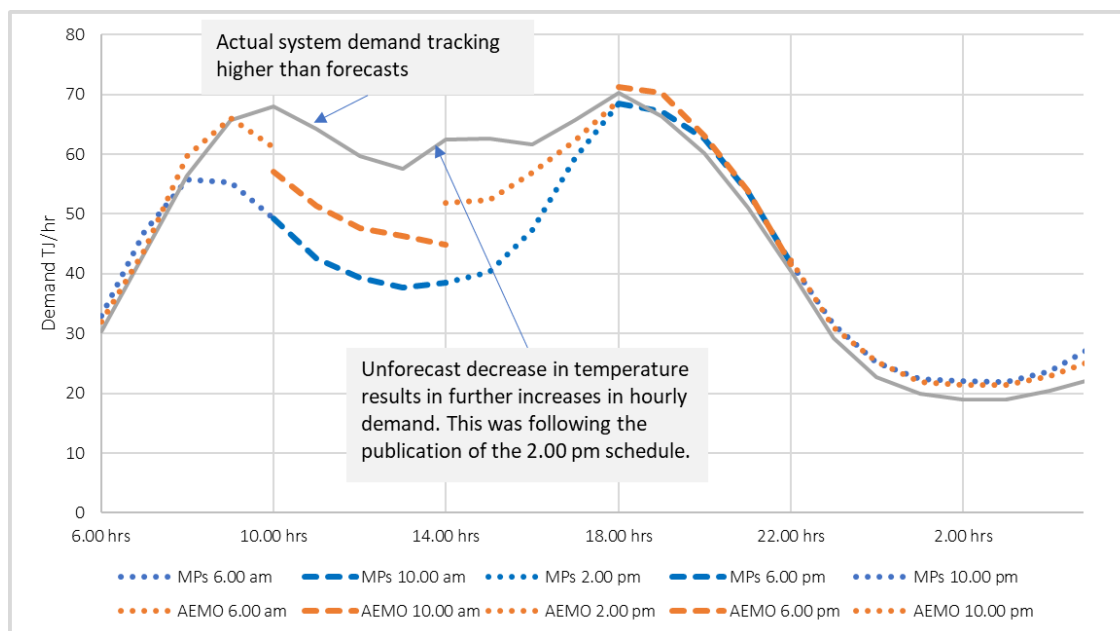
On this Saturday, the demand was unusually high due to the number of people at home to adhere to stage 4 restrictions<sup>1</sup>. These unusual circumstances caused difficulties in forecasting an accurate demand profile, combined with the increase in demand depleting linepack resulted in AEMO issuing a notice of a threat to system security for gas day 22 August 2020.

## 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 and the 2.00 pm scheduling intervals.

A demand forecast override of 35 TJ was applied at the 10.00 am schedule in addition to 74 TJ at the 6.00 am schedule. This was due to the extrapolated actual demand pushing the AEMO total demand forecast into a higher forecast range band per the Demand Override Methodology<sup>2</sup> rather than a change in forecast by AEMO. Despite the improved weather forecast from the 6.00 am schedule resulting in a slightly lower EDD<sup>3</sup> at the 10.00 am schedule, a deterioration in weather was forecast for the 2.00 pm schedule with a further 40 TJ of override applied.

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



Market Participants had forecast, in aggregate, a daily system demand of 991 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

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

<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 uses Effective Degree Days (EDD) to forecast gas demand in the DTS. This is a factor derived from temperature, wind speed and sunshine hours, and each gas day is assigned an EDD value based on the weather conditions.

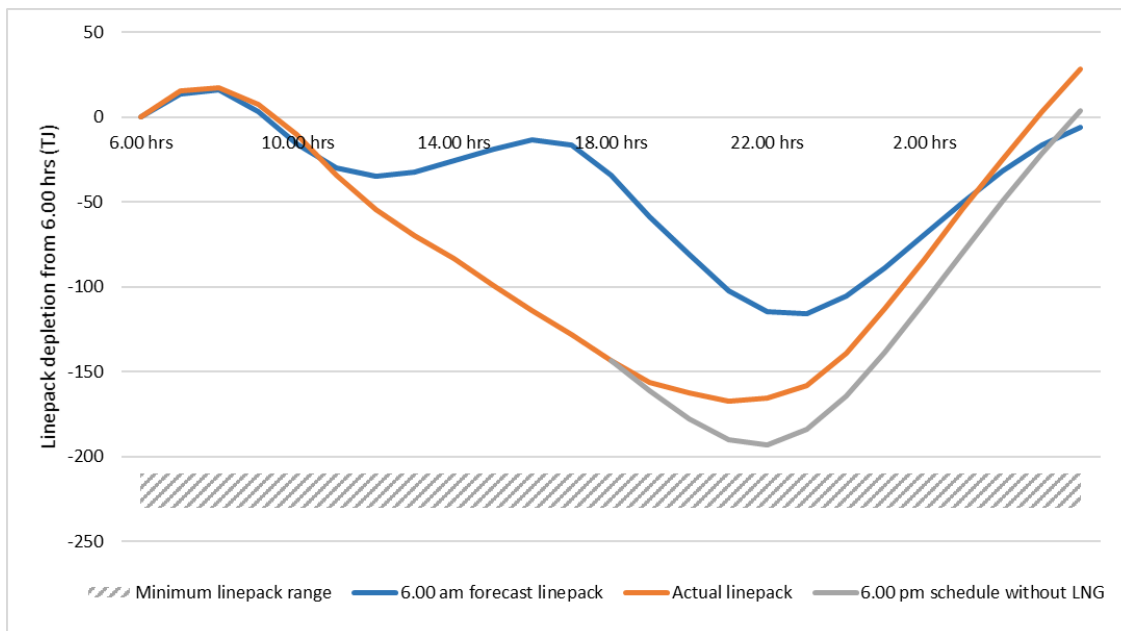
daily forecast was 1,083 TJ. AEMO's forecasts were updated at each scheduling interval based on current-day observed changes and COVID-19 profile.

Actual demand on 22 August 2020 ended up at 1,139 TJ and tracked higher than both participants' and AEMO's forecast between 8.00 hrs and 18.00 hrs. Forecasts for Gas-fired Power Generation (GPG) did not change materially across the day and only accounted for 13 TJ of the daily demand.

**Figure 3** highlights the sensitivity of the forecasts to the cold and declining temperatures across the day, combined with the impact of stage 4 restrictions. This resulted in demand tracking higher than forecasts from around 8.00 hrs through to 18.00 hrs.

AEMO's modelling, conducted at 16.30 hrs, forecast that there could be system security issues with system pressure potentially breaching limits at DCG inlet if the demand continued to track above forecast. The forecast impact on total system linepack levels can be seen in **Figure 4** with the largest impact at the 6.00 pm schedule.

**Figure 4 Total forecast and actual system linepack**



AEMO notified the market of a threat to system security at 17.00 hrs. To avoid the potential breach of system pressures at DCG inlet, AEMO intervened and scheduled 20 TJ of out-of-merit-order Dandenong LNG injections. Market prices across the day ranged from \$5.75/GJ at the 6.00 am schedule, up to as high as \$6.20/GJ at the 6.00 pm schedule and as low as \$4.75/GJ at the 10.00 am schedule.

AEMO notified the market that the threat to system security had ended at 21.05 hrs.

A chronology of events is included in appendix A1.

## 3. Assessment of event

This event was triggered due to the actual 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:

- Exceptional cold weather that saw a significant unforeseen increase in gas demand
- Difficulties associated with forecasting as a result of the COVID-19 restrictions
- There was the potential for a pressure breach at DCG due to reduced system linepack availability

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

### 3.1.1 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 17.00 hrs on 22 August 2020 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 received the final notification at 17.10 hrs to inject gas in response to the threat to system security.

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 scheduling out-of-merit-order (injection bids above the market price) gas from Dandenong LNG<sup>4</sup>.

### 3.1.2 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.

### 3.1.3 Demand Forecasts from Market Participants

On 22 August 2020 AEMO made consecutive demand overrides of 74 TJ, 35 TJ, and 40 TJ for the first three schedules. These actions 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 22 August 2020 gas day. 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 Participants 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 scheduling interval due to higher demands that had occurred throughout the day. In this event, AEMO took all reasonable steps to assess the forecasts and notified the market accordingly. AEMO continues to monitor the changing demand profile and make corresponding adjustments to its forecasts.

# 4. Costs of intervention

In response to the notice of a threat to system security issued for gas day 22 August 2020, AEMO scheduled 20 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 \$41,978.

# 5. Conclusion

AEMO issued a notice of threat to system security in the Victorian Declared Wholesale Gas Market for gas day 22 August 2020. AEMO scheduled 20 TJ of out-of-merit-order LNG injections at the 6.00 pm schedule as a result of higher than forecast demand. The constrained-on LNG resulted in \$41,978 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 continues to monitor the changing demand profile and adjusting its forecasts however, as discussed above and in recent Intervention Reports, it is not clear that Market Participants are also adjusting their demand forecasts to account for these challenging times. AEMO plans to raise this at the upcoming Gas Wholesale Consultative Forum in September 2020.

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
21 August 2020 15.49 hrs	Longford profiling	AEMO confirms with Jemena and Esso that Longford will inject 2 TJ/hour additional for the first 14 hours of gas day 22 August 2020.
22 August 2020 05.01 hrs	6.00 am schedule approved	Beginning of Day linepack was 433 TJ, 12 TJ below the target. A demand forecast override of 74 TJ was applied.
22 August 2020 09.01 hrs	10.00 am schedule approved	AEMO demand forecast revised down following lower than anticipated demand from 06.00 hrs, however, additional 35 TJ override was still required.
22 August 2020 13.20 hrs	2.00 pm schedule approved	AEMO demand forecast revised up following higher than anticipated demand from 10.00 hrs, and additional override was applied.
22 August 2020 16.30 hrs	AEMO forecast	AEMO determined 20 TJ of LNG would be required from 18.00 hrs to 22.00 hrs to avert potential pressure breach at DCG Inlet.
22 August 2020 17.00 hrs	AEMO market notice	AEMO issued market notice of the threat to system security.
22 August 2020 17.05 hrs	AEMO market notice	AEMO sends market notice advising of Dandenong LNG constraints
22 August 2020 17.10 hrs	6.00 pm schedule approved	6.00 pm operating and pricing schedule were approved
22 August 2020 21.05 hrs	AEMO market notice	AEMO issued market notice advising threat to system security ended.