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Australian Energy Market Operator

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2023 Inputs Assumptions and Scenarios Consultation

Delta Electricity (Delta) welcomes the opportunity to provide feedback on the Australian Energy Market Operator's (AEMO) draft 2023 Inputs, Assumptions and Scenarios (IASR) report, and recognises the importance of this work in terms of preparation of the 2024 Integrated System Plan (ISP).

Delta does not propose to comment on the four scenarios outlined in the IASR, especially as the proposed scenarios in the Draft 2023 IASR essentially reflect a similar scenario collection to the 2021 IASR scenarios that were applied in the 2022 ISP and updated to take account of changes in federal and state government policies. Delta will await the draft 2024 ISP before providing a detailed analysis and assessment of those scenarios and their implications.

However, Delta wishes to raise a number of issues with respect to the IASR which essentially continue the concerns expressed by Delta on the draft 2022 ISP, namely that AEMO's analysis is not sufficiently rigorous and, as part of this, is not based on the best available input assumptions.

These issues are critical to all stakeholders as the "pronouncements" and "forecasts" generated through the ISP process drive decisions and responses by NEM participants, a range of investors generally, TNSPs, Governments (Federal and State) and consumers. That is, AEMO's ISP is a primary driver for key investment decisions, and it is therefore critical that the analysis that goes into the preparation of the next ISP – and, particularly, AEMO's IASR – is rigorous and recognises the major risks that could arise under the various scenarios (and especially the scenario considered to be "most likely"). If this is not the case, there must be a very high risk that the resultant outcomes and conclusions in the 2024 ISP could drive imprudent investment decisions, which would unnecessarily drive-up costs of the power system and increase electricity bills for households and business.

The principal issue Delta wishes to raise in this submission is that the sensitivity analysis that AEMO proposes to undertake does not have any real regard to the prospect of well documented, high impact downside risks, and does not have sufficient regard to the prospect of a "compounding" of downside risks. This therefore creates the risk that the "pronouncements" and "forecasts" generated through to the 2024 ISP will be overly optimistic and, if acted on by stakeholders, will, in turn, create significant system security and reliability issues in the NEM, with significant negative consequences for households and business – and, therefore, the Australian economy.

It is Delta's view that this lack of detailed assessment of high impact downside risks stems from the "Risk Neutral" approach AEMO adopts in its analysis. This is consistent with the AER's Cost Benefit Analysis Guidelines. However, these Guidelines also allow AEMO to

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adopt a “Risk Averse” position. As set out in Delta’s submission on the draft 2022 ISP, Delta believes that AEMO should prepare its detailed analysis based on the adoption of a “Risk Averse” position, in addition to its current approach of only using a “Risk Neutral” approach. The adoption of both approaches in AEMO’s analysis would be consistent with the AER’s Guidelines.

This submission therefore sets out:

1. what the IAS report states with respect to the importance of sensitivity analysis;
2. examples of sensitivities that AEMO proposes to examine; and
3. specific high impact risks that have been identified in publicly available international and domestic materials, including materials prepared by, or in conjunction with, AEMO.

IAS sensitivity analysis

As set out in the IASR:

> “The use of scenario planning is an effective practice when planning in highly uncertain environments, particularly through disruptive transitions. Scenarios are a critical aspect of forecasting, enabling the assessment of future risks, opportunities, and development needs in the energy industry. Scenarios therefore purposefully cover the breadth of potential and plausible futures impacting the energy sector and capture the key uncertainties and material drivers of these possible futures in an internally consistent way. AEMO uses a scenario planning approach coupled with cost-benefit analysis to determine economically efficient ways to provide reliable and secure energy to consumers through the energy transition”. [1]

And:

> “While scenarios are fundamental to AEMO’s forecasting and planning approach, a key role exists for sensitivity analysis to explore uncertainties around key assumptions.”[2]

Elaborating on this issue of the role of sensitivity analysis, the IASR states:

> “There is inherent uncertainty around the set of inputs that make up each scenario and that underpin the modelling, which creates risks around decision-making. Sensitivities can be deployed to complement the scenario analysis and are designed to test how significant potential events or key assumptions are to influence the energy outcomes observed in the scenarios.”
>
> “Sensitivity modelling allows for the testing of the resilience of modelling outcomes and candidate development paths against this uncertainty in inputs, and increases confidence in the robustness of the optimal development path and the individual actionable projects it contains. This may involve change to a single variable (most

[1] Draft 2023 Inputs, Assumptions and Scenarios Report, page 4.

[2] Draft 2023 Inputs, Assumptions and Scenarios Report, page 6.

> common), or multiple variables (less common, as it is then unclear in isolation which variable was the primary driver for any result variation)."[3]

The report presents three sensitivities that AEMO proposes to consider (although the report notes that its sensitivity analysis will not necessarily be limited to the following examples):

- Higher and lower discount rate sensitivities.
- An offshore wind sensitivity.
- A smoothed infrastructure sensitivity.

In elaborating on the offshore wind sensitivity, the IASR states that AEMO proposes to "model the development of the scale of investment to meet the targets within the Victorian (Offshore Wind Directions) paper".

That is, this sensitivity analysis will model the achievement of the Victorian Government's offshore wind targets, which was confirmed during the recent AEMO webinar on the IASR.

As a result, the current proposed sensitivity analysis would not look at the major downside risks in terms of the on-time delivery of offshore wind farms now being flagged by the International Energy Agency (IEA), overseas government agencies, senior energy analysts and a range of offshore wind participants (and particularly in the shipping sector) and stakeholders.

And in terms of the smoothed infrastructure sensitivity, the report states that this analysis will explore "the costs and benefits of lower levels of volatility of employment demand."

And in elaborating on this, the IASR states:

> "The demand for skilled labour in the electricity sector is forecast to double from approximately 44,000 in 2023 to over 80,000 by 2050 in the *Step Change* scenario from the 2022 ISP. This growth will challenge engineering, procurement and construction (EPC) firms and regional communities as well as individual workers, particularly if there are boom-and-bust cycles or if workers and contractors are engaged project-to-project. With proactive planning, this challenge could represent an opportunity."[4]

This wording suggests the sensitivity analysis dealing with employment needs in the energy sector will approach the assessment from the point of view that the "challenge" represents "an opportunity" would appear to signal that the proposed analysis will not be looking at the significant downside risks, despite the concerns raised in the report.

Identifiable high impact risks

Offshore Wind Projects

[3] Draft 2023 Inputs, Assumptions and Scenarios Report, page 24.

[4] Draft 2023 Inputs, Assumptions and Scenarios Report, page 152.

The IEA's recently released "Energy Technology Perspectives 2023" particularly highlighted shortages of skilled labour in the (international) Energy Sector generally and the offshore wind sector in particular, noting:

> "An adequately skilled and sufficiently large workforce will be central to the energy transition. But shortages of skilled labour in emerging clean energy sectors, coupled with broader labour market difficulties, are already limiting the pace and extent of new projects in several key regions, raising doubts about the speed of the transition in the near to medium term……."
>
> "Offshore wind projects require better trained workers and more labour input per megawatt than onshore projects over their lifetime. There are growing concerns that shortages of trained personnel in the offshore wind sector could delay installations in the coming years."[5]

This IEA report also raised the prospect of:

- a shortage of specialised vessels for transporting and positioning offshore wind farm turbines;[6] and
- shortfalls in manufacturing capacity for offshore wind farm towers, blades and nacelles (which house the generator, gearbox, drivetrain and brake assembly).[7]

The American Clean Power Organisation has determined that offshore wind project development and operations will rely on at least 27 vessels per project across all project stages.[8]

Bloomberg recently carried an article entitled: There Aren't Enough Ships to Install Giant Wind Turbines Across Asia.[9] In particular, the article noted:

> "As countries embark on a rapid build-out of wind power in the next decade, builders can't churn out the support vessels fast enough to keep up, shipping experts say. The situation is only going to get worse as blades get longer and require bigger ships to handle them."
>
> "The potential crunch is likely to occur in the mid-to-late 2020s as more countries begin constructing their wind farms to meet 2030 national targets,"

And the National Renewable Energy Laboratory (NREL) – an agency of the US Department of Energy – recently released a report entitled "The Demand for a Domestic Offshore Wind Energy Supply Chain" also highlighted the risks posed by the shortage of appropriate vessels (as well as highlighting a number of concerns across the complete supply chain):

> "New vessels are required to alleviate risks of missing the national offshore wind energy target, with wind turbine installation vessels posing the biggest risk followed

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[5] Energy Technology Perspectives, pages 71-72. The report can be accessed here.

[6] Ibid, pages 215.

[7] Ibid, pages 223.

[8] American Clean Power: Offshore Wind Vessel Needs. The report can be accessed here.

[9] The Bloomberg article can be accessed here.

by feeder barges, cable lay vessels, service operation vessels, crew transfer vessels, scour protection vessels, heavy lift vessels, and anchor handling tug supply vessels."[10]

Shortages of Labour

The "Australian Electricity Workforce for the 2022 Integrated System Plan: Projections to 2050" report highlights that the rapid increase in demand for key occupations required for the transition of the NEM creates a high risk of skill shortages which could have an adverse impact on the achievement of the ISP's Optimal Development Path, with the report noting:

> "Skill shortages create the risks of delays, increased project costs (wage inflation, recruitment costs and liquidated damages), and increased cost of capital to reflect increased risk."[11]

The report set out these risks in detail. However, the risks the report flagged with respect to development of Renewable Energy Zones (REZs) are particularly important given the central role REZs are to play in achieving government renewables and emission reduction targets in a number of states. The report stated:

> "… analysis of the NSW Renewable Energy Zones (REZs) found the peak demand for key occupations outstrips the entire workforce in some REZs. Whilst regional labour markets vary, it is likely to be the case in many REZs that renewable energy employment demand in key occupational groups is very large relative to the existing local workforce. Low unemployment and occupational structure in regional labour markets will make it challenging to recruit labour from adjacent sectors."[12]

The report also noted that this could create social licence issues with local communities in REZs:

> "The peaks and troughs are disruptive for local economies with risks to social licence as communities experience the costs of sharp booms, such as housing shortages and inflation, with fewer ongoing jobs and economic growth."

The report went on to say that:

> "Analysis undertaken by AEMO Services Ltd for the NSW Government recommended a 'supply-chain adjusted' development pathway that included a maximum and minimum annual build to reduce volatility as the least- risk model."

However, the report considered that in order to achieve a "supply-chain adjusted" development pathway, essentially everything would have to fall into place in terms of delivering on the NSW Roadmap. But there is an on-going risk that the consistently regular pattern of tenders envisaged under the Roadmap could be delayed and the resources

[10] National Renewable Energy Laboratory. The report can be accessed here.

[11] The Australian Electricity Workforce for the 2022 Integrated System Plan: Projections to 2050. Revision 1, page 4. The report can be accessed here.

[12] Ibid, page 13.

(including labour) required to meet the legislated targets under the Roadmap could be significantly constrained – thus preventing the "smoothing out" of volatility in project delivery.

The AEMO Services' New South Wales Development Pathways Report, December 2021, spelt out these risks as follows:

> "The Development Pathways each expand the capacity of VRE and long-duration storage developments to levels significantly above existing capacity in New South Wales. In 2020-21, 1.5 GW of VRE committed to connect in New South Wales, and expansion of the supply chain is an anticipated outcome of the Roadmap."
>
> "In some Development Pathways, a material expansion of the supply chain would be required to fulfil the development pathway trajectories. Based on independent analysis provided to the Department by MBB Group, a maximum build of more than 2 GW to 3 GW per year could be challenging to sustain, due to labour and material constraints. In all Development Pathways (other than the Supply Chain Adjusted Pathway), more than 3 GW of new installations would need to be delivered in at least one year of the next decade, and therefore bring risk that the targeted developments would not be able to be achieved in practice due to these potential civil construction constraints. Furthermore, the annual installation volumes in these Development Pathways vary significantly from year to year, potentially making it more challenging to mobilise and maintain the workforce and construction plant required to deliver the Development Pathway."
>
> "This could lead to increased development costs, for example, due to competition for key equipment and labour, heightened risk of delays in approval processes, and potentially greater challenges in fostering community support."[13]

Supply Chain Risks

Supply chain constraints is not a phenomenon unique to Australia. It is being experienced globally, especially as a number of other major economies are seeking to acquire the same necessary equipment and resources (eg, cement and steel) for delivering projects required for reaching their own Renewables and Carbon Emission Reduction targets within similar timeframes as Australia. That is, there is effectively a global "competition" for key resources required for the transition of energy systems to an increasing level of renewables (and firming), exacerbating supply chain constraints already seen as a result of COVID-19 and Russia's invasion of Ukraine. And this competition for resources, etc is not only within the energy sector. There is also competition between different sectors as Governments also seek to undertake other major infrastructure projects (eg, in the Transport Sector).

This has been highlighted by the IEA at a global perspective in its Energy Technology Perspectives 2023 report:

[13] AEMO, New South Wales Development Pathways Report. Report can be accessed here.

> "It is far from certain that global supply chains needed to support the deployment of clean energy technologies projected in the (IEA's) NZE Scenario will be able to be expanded at the required rates."[14]

Additionally, the National Renewable Energy Laboratory have produced a number of reports looking at Supply Chain issues, for example, America's Strategy to Secure the Supply Chain for a Robust Clean Energy Transition[15]. This has also been highlighted by McKinsey in its article Building resilient supply chains for the European energy transition, noting:

> "Supply chains for key energy transition technologies are already stretched, and recent geopolitical events have further exacerbated the situation…. These events and trends could amplify five risk areas related to supply chains: volume shortage, price volatility, geographical-sourcing dependency, long lead times, and issues with quality…. Supply chain risks can affect procurement, manufacturing, logistics, and construction. These risks have the potential to cause serious disruption for all key energy transition technologies…. There are also risks to an orderly energy transition related to the transportation of key technologies to the location of installation. These risks generally manifest as volume shortages. Logistics is likely to become increasingly challenging in offshore wind. Increases in both capacity installation and, as a result of rapid technological advancement, turbine size are likely to lead to a shortage of appropriate installation vessels starting in 2025. We project that in 2026, about three GW of planned capacity will not be able to be installed because of the undersupply, and the size of this gap will increase over time. The lead time for supersized installation vessels is considerable, which means that without prompt action, this mismatch between supply and demand is likely to be of considerable duration…. Skilled labor to work on RES in the European Union is already scarce today, and employers experience a high level of competition from adjacent sectors. In 2019, for example, there were 1.8 job vacancies in Germany for every unemployed energy technician. This labor scarcity will get significantly worse: the demand for blue- and white-collar workers to develop and construct wind and solar assets in the European Union, for example, is expected to increase by a factor of between three and four by 2030…. Labor shortages will be further exacerbated by an increasing demand for workers to operate and maintain these wind and solar projects; the lack of technicians is expected to be a particular pain point."[16]

These Supply Chain Constraints in the Australian context were also recently highlighted in the AEMO webinar on its Engineering Roadmap to 100% Renewables in which reference was made to the potential need for 40 synchronous condensers for managing the system at 100% renewables, with AEMO personnel noting the supply chain risks in terms of being able to source a total of 40 new synchronous condensers – particularly as a number of other countries would also be seeking to acquire new synchronous condensers at the same time as those countries also moved to higher levels of renewables.

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[14] Energy Technology Perspectives, page 5. The report can be accessed here.

[15] The report can be accessed here.

[16] The article can be accessed here.

This supply chain risk with respect to synchronous condensers was also touched on in AEMO's "2022 System Strength" report, December 2022:

> "The scale of work required to deliver the system strength standards set in this report should not be underestimated. AEMO and SSSPs, as well as many other organisations across the Australian electricity sector, will need to apply concentrated effort to obtain the necessary system strength services and ensure power system security for the east coast of Australia."[17]

The shortfalls and standards set in this report prepare for the *Step Change* scenario. Should industry need to plan for a high or 100% renewable energy penetration scenario in the very near term, or if any new earlier-than-expected generator retirements are announced, additional services will be required more urgently. This report includes the results of a study of a 100% renewables scenario, under which the equivalent of up to 40 new synchronous condensers could be needed to meet system strength requirements. The report notes:

> "Severe supply chain limitations present risks for delivery of a range of infrastructure options. The scale of system strength needs in the future and the potential for long lead times make it clear that early engagement on system strength services will be crucial for ensuring a secure power system. "

Compounding of risks

In the IASR, AEMO explain its approach to how it undertakes Sensitivity analysis, stating:

> "Sensitivity modelling allows for the testing of the resilience of modelling outcomes and candidate development paths against this uncertainty in inputs, and increases confidence in the robustness of the optimal development path and the individual actionable projects it contains. This may involve change to a single variable (most common), or multiple variables (less common, as it is then unclear in isolation which variable was the primary driver for any result variation)."[18]

That is, in undertaking this sensitivity analysis, it is AEMO's preference to consider change to a single variable, rather than the potential for a "compounding" effect due to changes in two or more variables in relation to all of the factors required for the successful transition of the NEM to increasing levels of renewables while also ensuring system security and reliability.

This approach by AEMO in the context of the IASR and, thus, the materials that will flow through to the 2024 ISP, contrasts with the advice presented by AEMO Services in its December 2021 New South Wales Pathways report:[19]

> "A Development Pathway, of any form, will require significant coordination and investment to deliver the IIOs [Infrastructure Investment Opportunities], and the economic efficiency of any Development Pathway is contingent on the assumptions eventuating as expected. Delays in network infrastructure developments, tender

[17] AEMO's 2022 System Strength Report, December 2022, page 5. The report can be accessed here.

[18] Draft 2023 Inputs, Assumptions and Scenarios Report, page 24.

[19] AEMO, New South Wales Development Pathways Report. Report can be accessed here

auctions, long-duration storage development, and generation connection and commissioning will all be key delivery variables for the Roadmap."

"Of particular importance is the reliability of the Development Pathway and the resilience of each Development Pathway to single and compound events. In particular, the reliability of New South Wales electricity supply depends on the commitment of Snowy 2.0 and Kurri Kurri projects, and the anticipated development of Tallawarra B peaking gas turbine. Together these three projects are expected to provide over 3 GW of firm capacity to the New South Wales grid progressively from 2023-24 (1 GW) to 2026-27 (an additional 2 GW). AEMO's 2021 ESOO highlighted the importance of these projects in maintaining reliability below the Interim Reliability Measure (to 2024-25) and the reliability standard (to 2030-31)."

"The development of the HumeLink transmission project is necessary to enable the Snowy 2.0 capacity to provide firm supply to central New South Wales consumers. This project is yet to receive regulatory approvals."

"With such significant firm capacity developments underpinning the reliability assessment, the risk of delays to any or all of these projects may significantly increase the risk of achieving the IIOs under all Development Pathways."

A different approach to assessing risk

In its Energy Technology Perspective 2023 report, the IEA sets out its approach to risk analysis in the following terms:

"Both governments and businesses can use a risk assessment framework to evaluate supply chain risks and vulnerabilities. The IEA has developed such a framework, first presented in the *Securing Clean Energy Technology Supply Chains* report, published in July 2022…. For the purpose of this report, analysis has been significantly expanded to provide a more comprehensive risk assessment framework that analyses a range of vulnerabilities that may prevent energy and technology supply chains from being secure, resilient and sustainable while scaling up and developing at the pace required for climate objectives…. Two criteria are typically used in risk assessments, which each element can be tested against:

- Likelihood: How likely is it that a given clean energy or technology supply chain fails to expand at the pace required to meet climate objectives in a secure, resilient and sustainable way?
- Impact: What is the effect of failing to achieve security, resilience and sustainability while expanding a given clean energy or technology supply chain?"[20]

"The framework is designed to be applied to current supply chain structures, with a view to assessing risks in the short to medium term at the global, national or regional level towards a given targeted clean energy transition if no action were to be taken. We have applied the framework here to analyses of the preceding chapters to assess potential risks for deployment delays, and failure to achieve security, resilience and sustainability

[20] Energy Technology Perspectives, pages 362-3. The report can be accessed here.

from a global perspective. We focus on the gap between near-term prospects for scaling up clean energy and technology supply chains based on planned projects and the ambition required in the Net Zero Emissions by 2050 (NZE) Scenario."[21]

The IEA's approach to assessing risks appears to be similar to the "Risk Averse" approach referenced in the AER's Cost Benefit Analysis Guidelines: Guidelines to make the Integrated System Plan actionable.[22]

As mentioned above, the AER's guidelines do no constrain AEMO to using only the "Risk Neutral" approach it currently applies in the preparation of the ISP, with the result that AEMO has the ability to also use the "Risk Averse" approach (or both the "Risk Neutral" and the "Risk Averse" approach). Delta's submits that this would provide significantly greater detail as to the prospect of a preferred scenario being achieved and the associated risks – and, thus, result in a far more informed decision making process by NEM participants, investors, Governments and stakeholders.

The different outcomes in terms of using these different approaches to risk are set out in the AER's Guidelines in the following terms:

> "Once AEMO has performed its scenario analysis, it will rank development paths using a risk neutral decision making approach.
>
> Then AEMO may apply other decision making approaches. These should have been identified in its ISP methodology and may include a risk averse decision making approach(es). Under a risk averse approach, the ranking may be different.
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> If the future were known, development paths could easily be ranked from the development path with the highest net economic benefit (the optimal development path) to the development path with the lowest net economic benefit. However, investment decisions are subject to uncertainty and risk. The actual net economic benefit of each development path is not known ex-ante.
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> Given this, decision makers can estimate the net economic benefit of each development path across a range of possible future scenarios (see 'Step one: scenario analysis'), and then apply a range of different decision making approaches to evaluate and rank them. These decision making approaches differ (in part) based on their treatment of risk, which can evaluate development paths on a risk neutral, risk averse or risk taking basis. Evaluating projects on a risk neutral basis is the standard approach used in most policy contexts, but a risk averse basis can be appropriate when the risks are concentrated on a particular group or are large even when shared/spread across a large population.
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> Risk neutral and risk averse decision making approaches both account for risk. However:
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> - A risk neutral decision making approach ranks development paths based on their expected value. This means weighting the net economic benefit in each

[21] Ibid, pages 362-3.

[22] Cost benefit analysis guidelines: Guidelines to make the Integrated System Plan actionable.

scenario based on likelihood of the scenario occurring, which could be absolute or relative to the other scenarios. As such, a risk neutral decision making approach prioritises transmission investment risks based on their likelihood, with judgement used to assess likelihoods.

- A risk averse decision making approach does not rank development paths based on their expected value. Rather, it (implicitly or explicitly) weights the net economic benefit in each scenario to reduce variability or the risk of a negative outcome occurring. This is because it places a higher value on reducing the risk of a negative outcome occurring than the likelihood of its occurrence. As such, a risk averse decision making approach uses judgement on risk tolerances to prioritise transmission investment risks. We note there are a number of different risk averse decision making approaches that can be applied, and some do not apply explicit weights to scenarios."[23]

Conclusion

Delta has not commented on the four scenarios outlined in the IASR, and will await the draft 2024 ISP before providing a detailed analysis and assessment of those scenarios and the implications thereof. However, at this stage of the analysis of the inputs and assumptions that will be considered in the development of the 2024 ISP, Delta believes priority should be given to assessing AEMO's approach to the sensitivity analysis it proposes to undertake.

As set out in the IASR, sensitivity analysis is an important part of the development of the ISP as sensitivity analysis is designed to test how significant potential events or key assumptions affect the outcomes in the scenarios, and sensitivity modelling allows for the testing of the resilience of modelling outcomes and candidate development paths against this uncertainty in inputs.

Sensitivity analysis is therefore important in terms of assessing the risks attached to the various scenarios – and especially the "Preferred Scenario". Understanding risks in the areas of system security and reliability are especially important for all NEM participants, governments, investors and consumers because of their high impact effects. It is therefore critical that AEMO particularly analyse high impact risks – and especially those risks that have been clearly, and consistently, identified by the IEA, a range of government agencies and energy sector analysts.

AEMO references three sensitivities in the IASR that it proposes to undertake – but as set out above, two of these sensitivities (dealing with offshore wind farm developments and employment considerations) are framed in such a way as to effectively exclude consideration of the well documented significant downside risks in these two critical areas.

Delta is therefore particularly concerned that the sensitivity analysis AEMO proposes to undertake does not have any real regard to the prospect of these (and other) well documented, high impact downside risks. Additionally, the approach AEMO prefers to take in

[23] Cost benefit analysis guidelines: Guidelines to make the Integrated System Plan actionable. Pages 29-30.

its sensitivity analysis effectively excludes consideration of the impact of a “compounding” of downside risks in terms of the timely delivery of a number of inter-related projects that are required in the transition of the NEM to higher and higher levels of renewables (and firming) without risking system security and reliability.

Delta therefore strongly recommends that AEMO expand its sensitivity analysis to include well documented, high impact risks such as: supply chain constraints (both across the board and in specific project areas such as offshore wind) and labour shortages. Additionally, this work should include analysis of the compounding of risks in these afore-mentioned areas, as well as with respect to inter-related projects (eg, in line with the approach presented by AEMO Services in its NSW Development Pathways report).

This submission also highlights the very different approach the IEA takes in terms of assessing supply chain risks in the energy sector in terms of delivering government renewables and emission reduction targets versus AEMO’s approach in its analysis. The IEA’s approach has a far greater emphasis on downside risks versus AEMO.

Delta’s assessment is that this is because AEMO only adopts a “Risk Neutral” approach in its analysis. This is consistent with the AER’s Cost Benefit Analysis Guidelines – but, as set out above, these Guidelines also allow AEMO to adopt a “Risk Averse” position, and potentially use both risk assessment approaches in its analysis and, thus, the ISP.

Delta believes AEMO should prepare its detailed analysis based on the adoption of a “Risk Averse” position, in addition to its current approach of only using a “Risk Neutral” approach – with the inclusion of a number of significant, well documented high impact downside risks in its sensitivity analysis and the subsequent assessment of the implications for its ISP scenarios. This would provide significantly greater detail as to the prospect of a preferred scenario being achieved and the associated risks – and, thus, result in a far more informed decision making process by NEM participants, investors, governments, consumers, stakeholders, etc.

As the ISP is a primary driver for key investment decisions, it is critical that the analysis that goes into the preparation of the next ISP – and, particularly, via AEMO’s IASR – is rigorous and recognises the major risks to achieving the modelled outcomes under its various scenarios. If this is not the case, there must be a very high risk that the resultant outcomes and conclusions in the 2024 ISP could drive imprudent investment decisions, which would unnecessarily drive-up costs of the power system and increase electricity bills for households and business.

To discuss further please contact me at joel.aulbury@de.com.au.

Yours sincerely,

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