



4 December 2023

Submission: Integrated System Plan Review – Directions Paper

The Australian Pipelines and Gas Association (APGA) welcomes the opportunity to comment on the Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) Integrated System Planning (ISP) Review Directions Paper.

As we noted in previous comments to the ISP review team, an expanded ISP presents the opportunity to consider the structural differences between electricity and gas supply chain investment markets to support better outcomes for all gas customers, industrial, commercial and residential. Unfortunately, the current approach does not realise this opportunity. Instead, it risks repeating the mistakes of the recent past in focusing on gas infrastructure rather than gas supply.

High level challenges

APGA does not support the development of a prescriptive gas infrastructure development pathway by AEMO.

The gas infrastructure market has never failed to deliver transport capacity where it is bought and paid for by shippers. A prescriptive approach to gas infrastructure planning would undermine the existing contract carriage gas transmission infrastructure market – undermining the one part of the gas market that currently still functions efficiently and effectively. Such a planning approach would risk the pace and efficiency of project development – and in effect, result in the government picking winners.

A gas infrastructure development pathway does not address the fundamental cause of high prices and low security of supply.

The challenge facing gas customers, including gas power generation (GPG) is a lack of supply. The past decade of gas market reforms alongside introduction of more LNG demand capacity than supply has influenced the east coast gas market (ECGM) becoming and remaining a gas market short in supply. With less supply capacity than demand capacity, customers are competing for supply, rather than producers competing for customers, making the ECGM a sellers' market. This is the challenge which reforms need to address.

Focusing on infrastructure, not supply, repeats the mistakes of the past.

The past decade of gas market reform also focused on infrastructure, failing to address the fundamental supply/demand imbalance at the root of high prices and reduced supply security. The directions paper proposes a repeat of this error. Gas infrastructure costs only represent around one tenth of gas costs, and has never failed to provide contracted transport capacity in the absence of a physical fault – a much rarer occurrence on pipelines than powerlines. The best interests of gas and electricity customers is in the return to a gas market long in supply where producers compete for customers, not the other way around.

High level solutions

Accurate locational modelling of excess gas supply and at-risk demand would create clearer supply and infrastructure market signals, allowing the gas market to secure supply.

Instead of a gas infrastructure development pathway, APGA recommends 'supercharging' the GSOO by modelling to support future gas related investments needs to accurately identify locations and quantities of supply excess or demand shortfall. Precedent for this exists in modelling of Renewable Energy Zones for wind and solar resources. Modelling for gas resources to date has not been effectively accurate, and focusing on infrastructure to date has not supported better outcomes for customers. This approach would avoid 'picking winners' and allow the gas market the flexibility to respond with the right investments.

Support all gas customers by modelling gas to the same degree as electricity and expanding gas supply to consider renewable gases.

AEMO should be sufficiently funded to undertake modelling of both gas and electricity supply chains to the same high level of quality as in electricity modelling. This would provide the same level of assurance that the best possible outcomes are identified for gas customers as is done for electricity customers today. Supply security and emissions reduction outcomes can be better supported for both gas and electricity customers by including renewable gas supply in gas supply chain modelling.

Avoid leaving gas customers behind by enabling AEMO to expand beyond current modelling practices – it is possible to model gas and electricity customers in parallel.

The Department indicated that modelling the gas supply chain to the same degree as the existing electricity supply chain would risk the robustness of AEMO modelling. This is only true if funding and capability is limited. Limited funding and capability is not an appropriate reason to undertake ineffective modelling of gas customer outcomes – gas customers like their electricity customer counterparts deserve energy security and the least cost emissions reduction options that work for their circumstances – all of which requires robust modelling.

To discuss any of the above feedback further, please contact me on +61 422 057 856 or jmccollum@apga.org.au.

Yours sincerely,



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Detailed feedback on challenges and solutions

Risks of a prescriptive gas infrastructure development pathway

The gas pipeline industry in Australia largely operates under a contract carriage form of market (with notable exceptions, including the Victorian Transmission System). As this contract carriage form of market efficiently distributes risk between owners and shippers, it also effectively avoids the risk of stranded assets.

This form of market permits the rapid investment in infrastructure when and where it is needed, in marked opposition to electricity transmission project progression under the ISP. Under this form of market, the gas pipeline industry has never failed to deliver the capacity necessary to connect supply and demand when and where it is needed.

The Directions Paper proposes developing a gas infrastructure development pathway to support an integrated approach to gas and electricity planning. A prescriptive pathway risks inefficient outcomes, and ultimately may lead to taxpayer funding for inefficient pipeline investments – which is the opposite of how the pipeline industry naturally operates.

A prescriptive pathway risks repeating the mistakes of past intervention in gas transmission. The costs associated with transporting gas accounts for 10 per cent of the wholesale gas price,¹ which has not materially changed in recent years. Focusing on these costs draws attention away from the true problem: an imbalance between demand and supply.

Rather than addressing this imbalance, progressive reforms over the last few decades have instead imposed additional regulation on pipelines in an effort to make the market more competitive and accessible to customers. This has not had an appreciable impact on gas prices, and has potentially worsened the issue by reducing incentives for investment in additional supply, and infrastructure to connect supply to demand.

Any gas infrastructure development pathway should be limited to identifying supply excess and demand shortfalls. This would facilitate efficient investments to connect supply to demand, and have a much higher impact on wholesale gas prices.

Higher level direction to integrate electricity and gas planning

The Department is undertaking a review of AEMO's ISP with a view to expanding its scope and remit, as directed by the Energy Ministers. The Department is proposing to do this by integrating gas and electricity planning.

At a higher level, this direction has two major drawbacks. Rather than a true integration of gas and electricity planning, it is still largely focused on the perspective of the electricity sector. Therefore it largely considers gas as it supports gas-powered generation of electricity, rather than considering gas and electricity supply chains separately and equally.

It is also hampered by presently only considering natural gas supply, without consideration for current and future renewable gas supply chains. APGA acknowledges that this omission

¹ Oakley Greenwood, 2017, *Gas Price Trends Review*, <https://oakleygreenwood.com.au/wp-content/uploads/2017/12/gas-price-trends-report.pdf#page=49>, as referenced by the Australian Energy Regulator in *State of the Energy Market* reports.

was not intentional, however this should not be left implied and must be explicitly stated going forward.

A truly integrated ISP would model natural gas/renewable gas and electricity supply chains and customers equally effectively would provide a model for a lower-cost decarbonisation pathway for all customers. It would also include enhanced consideration of the following issues.

Enhanced consideration of generation and storage

The current ISP only shallowly considers the contribution of gas pipelines to medium energy storage. An expanded ISP should enhance this aspect, and also consider hydrogen and biomethane generation and storage.

Energy demand and demand-side participation

An enhanced ISP should also model renewable gas demand side management and lower electricity demand as more consumers use renewable gas.

Distribution network considerations

Residential and commercial customer energy use that is optimised between electricity and gas (including renewable gas) would result in lower distributed network demand, which has implications for the entire energy system.

Timelines and social licence challenges with delivery of actionable ISP projects

Pipelines are much cheaper to transport energy long distances than electricity transmission lines,² and are much faster to build.³ They also enjoy a much higher degree of social license than electricity transmission lines, with considerably lower impact on visual amenity and landholder's use of the land.

Modelling practicality

The Department has expressed concerns about the feasibility of simultaneously modelling electricity and gas demand, while retaining the capabilities of existing electricity modelling.

This is a limitation of funding, capability, and approach. Rather than bringing all aspects to a single model, similar outcomes can be derived by iterating multiple interacting models. This would have substantially less impact on cost and resourcing.

There are already practical examples of how this approach may work. University of Melbourne researchers have recently modelled the optimal greenfield integrated planning of electricity and hydrogen transmission and storage infrastructure.⁴ The model includes all

² GPA Engineering, 2022, *Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/pipelines_vs_powerlines_-_a_technoeconomic_analysis_in_the_australian_context.pdf

³ APGA, 2023, *Submission: Future Gas Strategy*, https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/231124_apga_submission_-_future_gas_strategy.pdf

⁴ Mhanna S, Saedi I, Mancarella P, 2023, *Transport and Storage Options for Future Fuels: Hydrogen transport with linepack and underground storage*, University of Melbourne for the Future Fuels CRC, https://www.futurefuelscrc.com/wp-content/uploads/FFCRC-RP1.1-02B-RES-transport-options-Linepack-and-UHS_open-access.pdf

relevant infrastructure technologies such HVAC/HVDC, reactive power plants, battery energy storage systems, hydrogen pipelines and compressors, as well as influential variables such as voltage drops due to impedances in HVAC and HVDC transmission lines, losses in HVDC converter stations, reactive power flow, pressure drops in pipelines, linepack and others.

This work was undertaken with funding from the Future Fuels CRC. Given the resources available to AEMO to undertake system modelling, there is no practical reason why a similar approach could be followed in undertaking dual gas and electricity demand modelling.

AEMO needs to be provided with sufficient capability and remit to undertake modelling that enables them to effectively support Australian energy customers. Limiting effective modelling to one energy supply chain because of concerns of maintaining the utility of one of the models does not achieve this.