21 February 2020

Dr Alex Wonhas
Chief System Design and Engineering Officer
Australian Energy Market Operator

Lodged by email: isp@aemo.com.au

Dear Dr Wonhas,

DRAFT 2020 INTEGRATED SYSTEM PLAN

The Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in renewable energy and energy storage along with more than 6,500 solar and battery installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

The CEC welcomes the opportunity to provide comment on the Australian Energy Market Operator's (AEMO) draft 2020 Integrated System Plan (draft ISP). The CEC strongly supported the 2018 ISP and remains supportive of the draft 2020 ISP as the guiding document for transitioning our energy system away from the remaining fossil fuel generators to a highly diversified system dominated by variable renewable energy (VRE) supported by dispatchable resources such as utility-scale pumped hydro and battery storage, distributed energy resources (DER) including distributed batteries participating as virtual power plants and demand side participation. We commend AEMO on its pragmatic and sensible approach to the development of the draft ISP and the significant stakeholder consultation that has been undertaken. We also commend AEMO on undertaking the additional step of a draft ISP in order to develop the final 2020 ISP. The industry appreciates the ability to provide input at each step of the development of this comprehensive system plan.

Broadly, the CEC supports the development of the optimal development pathway presented in the draft ISP. We also support the development of the Energy Security Board's (ESB's) actioning the ISP draft rules that will allow the streamlining of the regulatory processes for actionable projects identified in the ISP while retaining a balance between the need for timely investment to support the transitioning power system and ensuring unnecessary or inefficient costs are not placed on consumers.

It is widely accepted that the electricity system will rapidly transition over the next 20 years, most likely faster than anticipated. We see the ISP as the central document that will guide industry and government on the transmission developments required to support new generation build. However, in order to ensure that new generation is in place before each major plant exits at this anticipated faster pace of exit, rapid steps must be taken to deploy the necessary network investment. The draft ISP presents a very strong starting point through the immediate 'least regrets' optimal development pathway for network investments to connect the early stages of the incoming 34GW of new VRE and

21GW of dispatchable renewable energy (hydro and batteries)[1]. The clean energy industry suggests the ISP take additional steps to drive transmission investment at a faster rate than is currently presented.

The draft actioning the ISP rules that remove one step of the Regulated Investment Test for Transmissions (RIT-T) is a strong first step to speed up the process, however, it means that the ISP optimal development pathway has to date been limited to mapping the investment pathway to assets that are designed to pass the RIT-T. The CEC supports the testing of new transmission to ensure it provides a benefit so that consumers are not subject to excessive costs, but this approach has limited the scope of the ISP to those critical investments that represent the minimum network build out to meet consumer needs as the generation profile changes as generators retire. Following this process fails to capture the additional benefits that consumers could experience through a more rapid transition of the energy system with a quicker and greater build out of the transmission network. We recommend that the ISP develop a more visionary approach to transforming the transmission network that is not restricted by the RIT-T process.

Transmission investment is somewhat contentious in Australia with consumers justifiably concerned about the potential for over construction of the network leading to higher network costs in consumer bills. The clean energy industry suggests that concerns about the risk of overbuild by networks over the past 10 years have largely subsided and there is now a material risk of underbuild in the transmission network. As noted in this draft ISP, significant proportions of the current generation fleet are due to retire and must be replaced. The CEC argues this will occur faster than anticipated as asset owners respond to market signals. The ISP continues to be limited through its use of the expected closure dates provided by participants. The CEC suggests that in order to provide certainty to these assumptions, AEMO should undertake revenue adequacy modelling to confirm the assumption or ascertain a more accurate closure date. The draft ISP also notes that the cheapest form of new generation is VRE with renewable storage providing firming services. Noting both of these points, the CEC argues that it would be beneficial to consumers for the ISP to consider options that ensure transmission capacity is available to connect generators well in advance of when thermal plants are expected to retire.

A more rapid system transition will have significant benefits that are difficult for AEMO to quantify through economic modelling, including benefits that would not be captured through a least regrets, least cost approach. The CEC suggests more rapid transition build would bring on new renewable energy generation faster. We argue that given renewable generation investment is displacing emissions intensive generation sources, the risk of overbuild (or early build out) of the transmission network is drastically reduced due to the wholesale price reductions that the consequent additional renewable generation would produce alongside decarbonisation benefits as Australia deals with the impacts of climate change. Increasing system interconnection, meshing of the network and a decentralised generation fleet will increase the resilience of the system, which is also difficult to quantify through economic modelling.

The CEC suggests that the development of the ESB's draft actioning the ISP rules has given AEMO the flexibility to address the points raised above as the draft rules reduce the strict requirements on AEMO to deliver the transition at least cost, now requiring it to select options that present a net positive benefit. The CEC strongly supports this flexibility as we suggest this will allow AEMO to consider the merits of options that may not present benefits that influence a purely economic test. The CEC supports the retention of the requirement for the optimal development pathway to still present an overall net positive benefit to the system.

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[1] AEMO, Draft 2020 Integrated System Plan, December 2019, p 10, available at https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/isp/2019/draft-2020-integrated-system-plan.pdf?la=en

Please find additional comments in the attachment regarding the detail of the draft ISP. The CEC thanks AEMO for the continued engagement throughout the development of the ISP. The CEC and our members have participated in the range of information sessions and workshops as part of the ISP development process, most recently the draft ISP workshops held from 3 to 5 February 2020. We have found these valuable and suggest they become the standard process for future ISPs.

Thank you for the opportunity to comment on this consultation. If you would like to discuss any of the issues raised in this submission, please contact Tom Parkinson, Policy Officer, on (03) 9929 4156 or tparkinson@cleanenergycouncil.org.au or myself, as outlined below.

Yours sincerely,

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Additional comments on the draft ISP

Scenarios

AEMO has the ability to select the ISP scenario and the future trigger points that divert the optimal development pathway between the scenarios. The CEC suggests that the selection of the central scenario is a conservative approach to the energy transition and does not accurately reflect the transition in the energy market in Australia. Three of the six NEM states and territories are aiming for 100 per cent renewables by 2030 with two already achieving this target. Of the remaining three states, each has a 50 per cent target (or the equivalent to 50 per cent in NSW noting its 2050 commitment). These targets set the baseline for minimum renewable penetration in these markets. What actually transpires will likely be greater as the market responds to the policy signals. We suggest that facilitating this transition at a faster pace will be to the benefit of consumers. Adopting a 'wait and see' approach through the use of triggers to divert the pathway into different scenarios means highly politicised policies may potentially curtail the significant fleet of renewable generation that is waiting to be constructed and connected.

The CEC strongly supports the inclusion of the different scenarios in this draft iteration of the ISP that map out varying futures under different potential future technology splits. The CEC recommends AEMO incorporate a scenario that models the energy system on a net zero emissions by 2050 into future iterations of the ISP. The inclusion of such a scenario would be beneficial irrespective of if the Federal Government formally commits to such a target and particularly given state commitments to this target. It is also in line with Australia's international climate change commitments.[2] Formalising this in the ISP would assist the industry in understanding the system needs for a decarbonised energy system.

Cost allocation and coordination of network investment and generation development

The CEC notes that the Council of Australian Governments Energy Council (COAG Energy Council) has tasked the ESB with reviewing the cost allocation models that govern recovery of network investment to ensure fair treatment of consumers throughout the NEM. The CEC supports this review insofar as a different structure may support faster transmission infrastructure investment.

Industry is also willing to engage in discussions for different funding models that better coordinate transmission and generation investment. It is important to note that the work the Australian Energy Market Commission (AEMC) is undertaking through the Coordination of Generation and Transmission Investment (COGATI) review, which is closely linked to the ISP and that the two work processes should be closely integrated. The CEC suggests the AEMO ISP process must take priority and any potential COGATI reforms must complement the outputs of the ISP.

Network development

Noting our above-mentioned thoughts regarding the need for an increased pace of transmission developments but that such a change is unlikely possible for the final 2020 ISP, the CEC supports the presented network developments in the draft ISP. The draft ISP presents a thorough assessment of necessary network developments to incorporate the transitioning generation fleet. In particular, the CEC strongly supports the elevation of certain projects to Group 1 actionable ISP projects, such as EnergyConnect and the VNI West project to increase interconnector capacity between Victoria and NSW.

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[2] Net zero emissions by 2050 is widely acknowledged as the timeline necessary to limit warming to 1.5 degrees Celsius as agreed under the Paris Agreement.

The CEC suggests AEMO take additional steps in future ISPs to increase the meshing of the networks that interrelate to major interconnector upgrades and explore the benefits that this strategy may have on the network as it is expanded. We suggest that meshing of the network would increase capacity on the lines, increase resilience to line outages and support system strength.

The 2018 ISP suggested a high level of solar spillage that, in industry's opinion, would be unlikely to lead to economic development of solar in the NEM. Given the figures that were presented in the 2018 ISP, it is reasonable that some generators could expect 20%+ curtailment. This would represent a significant risk to these generators and risk future development. We note that this has not been addressed or developed further in the draft 2020 ISP. The CEC suggests there would be considerable value if the ISP provided more detail on the assumed levels of curtailment and congestion that is expected to be present across the forward horizon. This should include AEMO deciding an efficient level of curtailment and Marginal Loss Factors that would attract investment in identified development opportunity areas.

Renewable Energy Zones

The CEC suggests that further work is done for the final ISP if possible to provide more detail on Renewable Energy Zones (REZ) phases 1, 2 and 3. REZs present significant potential for the clean energy industry to coordinate efforts in an identified area that is well established and prepared in advance to connect new generation. In order to make commercial decisions on future developments in these areas, investors and developers require a greater degree of information than is currently presented.

AEMO now has the ability to leverage work being done by the NSW and Victorian Governments to inform potential detail to be included within the ISP regarding REZs. We suggest this could include but is not limited to:

- Mechanisms for supporting transmission development and upgrades that may sit outside, or modify certain elements, of the RIT-T process. We note the Victorian Government is now taking steps to progress urgent transmission upgrades by bypassing the National Electricity Rules (NER) to ensure these happen at the pace required
- Potential coordinated approaches to managing system strength in these areas
- Expected MWs of generation (illustrating different patterns of generation mix) and transmission capacity available and associated timings including possible maps
- Congestion projections in the area
- Potential bespoke access regime
- Granular projected generation diversity in the region, broken down to dispatch intervals (a day in the life of a REZ)
- Coordinated planning processes and community engagement

Renewable Integration Study

The CEC supports the Renewable Integration Study (RIS) that AEMO is currently undertaking to assess the technical renewable penetration limits of the power system for a projected generation mix and network configuration in 2025. We suggest the RIS outputs are formalised as inputs into each iteration of the ISP. In particular, the industry is keen to understand, from AEMO's perspective, what the system strength limits are for the system now and in the future as the system develops and how that may impact curtailment in areas that have identified development opportunities. The CEC suggests there is potential for the RIS to become the system strength roadmap that complements the ISP transmission roadmap.

Modelling and assumptions

We would like to make several high-level comments regarding the modelling and assumptions that AEMO has published alongside the draft ISP:

- We suggest the projected storage needs of the NEM are adjusted to reflect the technology neutral approach of the ISP. The ISP currently signals for 2,4, and 6 hour pumped hydro storage requirements for the storage needs in the NEM in the future. Adjusting this to just an hourly requirement will allow the market to respond with the suitable technology at that point in time. Ruling out battery or other storage options that may present themselves in the future may miss the opportunity to leverage these technologies for system services such as frequency control.
- Following the above comments, we are concerned regarding the large-scale battery storage projections over the next 20 years presented in the draft ISP data. Our reading of the data is that the large-scale battery storage projections will drop from 215MW to 110MW over the next 20 years. We are concerned that this is not accurate and sends a negative signal for battery development. The CEC is keen to understand AEMO's reasoning for this projection.
- Similarly, large-scale wind and solar capacity is not projected to increase until 2025 and will not materially increase until 2027. The CEC suggests this is either a failure of the projections under the central scenario not matching up with market trends or failures in the assumptions feeding into the modelling. Relatedly, AEMO could consider a smoothed investment projection as one characterised by periods of high activity interlaced with periods of low or no activity could prove more costly. For example, skilled workers would exit the market during periods of low activity and it would likely be costly to bring them back as investment ramps up again.
- The use of the least cost method for modelling may be biased towards solar as its costs are lower. In the long term, economic projections may favour wind development in the future as solar developments ramp up in the near term and the market is dominated with low short-run marginal cost solar.
- The CEC suggests further thought be given to the inclusion of nuclear power in the ISP modelling. Fundamentally, nuclear power is internationally recognised as a legitimate generation source. In Australia, it is highly politicised and socially unpalatable to consider nuclear power. However, this may not always be the case given the current political climate and the rhetoric surrounding nuclear power. It would be valuable for the ISP to include nuclear power in its economic modelling to provide evidence that nuclear power does not stack up against the alternative forms of generation available today.