Iberdrola Australia submission to "Efficient management of system strength on the power system"

17 June 2021

To: AEMC
From: Iberdrola Australia

Executive Summary

Iberdrola Australia broadly supports the AEMC's Draft Determination. Our key comments are:

- Further thinking is required on the role of system strength nodes, and whether this could be replaced by a whole of NEM assessment that reduces the risk of poorly located nodes, and better captures the uncertainty.
    - AEMO should consider probabilistic scenarios when determining the volume of IBR to be planned for.
    - The framework should not force AEMO to become a de facto central planner through limiting generators to a small number of nodes; this will be unlikely to deliver a least-cost outcome.
- While the AEMC has put significant effort into developing a pricing function, the resulting complexity is likely to outweigh any limited locational signals. Furthermore, any additional cost on new entrants will increase wholesale prices – driving up the total costs to consumers and resulting in a wealth transfer to incumbents (i.e., the charging regime may lead to a *higher* cost on consumers than the cost of the service – this is the inverse to the merit order effect that enabled the LRET to deliver significant savings despite consumers paying for LGCs). Given the pace of transformation required, we suggest that the scheme be implemented initially without a charge on generators, with that component reviewed at a later date.
- If the charging regime is maintained, there needs to be stronger obligations on TNSPs to deliver the system strength that is being paid for by generators. TNSPs should be required to undertake work as a reliability corrective action if additional projects pay for system strength beyond what was forecast by AEMO during the 3y forecast period.

Defining the system strength nodes

A key element of the proposed framework is the number and location of the system strength nodes. We understand that the nodal approach was introduced to simplify the analysis and planning process, but we are concerned that it will actually create uncertainty and delays. If the nodes are not correctly located, the proposed

locational pricing signal may prevent otherwise least-cost resources from being developed.

There is a risk that AEMO would become a de facto central planner if nodes are only defined in a limited number of locations. While AEMO's ISP models are useful tools, there is little historical alignment between AEMO's expected build (or locations) and the resulting developments. This is unsurprising, given that AEMO's modelling focuses on large-scale dynamics and long timeframes, and cannot model or predict local resources and other constraints on developments.

Critically, AEMO has consistently underestimated the rate of change of the system. There is a risk that AEMO's definition of nodes will be biased towards the location of existing coal power stations, which (regardless of AEMO's models) "first principles" dictate must all close within the next 10-15 years to be consistent with the global Paris Agreement[1].

Alternative approach

We understand that the nodal approach was introduced to simplify the analysis and planning process, but we are concerned that it will actually create uncertainty and delays. An alternative approach would be to assess system strength on a NEM-wide basis, through a NEM-wide PSCAD model as part of the TNSP's annual routine planning process. In consultation with industry and networks, AEMO would determine scenarios for future development, and SSS providers would then plan their networks accordingly. This would be analogous to network planning to serve future (uncertain) loads and potential connecting generators.

This would support a broader definition of system strength – allowing SSS providers to consider broader factors (as well as more locational factors) than simply fault current.

SSS providers would then be able to continuously develop system strength on a probabilistic basis, including planning projects that could be implemented if or when further certainty is required.

We note again that, because of the pace of the transition, the risk of stranded assets (or stranded system strength) is likely to be low – system strength will naturally decline as coal closes, requiring replacement, which will reduce risks of any "overbuild" in the near-term.

Improving the nodal approach

If nodes are retained, it is critical that the nodes are set based on the potential development of new zero-emissions resources. Greater guidance would be needed in the Rules as to how AEMO must set the nodes, and what factors should be taken into consideration. This could be through more explicit recommendations on the

[1] https://www.iea.org/reports/net-zero-by-2050

scenarios and uncertainty that need to be modeled, and engagement with industry, but could also involve a corresponding standard on AEMO.

Aa reasonable expectation for a successful framework is that if system strength remediation is required, most new IBR projects should be using the scheme, rather than self-remediating (to the extent that any remediation is required), and that system strength assets are well utilised. AEMO would be then obligated to ensure that, over time, the high-level locational signals from the system strength standard are consistent with the more detailed project-specific data used by developers and investors.

IBR projections

Similar to the points above, further guidance in the proposed Rules may be needed to clarify how AEMO should consider risk and "prudent" or "efficient" levels when setting IBR level requirements for TNSPs.

The ISP produces only a single view of the future. AEMO uses blunt generation traces for wind and solar such that all (or most) projects in a region have the same capacity factor, diurnal profile, and also the same capex costs. The ISP model then, similarly, mechanically applies constraints to meet a least-cost outcome. Therefore, if a region is even $0.01 cheaper than another in the model, the ISP will build *all* capacity in that region.

In our experience, predicting where projects will develop at a nodal resolution is very challenging given project specific features and technology changes over time.

In practice, locations with excellent resources, land access and planning may well be locations with low system strength. Network access is only one component of project development – multiple projects locating in the same area should be interpreted as a lack of anticipatory transmission planning rather than a failure of coordination by generators.

The proposed framework could be strengthened by requiring AEMO to consider multiple localized scenarios[2], and ensure sufficient system strength is available (or can be developed quickly) across the NEM to accommodate different potential futures. It should be noted that the costs and benefits are likely to be asymmetric. The marginal cost of additional system strength is relatively small when compared to the very significant costs of not having invested enough in system strength.

[2] TNSPs have used a similar methodology where many different scenarios are used to consider many different generation and transmission build-outs across the NEM (such that, across all scenarios, a very broad range of projects are considered). For example https://www.aer.gov.au/system/files/ROAM%20identification%20of%20generation%20development%20scenarios%20-%205%20September%202005.pdf

Need for greater interaction between industry, TNSPs, and AEMO in setting requirements

Given the limitations discussed above, we suggest there needs to be a clear framework for how industry data, TNSP planning information (including connection applications), and AEMO modelling will be considered together.

For example, AEMO should consider announced projects and connection applications as firmer data points than the theoretical ISP modelling outcomes (to the extent the ISP does not already calibrate against and align with this data).

There also needs to be an established engagement pathway for industry to engage with AEMO before any requirements are set.

Finally, AEMO and TNSPs need to use consistent PSCAD models to ensure that assessments are consistent across the planning proposal and the connection process. We are aware of at least two examples where different models were used, leading to different conclusions. These discrepancies introduce a lot of uncertainty and delays to projects.

Calculation of the pricing function

If the AEMC retains a pricing function, we note there is additional detail that needs to be clarified. For example, when calculating the electric distance from the system strength node, whether this is under system normal conditions, N-1, etc.

Interaction between multiple parties

Iberdrola Australia supports the basic framework proposed of a dedicated SSS provider in each region. However, SSS providers will need to engage with all parties in the region, particularly DNSPs (given the increasing number of distribution connected parties).

Obligations on TNSPs

We recognize that the obligation on TNSPs is a planning standard. That is, TNSPs will not be obligated to provide firm access for connecting generators.

Iberdrola Australia supports an open access network in general. However, if generators are to pay for system strength provision from TNSPs, then there would be an expectation that TNSPs would be delivering system strength in a timely fashion. I.e., if the AEMC requires generators to pay for system strength, it effectively establishes a relationship between generators and the TNSP, which should come with appropriate obligations.

This includes situations where AEMO underestimates the volume of IBR (either globally, if AEMO continues to underestimate the pace of emissions reduction, or in specific locations due to the (necessary) limitations of ISP modelling).

We agree with the AEMC's analysis that risks are asymmetric – the cost to consumers of overprocurement will, on average, be less than the cost of

underprocurement. Ensuring generator participation in the scheme (and thereby avoiding additional costs, as well as additional complexity for AEMO modelling) will require confidence that the service will be delivered.

We therefore recommend:

- The standard should be for TNSPs to plan for the greater of the level of IBR set by AEMO and the capacity committed.
- For gaps that emerge within three years, TNSP should make best efforts to deliver sufficient system strength. This should be undertaken as a reliability corrective action (with TNSPs obligated to undertake action by selecting the least-cost remedy, rather than needing to undertake extensive scenario modelling to demonstrate overall benefits; this is appropriate, given generators are paying for the service).

Minimum SCR capability standard

A minimum SCR capability standard will help TNSPs plan for the future system strength requirements. However, we note that the GPS will need to be carefully considered, and there may be conflicts between tuning a system to meet a low SCR and other elements of the d (of which AEMO is increasingly seeking automatic access). This could potentially burden the connection process unnecessarily, in particular for those sites with actual SCR higher than 3, depending on what is requested of the connecting parties in terms of demonstrating capability.

There may also be a balance point between performance and SS capability/consumption. For example, there may be situations where it would be preferrable for generators to tune for a lower SCR rather than having to pay a SS charge or self-remediate. While this trade-off will be appropriate if the economic pricing signals are correct, it is important that standards are not set at a point that unnecessarily increase the overall cost of transitioning to a zero emissions system.

Conclusion:

We look forward to the opportunity to continue to engage with the AEMC. If you would like to discuss this submission, please contact me at joel.gilmore@iberdrola.com.au or 0411 267 044.

Yours Sincerely

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