Your ref: ERC0395 and ERC0396

17 July 2024

Mr Ashwin Raj
Project Leader, AEMC
Australian Energy Market Commission
Submitted online at www.aemc.gov.au

Dear Mr Raj

Submission: Enhancing the Integrated System Plan to support the energy transition

CS Energy welcomes the opportunity to provide a submission in response to the Australian Energy Market Commission's (**AEMC's**) *Consultation Paper – Enhancing the Integrated System Plan to Support the Energy Transition*, and specifically the chapters on better integrating gas into and improving consideration of demand-side factors in the Integrated System Plan (**ISP**). The submission responds to select questions as relevant.

About CS Energy

CS Energy is a proudly Queensland-owned and based energy company that provides power to some of our state's biggest industries and employers. We employ almost 600 people who live and work in the Queensland communities where we operate. CS Energy owns and operates the Kogan Creek and Callide B coal-fired power stations and has a 50% share in the Callide C station (which it also operates). CS Energy sells electricity into the National Electricity Market (**NEM**) from these power stations, as well as electricity generated by Gladstone Power Station for which CS Energy holds the trading rights.

CS Energy is creating a more diverse portfolio of energy sources as we transition to a new energy future and is committed to supporting regional Queensland through the development of clean energy hubs at our existing power system sites as part of the Queensland Energy and Jobs Plan (**QEJP**).

Question 1: Should greater gas market analysis be required under the ISP?

CS Energy supports the proposed rule amendment to allow greater analysis of gas in the ISP so that it can more effectively assess gas-related matters. The material currently provided to inform the Gas Statement of Opportunities should be utilised. Better information will improve the ISP and these measures will support delivery of the Future Gas Strategy that recognises the serious need for more investment in the upstream gas sector, gas transport and storage, and gas-fired power generation. That said, it is essential to avoid 'paralysis by analysis' by action now at all levels of government and industry to facilitate increased availability of gas, for example through the Capacity Investment Scheme and new exploration and production.

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Question 2: Will the proposed solution support a more robust ISP by better integrating gas and electricity infrastructure developments

Further gas analysis will improve the quality of the ISP. More information about reserves, demand and production forecasts, capacity and constraints, pricing, new build plans and outage plans will add more comprehensive detail that can better inform planning through the identification of challenges and opportunities. Particularly as gas demand for power generation becomes peakier it is important to understand and account for the challenges of technical and commercial deliverability of molecules when needed.

CS Energy notes that the current ISP appears to assume unlimited flexibility in its model concerning the availability of new gas-fired power generation assets, that is, they are always available just in time as needed. In reality, there is not perfect foresight so the next ISP could be an opportunity to stress-test this assumption.

It is appropriate for gas information provided to the Australian Energy Market Operator (**AEMO**) under the National Gas Rules to inform the ISP, providing any commercially sensitive information is treated properly.

Question 3: What are your views on the costs and benefits of requiring AEMO to undertake additional gas analysis in the ISP?

If the data sought from the gas sector is already obtained for the purposes of the Gas Statement of Opportunities the costs should be low, except for the extra assessment work to incorporate more data and information into the ISP. A more comprehensive ISP should deliver benefits in terms of more accurate modelling and advice, and should provide net benefits.

Question 4: What implementation considerations need to be considered?

As covered under question 2 above, any commercially sensitive information may need to be treated appropriately through aggregate or anonymous presentation, although we do not raise any specific concerns at this point.

Question 6(a): Should the ISP's analysis include greater consideration of the assumptions and contingent factors underpinning the expected development of consumer energy resources (CERs) and distributed resources? Why or why not?

CS Energy supports the proposed rule to require AEMO to expand its analysis and undertake a more transparent and robust assessment of demand side factors in the ISP. This could be achieved by incorporating and detailing assumptions of factors that affect CER uptake and their active participation to provide grid-related services (through aggregation such as virtual power plants (**VPPs**)). These factors include:

- Financial factors, including costs of CER, network augmentation and financial incentives. For example, significant expenditure is likely required to upgrade the distribution network to facilitate CER uptake and maintain system security. Depending on the level of CER adoption, Energeia estimates that the costs of mitigating over-voltage[1] due to rooftop PV is likely to be between $0.7 to $1.1 billion over the next twenty years.[2]

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[1] Over-voltage occurs when voltage goes above the design limit of the network.
[2] Energeia, Distributed Energy Resources Enablement Project – Discussion and Options Paper, May 2020.

Further, financial incentives are likely necessary to convince consumers to allow battery orchestration through VPPs or change their electric vehicles (**EVs**) charging habits to serve the needs of the grid. For example, only 24% of consumers surveyed by Project EDGE (a CER orchestration trial) expressed a high level of interest in participating in a VPP.[3] Research from the University of Melbourne also suggests that, without an incentive, only 16.5% of EV owners would consider changing their charging time to between 10am and 2pm (i.e. when rooftop PV output is at its peak).[4]

- Technical factors, such as distribution network constraints, which can limit or facilitate CER uptake and its ability to provide grid-related services, depending on the operational model. The increase in CER adoption has led to parts of the distribution network reaching their operating limits for exports during daytime. This means that distribution entities need to limit exports (and the ability to provide grid-related services) of new CERs to maintain secure operation. This is typically done through static limits, which are conservative and meant to account for worst-case scenarios.

  However, distributors are exploring flexible limits (or dynamic operating envelopes), which allow for CER exports to be varied dynamically depending on network conditions. This is a more efficient and less conservative approach with higher export limits for most of the time while dynamically constraining exports only to the extent, and at times, when it is necessary.

- Non-technical factors, such as consumer perceptions. Project EDGE found that while 62% of consumers surveyed were positive about VPPs, this did not translate into an interest in joining a VPP with 47% of consumers had little to no interest. This survey also found that only 24% of consumers trust operators of VPPs to manage their CERs.[5] This demonstrates the potential challenge in convincing consumers with CERs to participate in VPPs and provide grid-related services.

A more robust analysis of demand side factors would assist in identifying a least cost approach to CER integration, improving AEMO's operational demand forecasts and assessing the additional utility-scale generation necessary to meet that demand.

Question 7(b): What type of demand-side information should be provided by distribution network service providers (DNSPs) that would be useful for the ISP analysis?

To improve the robustness of CER related analysis in the ISP, CS Energy considers that AEMO should incorporate network data relating to constraints, limits, voltage management and power quality from DNSPs. Some of these data are already being developed by DNSPs through their Distribution Annual Planning Reports (**DAPRs**) and the Australian Energy Regulator's (**AER's**) revenue determination processes.

DNSPs could build upon these processes and explore cost-effective ways to provide AEMO with sufficiently granular data, which would enable an effective assessment of network constraints that may limit the availability of orchestrated CERs to serve the grid's needs. To promote transparency, these data should be made publicly available as part of the ISP.

[3] AEMO, Project EDGE Final Report, October 2023.
[4] University of Melbourne, Electric Vehicle Charging Consumer Survey: Insights Report, October 2021.
[5] AEMO, Project EDGE Final Report, October 2023.

In addition to data from DNSPs, AEMO should also consider incorporating demand side information from other entities, including the Clean Energy Regulator and other state-based entities such as Solar Victoria and the Victorian Department of Energy, Environment and Climate Action (**DEECA**).

For example, the Clean Energy Regulator publishes its assessment of potential uptake of CERs incentivised by the Commonwealth's Small-scale Renewable Energy Scheme. Further, DEECA has been working on a program to support effective voltage management in distribution networks.[6] As part of this program, requirements for public reporting of voltage data have been introduced to improve visibility and management of CER integration while maintaining system security. These data could contribute to AEMO's assessment of how best to integrate CER at least cost into our broader energy system.

If you would like to discuss this submission:

- For gas related issues, please contact Joshua O'Rourke, Gas Policy Manager, on either 04 811 66 801 or jorourke1@csenergy.com.au;
- For demand side considerations, please contact Wei Fang Lim, Market Regulatory Manager, at wlim@csenergy.com.au or on 0455 363 114.

Yours faithfully

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[6] DEECA, Voltage Management in Distribution Networks, accessed in July 2024.