

11 February 2022

Mr Daniel Westerman  
CEO, Australian Energy Market Operator  
Lodged by email: [ISP@aemo.com.au](mailto:ISP@aemo.com.au)

Dear Mr Westerman,

**Response to *Draft 2022 Integrated System Plan***

The Clean Energy Investor Group (CEIG) welcomes the opportunity to provide feedback on the Australian Energy Market Operator's *Draft 2022 Integrated System Plan* (draft ISP).

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 a clean energy system from the perspective of the stakeholders who will provide the low-cost capital needed to achieve it.

**KEY POINTS**

- CEIG supports the selection of Step Change but is concerned it is not a 1.5 degree scenario and does not align with international investor sentiment.
- CEIG proposes strengthening Step Change through a 'Strong Electrification' variation so it is a 1.5 degree scenario and that governments should work to implement it.
- CEIG agrees with AEMO that the transition has outpaced the biennial ISP cycle and broad reform of governance is required.
- Adding an environmental objective to the National Electricity Objective would assist with ISP implementation.

- Transmission frameworks are a priority reform because they elevate risk for investors and undermine the ISP.
- CEIG supports in-principle the staged development of transmission projects but is concerned it does not provide enough clarity about when new transmission capacity will ultimately be completed.
- However, CEIG notes that HumeLink and VNI West are urgently needed and should be completed early, not just commenced early through staging.
- CEIG notes that AEMO has applied its professional judgement to propose bringing Humelink forward 2 years and looks forward to understanding how the AER views this analysis and how it complements its own approach.
- CEIG proposes that AEMO should consider incorporating the short-term consumer benefits that would accrue from earlier transmission investment, when applying professional judgement as required by the AER's *Cost benefit analysis guidelines*.
- CEIG supports AEMO's concern about the risk of early and disorderly coal closure.
- CEIG notes that coal closes faster in the draft ISP; Step Change is likely to see 14 GW retired by 2030 and may see all coal close by 2040.
- CEIG notes three actionable projects are not scheduled for completion until around 2030: HumeLink (2026), Marinus Link Cable 2 (2029), VNI West (2031).
- CEIG proposes that AEMO consider how other planning tools (e.g., Electricity Statement of Opportunities) could help mitigate closure risks.
- CEIG strongly supports AEMO's stronger emphasis on social licence.

In addition to responding to the draft ISP, our submission canvasses National Electricity Market (NEM) governance and policy reforms that would improve the delivery of the ISP.

Our approach is based on the [Clean Energy Investor Principles](#) (Investor Principles) that CEIG published in August 2021. Crucially, CEIG's *Investor Principles* present the investor case for why governments and the market bodies should adopt planning scenarios that reflect scientific consensus and international sentiment. The research commissioned for the *Investor Principles* found that improving certainty for investors will reduce the risk premium for new generation in the NEM that could deliver savings of up to \$7 billion out to 2042.

The ISP process is vital for investors, and we commend AEMO on the work it has done on the draft ISP. The ISP gives investors economic information on which to base clean energy investment plans. In broad terms, CEIG supports the selection of the Step Change scenario but proposes that it should be strengthened to 1.5 degree compliance, through the 'Strong Electrification' scenario version.

## **1 Support Step Change scenario but concerned it does not match international investor sentiment**

CEIG is broadly supportive of the design of Step Change and its selection as the most likely scenario in the draft ISP because it is more ambitious than the current Central Scenario.<sup>1</sup> But it does not go far enough. The draft ISP contains four scenarios and only Hydrogen Superpower is consistent with limiting temperature rise to 1.5 degrees. Step Change is not a 1.5 degree consistent pathway and nor is it the most ambitious of the scenarios.

International investor sentiment is moving ever more clearly in favour of clean energy and climate action. CEIG has reviewed the science and formed a position that Australia should set targets for net zero by 2035 for the electricity generation sector and no later than 2040 for the rest of the economy. The Australian Academy of Science recommends that “Australia accelerates its transition to net zero GHG [greenhouse gas] emissions over the next 10 to 20 years” and that “reaching net zero emissions by mid-century is an absolute minimum”.<sup>2</sup> The Climate Council recommends that Australia should reduce emissions by 75% below 2005 levels by 2030 and net zero by 2035.<sup>3</sup> Climateworks Australia recommends that Australia should reach net zero by 2035.<sup>4</sup>

CEIG recommends that the final 2022 ISP should plan for emissions reduction consistent with maintaining warming under 1.5 degrees. That would align energy investment in the NEM with international investor expectations and trading partner actions. We also propose that the ISP should be flexible enough to support state jurisdictions or the national government decarbonising the electricity sector faster than under existing policies.

It is important to highlight the market benefit of the transmission investment that would be delivered by implementation of the Step Change scenario. The modelling predicts a \$29 billion benefit with a return on investment of around 2.5 times. We support AEMO’s position that this represents a significant positive benefit to consumers. The CEIG supports this investment because it would provide the infrastructure required for clean energy generation and storage investments to proceed.

CEIG supports the development of green hydrogen and endorses the modelling of Hydrogen Superpower as one of the key scenarios. While hydrogen is still at a relatively early stage of commercial deployment however, we endorse the modelling of an additional

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<sup>1</sup> AEMO (2021) *Draft 2022 Integrated System Plan [“Draft ISP”]*, pp.29-30

<sup>2</sup> Australian academy of science (2021) *The risks to Australia of a 3°C warmer world*, pp. 13, 11

<sup>3</sup> Flannery et al. (2021) *From Paris to Glasgow: a world on the move*, p.45

<sup>4</sup> Butler et al. (2020) *Decarbonisation futures: Solutions, actions and benchmarks for a net zero emissions Australia*, p.79

1.5 degree scenario based on commercially available technologies (see below). We note the ISP is tasked with delivering a plan for the “efficient development of the power system...for the long-term interests of the consumers of electricity”.<sup>5</sup>

## **2 Propose Strong Electrification Step Change as preferred ISP 2022 scenario**

CEIG is optimistic that existing clean energy technologies have the capability to enable ambitious decarbonisation over the 2020s. We submit that Step Change should be strengthened to be consistent with the 1.5 degree ambition of the Paris Agreement. AEMO’s commissioned research provides this alternative scenario which would be consistent with 1.5 degrees.

The *Multi-Sector energy modelling* study was produced by CSIRO and Climateworks for the draft ISP. It compared how the core four scenarios used in the ISP would help Australia meet different emissions trajectories (Representative Concentration Pathways). The analysis found that Hydrogen Superpower accords with Representative Concentration Pathway 1.9 (<1.5°C) whereas Step Change is merely consistent with Representative Concentration Pathway 2.6 (~1.8°C).<sup>6</sup>

In addition to comparing the core scenarios, the research included a sensitivity of Hydrogen Superpower called ‘Strong Electrification’. In this variation green hydrogen capacity continues to increase although not as fast as predicted in the core scenario on which it is based. Strong Electrification achieves net zero emissions by 2036-37. Step Change as currently presented does not reach net zero until 2050.

Strong Electrification shows how Australia could meet its commitments under the Paris climate Agreement for a 1.5 degree trajectory without relying on heroic growth in green hydrogen. In combination with significant growth of energy efficiency in the short term the study shows that electrification of sectors across the economy could deliver rapid decarbonisation. The electrification technologies modelled include water and space heating in buildings, some commodity processing, industrial and agricultural heating, light passenger vehicles and 20% electrification of short haul aviation and rail freight by 2050.<sup>7</sup> Previously published studies have pointed to the economic viability of electrification for residential households and private vehicles<sup>8</sup> and industrial heating.<sup>9</sup>

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<sup>5</sup> *National Electricity Rules* 5.22.2

<sup>6</sup> Reedman et al. (2021) *Multi-Sector energy modelling*, CSIRO, pp.24-25

<sup>7</sup> *Ibid.*, pp.8-9, 24, 36

<sup>8</sup> Griffith, Ellison, Calisch, & Cass (2021) *Castles & Cars: Savings in the Suburbs through Electrifying Everything* - Technical Study

<sup>9</sup> Beyond Zero Emissions (2018) *Zero Carbon Industry Plan: Electrifying Industry*

CEIG submits that the final 2022 ISP should include a Strong Electrification scenario built on Step Change. The Strong Electrification version of Step Change would most closely reflect consumer risk preferences and thus attract investment into generation and storage in the NEM. It is based on low-risk technologies and supports the long-term interests of consumers in the formal sense articulated in the National Electricity Objective.

### **3 Call for broad reform of transmission and governance**

CEIG agrees with AEMO's assessment in the draft ISP that the pace of the energy transition over the past four years has outpaced the biennial ISP cycle and that this puts pressure on market bodies and governments.<sup>10</sup> That supports the argument made in the *Investor Principles* for reform of governance broadly and of specific decision-making rules and criteria.

Step Change goes part way to supporting CEIG Investor Principle 1 ('Align NEM development with global markets'). It signals that decarbonisation is progressing faster than predicted in the 2020 ISP. To ultimately align NEM development with international sentiment, governments should choose and implement an ISP scenario which is consistent with Australia's commitments under the Paris Climate Agreement. This would provide the clarity to reduce risk for investors and lower cost for consumers.

CEIG Investor Principle 2 ('Redesign governance for transformation') recommends that governments should add an environmental objective to the National Electricity Objective. This is a foundational reform that would support the ISP by providing clear policy leadership to market bodies and a strong signal to the market. This planning goal could then be fully incorporated across governance, policy and regulatory decision-making.

In November 2021 CEIG released our inaugural [Clean Energy Investment Confidence Survey](#). This research found that the most critical risks facing investors are caused by the current regulatory frameworks for transmission investment. Market bodies and governments should prioritise transmission reforms to reduce risk and encourage investment. CEIG recommends that AEMO work closely with the AEMC on the Transmission Planning and Investment Review.

### **4 In-principle support for intention of staged actionable development but HumeLink and VNI West should be completed early**

CEIG supports in-principle the staged development of large transmission developments if commencing some works earlier can reduce cost and risk. However, we have a general concern that until there is clarity about the final approval and completion date for each

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<sup>10</sup> Draft ISP, p.17

actionable project, residual risk remains. That risk contributes to a higher cost of capital which ultimately flows through to consumers. Any residual uncertainty makes the ISP less valuable as a planning instrument.

We also have a specific concern with the Victoria – New South Wales Interconnector (VNI) West and HumeLink projects. CEIG’s position is that HumeLink and VNI West are clearly and urgently necessary and should not be subject to delay or cessation through a staging process. They must be expedited in totality.

Staging means that a large transmission project is divided into multiple phases so early works can be commenced sooner than would otherwise be the case. The purpose of this approach is to reduce long-term cost. Theoretically it allows project expenditure to be more efficient than if the whole project is built in one phase and just-in-time. CEIG commends AEMO for the initiative it has taken in formulating the concept and in sharing detailed cost benefit analysis.

AEMO presents staging as the solution to the trade-off faced by regulators and governments; whether to risk building transmission too late or too early. The *Cost benefit analysis guidelines* require AEMO to exercise “professional judgement” to balance the outcomes of the strictly economic analysis used to design the ODP.<sup>11</sup> AEMO has compared over 800 candidate development paths at a high level of detail and used professional judgement to select the ODP, including the staging of HumeLink early works<sup>12</sup>.

The critical judgement made by AEMO is how it weighs the regret cost of delivering actionable projects earlier or later than a perfectly efficient market would. AEMO builds a clear case that it is preferable to risk early completion rather than risk having infrastructure operational later than it would have been theoretically economically efficient to build it. This helps mitigate the risk of early coal closures and construction delays and may reduce project costs by maintaining momentum in the design process. AEMO argues this is a better approach than a “strictly rules-based optimal timing”.<sup>13</sup>

The ODP thus brings forward the optimal completion date of HumeLink to July 2026, rather than the strictly rules-based 2029 date. AEMO’s analysis seems robust and CEIG looks forward to understanding how the AER views this judgement and how it might inform its own assessments.

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<sup>11</sup> Ibid., p.28 (3.3.6 part 3)

<sup>12</sup> AEMO (2021) *Appendix 6. Cost Benefit Analysis*

<sup>13</sup> *Draft ISP*, p.65

CEIG could support staging in principle as it may be worthwhile for projects with longer delivery timeframes. However, AEMO's own analysis in the draft 2022 ISP makes it clear that for both HumeLink and VNI West earlier completion is justified. There are considerable uncertainties around coal retirements and as AEMO argues, the transition has outpaced the ISP process. The Step Change scenario is unfolding at a rate that is faster than the transition which has been planned for. It is vital that the ISP gets ahead of the transition and does not lag behind as this will push up costs and increase risks.

CEIG's general concern is that staging has residual risks. Firstly, early works do not provide a guarantee for investors who may require the actionable project to be complete for their generation and storage projects to be viable. Secondly, early works for HumeLink are proposed for 2024 and completion by July 2026 and it is difficult to see how a staging decision point could fit into such a tight timeline.

As the transition accelerates it may outpace the staging model. AEMO's modelling predicts that in all four scenarios coal withdrawals will be faster than is currently predicted based on announced retirement dates. It is predicted that Step Change is likely to see 14GW of coal retire by 2030 and may see all coal close by 2040.

The draft ISP shows that the NEM is heading into a period of high uncertainty in which early completion of actionable projects has clear insurance benefits for consumers. Unfortunately, the AER's *Cost benefit analysis guidelines* for the ISP constrain AEMO's consideration of consumer benefits.<sup>14</sup> CEIG proposes that, when informing its professional judgement by assessing the consequences of events that could have material negative impacts on consumers (e.g. unexpected and earlier coal retirements), AEMO should consider incorporating the short-term consumer benefits that would accrue from earlier transmission investment.

We note that three actionable projects are not scheduled for completion in the draft ISP until around this critical 2030 milestone: HumeLink (2026), Marinus Link Cable 2 (2029), VNI West (2031). We also note that this leaves another 12 "future" ISP projects with no proposed completion dates in the period up to the significant 2040 milestone.

The staged timetables are still a best-case scenario in the sense that TNSPs do not have recent deep experience in these kinds of projects so they may take much longer than predicted. In the next section below, we address the risk that coal could retire quicker than is allowed for under the ODP with the staged actionable process.

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<sup>14</sup> AER (2020) *Cost Benefit Analysis Guidelines: guidelines to make the Integrated System Plan actionable*, pp.20-22 (3.3.4)



## 5 Concern that disorderly coal closure risk is an ongoing problem

AEMO expresses concern about the risk of early and disorderly coal closure at many points in the draft ISP. AEMO's emphasis on this risk is supported by our *Clean Energy Investment Confidence Survey* which found that one of the top five risks in the NEM is unrealistic scenario planning and the lack of a clear timetable for coal closure. It contributes to a risk premium borne by consumers that our *Investor Principles* research estimated to be in the order of 100-250 basis points.

We support AEMO's use of an insurance weighting when selecting the ODP against other path candidates. Given the pace of change over the past four years in Australia and shifts in international market sentiment, CEIG agrees with AEMO's assessment of 'under-investment risk being greater than over-investment risk' in the phasing of transmission.<sup>15</sup>

CEIG supports AEMO's decision to *not* choose the highest net market benefit path. AEMO explains this would have offered only a marginal reduction in cost but would significantly reduce the 'insurance value' that transmission infrastructure provides for early coal retirements in NSW. The cost benefit analysis demonstrates that the ODP is more expensive in the short term than other pathways but is less likely to incur more costly regrets later.

The ranking of scenarios and selection of the ODP is sensitive to coal risks that are impossible to predict confidently. This has material implications for the optimal timing of actionable projects. For example, AEMO found that if the probability of faster coal closures is 10% or greater than predicted in Progressive Change then HumeLink should become a staged actionable ISP project immediately under that scenario.<sup>16</sup>

CEIG remains concerned that not enough has been done to mitigate the risk that coal retirements will outpace the ISP. As we detailed in section 4 above, if coal exits over the next several years are much faster than predicted in the draft ISP and major actionable projects remain uncompleted then this could be a costly and risky situation. We recommend that AEMO reconsider coal closure risks and their weighting in the development path decision tree and risk analysis.

CEIG proposes that AEMO consider how other levels of the broader planning process might help mitigate closure risks to the ISP. For example, the Electricity Statement of Opportunities could include updated declarations of coal closure risk. AEMO has intimate knowledge through its bilateral arrangements with jurisdictions and contractual relationships with generators. It may be able to find a way to signal risk to the market and

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<sup>15</sup> *Draft ISP*, p.79

<sup>16</sup> *Draft ISP*, p.12



governments without breaching confidentiality. This data could assist consumers, investors, governments and market bodies understand the market and make informed decisions.

## **6 Endorse stronger social licence emphasis**

CEIG endorses the stronger emphasis given to social licence in the draft ISP. As AEMO explains, the ISP maps out 10,000 km of transmission infrastructure and the Step Change scenario will drive a faster pace of development of generation and storage assets. The speed and extent of development makes it more important to obtain and maintain social licence with local communities. This supports the CEIG Investor Principles (Investor Principle 4: Allocate risk effectively).

CEIG supports AEMO's push for greater collaboration and planning around social licence at the national level and within states. We agree that its call for 'proactive engagement and integrated land-use planning is also needed at a jurisdictional level.'<sup>17</sup> CEIG investors are prepared to show leadership through best-practice engagement and benefit sharing with local communities.

CEIG supports early works declarations for actionable projects. This process will encourage transmission networks and planners to work with communities earlier and design infrastructure more sensitively. This is especially important in the parts of Renewable Energy Zones (REZ) that will attract the most intensive generation, storage and transmission development.<sup>18</sup>

CEIG thanks AEMO for the opportunity to provide feedback on the draft ISP and looks forward to continued engagement with your organisation on the ISP and other issues. Our senior advisor Dan Cass can be contacted at [dan.cass@ceig.org.au](mailto:dan.cass@ceig.org.au) if you would like to further discuss any elements of this submission.

Yours sincerely,



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<sup>17</sup> *Draft ISP*, p. 15

<sup>18</sup> RE-Alliance (2021) *Building Trust for Transmission*