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Mr Ashok Kaniyal
Project Leader – Enhancing investment certainty in the R1 process
Australian Energy Market Commission

By online Submission

Dear Mr Kaniyal

Enhancing Investment Certainty in the R1 process

AEMO welcomes the opportunity to provide a submission to the AEMC's consultation paper on Enhancing Investment Certainty in the R1 Process.

Australia is connecting more renewable generation capacity per capita than any country in the world, with AEMO receiving a record number of new applications year on year. AEMO is committed to supporting the transition to greater renewable energy generation through improvements to the transparency, consistency, practicality, timeliness and efficiency of connections processes.

Key to this commitment is the Connections Reform Initiative (CRI) collaboratively established by AEMO and the Clean Energy Council (CEC) to address barriers in the increasingly complex connections process in the NEM. AEMO is also managing the Connections Process Trials Program and launched its world-first Connections Simulation Tool in November 2022 to allow proponents to run simulation studies against AEMO's NEM power system model.

AEMO welcomes the CEC's rule change proposal regarding the R1 assessment process. AEMO views the current framework as largely able to provide suitable flexibility for positive, timely engagement for well-prepared connection applications, but is supportive of the CEC's efforts which can complement recent and ongoing connection reform initiatives. AEMO agrees that increased transparency and consistency is likely to support proponents of connection projects, in particular through the establishment of processes for conditional approval with appropriate discretion, publication of a materiality guideline, and flexibility of approval for non-material deviations from negotiated standards.

AEMO also notes there are a range of reasons for delays associated with the R1 assessment process. Common causes of delays include proponents' do not meet negotiated access standards previously agreed under National Electricity Rules (NER) 5.3.4A, models and data from some proponents are of poor-quality and do not meet requirements for inclusion in the broad modelling of the power system, shortage of proponent resources that can address issues as they arise, and turnaround times required for proponents or their consultants to provide clarifications/updates. A number of these issues will not be addressed by regulatory measures on either AEMO or the NSPs in the connection process and are better dealt with through improved practices between all parties involved in the connection process – the developer, the OEM, the NSP and AEMO. That said AEMO understands the value to developers of more certainty in the connection process and that some level of regulatory change may assist in providing that.

Attachment 1 sets out AEMO's detailed responses to AEMC questions regarding the CEC's proposals, summarized briefly below:

Support

- *A conditional approval mechanism*: AEMO supports an explicit NER mechanism for conditional approval where issues are minor, subject to AEMO and NSP discretion, and with effective frameworks for compliance enforcement and cost-recovery.
- *Flexibility for non-material deviations*: AEMO supports providing explicit flexibility in NER 2.2.1(e)(3) to accept a standard lesser than the agreed standard during the application process, where feasible and justifiable by the proponent, and subject to AEMO and NSP discretion.
- *AEMO guidance:* AEMO supports the development of an AEMO guidance regarding R1 issues management and materiality. Some change in scope is proposed, noting AEMO considers it would not be possible to define materiality in a way that applies across all connection points.

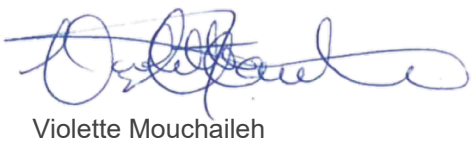
Areas of concern that require further consideration from AEMC

- *Conditional approval compliance framework*: Any compliance framework needs to provide meaningful incentives for proponents to resolve deferred R1 issues as there are operational consequences for non-compliance. AEMO (and NSPs if necessary) should have an explicit right to recover costs of compliance-management directly from non-compliant generators.
- *Ex-ante determination of materiality thresholds for a project*: AEMO does not support the ex-ante determination of materiality thresholds at the NER 5.3.4A stage as it would undermine incentives to achieve compliant GPS and may increase NER 5.3.4A approval timeframes.
- *Type 4 category – proponent to resolve material issues*: AEMO does not consider it appropriate to reverse the onus of responsibility from the proponent to demonstrate compliance, to the NSP to prove non-compliance as it does not incentivise compliance and the development of high quality R1 packages.

More broadly, AEMO is supportive of CEC's proposals to improve the R1 process where NER incentives are preserved for proponents to comply with generator performance standards agreed through NER 5.3.4A. The aim is to ensure robust, compliant applications are approved quickly, but it is critical that poor applications and models, for example those demonstrating poor technical capabilities of the physical plant; poor design of the reticulation network; and/or that connect in an already over-subscribed area of the power system are not relieved of their obligations to demonstrate compliance. Doing so may discourage proponents from preparing robust, high-quality applications, and will likely lead to a deterioration in the quality of future applications and subsequent speed of approvals.

Should you wish to discuss any of the matters raised in this submission, please contact Margarida Pimentel, Group Manager – Onboarding and Connections at Margarida.Pimentel@aemo.com.au.

Yours sincerely,



Violette Mouchaileh
Executive General Manager – Reform Delivery

Attachments: AEMO responses to consultation paper questions

Attachment 1: AEMO Responses to Consultation Paper questions

QUESTION 1: DO YOU AGREE THAT THE ABSENCE OF NER OBLIGATIONS ON PARTIES TO THE R1 PROCESS IS CONTRIBUTING TO POOR ENGAGEMENT AND PROCESS DELAYS?

AEMO notes there are a range of reasons for delays associated with the R1 assessment process. Common causes of delays include proponents' do not meet negotiated access standards previously agreed under National Electricity Rules (NER) 5.3.4A, models and data from some proponents are of poor-quality and do not meet requirements for inclusion in the broad modelling of the power system, shortage of proponent resources that can address issues as they arise, and turnaround times required for proponents or their consultants to provide clarifications/updates. AEMO also notes that aspects of the existing framework, for example the open access framework, may incentivise proponents to rush the design of plant in order to get connected or approval of their connection ahead of other proponents, particularly in capacity constrained areas. Additional obligations in the NER will likely not address such issues, and therefore will not improve the engagement or timeframes for those projects that have historically experienced poor engagement and process delays.

While AEMO sees the current framework as providing reasonable flexibility for positive engagement and process timing for well-prepared connection applications, it also acknowledges the benefits to proponents of some regulatory reform. AEMO acknowledges that many processes within the current connections framework are not set out in the NER, which means that there can be a lack of transparency and consistency for proponents in how these processes are applied and their likely outcomes.

AEMO considers that the benefits of prescription in the NER need to be carefully weighed against the potential for additional complexity or inflexibility to resolve issues which is ultimately counter-productive. Additional complexity could increase timeframes and ambiguity regarding the process, while inflexibility could mean that NSPs and AEMO are prevented by the NER from working with proponents to ensure the optimal outcome for all parties.

QUESTION 2: HOW DO CONNECTING PARTIES CURRENTLY MANAGE UNCERTAINTY REGARDING TIMEFRAMES FOR THE R1 MODELLING PACKAGE ASSESSMENT AND TO WHAT EXTENT DOES PUBLIC DATA (E.G. AEMO CONNECTION SCORECARDS) ASSIST?

AEMO suggests connecting parties are best placed to respond to this question, but notes that AEMO has initiated a number of measures to reduce uncertainty for the R1 Modelling package assessment and supporting the provision of public data, including the AEMO Connection Scorecard; generator connection R1 Submission checklist; development of agreed project plans across AEMO, the NSP and the proponent; and related guides/factsheets. AEMO continues to enhance and clarify its Connection Scorecard to ensure that stakeholder insight into the process is optimised, for example by being clear about the stages where timeframes are predominantly impacted by proponents (e.g. progressing through the "preparing for registration" stage is predominantly impacted by proponents).

QUESTION 3: DOES THE EXISTING PROCESS FOR RENEGOTIATING TECHNICAL PERFORMANCE STANDARDS CREATE BARRIERS FOR ENABLING CONNECTING PARTIES TO NEGOTIATE EFFICIENT SYSTEM SECURITY AND RELIABILITY OUTCOMES?

The background to this question in the consultation paper focuses on the inability of AEMO, NSPs and connecting proponents to revise down a GPS during the R1 process. Firstly, AEMO notes the R1 assessment phase should not become a de-facto re-prosecution of NER 5.3.4A, allowing GPS to be readily revised down, because this will undermine the purpose of NER 5.3.4A.

It is critical that the primary objective of the R1 assessment process should be to demonstrate that, in its detailed design or as-built state, (accounting for plant design changes due to learnings gained or site/equipment limitations discovered during the detailed design or construction phase) the plant will meet the

GPS agreed under NER 5.3.4A (when the plant was in its initial design state). However, if meeting GPS is not practical given proven physical equipment or site limitations; and if a deviation is unavoidable and does not pose a threat to system security and quality of supply, then the secondary purpose of the R1 phase is to permit negotiation to resolve issues. Creating a mechanism and expectation in the NER 5.3.4A phase of the process to readily revise GPS to accommodate changes in plant would likely reduce incentives for Engineering, Procurement and Construction (EPC) contractors to target compliance with the agreed GPS as the primary objective.

On a project level, across a number of projects, AEMO has implemented a diverse range of improvements which should, among other benefits, enable efficient negotiation at the R1 assessment stage. These include:

- collaborative pre-application identification of critical issues for both models and GPS;
- the development of a structured delivery plan for R1 assessments (including timelines and responsibility allocation across parties);
- leveraging of proponent and NSP studies where possible to remove duplication;
- materiality assessments for R1 in consultation with the NSP and proponent (for example review of outstanding items from the NER 5.3.4A process to ensure that these are appropriately addressed, review of model changes and their performance impacts);
- adjustments of GPS to reflect installed/design performance where changes from the original GPS are not seen to impact system security (for example updates to the GPS to reflect the performance of enabling of a functionality (such as QV droop control) that was not available at the NER 5.3.4A stage); and
- conditional approvals to enable registration to proceed with issues to be resolved during commissioning (for example allowing registration with a commitment to provide a complete document package post-registration addressing minor issues).

However, applying NER 5.3.9 for alterations to plant at R1 assessment can act as a barrier to the negotiation of efficient system security and reliability outcomes. This is because the R1 process is performed after NER 5.3.4A has been completed, access standards have been agreed and a connection agreement has been executed. Applying NER 5.3.9 can be problematic because NER 5.3.4A(b)(1A) requires that a revised performance be not less onerous than the previously agreed performance standard.

AEMO therefore considers there are likely benefits in modifying NER 5.3.9 and NER 5.3.4A to provide for flexibility to reduce performance in an individual technical requirement, based on engineering judgement, where there is an overall benefit to power system security, remediation costs and timeframes. AEMO notes that review of NER 5.3.9 under the CRI is well progressed. It is anticipated that a key recommendation of this work may be to modify NER 5.3.4A(b)(1A) such that a lesser standard may be agreed under certain circumstances, including where deemed appropriate using engineering judgement. The review seeks to address issues at the R1 stage and beyond. AEMO further suggests that there be consideration to co-locate and/or harmonise elements of NER 5.3.9 and 4.14(p), which may provide greater clarity to proponents and this may also form part of recommendations via the current review.

Naturally, any revisions to the performance of plant will require additional time at the R1 assessment stage of the connection. It would be beneficial for this reform to consider other changes that will assist with amendments to performance during the R1 process, such as use of NER 5.3.9 and NER 5.3.4A.

QUESTION 4: DO YOU AGREE THAT THERE ARE PROBLEMS WITH THE WAY THE R1 PROCESS SEEKS TO RESOLVE EXTERNAL SYSTEM SECURITY ISSUES?

In AEMO's experience, issues identified through R1 assessment are not typically related to external conditions (the West Murray Zone being a notable exception). This is because during the NER 5.3.4A application stage, a range of current and future network scenarios are evaluated by the proponent and NSP. These scenarios

are accounted for to ensure that agreed GPS support robust generating system design and control systems. Further, network changes, which NSPs have visibility of, are committed incrementally meaning that when a new project becomes committed, studies would have identified any problems likely to impact that connection. The likelihood of “external” changes is therefore substantially mitigated. AEMO is not aware of any recent projects delayed at the R1 assessment stage due to external issues.

AEMO notes that there is limited potential for external changes to impact a proponent's ability to meet its GPS as agreed under NER 5.3.4A, though this does not impact the R1 assessment stage. This could very rarely occur where there are delays between a proponent agreeing its GPS under NER 5.3.4A and executing an agreement with the NSP. This is because project models are not released for external parties to consider in their studies prior to execution of the agreement and are therefore not accounted for in subsequent projects assessments where connecting in another network (AEMO and the NSP of the original project will have visibility).

Such a scenario means the possibility that there could be external changes that were not accounted for when originally agreeing the GPS. This external impact would be addressed through renegotiation of NER 5.3.4A, as it would not have progressed to the R1 assessment stage. It is a reasonably rare occurrence and has not recently arisen as far as AEMO is aware.

The potential for, and impacts of, network changes is flagged in AEMO’s letter setting out advice to connection NSPs under NER 5.3.4A(d) and 5.3.4B(j). This letter states that the conclusions documented are only valid for six months (with an intention to increase this period to 12 months in the near future); and that if a connection agreement is not entered into within that period, the proponent must revert to the NSP and AEMO for further advice. The letter also specifies that changes to the network may impact the proponent’s ability to meet the performance standards; and that this could result in a need to retune or coordinate plant control system settings, modify or add ancillary plant, or other measure to meet the performance standards.

Ideally the NER should require the party best placed (including actions from the proponent and/or the NSP) to resolve the technical matter to do so as quickly and as cost effectively as possible. In limited cases where network conditions do change unexpectedly, AEMO considers that there may be potential efficiencies in NSP resolution, such as by modifying the settings of dynamic network plant, installing ancillary equipment or even contracting services, however this resolution may not ultimately be the most expeditious.

The system strength framework is cited by the CEC as evidence that NSP resolution is effective. Critically however, under that framework the relevant TNSP (the System Strength Service Provider (SSSP)), is responsible for achieving the network standard, with this being a prescribed service. As this is a prescribed service, the SSSP is expected to plan and act to ensure that sufficient system strength services are available for the forecasted level. However, under the CEC-proposed model, the NSP is to resolve issues during the connection process, posing practical limitations to its benefit.

Lastly, AEMO notes that it does not support the use of 'internal' and 'external' to characterise changes during the R1 phase. Changes to the subject connection will also contribute to changes externally. Consistent with the current process, issues identified during the connection phase of a generator are more appropriately characterised as either pre-existing (“without” the connection) or caused or exacerbated by the connection of the generator (“with” the connection). The NER 5.3.4A and R1 processes are designed to ensure a system that is secure and stable without the connection, remains so with it.

QUESTION 5: HOW MATERIAL IS THE ABSENCE OF AN INDEPENDENT, EXTERNAL DISPUTE RESOLUTION PROCESS FOR THE EFFICIENT NEGOTIATION OF TECHNICAL PERFORMANCE PARAMETERS BEFORE REGISTRATION APPROVAL?

AEMO considers it critical that parties collaborate to ensure the safety, security and reliability of the power system and streamline the connection of generation to the system and supports measures for a targeted, expeditious and transparent dispute resolution process. However, AEMO does not consider that the absence

of an independent and external dispute resolution process impacts the efficient negotiation of GPS during R1 assessment.

AEMO considers existing processes to be flexible and responsive and therefore questions the value, efficiency, and logistics of appointing a third-party facilitator. Points of difference regularly arise between AEMO, NSPs and proponents in progressing an R1 assessment and are typically successfully resolved at the project level through proactive issues identification, constructive discussions and clear communication. Where issues remain unresolved, there are escalation pathways to enable further consideration of issues by senior management.

Broadly, where other proposed reforms such as transparency measures can achieve a similar improvement without these delays, they should be preferred.

QUESTION 6: WOULD THE PROPOSED TIMELINES PROVIDE SUFFICIENT CERTAINTY ABOUT THE DURATION OF THE R1 MODEL ASSESSMENT PHASE?

PROPOSAL

The CEC proposes that:

- *AEMO advises NSPs on AEMO advisory matters within 20 business days of the submission of the R1 package, and*
- *at the same time, the NSP completes its review of the R1 model within 30 business days of the submission of the R1 package.*

Achieving a timely connection process requires all parties to take ownership of their responsibilities in the process. AEMO and NSPs should be clear and specific in their feedback, with a strong evidence base and prioritising critical issues for resolution, developers must be responsive to evidence of critical project issues and ready to resolve these, and equipment manufacturers must be accessible and agile in addressing model deficiencies.

AEMO does not oppose the application of a time limit to respond (as opposed to a time limit to approve), on the basis that this timeframe commences on provision of a complete R1 package. Based on the experience with the NER 5.3.4A process, which is typically an iterative process, AEMO notes that prescribed timelines to respond are not likely to reduce overall timeframes associated with the R1 Model Assessment phase. Improvements in the quality of data and modelling provided to AEMO by proponents, and responsiveness and availability of developers and OEMs, may have a more substantive impact on timeframes and lead to a reduction in the number of iterations and speed of resolution of issues.

AEMO generally considers the proposed timelines reasonable (where it is applied in a similar manner as NER 5.3.4A) but notes that this will ultimately be dependent upon the final NER design measures of the R1 process. Further, the timelines should include a reasonable endeavours qualification similar to other timebound obligations in the NER for AEMO and NSPs.

QUESTION 7: DO YOU AGREE WITH THE CEC'S PROPOSAL FOR MATERIALITY GUIDELINES, INCLUDING WHETHER THEY COULD APPROPRIATELY DEFINE MATERIALITY THRESHOLDS FOR THE CATEGORISATION OF CONNECTION TYPES?

PROPOSAL

The CEC proposes that a formal NSP assessment of materiality would be determined individually for each connection in accordance with a new guideline developed by AEMO and through negotiations between connecting parties as the R1 package is developed.

AEMO agrees that the development of AEMO guidance would provide value to proponents as it would provide transparency and consistency to support the R1 assessment process and any NER reforms that are introduced. Instead of the materiality guidelines as proposed, AEMO considers that the scope of guidance it

provides should focus on R1 issues management more broadly and be used as indicative, non-binding guidance.

For example, AEMO could prepare a fact sheet describing common issues encountered through R1 assessment, principles and criteria underpinning decision-making (including on mechanisms proposed by the CEC proposal), potential resolution options, how issues can be best managed to limit delays, and a process for identification of the party best placed to address the types of issues that are likely to arise (where the NER support this). This would provide greater transparency and certainty to proponents on how issues are managed and solved in a timely and economic manner and how assessments and determinations of materiality would therefore be made.

Importantly, "materiality" of a GPS deviation is strongly dependent on the connection point, locational factors, size of the proposed connection and changes in the power system. What is "material" to one proposed connection may not be "material" to another proposed connection. This means that any such guideline could not quantitatively define materiality thresholds for performance parameters. Further the guideline should not prescribe the treatment pathway for any "type" of R1 assessment deviation as the assignment of any NER mechanism to facilitate an R1 assessment should be at the NSP and AEMO's discretion based on the factors associated with an individual connection.

QUESTION 8: WHAT ARE YOUR VIEWS ABOUT THE PROPOSED PATHWAY FOR EACH CONNECTION TYPE, INCLUDING THE ASSIGNMENT OF OBLIGATIONS AND THE ALLOCATION OF COSTS AND RISKS?

PROPOSAL

The CEC proposes that the relevant 'Type' be proposed by the applicant during the R1 stage, and subsequently agreed or rejected by the NSP in consultation with AEMO. NSPs would be required to provide clear and justified reasons to disagree with the applicant's proposed Type self-classification, following consultation with AEMO. The Type categories that a connecting generator would be required to self-assess under, and that NSPs would need to approve, are:

- Type 0: NSPs and AEMO would confirm Type 0 if there are no deviations between NER 5.3.4A GPS and R1 package
- Type 1: NSPs and AEMO would confirm registration if there are non-material or minor deviations from the NER 5.3.4A GPS
- Type 2: NSPs would be required to take actions to mitigate the impact on generator's technical performance from changes due to external network changes
- Type 3: NSPs and AEMO would define and enforce conditional registration specifying that minor issues be resolved by generators in commissioning or in full operation
- Type 4: NSPs would evidence and specify why an applicant needs to resolve material issues with the R1 package before registration is granted.

Defined pathways to registration

For applications that have differences from the agreed GPS, as contemplated by Type 1 to 4 categories, AEMO considers that all options should be considered for remediation by NSPs and AEMO on the basis of implementation timeframes, technical and commercial feasibility and impacts and this should include actions from the proponent and actions by the NSP.

AEMO notes the proposed self-assessment types are a way of trying to avoid the NSP and proponent falling under the NER 5.3.4A – 5.3.9 – 5.3.4A "loop" where connection agreements need to be varied, and GPS renegotiated. However, it is critical that the design of any NER framework ensure that allowance for non-material deviations, conditional approval and external issues does not lead to projects that should most

appropriately have undertaken a renegotiation and reassessment of GPS being pushed through registration under other mechanisms. This would reduce the incentives for proponents to achieve negotiated standards and could potentially reduce the quality of applications, designs and R1 models. It is also likely to increase the number of problems to be resolved at later stages in commissioning, where the commercial and technical options for rectification are more limited.

AEMO sees benefit in the introduction of the proposed mechanisms in the NER (for example to enable NSPs and AEMO to have regard to materiality in assessing deviations from agreed performance standards, or to provide conditional approvals). The benefits of these measures would be to provide an explicit and transparent means for AEMO and proponents to apply such provisions where required. However, AEMO considers that defining set pathways for different 'types' of scenarios may introduce inflexibility and inefficiently limit the discretion available to NSPs and AEMO to apply good engineering judgement as appropriate.

Rather than introducing these fixed pathways to registration based on scenario 'type', NSPs and AEMO should be given flexibility to apply the NER mechanisms to best meet the requirements of the individual scenario, based on good engineering judgement and taking into account their responsibilities for power system security. Transparency on how these mechanisms would apply would be provided through AEMO guidance on R1 issues management (as described above).

Further, where a proponent deviates from the agreed GPS at the R1 assessment phase, the onus should lie with the proponent to convince the NSP and AEMO why a particular mechanism should apply to that deviation. For example, that a deviation is immaterial or that it is appropriate for a condition to apply.

AEMO considers it appropriate that the onus should be on the proponent as it preserves the incentives for well-justified and high-quality applications that are critical in assisting AEMO to continue to meet its system security responsibilities. Should AEMO be required to actively demonstrate why a particular mechanism should not apply, this is likely to result in inefficient redistribution of AEMO resources from other connections activities and could be compounded across multiple projects. Proponents, however, would face no disincentive to 'test' AEMO positions, seeking a better outcome, even where proponents are well aware of issues that would make that highly unlikely. This would impact multiple AEMO teams and create delays in progressing other connection projects.

Lastly, it is critical that AEMO, as the market operator and party responsible for registration and for system security, continue to be empowered to make key decisions in the R1 assessment process. In seeking to improve efficiency in the R1 process, the ongoing safety and security of the power system must not be undermined.

Type 0: No differences in performance

AEMO reiterates that the primary objective of the R1 assessment process is for proponents to demonstrate that they meet GPS in their entirety, hence each proponent should be aiming Type 0 and should not be incentivised to seek an alternative 'type' pathway prior to demonstrating why they cannot meet their GPS. Any of the proposed mechanisms for deviation should be applied as a last resort so that these mechanisms do not undermine the agreed GPS set in the NER 5.3.4A process.

Type 1: Non-material differences in performance

Projects should not be delayed for immaterial issues, rather the materiality of impacts to system security of a GPS deviation should be determined by the NSP or AEMO using a consistent and fit for purpose assessment and the most recent and relevant information.

AEMO agrees that there would be benefit in providing explicit flexibility in NER 2.2.1(e)(3). It would welcome the flexibility in the NER to be able to accept a standard lesser than the agreed standard during the application process, where it is feasible to do so and can be justified. Critically, however, AEMO is ultimately responsible

for power system security. AEMO therefore considers that the materiality of impacts to system security of a GPS deviation should be ultimately determined by the NSP and AEMO on a case-by-case basis (using a consistent and fit for purpose assessment and the most recent and relevant information).

AEMO does not support the ex-ante prescription of materiality thresholds as proponents should primarily aim to fully meet their GPS. The negotiation of materiality thresholds during the NER 5.3.4A process is likely to undermine the performance standard set during the NER 5.3.4A process by incentivising commencement of the design process at the lower end of the performance level, and disincentivising drive to meet the agreed GPS. Further, when making an assessment of materiality in the deviation of performance against one technical requirement, this must be considered in the context of any deviations for other technical requirements being considered under the materiality threshold. This assessment is most appropriately performed during the R1 assessment process and would ensure that multiple 'immaterial' deviations do not compound such that the cumulative effect is material.

Lastly, it should be noted that adding a requirement to agree thresholds at the application stage may actually increase timeframes associated with negotiation at the negotiation phase without improving timeframes at R1.

Type 2: Material differences due to 'external' network conditions

In principle, AEMO would support the most expeditious and cost-effective solution for identified issues, whether those solutions are internal or external to the project. AEMO considers that during R1 assessment, all options should be considered for remediation based on implementation timeframes, technical and commercial feasibility. The remediation pathways should consider actions from the proponent and actions by the NSP and AEMO.

For Type 2, although there may be efficiencies in NSP remediation, it is not clear that the allocation of remediation responsibility solely to the NSP for all changes in network conditions will always result in more timely or cost-effective outcomes for the proponent. For projects where network conditions change, AEMO acknowledges there may be efficiencies in NSP resolution, such as by modifying the settings of dynamic network plant, installing ancillary equipment or even contracting services, but these things may take longer time than a solution involving the connecting plant and therefore other NSP solutions may not always be optimal for the proponent.

AEMO does not support the requirement that it develop a guideline for assessing whether R1 issues are internal or external. As previously noted, AEMO considers that issues identified in connecting a generator are more appropriately characterised as either "with" and "without" the connection; and that any guidance it provides should focus on R1 issues management. To inform Type 2 scenarios it is suggested that guidance would establish whether the solutions to identified issues (not the issues themselves) are appropriately assessed as internal or external to the generating system.

If the sole purpose of the service is to support the generator connection(s), the question of who should pay for this service arises and should be considered in any reform adopted.

Type 3: Material difference with conditional approval

AEMO supports the allowance of conditions to approval of R1 noting this is an approach currently used ad-hoc on existing projects, where the issues are minor, options to resolve in a timely fashion pre-approval have been exhausted, or it is agreed across all parties that options are unable to be implemented in a timeframe prior to registration. It considers that a structured process can be achieved by defining a milestone in the R1 application process where AEMO, NSP and the proponent agree the issues to be resolved for the project, the path to resolution, and the timeline for resolution.

To date, AEMO has acknowledged the potential for delays due to immaterial issues, and consequently introduced the concept of a 'notifiable exemption' in 2018. In specific circumstances, a notifiable exemption enables generators to energise and commence commissioning of individual inverters ahead of achieving

market registration, under the current framework. Therefore, there is possibility under the existing framework to allow conditional approval to a partial level, including the 'notifiable exemption' which allows energisation of generating units with a combined nameplate rating up to 5 MW to start testing.

It would be critical that AEMO have final responsibility for determining whether a conditional approval is granted (i.e. where projects may proceed without impacting system operation, security, and other generators in the area) and the conditions that would apply. AEMO ultimate discretion is appropriate given that AEMO Operations teams will be responsible for addressing any post-energisation issues arising out of system security or compliance risk that has been realised. AEMO notes that formalising a conditional approval process in the NER should not create the expectation that plant not meeting its GPS is a default course of action and should ensure that compliance is the primary pathway.

The granting of any conditional approval would need to be on the basis that the change is minor; or that it will be resolved prior to, for example, an operating point being achieved that would cause the issue to arise, become material and/or reportable (through formal notification to AEMO and, in turn, the AER) under NER 4.15 provisions. The timeframes or milestones for the rectification of any issues should also be at AEMO's discretion.

Compliance framework

While AEMO supports the enablement of conditional approvals, effective enforcement of those conditional approvals is a critical concern for AEMO. This is because the granting of conditional approval presents a risk that issues will be deferred to a later stage in the connection process, creating the potential for a backlog of ongoing issues with operational projects and for an accumulation of system security issues, particularly as more projects are connected. Further, if compliance issues are allowed to persist past energisation when the generator is dispatchable and earning revenue, AEMO is concerned that incentives will be lost to ensure generator (and more specifically project construction and commissioning) compliance. This may present system security impacts and may also impact newly connecting projects, which may be technically compliant but whose operation may be impacted by the accumulation of non compliances from previously connected generators.

In this regard it is worth noting that AEMO's role is not to manage connections non-compliance in operations, nor is it funded to do so. AEMO is currently obliged to report non-compliance to the AER.

Any compliance framework needs to ensure ongoing, meaningful, incentive remains with proponents to resolve issues that have been deferred from R1 resolution. For example, where conditional arrangements are not met, there should be clear operational consequences. This may be enforced through restrictions to market access, connection approval and limitations on dispatch possibly with a pre-defined upper threshold for dispatch level in the framework. Further, the onus of proof on whether a technical issue is satisfied should remain on the generator. AEMO's view is that the GPS compliance framework is not established to effectively manage connection issues.

The CEC proposes the use of constraint equations to limit export of generation in the event of system security issues. This is currently used as part of commissioning process and operation of the system, but does not always address issues. Compliance issues may relate to the connection of inverters in the generating system itself to the grid and hence the restriction may actually need to be on the number of inverters that are able to be on line rather than limitation of the level of dispatch. Further, the appropriateness of constraining a project as a penalty for non-compliance needs to be further assessed, particularly as this may impact system reliability.

The CEC also proposes that the AEMC could attach a civil penalty provision to breaches of conditions. Assuming the similar operation to existing civil penalty provisions in the NER, the AER would enforce breaches of approval conditions, and AEMO would likely have obligations to follow a pre-enforcement process (similar to NER 4.15), to frame the non-compliance for notification to the AER, and to support the AER in its

technical understanding of the issues prior to and during the enforcement process. This would be a significant undertaking for AEMO (and potentially the AER). This could also be inefficient and possibly ineffective for a number of reasons including competition for resources in enforcement; and the relative amount of any penalty compared to the costs of rectification (for example any loss of revenue from outages or unavailability of generating units). AER enforcement action on non-compliances can also be a lengthy process which is not suited to dealing with real-time power system issues that may manifest in isolation or contribute to cumulative system disturbances or faults.

A practical solution may be to agree conditional approvals similar to the management of a non-compliance. For example, a project that falls short of agreed reactive capability above 90% power, may be approved to register with the condition that the project only generate up to 90% of maximum power until reactive support equipment is installed.

In the absence of a responsive and effective compliance framework, AEMO would need to factor in the impacts and risk of non-compliance in determining whether a conditional approval should apply. Conversely, if an effective framework is established with appropriate and timely recourse breach of conditions post-energisation, AEMO may be able to grant conditional approval for more material issues than under the current compliance framework (on the basis of reduced risk).

AEMO proposes that further consideration be given to who would hold the responsibility to ensure that conditional approvals are met. It suggests that conditional approvals should be lodged the same way as a non-compliance to the AER. Similar to this approach, the conditional approval would include a mitigation plan agreed with AEMO and the NSP.

AEMO's additional costs to meet this measure and manage any later compliance issues must be recoverable as conditions that are approved for satisfaction after the generator is operational will burden AEMO, particularly where generators fail to comply with the conditions. The AEMO Operations team already has significant responsibilities in managing NER 4.15 notifications by existing generators, and the AEMO Connections team (along with consultants retained by generators) would invariably also be involved and therefore diverted from critical technical assessments. Additional costs should be directly recoverable from the relevant generator to ensure the cost reflectivity.

By way of example of the volume and timeframes associated with non-compliances, AEMO is currently managing 69 compliance issues for connections projects still in the commissioning and R2 stages alone. The median duration these issues have been open is 250 days. Management of the non-compliances therefore requires ongoing input from connections and operations teams to work with the proponent on solutions. Any mechanism which formally allows for conditional approvals is likely to increase this workload and hence incentives to address non-compliances must be considered under this reform.

Type 4: Material issues for rectification

AEMO disagrees with the obligation being placed on the NSP, with AEMO support, to prove the insecurity of connection rather than the R1 process proving the plant is secure by meeting the required standards. This would be an inappropriate shift of the burden of responsibility onto the NSP (with AEMO support) for applications that have material issues and would require AEMO re-justifying what has been prosecuted in the NER 5.3.4A process – this would devalue that process.

AEMO would support a reasonable requirement to give reasons for considering that an application is Type 4, for reasons of transparency.

QUESTION 9: WHAT ARE YOUR VIEWS ABOUT THE CEC'S PROPOSAL FOR DISPUTE RESOLUTION?

PROPOSAL

The rule change request notes that, where there are disagreements, it is currently unclear what options exist for coming to a resolution. The CEC proposes requirements for AEMO, NSPs and connecting generators to

be brought together in facilitated discussions. The CEC proposes that AEMO and NSPs would be required to engage in this facilitated review process within 10 business days of the request from the applicant. The purpose of facilitated review would be to encourage healthy resolution of the issues and determine what avenues are available for connection. It is noted that the CEC has proposed that it would not have any authority to offer binding resolutions on the generator NSP or AEMO.

The CEC also proposes that if there is a dispute that cannot be resolved, this should be taken through the independent engineer process, through arbitration as laid out in rule 5.5 of the NER120, or through the dispute resolution process in NER cl. 8.2.

AEMO recognises the potential for differences of opinion in the connection process which need to be resolved. AEMO considers the best way to do this is through constructive engagement of all parties involved in the process – the developer, the OEM, the NSP and AEMO. In AEMOs experience this approach, including involvement of more senior people in the various organisations, results in agreement of a course of action between the parties.

AEMO considers instituting a third-party facilitated process would increase overall cost, timeframes, and complexity compared to a bilateral discussion approach and lead to further strains on resources and new delays to the process. With limited resources generally available in the industry, prioritisation of resources across all stakeholders should be considered. For example, a formal process may result in diverting resources away from applications for which high quality data and modelling has been provided to managing a dispute resolution process which may potentially have arisen out of lower quality data and modelling. Further, additional complexity may arise through requirements to sufficiently brief a third party and to comply with process requirements.

AEMO, therefore, proposes an alternative NER requirement for AEMO to participate in good faith discussions to understand issues raised by proponents.

If a facilitated dispute resolution process is to be introduced however, AEMO proposes the following elements should be considered:

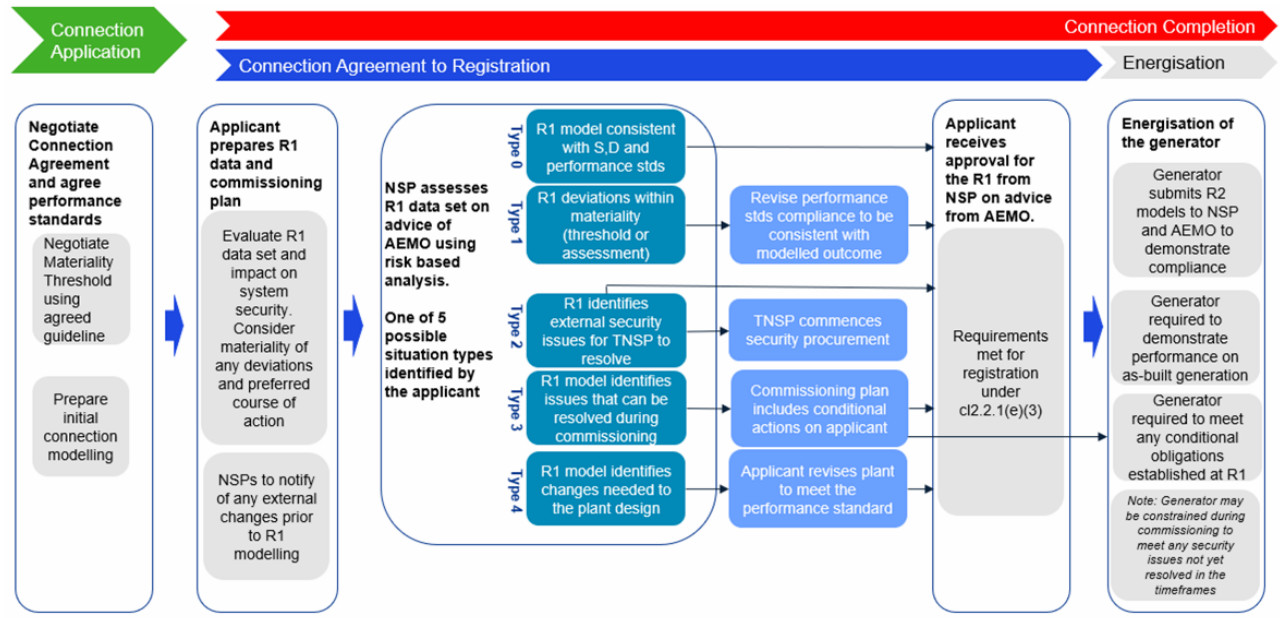
- Reflection of NER obligations – AEMO and NSPs carry obligations under the NER, and it is appropriate that the engineering judgement of its connections experts to meet these obligations are not overruled by any other party through this process.
- Processes – how facilitated discussions would be arranged and what conditions or thresholds, if any, would apply before a proponent could request AEMO to participate in these discussions.
- Facilitator skill set – any facilitator should be an independent expert who is experienced in connection processes and common technical issues and is able to provide an independent perspective on the critical issues and resolution pathways.
- Process controls – controls to ensure that facilitated discussions are exercised on a case-by-case basis, and proponents with deficient or rejected applications that would not benefit from discussions.
- Principles-based guidance – any framework for facilitated discussions established under the NER should be held to guiding principles regarding behaviour and process. If at any time any of the parties are uncomfortable with the approaches or behaviours being adopted, and do not believe that these adhere to the guiding principles, they can nominate to cease participation.
- Cost-benefit assessment – the costs of any additional dispute resolution process should be required to weigh up the practical benefits of the process against the significant involvement required from AEMO connections engineers, and consultants retained by proponents as well as the diversion of these resources from their technical work.

- Cost recovery – a process and responsibilities for recovering the costs of a dispute resolution process and consideration of whether this should vary based on circumstances of the process.
- Interaction with existing dispute resolution processes – interactions with other processes, such as the independent engineer process, commercial arbiter, or formal dispute process as in Victoria, needs to be considered and articulated.

QUESTION 10: DO YOU SUPPORT THE CEC'S PROPOSED MODEL OR DO YOU PREFER AN ALTERNATIVE APPROACH? ARE THERE ANY MODIFICATIONS TO THE CEC PROPOSALS THAT YOU BELIEVE MAY IMPROVE IT?

PROPOSAL

Figure 3.1: The CEC's proposed new R1 process



Source: CEC rule change request, p. 34.

AEMO's views on elements of the proposal are set out in preceding section of this response. Broadly, AEMO agrees that there are potential for transparency and consistency benefits in establishing aspects of this this model in the NER. With adjustments to meet issues discussed in this submission, the model would support improvements in certainty and transparency which are the primary concerns of the CEC. AEMO does not propose an alternative overarching framework for reform.

QUESTION 11: DO YOU AGREE WITH THE PROPOSED ASSESSMENT CRITERIA? ARE THERE ADDITIONAL CRITERIA THAT THE COMMISSION SHOULD CONSIDER OR CRITERIA INCLUDED HERE THAT ARE NOT RELEVANT?

PROPOSAL

The proposed assessment criteria are.

- *Safety, security, and reliability*
- *Emissions reduction*
- *Implementation considerations*
- *Innovation and flexibility*
- *Principles of good regulatory practice*

AEMO supports the proposed assessment criteria. In general, for the proposed measures to improve the connections process, the proposed changes should:

- not degrade the performance or quality of generating systems connecting, or lead to degrading the performance of the system as a whole;
- be technically feasible from a system operation and security standard perspective;
- be practical and timely to implement upfront, and agile to apply on an ongoing basis, so as to not delay the process;
- adapt existing process where possible (where new processes are proposed, robust cost-benefit and feasibility assessment should be conducted); and
- limit incremental costs on parties negotiating agreements.