Australian Pipelines
& Gas Association
T 02 6273 0577
F 02 6273 0588
W www.apga.org.au
A 1st Floor,
7 National Circuit
Barton ACT 2600
PO Box 5416,
Kingston ACT 2604

1 February 2021

SUBMISSION: AEMO DRAFT 2021 INPUTS, ASSUMPTIONS AND SCENARIOS REPORT AND CSIRO GENCOST 2020-21 CONSULTATION DRAFT

The Australian Pipelines and Gas Association (APGA) represents the owners, operators, designers, constructors and service providers of Australia's pipeline infrastructure, with a focus on high-pressure gas transmission. APGA's members build, own and operate the gas transmission infrastructure connecting the disparate gas supply basins and demand centres of Australia, offering a wide range of services to gas producers, retailers and users.

APGA welcomes the opportunity to comment on the CSIRO GenCost 2020-21 Consultation Draft and the AEMO Draft 2021 Inputs, Assumptions and Scenarios Report. In this submission, APGA will focus on the value of gas-powered generation in the electricity mix. Our key concern is that the assumptions and scenarios in both reports undervalue the role of gas-powered generation in the NEM in enabling high levels of penetration of variable renewable electricity generation. Much of this value is present in gas-powered generation's insurance value in the event of a prolonged renewables drought.

A failure to fairly value the critical role of gas-powered generation in the NEM in the next iteration of the ISP and other strategic planning documents could lead to under investment in gas powered generation capacity and associated gas infrastructure such as pipelines. This is important because this outcome could result in significantly higher power system costs in very high renewables penetration scenarios - thereby creating an economic disincentive and hampering decarbonisation efforts. It could also result in unnecessarily high energy costs for Australian households and businesses and/or lead to suboptimal security of supply/reliability outcomes.

To further develop the evidence-base on this topic, APGA commissioned a report from Frontier Economics on the *Potential for Gas-Powered Generation to Support Renewables*. The report's findings show that gas powered generation can allow very high renewable electricity systems (i.e., those with more than 90% renewables penetration) to function reliably at much lower system cost than they would otherwise. The report's Executive Summary with key findings is attached (confidentially) to this submission; APGA will publicly release the full report later in February.

CSIRO GenCost 2020-21 Consultation Draft

The section of the GenCost 2021 Consultation Draft of key relevance to APGA's concerns is Section 5 on Levelised cost of electricity analysis.

The report identifies three 'issues and concerns' in calculating and interpreting levelised cost of electricity (LCOE) highlighted in the report. These are:

1. LCOE does not take account of the additional costs associated with each technology and in particular variable renewable electricity generation technologies
2. LCOE applies the same discount rate across all technologies even though fossil fuel technologies face a greater risk of being impacted by the introduction of new state or commonwealth climate change policies
3. LCOE does not recognise that electricity generation technologies have different roles in the system. In particular, some technologies are operated less frequently, increasing their costs, but are valued for their ability to quickly make their capacity available at peak times.

APGA acknowledges and welcomes efforts by CSIRO to address the first two issues. Particularly the adoption of a new method to better take into account additional investment costs associated with variable renewables, such as the need for additional transmission infrastructure and additional storage facilities like battery and pumped hydro storage.

However, point three has not yet been adequately addressed – especially in relation to the insurance value of gas-powered generation in the event of a prolonged renewables drought. Additional modelling is required to address this issue.

AEMO Draft 2021 Inputs, Assumptions and Scenarios Report

Apart from the five scenarios elaborated in the Draft 2021 Inputs, Assumptions and Scenarios report, there are no specific sections in this report that are directly applicable to APGA's concerns about undervaluing the insurance value of gas-powered generation. For this reason, APGA's primary focus in this consultation round is the GenCost 2020-21 Consultation Draft – the key document for discussion and analysis relevant to our concerns. We expect this will in turn inform AEMO's Draft Inputs, Assumptions and Scenarios report and the scenario development process for the next iteration of the ISP.

APGA notes that in some scenarios (i.e., the Central Scenario and the Sustainable Growth Scenario) in the Draft 2021 Inputs, Assumptions and Scenarios report the "increased cost-competitiveness of VRE and storage technologies relative to fossil fuel generation" is a key factor. It is important that the limitations and/or cost implications of storage technologies relative to gas powered generation in the event of a prolonged significant reduction of VRE generation is factored into these scenarios.

Frontier Economics Report: Potential for Gas-Powered Generation to Support Renewables

As noted above, APGA commissioned a report from Frontier Economics on the *Potential for Gas-Powered Generation to Support Renewables* to further advance the evidence-base in this area.

The report's findings show that gas powered generation can allow very high renewable electricity systems (those with over 90% renewables penetration) to function reliably at much lower system cost than they would otherwise. Gas powered generation provides effective energy storage over periods of weeks and months - much longer time periods than batteries and pumped hydro can provide. This makes gas-powered generation particularly well suited to managing energy requirements during sustained periods of low renewable generation, either due to seasonal weather patterns or prolonged renewable droughts.

Low VRE generation can persist for a long period of time. AEMO projections show renewable droughts can last from days to months. In high-VRE scenarios, investment is required in additional generation or storage capacity to ensure the lights can be kept on during these renewable droughts. The flexible nature of gas-powered generation means it is uniquely placed to provide support to renewable generation, protecting the security and reliability of the electricity system.

The Frontier Economics report models total system costs for two VRE output years (2030 and 2035) indexed against the system costs of a 100% renewable power system each year. The 2030 model doesn't contain any particularly long periods of low wind output; whereas 2035 features a prolonged wind drought. The models for both years include four scenarios:

- 100% renewables;
- 99% renewables;
- 95% renewables; and
- an optimised high VRE system where the level of gas-powered generation is not stipulated (93% renewables in this model).

In 2030 the inclusion of a small proportion of peaking gas-powered generation reduced system costs by approximately 28% (equating to around $5 billion in cost savings in a NEM sized electricity system). In 2035, the inclusion of a small proportion of gas-powered generation reduced system costs by approximately 36% (equating to around $7.5 billion in cost savings).

This reduction in total resource costs reflects the report's conclusion that investment in some gas-powered generation enables the system to avoid costly and wasteful overbuilding of renewable generation required to deliver system security to manage renewable drought.

The key point in the context of the GenCost 2020-21 Consultation and the AEMO Draft 2021 Inputs, Assumptions and Scenarios Report is that while gas-powered generation is uniquely placed to provide support to renewable generation, long-term investment modelling will often under-value this insurance role for gas-powered generation. Long-term investment modelling of the type undertaken by AEMO for the ISP tends to model outcomes for typical conditions expected in the electricity market, or average conditions. It is typically not well-suited to modelling investment decisions for generation or storage assets that earn a return during atypical conditions, such as periods of unexpectedly low VRE output. Modelling these investment decisions typically takes additional modelling and analysis.

A confidential copy of the Executive Summary of the Frontier Economics report on the *Potential for Gas-Powered Generation to Support Renewables* is attached **[see APPENDIX A]**. APGA will publicly release the full report later in February.

To discuss any of these issues further, please contact APGA's National Policy Manager, Andrew Robertson on 0439 491 102 or at arobertson@apga.org.au.

Yours sincerely

STEVE DAVIES
Chief Executive Officer