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Ms Anna Collyer
Chair
Australian Energy Market Commission
Sydney South NSW 1235

Dear Ms Collyer

Consultation paper - Review of the Gas Supply Guarantee

Thank you for the opportunity to provide a submission to the Australian Energy Market Commission (Commission) Review of the Gas Supply Guarantee Stage 1 Consultation Paper (Consultation Paper).

In the short-term, AEMO considers the risk of a gas supply shortfall impacting the dispatch of gas-powered generation (GPG) to be low. This is because the tight supply impacting gas markets in 2017 has relaxed, with an increase in alternative electricity supply options, maturation of CSG fields developed by the Queensland LNG exporters, and the recent commitment of Port Kembla Gas Terminal. Scenario analysis performed by AEMO indicates that the requirement to trigger the GSG would require three coincident contingency events in the NEM and gas markets, making its current likelihood of deployment low.

In the medium- to long-term however, AEMO's forecasts indicate that various factors in the National Electricity Market (NEM) and gas markets may increase the risk of gas supply to GPG. For example, the most recent Gas Statement of Opportunities (GSOO) forecasts that demand for GPG will become more volatile with the increase in Variable Renewable Energy (VRE) and the retirement of coal generators; GPG peak demand may shift from a summer peak to a winter peak; and while total gas consumption is expected to reduce, the peak gas consumption is expected to remain relatively constant according to current forecasts. If these peak demands for GPG align with a peak gas demand day, the capacity to meet demand may be challenged.

Whilst the impact of not having the GSG in place may be minimal (given its limited scope of effectiveness), the impact of having no other risk mitigation tool for GPGs may then become an issue. Without a targeted risk management tool, AEMO would rely on other existing NEM reliability measures such as the RERT which has an associated financial cost, or ultimately load-shedding which has significant customer impacts, if required. Alternatively, in the gas market, market forces may ultimately source an adequate supply, potentially resulting in higher gas prices.

As a NEM risk mitigation tool the GSG mechanism is untested, but likely to be effective in a limited set of circumstances. That is, where a gas supply shortfall has been identified with a reasonable degree of certainty three to four days out from a NEM reliability gap. Therefore, review of amended or alternative measures to address future risk may be necessary.

While the future need for risk mitigation appears likely, the transformation that the NEM and gas markets are experiencing means that there is significant uncertainty about exactly how the above factors will converge and therefore the nature and extent of the risk to be addressed. This means that, should the Commission proceed to Stage 2 of the GSG Review, any alternative options would need to be closely monitored to ensure ongoing effectiveness and would ideally be flexible to changing needs. Alternatively, the Commission may wish to consider deferring Stage 2 in the short-term until future market dynamics, regulatory reforms and risks become clearer.

We would welcome the opportunity to discuss the matters raised in this submission further. Should you have any questions, please contact Kevin Ly, Group Manager Regulation at kevin.ly@aemo.com.au.

Yours sincerely

Tony Chappel
Chief External Affairs Officer
External Affairs

Attachments:

AEMO Submission to Gas Supply Guarantee (GSG) Review Stage 1 Consultation Paper (EMO0041)

ATTACHMENT 1: AEMO SUBMISSION TO GAS SUPPLY GUARANTEE (GSG) REVIEW STAGE 1 CONSULTATION PAPER (EMO0041)

1. Problem definition

The Australian Energy Market Commission (Commission) seeks to understand whether there is a problem with access to gas supply for gas-powered generators (GPGs) in the National Electricity Market (NEM), particularly from a system reliability perspective. Overall, AEMO considers the risk of such a gas supply shortfall to be low in the short-term. However, in the medium- to long-term this risk is likely to increase due to factors in both the NEM and gas markets, noting that there is a high degree of uncertainty in these markets over the period. Relevant market dynamics and regulatory reforms and associated impacts are set out below.

Short-term risk of gas supply shortfall for NEM GPGs

Based on AEMO's scenario analysis, in the short term there is currently one set of credible contingencies that would lead to a gas supply shortfall for a NEM GPG, being:

1. Longford gas plant is operating with reduced capacity due to maintenance;
2. A peak demand period has arisen in the NEM due to extreme temperatures and there is no concurrent wind generation available; and
3. One or two coal fired plants have tripped and are not operational.

The likelihood of this scenario eventuating is low because:

- All three contingency events would need to eventuate in parallel;
- Planned maintenance is not scheduled for Longford during peak NEM periods, specifically maintenance is scheduled for shoulder periods;
- During summer there is sufficient gas supply available to GPGs at short notice, meaning that GPGs should be able to operate during a NEM event if directed.

Other relevant factors are that:

- Supply risk for GPGs is unlikely to impact Queensland GPGs given the abundance of supply in the north; and
- The likelihood of the above scenario may be higher during drought periods, as there is reduced supply available from hydro generation, which provides the same reliability and security services as GPGs.

Market dynamics

Since 2017 when the GSG was established in response to the Pelican Point event, various market, regulatory and policy changes have impacted the risk of a gas supply shortfall to NEM GPGs. There are considered to be sufficient domestic mechanisms now available to GPGs to access gas at short notice.

Current environment

Across the NEM, it is noted that overall reliability forecasts do not indicate an imminent reliability shortfall. However, forecast reliability gap will occur in New South Wales from 2023-24 and in Victoria and South Australia from 2029-30, with forecast USE to exceed the interim reliability measure (IRM) of 0.0006%.[1] GPGs are important to meet demand during peak periods in summer and low VRE periods in winter. Demand for GPGs is typically event-driven, and therefore volatile. GPGs typically target operation as peaking units, looking to supply at higher price times when there are fewer options available. This volatility is already experienced in South Australia where, on any given day, gas could comprise 0% or up to 95% of electricity supply.

In gas markets, the tight gas supply occurring during summer 2017 which preceded the Pelican Point load-shedding event has eased. In this period there has been new gas supply from the Northern Territory and Queensland, as well as from the Orbost facility in Victoria. The COVID-19 pandemic reduced international demand for gas as the world was impaired by social and economic lockdowns, resulting in an oversupplied market for LNG. Lower spot prices have occurred as a result, both domestically and internationally. While there are signs of recovery in the near term, international LNG demand remains uncertain. LNG export volumes reached record levels in 2020 but were lower than producers had forecast would occur prior to COVID-19.[2]

The recently committed Port Kembla Gas Terminal will improve the near-term gas supply outlook for the domestic market, injecting up to 500TJ per day and thereby replacing other declining supplies such as the Longford gas plant. Further to improving overall gas supply in the short term, the Port Kembla Gas Terminal will somewhat reduce the risk in the future of GPGs facing a gas supply shortfall by providing an additional fuel source.

It is noted that due to logistical issues, the terminal does not completely mitigate GPG shortfall risks. For example, if LNG cargoes to the new terminal are unavailable during a shortfall event or if the LNG import facility empties its inventories without the new vessel having arrived. There would be no more supply until another vessel arrives, representing a very large decrease in supply capacity. Cargo issues occur significantly more frequently than complete gas plant failures.

During summer, even at the extreme where all GPGs are running in a period, GPGs could source gas through alternative means if required and there are various mechanisms available to access gas at short notice. For example, from a capacity perspective the Capacity Trading Platform provide as-available and interruptible contracts; and from a commodity perspective there are mechanisms such as the Gas Supply Hub, direct contracting with suppliers for as-available gas, and gas swaps. Brokers are increasingly playing a role in this space also. Some GPGs are dual fuel and can also operate on diesel, although this is a significantly expensive and short-term measure, and hence likely to be a last resort.

[1] 2020 Electricity Statement of Opportunities, August 2020, 5.4.2

[2] 2020 Electricity Statement of Opportunities, August 2020, 2.1.1

Future outlook

From a NEM perspective, growth in Variable Renewable Energy (VRE) in the medium-term is forecast to continue to drive down annual gas consumption from GPG.[3] Nonetheless GPG will remain an important source of peaking capacity for the NEM and as such is forecast to remain a volatile contributor to total gas system peak demands. The contribution of GPG to overall system peaks is expected to vary greatly, depending upon the coincident availability of other forms of electricity generation within the NEM.

However, from around 2030, as additional coal retires and more VRE is installed in the NEM, the maximum daily GPG demand is forecast to increase moderately and to shift towards a higher winter daily maximum than in summer.[4] This shift will occur as additional coal retires and more VRE is installed in the NEM, winter PV generation is lower and coal-fired capacity may be withdrawn for strategic maintenance (and will not be able to be brought back online quickly). While the important role of GPG is expected to continue it is important to note however that the specific role and long-term operation of GPG is uncertain and highly dependent on the evolution of the NEM generation technology mix, and the timing, location, and scale of NEM transmission investment and potential interconnectors such as EnergyConnect.

From a gas perspective, the gas sector is set for transformation, with changes in consumption patterns forecast and alternate supply sources being actively developed. This means that while gas consumption is forecast to remain relatively flat, there is uncertainty affecting consumption in the longer term, indicating potential gas consumption decline.[5]

As the Longford supply declines, there will be greater dependence on the supply and pipelines out of Queensland, and the LNG import facility being appropriately managed and having sufficient gas inventories in the floating storage and regasification units (FSRU). Long-term reliance on the LNG import facility is a key risk in the future due to previously mentioned supply risks associated with tankers.

Given the level of uncertainty in the future outlook for gas markets, the GSOO advises that future gas infrastructure investments should be robust to a range of possible futures, including futures with lower demand for gas in the long term, and/or more peaky demand profiles. Similarly, any regulatory reform developed now will need to be sufficiently flexible to accommodate various outcomes or reviewed at regular intervals to ensure ongoing effectiveness. More detail regarding the future outlook for gas markets can be found in the 2021 GSOO or the NEM in the 2020 Electricity Statement of Opportunities (ESOO)[6].

<u>Regulatory reforms</u>

A range of regulatory reforms have occurred since 2017, and are on the horizon for the medium- to long-term. The most relevant reforms are those that have, or will, improve NEM

[3] Gas Statement of Opportunities, March 2021, s2.3
[4] Gas Statement of Opportunities, March 2021, s2.3
[5] Gas Statement of Opportunities, March 2021, s2.1
[6] 2020 Electricity Statement of Opportunities, August 2020

reliability risks and therefore reduce risks associated with GPGs being unable to run; or that improve gas trading, access and transparency and therefore address risks of shortfalls.

Current environment

Relevant regulatory reforms since 2017 include:

- Pipeline capacity trading (PCT): enables the trade and auction of unnominated capacity outside of the DWGM. The day ahead auction is used by GPGs, indicating that the reform is leading to more efficient access to gas supply for GPGs (commenced in 2018). However, as DAA does not provide firm capacity it would be unlikely to be relied upon by a GPG to address an identified GSG shortfall.
- Generator notice of closure: this requires large electricity generators to provide at least 42 months' notice to the market before closing, helping market participants to respond to possible future shortfalls in thermal generation (commenced in 2018).
- Interim reliability measures: aligns the declaration of a Forecast Reliability Gap with the new Interim Reliability Measure of 0.0006% USE and temporarily replaces the long notice RERT (commenced August 2020).

Future outlook

There are several relevant regulatory reforms which will address issues considered in this submission. While the outcomes of these regulatory changes are not sufficiently mature to understand the extent of impacts with certainty, but should be taken into account in assessing the future outlook.

In the NEM, the Wholesale Demand Response (WDR) Mechanism, which commences in October 2021, will enable consumers to sell demand response in the wholesale market and compete with peaking generation during NEM peak periods. Clarity regarding the levels of available demand response will improve as the WDR mechanism becomes operational.

For gas, COAG's Measures to Improve Transparency in the Gas Market, which commences in the latter-half of 2021, will deliver a range of market benefits by enabling better informed decisions, providing market signals and promoting the efficient trade of gas and infrastructure services. More transparent information may enable to respond to potential gas supply shortfalls.

2. Impact of the problem

From a gas markets perspective, should a potential gas supply shortfall for GPGs be identified, market forces will likely come to bear and solve the supply problem, noting that it could lead to high gas prices on those days. From a NEM perspective, given the limitations of the GSG as a risk mitigation tool (discussed in the following section), the impact of not having the GSG in place would be minimal for any credible contingency, however, there could be unforeseen events which the GSG could prove to be a valuable tool.

More broadly, the impact of not having any alternative measure in place for a GPG gas supply shortfall would be the activation of the Reliability and Emergency Reserve Trader (RERT) to access out-of-market capacity reserve. To the extent that the RERT could not address the shortfall, curtailment in the NEM would be the next step.

The impact of activating the RERT is financial. For example, RERT services were activated on four days over the 2019-20 summer period in response to low reserve conditions and cost a total of $38.1 million.[7] However, had AEMO not activated these RERT services, load shedding would have been required had the largest credible contingency event at that time occurred.

In terms of who is impacted, AEMO recovers RERT costs from market customers. From a household perspective, the average impact for the above activation events was estimated to be $3.24 in New South Wales and $2.43 in Victoria (including GST).[8] The cost of curtailment where RERT is unavailable can be approximated for the relevant customer group with reference to the Australian Energy Regulator (AER) values of customer reliability data set.

3. Assessment Framework

The assessment framework proposed by the Commission is appropriate to the scope of review. Criteria of particular concern to AEMO are the potential for any recommendations to offer effective risk management in the short-term and the ability of measures to continue to be effective in the long-term; a focus on balancing the costs and benefits of any regulatory reform for market participants and AEMO; and ensuring that AEMO and participants have access to gas market and NEM information required to identify, validate and address gas supply shortfalls for GPGs.

4. Potential solutions

Value of the GSG mechanism

The GSG mechanism has some beneficial features which could make it an effective risk management tool. For example, the GSG:

- Contributes to AEMO's overall NEM risk management approach, even if not targeting a credible contingency. Effective risk management requires a wide spectrum of strategic and tactical tools for high to low probability events. In addition to risk controls for credible contingencies, AEMO also requires controls for non-credible and, where justified, low-probability high impact events.
- Could be valuable in specific circumstances. That is where a potential NEM shortfall is identified with reasonable certainty 3-4 days from the reliability event; AEMO has identified a feasible supply solution and initiated an industry conference; and gas industry participants have successfully contributed towards AEMO's solution.

[7] AEMO, 2019-20 NEM Summer Operations Review Report, June 2020, s5.2
[8] AEMO RERT Quarterly Report Q1 2020, s.6; and AEMO RERT Quarterly Report Q4 2019, February 2020, s.3.

- Operates across regions outside the DWGM. While in the DWGM there is a robust regulatory framework establishing AEMO as market operator there is no such role outside of the DWGM meaning that the GSG is the only safety net for other regions.

From a gas market perspective, the fact that the GSG has not been called on to date is not a conclusive indication that it would not be used in the future. Gas supply systems typically experience non-credible contingencies around one per ten-year period meaning that in just over three years it is possible that the need for the GSG would not be triggered.

Limitations of the GSG mechanism

As a NEM reliability risk mitigation, the GSG mechanism is untested and its fitness for purpose is limited. For example, the GSG:

- Cannot mandate participation by market participants. This means that there is no requirement to register initially, or to comply with any aspect of the GSG Guideline once market participants have committed to involvement. While the mechanism places additional obligations on AEMO outside the scope of its formal DWGM, STTM and GBB roles, it lacks the firmness and presents risk to AEMO if it is not successfully deployed.
- Operates within a limited timeframe due to the need to transport gas from Queensland. This means that certainty regarding NEM bids and dispatch, responses to market notices and the need for direction would typically become certain too late to leverage the GSG. By contrast, the RERT, provides more certain outcomes and can be triggered down to 3 hours before a NEM reliability gap. While the GSG has not been triggered since its establishment, the RERT was activated on four days over the 2019-20 summer.
- Presents risk to GPG operators in sourcing alternative gas supply. That is, GPG operators may source an alternative gas supply at a higher price but ultimately not be dispatched depending on factors such as how the market responds to AEMO notices, the ultimate availability or renewable resources and other matters beyond their control.
- Is reliant on datasets that are not firm from 7 days out. The data underpinning AEMO's determination of a gas supply shortfall is reliant on interpolating data from the NEM 7 Day short term Projected Assessment of System Adequacy (STPASA) which is of low quality beyond four days out, and lacks granularity in terms of GPG fuel requirements; publicly available Gas Bulletin Board data; and Victorian market information about gas flows, supply availability and GPG scheduling obtained via AEMO's role as DWGM market operator.
- Places some operational burden on AEMO, and this is not within its limited official duties within the eastern gas markets. For example, the process to determine a gas supply shortfall is largely manual, being run through spreadsheets that aggregate all of the information. It also requires AEMO staff to monitor East Coast gas flows, East Coast GPG nominations and East Coast gas operations, which involves significant reliance on contacts maintained by Gas RTO with non-DTS pipeline operators.

Potential improvements and alternative measures

In the longer term, measures to address GPG shortfalls may become more important and therefore reliance on the GSG, particularly in its current form, will become riskier as a sole measure. Both strengthening of the GSG, and the development of alternative measures to address the risks as these become clearer, will need to be carefully considered.

Given the focus of stage 1 of the Commission's review is on problem identification and materiality, AEMO does not propose any specific amendments or alternative options in this submission. However, should the Commission elect to proceed to Stage 2 to identify potential solutions, AEMO would potentially consider:

- GSOO recommendations to investigate gas demand side response mechanisms, for example peak day demand management contracts, demand reduction via energy efficiency, fuel-switching, or alternative methane production pathways;
- options to improve the certainty of data used to inform the GSG 7-day gas supply outlook for GPGs and the extent of associated financial, operational and/or risk impacts for AEMO and/or market participants;
- options to automate the GSG mechanism, thereby reducing ongoing cost and operational burden;
- the benefits of mandatory GSG participation to enhance certainty of outcomes, and whether this outweighs the compliance obligation on market participants and AEMO;
- the benefits of enshrining the GSG, and AEMO's role in it, in the Rules given the work involved in monitoring shortfalls, developing solutions and liaising with participants to work towards those solutions.