

15 February 2024

Mr Daniel Westerman
CEO, Australian Energy Market Operator
Lodged by email to: ISP@aemo.com.au

Dear Mr Westerman,

Response to Draft 2024 Integrated System Plan

The Clean Energy Investor Group (CEIG) welcomes the opportunity to provide feedback to the Australian Energy Market Operator (AEMO) on the Draft 2024 Integrated System Plan (Draft 2024 ISP) published on 15 December 2023.

CEIG represents domestic and global renewable energy developers and investors, with more than 11GW of installed renewable energy capacity across more than 70 power stations and a combined portfolio value of around \$24 billion. CEIG members' project pipeline is estimated to be more than 18GW. CEIG strongly advocates for an efficient transition to clean energy with a focus on the stakeholders who can provide the cost-effective capital required for this transition.

KEY POINTS

- **CEIG strongly welcomes the release of the AEMO 2024 Integrated System Plan (ISP)** as a vital roadmap for Australia's transition to a clean, secure, and affordable energy future.
- **CEIG welcomes AEMO's proactive adoption of the amended NEO**, using only scenarios that comply with Australian government's emissions reduction policies and a consideration of policies and targets both meeting, and on the way to meeting, the National Electricity Rules requirements for public policies' inclusion in the ISP.
- **CEIG notes the AEMO will not incorporate the impact of concessional finance** in the draft or final 2024 ISP resulting in the impact of the 'Rewiring the Nation' initiative not being reflected in the ISP. **We recommend considering its inclusion in the Final ISP**, particularly where relevant data is available, to better understand its potential effects on the energy transition.
- **CEIG welcomes AEMO's identification of risks and subsequent identification of market and policy settings to mitigate the risks** including:
 - Further **market reform is needed to expedite investment** and effectively balance timely investment with assessment rigour across all forms of infrastructure in the context of reducing risk of uncertainty for infrastructure investment.

- **Agreement is needed on the latest closure timeframes of coal generators** and the delivery of planned investment in generation capacity to reduce the risk of early coal retirements
- Market frameworks and settings are calibrated to **ensure system services, resource adequacy and operational capability are in place in time for coal retirements.**

CEIG Supports Market Reform to Reduce Congestion

- CEIG acknowledges that the Draft 2024 ISP found **approximately 20% of renewable generation could be curtailed by 2050 across the NEM. This number is not commercially viable**, particularly considering that some VRE generators located in heavily congested areas of the grid would result in significantly higher levels of curtailment.
- CEIG supports AEMO's finding that **further market reform is needed to ensure incentives are in place for investors to develop an optimal level of capacity in the context of limiting spilled or curtailed renewable generation.**

Aligning Ambition with Investment Sentiment

- **CEIG strongly welcomes the integration of 1.5-degree aligned sensitivity to the Step Change scenario** as positive development, resonating with international climate commitments.
- **CEIG recommends that an investor credible 1.5 degree aligned scenario be included in the ISP** that government can plan towards and implement.
- **CEIG recognises that the current absence of a quantified value for emissions reduction in the Draft ISP creates a blind spot in market benefits.** As such, CEIG strongly advocates for its inclusion in the Final ISP, providing a more comprehensive understanding of the economic impacts of emission reductions.
- CEIG strongly recommends that **governments consider developing policies that accelerate, and increase the capacity of, transmission infrastructure** to facilitate the widespread adoption of renewable energy, support the growth of green industries, and secure a leading position in the international clean energy market.
 - For example, the Commonwealth Government's forthcoming sectoral decarbonisation plans could be calibrated based on achieving an accelerated transmission rollout schedule presented within the Green Energy Exports scenario resulting in the adoption of the augmentation timings in the Final ISP.

Futureproofing Through Robust Data

- To provide a more comprehensive understanding of potential weather-related risks to renewable energy generation, particularly in the context of wind and solar droughts, **CEIG recommends that AEMO expand its weather data modelling to include a longer historical profile, spanning 30-50 years.**
- This enhancement in data modelling will **facilitate more informed decision-making in the development of deep storage solutions.**

Transmission and Timely Delivery

- **CEIG strongly welcomes the progression of transmission projects across the NEM** and the future ISP project which have become actionable projects
- **Failing to deliver the ISP projects on time could lead to higher transition costs and an increased likelihood of power interruptions**, as highlighted by AEMO in the Draft ISP, stressing the need for timely project execution. CEIG would like to **encourage project proponents to take greater action and/or seek additional support to expedite projects and minimise the risk of further delays.**

Managing Delivery Risks and Optimising RE Buildouts

- From an investor perspective, **the significant peaks in renewable energy deployment** seen throughout the ISP scenarios **could hinder investor confidence and exacerbate social license and supply chain challenges.**
- To counter these risks, CEIG recommends **AEMO include an investor credible sensitivity in the Final ISP** and **policy makers focus on streamlining approval processes, fostering industry collaboration, promoting long-term certainty for investors, and coordinate coal closure dates.**

Minimising the transition risk through the coordinated closure of coal

- **More needs to be done to mitigate the risks associated with disorderly retirements** and ensure a smooth transition without compromising system stability.
- CEIG supports the implementation of an OEM to facilitate a transparent and coherent process for managing the retirement of thermal generators. However, the design of the OEM should:
 - Be structured in a way that **avoids deterring new investments** and incorporates robust safeguards to **shield consumers from unnecessary costs.**
 - This should involve a heightened focus on evaluating whether innovation and clean technologies can effectively address concerns related to reliability.
 - **Ensure that the OEM Framework cannot be exploited by thermal generators**, preventing unfair opportunities for incumbents to seek compensation at consumers' expense.
- It is essential for governments to go beyond merely recognising the ISP as a planning tool where there is no accountability or responsibility to deliver.
- **CEIG recommends that the ISP should be implemented as a mandatory framework by governments**, obligating relevant stakeholders to adhere to its timelines and strategies.
- Implementing the ISP as a binding operational plan would ensure that the transition to renewable energy sources is **not only ambitious but also structured and predictable.**
- Such predictability is crucial for investors, energy providers, and consumers, enabling them to make informed decisions and investments in renewable energy infrastructure, technologies, and skills development.

CEIG strongly welcomes the release of AEMO's Draft 2024 ISP as a vital roadmap for Australia's transition to a clean, secure, and affordable energy future. This plan holds immense significance for investors seeking clarity in guiding their investments to support the achievement of government policies such as the Federal Government's commitment to a 43% reduction in 2005-level emissions by 2030 and achieving an 82% renewable energy target in the National Electricity Market (NEM) by the same year.

AEMO's Draft 2024 ISP embraces policy direction and guides market reform

CEIG welcomes AEMO's proactive adoption of the amended National Energy Objectives (NEO), which resulted in only using scenarios that comply with Australian government's emissions reduction policies and a consideration of policies and targets both meeting, and on the way to meeting, the National Electricity Rules requirements for public policies' inclusion in the ISP.

Incorporating further announced state and federal policies between the release of the Draft ISP and the Final ISP, such as the recent emission reduction targets announced by Queensland and New South Wales, will strengthen the plan's relevance and reflect the evolving policy landscape.

CEIG notes the AEMO will not incorporate the impact of concessional finance in the draft or final 2024 ISP resulting in the impact of the 'Rewiring the Nation' initiative not being reflected in the ISP. We recommend considering its inclusion in the Final ISP, particularly where relevant data is available, to better understand its potential effects on the energy transition.

Beyond including these policies to assist in determining the Optimal Development Path (ODP), the ISP provides policy makers with a critically important tool to identify key areas for market reform and policy settings to deliver the ODP and broader energy transition.

CEIG welcomes AEMO's identification of risks and subsequent identification of market and policy settings to mitigate the risks. In particular, CEIG supports AEMO's identification that:

- Further market reform is needed to expedite investment and effectively balance timely investment with assessment rigour across all forms of infrastructure – CEIG agrees that this would reduce uncertainty for infrastructure investment.
- Agreement is needed on the latest closure timeframes of coal generators and how to expedite the delivery of planned investment in generation capacity to reduce the risk of early coal retirements
- Market frameworks and settings are calibrated to ensure system services, resource adequacy and operational capability are in place in time for coal retirements.

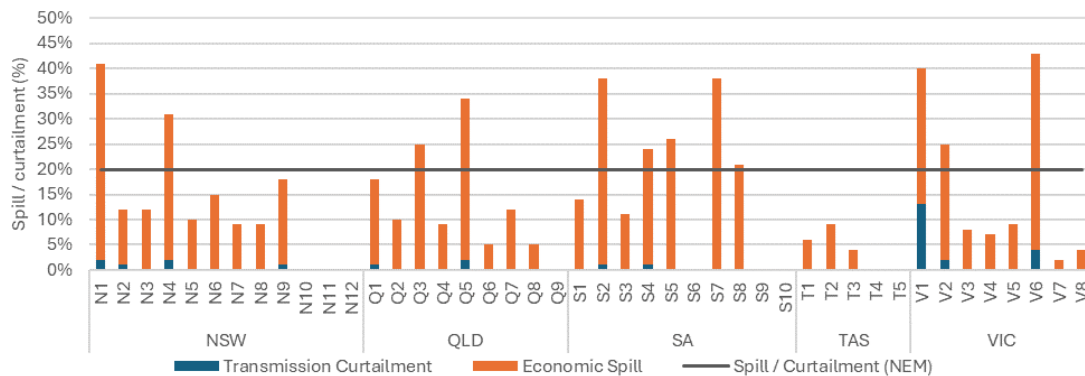
CEIG supports market reform to reduce congestion

CEIG acknowledges that the Draft 2024 ISP found approximately 20% of renewable generation could be curtailed by 2050 across the NEM. This number is not commercially

viable, particularly considering that some VRE generators located in heavily congested areas of the grid would result in significantly higher levels of curtailment.

The forecast high levels of curtailment can be seen in Figure 1 below which highlights that 12 REZs, accounting for approximately 10 per cent of the 126GW of utility-scale VRE in the NEM by 2050 under the Step Change scenario, will be subject to spill/curtailment over the average projected 20% curtailment.

Figure 1: Economic Spill and Transmission Curtailment, Step Change scenario, by REZ – 2049-50



Source 1: CEIG, Adapted from AEMO Draft 2024 ISP data

CEIG recognises that where there is a forecast level of congestion greater than an accepted economic level the cost of capital will increase, creating a driver to resolve this issue through measures such as additional storage capacity to absorb excess VRE generation, locate new industrial load near generation, build more transmission, or improving the utilisation of existing transmission.

However, as highlighted by AEMO there is also a justification for market reforms to provide a signal to investors where to locate VRE at the least congested parts of the network to avoid additional investment in transmission infrastructure thus resulting in lower overall costs to consumers.

Considering this, CEIG supports AEMO's finding that further market reform is needed to ensure incentives are in place for investors to develop an optimal level of capacity in the context of limiting spilled or curtailed renewable generation.

To improve investment efficiency and manage access risk, CEIG looks forward to contributing to the next stage of consultation on transmission access reform, in particular working through the details of the priority access model which was originally developed by CEIG to reduce the costs brought on by excessive grid congestion.

Aligning ambition with investment sentiment

CEIG welcomes the integration of a 1.5-degree aligned sensitivity, but notes that while progressive, the main scenario 'Step Change' continues not to match global investment

sentiment.¹

Although we understand that the ISP's most likely scenario is determined by extensive consultation with expert panellists through the Delphi panel process, CEIG recommends that an investor credible 1.5 degree aligned scenario be included in the ISP that government can plan towards and implement.

Our analysis², aligned with the rapid decarbonisation sensitivities insights, suggests a more ambitious decarbonisation trajectory in the NEM could unlock even greater net market benefits for investments supporting the transition. This faster track, characterised by an accelerated transition away from fossil generation with the rapid deployment of renewable energy and firming capacity, would ultimately pave the way for a more secure and cost-effective energy system.

However, CEIG recognises that the current absence of a quantified value for emissions reduction in the Draft ISP creates a blind spot in market benefits. As such, CEIG strongly advocates for its inclusion in the Final ISP, providing a more comprehensive understanding of the economic impacts of emission reductions.

Strategic planning for a NEM that can achieve a 1.5-degree Celsius outcome is essential, not just for aligning Australia with global climate goals but also for unlocking the full potential of domestic decarbonisation and catering to the increased electricity demand from renewable energy export opportunities.

Central to realising this vision is the enhancement of transmission infrastructure. Enhanced transmission capabilities are vital for distributing renewable energy efficiently across the country and to produce renewable exports, ensuring that energy can flow from where it is generated to where it is most needed without significant losses.

By planning for the development of robust transmission networks, Australia can facilitate the widespread adoption of renewable energy, support the growth of green industries, and secure a leading position in the international clean energy market. This approach not only accelerates the country's transition to a fully renewable energy grid but also brings significant economic benefits, including job creation, energy security, and reduced electricity costs for consumers.

Considering this, CEIG strongly recommends that governments consider developing policies that accelerate, and increase the capacity of, transmission infrastructure to unlock these opportunities. For example, the Commonwealth Government's forthcoming sectoral decarbonisation plans could be calibrated based on achieving an accelerated transmission rollout schedule presented within the Green Energy Exports scenario resulting in the adoption of the augmentation timings in the Final ISP.

¹ [See CEIG response to AEMO's Draft IASR for an expansion on global investment sentiment.](#)

² [CEIG \(2023\). Decarbonising Australia: Accelerating our energy transition with a credible 1.5°C scenario.](#)

Futureproofing through robust data

Considering the inherent uncertainties in energy demand forecasting and weather prediction, it is crucial for AEMO to enhance its weather data modelling capabilities. CEIG recommends that AEMO expands its weather data analysis to include a historical profile spanning 30 to 50 years. This extended dataset would offer a more robust and comprehensive understanding of the weather patterns and their potential impact on renewable energy sources, especially regarding the occurrence of wind and solar droughts.

Such long-term data would enable better anticipation of periods with lower wind and solar generation, which are critical for planning renewable energy supply. By integrating a broader range of historical weather data, AEMO can more accurately assess and mitigate weather-related risks. This enhancement in data modelling will facilitate more informed decision-making in the development of deep storage solutions.

It will also add an essential layer of resilience to the energy grid, ensuring a more reliable and sustainable energy supply in the face of unpredictable yet known risks associated with weather variability. This approach aligns with sound planning and energy management principles that aim to minimise over-reliance on deep storage and gas backup by proactively addressing potential vulnerabilities in renewable energy generation.

Transmission and timely delivery

CEIG strongly welcomes the progression of transmission projects across the NEM, including the completion of QNI Minor, VNI Minor and the Eyre Peninsula Link and the future ISP projects which have become actionable projects including the Gladstone Grid Reinforcement and Queensland SuperGrid South. These are crucial steps in enhancing Australia's energy infrastructure.

However, CEIG notes that from the 2022 ISP, several projects have presented delays ranging from six months to three years including Northern QREZ Stage 1, Central West Orana REZ Transmission Link, Western Renewables Link, HumeLink, Sydney Ring, New England REZ Transmission Link, and Marinus Link.

Failing to deliver the ISP projects on time could lead to higher transition costs and an increased likelihood of power interruptions, as highlighted by AEMO in the Draft ISP, stressing the need for timely project execution. CEIG would like to encourage project proponents to take greater action and/or seek additional support to expedite projects and minimise the risk of further delays.

Table 1: Change in Status of ISP Projects from 2022 ISP

Network projects in the ODP	Delivery date advised by project proponent		Status from 2022 ISP
	2022 ISP	Draft 2024 ISP	
Committed and anticipated ISP Projects			
VNI Minor: Victoria – New South Wales Interconnector Minor upgrade	November 2022	Complete	Complete
Eyre Peninsula Link	Early-2023	Complete	Complete
QNI Minor: Queensland – New South Wales Interconnector Minor upgrade	Mid-2023	Complete	Complete
Northern QREZ Stage 1	September 2023	Apr 2024	~6 mth delayed
Central West Orana REZ Transmission Link	July 2025	Aug 2028	~3 yrs delayed
Project EnergyConnect	July 2026	Stage 1 Jul 2024 Stage 2 Jul 2026	On time
Western Renewables Link	July 2026	Jul 2027	~1 yr delayed
CopperString 2032		Jun 2029	New
Actionable Projects			
HumeLink	July 2026	Northern Jul 2026 Southern Dec 2026	~6 mth delayed
Sydney Ring	July 2027	Dec 2027	~6 mth delayed
New England REZ Transmission Link	July 2027	Sept 2028	~ 1 Yr delayed
Marinus Link	Cable 1: July 2029 Cable 2: July 2031	Stage 1 Dec 2030 Stage 2 Dec 2032	~1.5 yr delayed
VNI West (via Kerang)	July 2031	Dec 2029	~1.5 yrs early due to support
Gladstone Grid Reinforcement		Sept 2029	New
Queensland SuperGrid South		Jun 2031	New

Source 2: CEIG, Adapted from AEMO Draft 2024 ISP and 2022 ISP data

Managing delivery risks and optimising RE buildouts

CEIG acknowledges the increased task to deploy 6GW of new renewable generation capacity per year under the ‘Step Change’ scenario over the coming decade, up from 4 GW per year in the 2022 ISP.

Our analysis found that the build out rate of utility scale renewable generation under the ‘Step Change’ scenario will face early peaks of just under 10GW in 2026-27 and 2029-30. Under the Green Energy Exports scenario, the rapid scale-up of renewable generation is even more pronounced, indicating a need for substantial increases in capacity of just under 25GW in the year 2026-27 to replace coal generation.

Figure 1: New Utility Scale VRE – Step Change

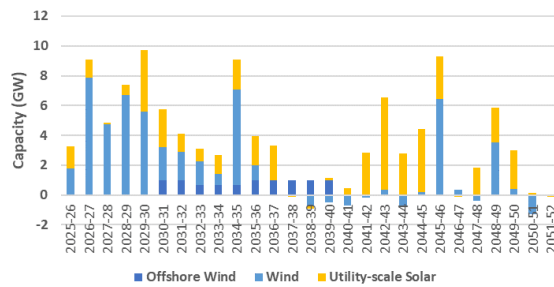
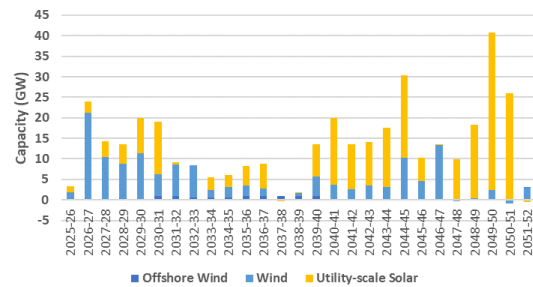


Figure 2: New Utility Scale VRE – Green Energy Exports



Source 2: CEIG, Adapted from AEMO Draft 2024 ISP

Although it is encouraging that AEMO’s assumptions estimate the buildout rate as technically feasible by its inclusion in the Draft 2024 ISP, from an investor perspective the significant peaks in renewable energy deployment could hinder investor confidence and exacerbate social license and supply chain challenges.

To counter these risks, robust strategies to manage the associated risks and capitalise on the opportunities are crucial. CEIG recommends AEMO include an investor credible sensitivity in the Final ISP and policy makers focus on streamlining approval processes, fostering industry collaboration, promoting long-term certainty for investors, and coordinate coal closure dates.

Sense check the need for new gas generation considering drop off in utility storage

CEIG recognises that the Draft 2024 ISP increases backup gas-powered generation capacity to 16 GW by 2050, up from 10 GW in the 2022 ISP under the Step Change scenario.

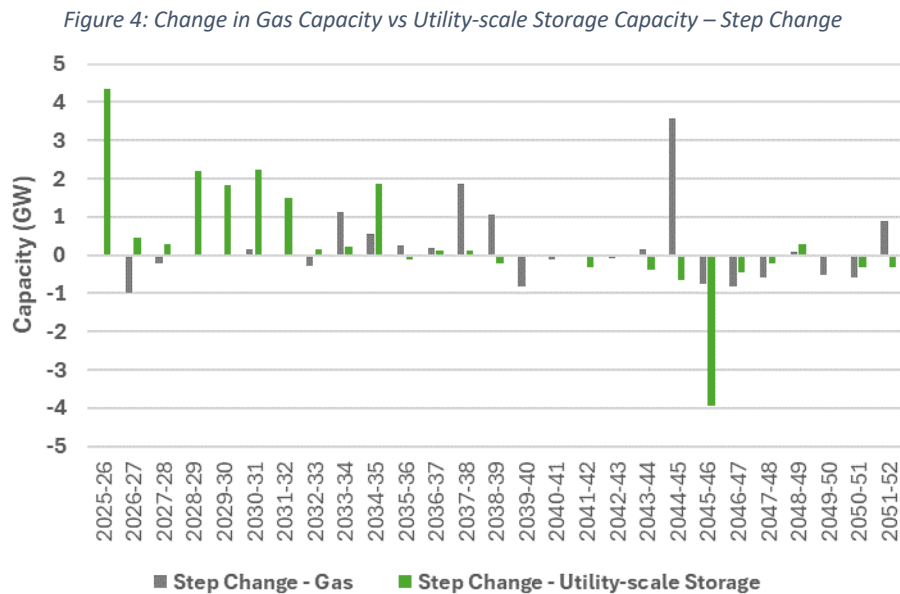
As seen in Figure 4 below, under the Step Change scenario, significant new gas capacity is not forecast to be needed until 2033-34 when the bulk of coal generation has left the market and is forecast to be used as a strategic reserve for power system reliability and security. CEIG notes that AEMO suggests that deep storage may also be another alternative.

Interestingly, the forecast need for medium-depth storage has reduced by 5 GW due to increased wind generation and increased storage capacity from consumer energy resources. Combined, this results in new utility scale storage capacity dropping to near zero when new gas comes into the market as can be seen in Figure 4.

Whether this plays out or not will be a factor of emissions policies, valuing emission reductions, the evolving pipeline of energy storage projects, technological developments, supply chains, level of consumers’ acceptance for the partial loss of control over parts of their assets, and global energy prices.

To give clarity to investors, CEIG is calling for a sense check into the likelihood of new build gas and the level of participation from coordinated consumer energy resources. To achieve this CEIG recommends including a value of emission reductions within the Final

2024 ISP and greater consideration to the evolving pipeline of utility-scale energy storage projects in the NEM.



Source 4: CEIG, Adapted from AEMO Draft 2024 ISP

Minimising the transition risk through the coordinated closure of coal

The Draft ISP's acknowledgement of the potential for early coal closures presents a challenging reality. As highlighted above, CEIG welcomes the four sets of risks identified by AEMO in the Draft 2024 ISP in the context of coal plant retirements and the shift to 100% renewable energy. We appreciate the efforts of AEMO in outlining these risks and support AEMO's position for further market reforms and strategies to effectively mitigate them.

More needs to be done to mitigate the risks associated with disorderly retirements and ensure a smooth transition without compromising system stability. CEIG advocates for targeted policy interventions, strategic grid investments, and proactive workforce redeployment strategies to avoid potential disruptions and optimise the transition pace.

In addressing these risks, we stress the importance of a coordinated approach that involves all stakeholders, including government, industry, and consumers. CEIG is committed to collaborating with AEMO and other relevant stakeholders to ensure market and policy settings are effectively implemented, ensuring the NEM is ready for a future powered by 100% renewable energy and export opportunities can be realised.

This coordinated approach is not only crucial for the energy sector's stability and growth but also for maintaining public trust and support during this critical transition phase as well as capturing additional net market benefits to consumers and economic opportunities in Australia's regions.

In our submission to the NSW and Commonwealth Government’s consultation paper on Orderly Exit Management (OEM) Framework³, CEIG supports the implementation of an OEM to facilitate a transparent and coherent process for managing the retirement of thermal generators. However, the design of the OEM should:

- Be structured in a way that avoids deterring new investments and incorporates robust safeguards to shield consumers from unnecessary costs.
 - This should involve a heightened focus on evaluating whether innovation and clean technologies can effectively address concerns related to reliability.
- Ensure that the OEM Framework cannot be exploited by thermal generators, preventing unfair opportunities for incumbents to seek compensation at consumers’ expense.

It is essential for governments to go beyond merely recognising the ISP as a planning tool where there is no accountability or responsibility to deliver. CEIG recommends that the ISP, with its comprehensive and forward-looking approach to managing the energy transition, should be implemented as a mandatory framework by governments, obligating relevant stakeholders to adhere to its timelines and strategies. This could be achieved through the Energy and Climate Change Ministerial Council (ECMC) to ensure there is a level of accountability.

Our previous recommendation for setting coal closure dates in alignment with the targets of a 1.5-degree Celsius climate ambition is a critical step. However, this alone is not sufficient. AEMO’s Draft 2024 ISP indicates that the retirement of coal-powered plants may happen even more rapidly than initially anticipated. This acceleration underscores the necessity for governments to take decisive action.

Implementing the ISP as a binding operational plan would ensure that the transition to renewable energy sources is not only ambitious but also structured and predictable. Such predictability is crucial for investors, energy providers, and consumers, enabling them to make informed decisions and investments in renewable energy infrastructure, technologies, and skills development.

Furthermore, the binding nature of the ISP would create a sense of accountability and responsibility among all stakeholders. Governments, energy providers, and regulatory bodies would be required to work collaboratively to meet the targets set forth in the ISP. This collaborative approach would facilitate a smoother transition by addressing potential challenges such as grid stability, energy affordability, and equitable access to clean energy.

³ CEIG [response: Orderly Exit Management Framework](#)



CEIG thanks the AEMO for the opportunity to provide feedback on the Draft 2024 ISP and looks forward to continued engagement. Our Policy Director Ms. Marilyn Crestias can be contacted at marilyn.crestias@ceig.org.au if you would like to further discuss any elements of this submission.

Yours sincerely,

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