# Submission – Draft 2026 Integrated System Plan

Email: ISP@aemo.com.au

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**Attention: Australian Energy Market Operator (AEMO) ISP Team**

Beyond Zero Emissions welcomes the opportunity to provide a submission for AEMO's Draft 2026 Integrated System Plan (ISP). Beyond Zero Emissions (BZE) is an independent think tank creating solutions for a prosperous zero-emissions Australia.

This submission draws upon our extensive inhouse research, including the development of our *National Action Plan* (NAP) – a place-based, multi-sector approach to accelerate and track the development of Renewable Energy Industrial Precincts (REIPs). Through this work, BZE seeks to support Australia's transition from fossil fuel exporter to a renewable energy superpower, unlocking a potential $333 billion export opportunity by 2050[1].

As discussed in our *Deploy* and *National Supergrid* reports, and supported by AEMO's findings, a grid capable of securing these opportunities relies on technologies that already exist – wind and solar, connected by an expanded transmission network, firmed by batteries and long-duration storage, and assisted by demand-response opportunities. In light of this qualitative consistency, the main challenge ahead is delivery.

In *Powering Up the Hunter* and *Powering Up Gladstone*, our recent NAP assessments of the Hunter Valley and Gladstone, we identified that local manufacturers are increasingly looking to decarbonise, but face increased cost and uncertainty without the delivery of critical infrastructure – especially the Hunter Transmission Project and the Gladstone Project. This matches AEMO's own findings that constrained delivery presents substantial risk to the realisation of the market benefits identified in the Optimal Development Path (ODP).

This sensitivity underscores the prudence of progressing major network investments earlier than would be required under idealised delivery timelines, in order to mitigate the risks associated with delay. As AEMO continues to refine ISP methodology, BZE also encourages demand-side opportunities and distribution-connected generation and storage to be assessed on an equal footing with other elements of the ODP. Doing so could help reduce projected reserve capacity requirements and mitigate the risk of system overbuild.

Our responses to AEMO's consultation questions are outlined below.

Yours Sincerely,

**Matt McKee**
Chief Researcher
Beyond Zero Emissions

[1] Beyond Zero Emissions, 'Export Powerhouse: Australia's $333 Billion Opportunity'

## Questions

**Q1: AEMO has proposed an ODP that represents a mix of investments that help deliver a reliable, secure, and least-cost power system while also meeting government policy targets.**

***Do stakeholders agree with AEMO's optimal development path selection in the Draft 2026 ISP? If yes, what gives you that confidence? If not, what should be further considered, and why?***

BZE generally agrees with AEMO's optimal development path selection in the Draft 2026 ISP. It is encouraging to see the qualitative consistency of AEMO's findings, which aligns closely with pathways BZE has supported in our *Deploy* and *National Supergrid* reports: the technologies required for Australia's future grid already exist – wind and solar, connected by an expanded transmission network and firmed by batteries and long-duration storage.

The shifts in the proportions of specific technologies relative to the previous ISP are a natural consequence of updated inputs. The reduction in installed wind capacity reflects the capacity factor updates flagged in the report, while the more prominent role for battery energy storage systems (BESS) and solar follows directly from the latest GenCost results.

Given this underlying consistency, the primary barrier to realising the optimal development path is now delivery. It is critical that more projects move from announcement to delivery, so the benefit losses identified in the *Constrained Delivery* sensitivity can be avoided.

Similarly, demand-side opportunities and distribution-connected resources represent opportunities to mitigate the benefit impacts of delayed network investment delivery. BZE recommends that AEMO work towards fully integrating demand-side and distribution-connected resources optimisation within the ODP on par with all other investment opportunities.

**Q2: In the Draft 2026 ISP, AEMO has proposed some changes to actionable transmission projects including:**

- **11 actionable projects to remain for delivery over the next decade,**
- **three projects to move to 'committed or anticipated' status,**
- **one project to move to 'future' status to align with the timing of other projects that influence its benefits (Central Queensland to Southern Queensland Expansion aligned with Borumba Pumped Hydro), and**
- **two projects under review due to uncertainty in input assumptions and the influence of recent policies (Northern Transmission Project and QNI Connect).**

***Do you agree with the proposed timing and treatment of actionable projects in this draft?***

BZE agrees with AEMO's findings that timely delivery of critical infrastructure remains central to realising market benefits for consumers. The importance of delivery timing for industry is reinforced by our own research, *Powering Up the Hunter* and *Powering Up Gladstone*, and for consumers in AEMO's *Constrained Delivery* sensitivity and the Australian Energy Market Commission's *Wind and transmission delays* scenario (ref). In this context, BZE agrees with the retention of 11 actionable projects as well as the classification of three projects to committed or anticipated status.

We also strongly support the continued prioritisation of interconnectors as a means of maintaining system reliability and reducing costs. Interconnection reduces reliance on expensive gas-fired generation by enabling access to a more diverse range of generation conditions across regions, particularly Queensland's wind resource, which is negatively correlated with the solar profile, and complementary to wind in other states (ref, ref). This reduces periods in which gas peakers set market prices and avoids the need for additional peaking infrastructure investment. AEMO's modelling reinforces the system-wide reliability and cost benefits of this approach. Furthermore, despite the Queensland Government's recent Energy Roadmap, developers are still proceeding with renewables projects in Queensland. For these reasons, we consider QNI Connect to be vital to future energy reliability in the NEM and we strongly encourage it to be retained as an actionable project.

In contrast, we seek clarification on the treatment of the SQ–CQ Option 5 flow path augmentation. The 2025 Electricity Network Options Report identifies that a lead time of up to ten years is required to deliver this augmentation, yet it has been downgraded to Future status in this draft, despite having FY36 optimal in-service dates under both the Step Change and Accelerated Transition scenarios. Given the long development timelines involved, BZE requests further explanation as to why this project has not been retained as actionable.

In parallel, our engagement in the Gladstone region, as part of our report *Powering Up Gladstone*, suggests that AEMO's current load growth forecasts for the Gladstone Grid sub-region are being underestimated, even in the Accelerated Transition scenario. For example, the CSIRO's latest multi-sectoral modelling, which is fed into the ISP as an input, assumes little electrification of the digestion stage of alumina refining by 2058, which is at odds with the plans of manufacturers. This would be further impacted by the construction of a new chlor alkali facility, Project Halogen, in the Gladstone Development Area. Additional network reinforcement to CQ and GG may therefore be required sooner than is currently evident in modelling. While the delay of Borumba's completion until at least 2035 explains why its connection can be deferred, the other component of SQ-CQ Option 5, could proceed independently.

**Q3: For the Draft 2026 ISP, the tested sensitivities were on constrained delivery of the ODP, variations on the gas development projection, and the pace of coal closures. The effect of demand-side factors was also tested by assessing the impact of reduced energy efficiency measures, and no further CER coordination.**

***What other sensitivities should be considered to further test the robustness of the candidate development paths, and why? What other sensitivities are relevant to testing robustness of investment decisions, why?***

BZE applauds the decision to model a *Constrained Delivery* sensitivity. The results reflect what we have observed in our own research, *Powering Up the Hunter* and *Powering Up Gladstone*: the timely delivery of transmission infrastructure is critical to ensuring consumers and manufacturers realise the economic benefits of renewable energy and meet their decarbonisation objectives.

This finding is consistent with modelling undertaken by other organisations. In its Residential Electricity Price Trends 2025 report, the Australian Energy Market Commission found that a 12-month delay to wind and transmission projects resulted in an average electricity price increase of 9% across the NEM, with impacts as high as 20% in some regions (ref). Similarly, Baringa found that, in the South West Interconnected System, a single year's delay to transmission delivery increased consumer costs by $1.4 billion over 2028–2033, rising to $3.9 billion for a three-year delay over 2028–2035 (ref).

Despite the importance of on-time delivery, AEMO notes in Section 11 that the infrastructure build rate required under the Optimal Development Path (ODP) exceeds historical delivery rates. In practice, there are two broad approaches to mitigating the risks associated with constrained delivery of transmission infrastructure:

- accelerating delivery by simplifying planning, approvals and delivery processes for priority projects at the state and federal level; and
- commencing development of priority projects earlier than currently required to meet their optimal in-service dates, allowing additional time to manage delivery risks.

While the former is clearly necessary and remains the subject of ongoing policy reform, the latter represents a legitimate and complementary risk-mitigation strategy, albeit with the potential trade-off of bringing forward capital expenditure. This trade-off is already partially illustrated in AEMO's Constrained Delivery sensitivity. Under this sensitivity, the Accelerated Transition least-cost development path, with more actionable projects, is the best-performing option. Separately, the AEMC's expedited wind and transmission scenario found average cost savings of approximately 6.5%, rising to 11% in some regions (ref).

Given these results, BZE recommends that AEMO test an additional sensitivity focused on expedited or earlier-than-optimal transmission delivery. This would help quantify the cost to consumers of delivering infrastructure "too early", relative to the much larger and better-evidenced costs associated with delayed delivery.

Future iterations of the ISP should also include sensitivities that explore varying levels of demand response, to quantify the benefits of planning network infrastructure to a level below unconstrained peak demand.

**Q4: For the first time, AEMO has assessed opportunities for investment in distribution networks across the NEM, that are consistent with the efficient development of the power system, to support operation of consumer energy resources. This recognises the key role of distribution networks in supporting the integration of consumer energy resources. See Appendix A9 for more information.**

***Does the ODP appropriately identify and leverage distribution investment opportunities?***

BZE recognises the scale and complexity involved in standardising incomplete and heterogeneous distribution network datasets and integrating them into the ISP framework, and commends AEMO on the progress made to date.

Looking beyond this iteration of the ISP, BZE recommends that opportunities to connect utility-scale generation and storage at the distribution level be incorporated more transparently into the ISP and assessed alongside other investment options. Greater visibility of these opportunities would improve confidence that the Optimal Development Path reflects the full range of feasible resources available to the system.

For example, Ausgrid, Endeavour Energy and Essential Energy estimate in their *Distribution System Plan Opportunities Report* that up to 14.7 GW of solar and 5.8 GW of wind generation could be connected to their networks at an average cost of approximately $0.15 million per MW. These resources have the potential to partially mitigate the impacts of constrained delivery affecting large-scale generation and transmission projects, although they do not remove the need to accelerate those investments. Similarly, Ergon Energy is currently managing connection enquiries for up to 6.2 GW of renewable energy projects seeking access to its distribution network (ref).

BZE recommends that these distribution-level opportunities be treated as explicit components of candidate development paths, rather than remaining peripheral considerations.

**Q5: For the first time in the Draft 2026 ISP, AEMO has incorporated combinations of gas investments that may be developed by the gas industry. These gas development projections influence the availability of gas to support the power system in the future, and (potentially) the mix of investments required in the ODP.**

***Do the gas development projections reflect an appropriate level of investment to support the gas sector, including gas-powered generation in the NEM?***

BZE acknowledges that some form of reserve generation will be required to maintain system reliability during extended periods of low renewables output (as reflected in the ODP). However, the quantity, timing and technology mix of this reserve capacity remain highly uncertain, given the continued decline in battery costs, the prospect of new storage chemistries reaching utility-scale deployment, and the potential of alternative fuels such as bio-methane.

Under the ODP, installed gas capacity remains broadly stable at approximately 8-9 GW through to the late 2030s, before increasing by a further 6 GW by FY50 following the retirement of Queensland's remaining coal-fired generation. Over this timeframe, alternative low-emissions fuel options may become increasingly cost-competitive and provide lower-emissions sources of reserve capacity. Additionally, continued advances in energy storage – particularly longer-duration technologies such as flow batteries – may enable storage to provide a greater share of reliability and system support services currently assumed to be delivered by gas-fired generation.

This shift is already partially reflected in the Draft 2026 ISP. Projected dispatchable utility-scale storage capacity in FY50 has increased from 11.6 GW in the 2024 ISP to 32.3 GW in the Draft 2026 ISP. Importantly, storage technologies have not exhibited the same degree of constrained delivery risk as other infrastructure classes, with approximately 4 GW and 8.6 GWh of battery energy storage commissioned in Australia in 2025 alone (ref).

In light of these trends, BZE cautions against embedding high levels of new gas infrastructure and generation capacity in the Optimal Development Path. This is reinforced by AEMO's sensitivity analysis, which indicates that underinvestment in gas infrastructure does not materially reduce net market benefits to consumers. By contrast, overinvestment risks stranding these assets should higher levels of storage, renewable fuels and demand-response be realised, particularly as domestic gas demand declines with ongoing household electrification.

**Q6: The Addendum to the 2025 Inputs Assumptions and Scenarios Report (IASR) provides further explanation in response to the AER's Transparency Review. This includes further explanation of forecast components including policies affecting consumer demand, data centres, hydrogen production, biomethane and community batteries.**

***Do stakeholders have feedback on the Addendum to the 2025 IASR?***

The Addendum to the 2025 IASR, referencing both the 2025 IASR and the ISP Methodology, notes that AEMO has revised its assumptions regarding hydrogen production. Specifically, AEMO now assumes electrolysers will be located within Renewable Energy Zones (REZs) and connected to end users via hydrogen pipelines, rather than being co-located with end users at ports, as assumed in earlier ISP iterations.

BZE notes that this assumption is at odds with the current project pipeline reflected in CSIRO's HyResource dataset. The vast majority of announced hydrogen projects are proposed to be co-located with end users or located at ports, often within existing industrial precincts – including one successful Hydrogen Headstart applicant. Many of these projects are targeting export through ports beyond those listed in the 2025 IASR "Hydrogen consumption locations" tab, suggesting a broader and more diverse set of hydrogen hubs than currently reflected in the modelling assumptions.

While the studies cited in the Addendum support AEMO's statement that electricity transmission is typically more costly than hydrogen pipelines, these comparisons generally assess the cost of constructing dedicated new infrastructure to connect renewable generation directly to hydrogen end use. In practice, this is not the decision faced in most real-world contexts. Renewable generation is being developed within REZs or near the NEM's vast network of existing transmission infrastructure, allowing substantial cost savings through shared network assets. Similarly, hydrogen facilities located at ports or existing industrial hubs are able to leverage established transmission infrastructure serving those precincts.

Where additional network capacity is required in these locations, new transmission investments are unlikely to be driven solely by a single hydrogen facility. Rather, they are typically required to support a broader set of existing and emerging industrial loads seeking to electrify and decarbonise. The addition of a hydrogen facility is therefore not equivalent to constructing a dedicated new transmission line, but instead to ensuring that already-planned network augmentations are appropriately sized. BZE's report *Safeguarding Our Future* demonstrates that this common-user approach can reduce transmission costs by almost 75% on a per-MW basis compared with a piecemeal, project-by-project approach. Similar conclusions are reflected in the literature cited by AEMO, drawing on comparable findings regarding shared infrastructure development (ref, ref).

Notably, these same references emphasise that hydrogen pipelines and electricity transmission should be treated as complementary technologies, each with distinct strengths and limitations. The optimal choice between them depends on local conditions, including factors such as proximity to end use, existing network capacity, land constraints and water availability.

In light of this evidence, and given that hydrogen facilities represent large loads on the electricity system, BZE recommends that AEMO allow for both REZ-based and port-based hydrogen production to be connected to the grid in future modelling.