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28 September 2023

Ms Anna Collyer
Chair
Australian Energy Market Commissioin

Lodged electronically.
Subject: ERC0363 - Enhancing Investment Certainty in the R1 Process Consultation Paper

Dear Ms Collyer,

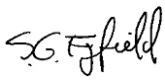
Goldwind would first like to express gratitude to the AEMC for considering the proposed rule reform proposed by the CEC on improving the outcomes from the R1 stage of the connections process. The proposed changes are expected to streamline future Goldwind and other renewable projects which will ultimately lead to a smoother transition. We have duly considering the consultation questions published by the AEMC on the 17th August 2023 and through this letter provide feedback on the questions raised.

We would like to further reinforce that, in our view, the most important element of the proposed rule change is the guidance on materiality of various issues and to further extend that to a risk based framework. Adoption of such an approach will go a long way in addressing the shortcomings in the current process. Currently there are too many projects being help up in the connections process for relatively minor GPS compliance discrepancies (not because the performance is poor, but it doesn't quite fit the box that the NER has defined).

There is currently a skills shortage in the industry, and given that many of the staff preparing and subsequently assessing the packages are new to the industry, it is important to define clearly what are important issues that warrant addressing immediately and holding progression of the project so those not meeting that criteria do not result in delays. Many key leaders in the industry have echoed the sentiment that not enough projects are being built. This in our view is also related to sizable risk associated with with the connection process overall.

Should you have any questions on our submission, please reach out to Priank Cangy on 0400 770 081 or priankcangy@goldwindaustralia.com in the first instance.

Sincerely,



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Responses to consultation questions

DO YOU AGREE THAT THE ABSENCE OF NER OBLIGATIONS ON PARTIES TO THE R1 PROCESS IS CONTRIBUTING TO POOR ENGAGEMENT AND PROCESS DELAYS?
While the industry is going to a more collaborative approach when it comes the connection process, not all NSPs and sometimes AEMO are interested in engaging early in the process. In some previous occasions, we have not had the opportunity to align expectations prior to submission of the registration package. What this led to was assumptions regarding the expectations of AEMO and NSP that proved to be different in reality which ultimately meant we spent resources and time in the wrong places. We propose that early engagement and setting of expectations can greatly improve the connection process. We acknowledge that industry has progressively reformed on this aspect, however we believe having early engagement, with time bound response times, can only lead to positive outcomes as far as streamlining the connection process. The end result would allow resources to be focused on the key aspects. In our view, the impact of the absence of time bound obligations in the R1 process is likely having a marginal impact on the delays faced during R1.
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?
As an OEM, we have found that we spend a significant amount of time negotiating how and where to allocate the risks associated with the transition from connection application to registration in the contracts with our clients. It is evident that from our previous experience that no party is interested in bearing the risks associated with the R1 process as the risks are considered to be significant. Public data from AEMO does help with quantifying some of the risk, however we are still seeing large variance in the connection process duration. No project wants to be on the longer end of the scorecard. Key risks have to be managed in the registration process include: • Changes in generator design – while some elements of the generator design can be managed (e.g. transformer rating) sometimes there are aspects of the design that can have unforeseen changes (e.g. the reticulation systems due to terrain/constructability). • Changes in the wider network – the time taken between receiving a 5.3.4A letter and submission of the R1 package can be in the order of years depending on the construction timeframe. • Changes in interpretation – the personel working on a project during the connection application is not the necessarily the same as the personel working at the R1 stage, hence there is risks associated with change in interpretation as well as changes in methodology. One strategy to manage risk that we have identified is to aim to have as little changes as possible between the connection application and the registration phase. This sometimes means using more conservative designs during

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the concept phase to "stay on the safe side", or spending more on detailed engineering early in the connections process. This can be challenging though as during the Connection Application (pre-R1) phase, the NSPs and AEMO still want the GPS to reflect the best possible performance shown by modelling, not making allowance for conservative considerations.

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

In short yes. As mentioned in the CEC rule change request, we end up spending large amounts of engineering hours working through relatively minor discrepancies between the performance and the GPS. This issue stems from the fact that during the connection application stage, adding margins to performance is not allowed (we need to tune everything to their limit) and between the connection application stage and R1, as the design is firmed up, there can be some minor changes in the generator which lead to marginal reductions in performance.

In many instances there are also challenges associated with changes in personel which leads to changes in interpretation and/or assessment methodology which identifies new issues that are likely immaterial, but nevertheless issues that need to be resolved. As there is no risk based approach, all issues are almost considered to be of the same gravity – they all need to be resolved before the generator can connect. This is regardless of whether the issue is identified from a realistic scenario or whether there is any tangible impact on the network.

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

Yes, we have first hand experience whereby network issues have delayed a project for over 2 months. After numerous PSCAD studies it was determined that the reduction in system damping was a powerflow issue. As the project was the first one to push network flows past the MW threshold, it led to lots of investigations to better understand this phenomenon when it was evident that the generator doesn't have enough capability to cause such a large swing in MW. Till this day, the temporary constraint to address this network issue still only applies to one generator despite the NSP and AEMO acknowledging that it is a system issue.

A more systematic way of dealing with network issues is required. In the context of R1, this comes in the form of having a pragmatic way to approach such problems without hampering the progression of the generator. The impact of such an issue was two fold:

- Delays during R1
- Ongoing temporary constraint that effectively punishes one generator for a network issue

We believe some of the delays during R1 could be avoided if a materiality guide and risk framework was in place.

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HOW MATERIAL IS THE ABSENCE OF AN INDEPENDENT, EXTERNAL DISPUTE RESOLUTION PROCESS FOR THE EFFICIENT NEGOTIATION OF TECHNICAL PERFORMANCE PARAMETERS BEFORE REGISTRATION APPROVAL?
This one is more challenging to comment on with certainty. Without having a system in place already, it is not clear if having an external dispute resolution would lead to improved outcomes overall. We consider this to be somewhat of a "double edge" sword. On one hand it can be a useful mechanism to call upon during an impasse (subject to reasonable timelines and a clear guide/structure on how problems should be approached). However, the flip side of it could be a much longer dispute resolution process where the outcome is not satisfacry to either party. We are not opposed to the idea, but do not consider this to be an important amendment.
WOULD THE PROPOSED TIMELINES PROVIDE SUFFICIENT CERTAINTY ABOUT THE DURATION OF THE R1 MODEL ASSESSMENT PHASE?
We do not believe that codifying the durations as proposed by the CEC will have material impact on the timelines or certainty on the R1 process, nevertheless support the proposal put forward by the CEC to align the obligations between the connection application stage and the registration stage. Generally we see the ambiguity of time frames as stemming from uncertain approval or rejection of studies rather than an unwillingness from the NSP to complete an assessment. It is very easy for a regulator to find faults that can then lead to delays; we need our regulators to find reasons to proceed instead.
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?
In our view, the guidance on materiality is the most important part of the rule change request. Currently there is a significant amount of engineering judgement applied to issues. Most of the time the engineering judgement can be quite conservative in nature which in reality has limited to no impact on the overall performance of the power system (e.g. a brief entry into LVRT after a 10% voltage step while operating at Pmax, Qmax can be deemed non compliant requiring much more tuning of the generator settings). We agree with the CEC that AEMO would be best placed to develop this guideline (in consultation with NSPs and wider Industry) given its bredth of experience across all projects in the NEM. We suggest that the concept is further extended to a risk based approach whereby the issues at hand are assessed for both likelihood and consequence. This would help focus the limited resources the industry has on the key issues, with small discrepancies either accepted due to low risk or resolved later on due to medium risk level. We propose that the materiality concept also takes into account the nuances of the tests being carried out: • Some issues only present themselves in unrealistic operating conditions – e.g. issue only occurs when generator is at inductive reactive power and POC voltage is <1pu. • Some of the tests are overly fictitious in nature – e.g. applying a disturbance that forces the voltage to a particular profile where the generator response has no influence on the voltage • Issues arising from the non linear nature of inverter controls – e.g. if tests are granual enough there may be particular voltage steps where you can find that the inverter has entered LVRT but not the PPC.

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- Where there is a change in assessment methodology in R1 relative to the connection application stage – sometimes AEMO and NSPs can change their approach to assessing a particular clause and sometimes this change in methodology can be the difference between compliant operation and a non compliant one.

By focusing on critical issues, we can allow the generators to deliver much needed energy to the systems efficiently as well as optimise the usage of the limited engineering resources available to the industry. This can also free some some engineering time from the SMIB type of test to the, arguably more valuable, wide area testing. A risk based approach will be essential to deliver the sheer volume of generation that is needed to replace the coal fleet.

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

While we don't necessarily type each R1 package, our view is that some of the principles of the connection type is already being employed in the current process (depends and varies by NSP). Nevertheless, we believe the proposed approach to typing can be quite beneficial for the following reasons:

- Even with minimal changes between the connection application submission and the R1 submission (equivalent to type 0), we have seen projects being assessed top to bottom. This is, in our view, a waste of engineering resources.
- The introduction of a type 2 category can be helpful in ensuring that the network related issues are delineated from the issues caused by the generator. However, there is more work to be done to ensure there is a proper framework in place to be able to efficiently delineate the issues – we believe this circles back to the materiality guidance to some extent.
- Having a very clear streamlined pathway (type 0) will also incentivise generators to minimise changes that are required between connection application stage and R1.
- All else being the same, this provides a great opportunity to meet and align expectations of the R1 process from both sides and ensure the efforts directed at the project are meaningful to the NSP and/or AEMO

We are supporting of the proposed assignment of obligations, and allocation of costs and risks.

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

We do not have any particular views on this.

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?

We are broadly supportive of the CECs's proposed model.

To build on that model, we also propose that the AEMC consider whether having a performance tolerance at R1 may be appropriate. Most equipment we tend to purchase/design tend to come with tolerances, we can never have 100% certainty on what the actual impedance is until the item is procured. On that basis having tolerance or error margins for the various GPS requirements enable the connections process to take a more realistic view at the R1 stage. Ultimately, the goal is to connect the large volume of new generation needed for the energy transition as efficiently

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as possible given the limited resources available. Another aspect we suggest the AEMC consider is ensuring that some consistency around the assessment methodology remains between the connection application stage through to the R1 stage. Changes in interetation and/or assessment should not delay projects unless AEMO and/or NSP can demonstrate that the newly identified is really can lead to an high risk situation in the network.
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?
We do not have any particular views on this.