Mr John Pierce AO
Chair
Australian Energy Market Commission

Lodged online: www.aemc.gov.au

Melbourne, 7 May 2020

Dear Mr Pierce,

INVESTIGATION INTO SYSTEM STRENGTH FRAMEWORKS IN THE NEM – DISCUSSION PAPER (EPR0076)

innogy Renewables Australia (innogy) welcomes the opportunity to provide a submission on the discussion paper by the Australian Energy Market Commission (AEMC) on system strength frameworks in the NEM.

innogy is the Australian subsidiary of innogy SE, a company with 4 gigawatts of operating onshore and offshore wind, solar and hydro renewable power plants; as well as a 7.1 gigawatt global renewable and storage development pipeline. We are currently constructing and commissioning the largest solar farm in Australia – the 349 MWp Limondale project. If the appropriate policy settings are adopted in the National Electricity Market (NEM), we intend to grow our Australian portfolio of renewable energy assets through further investments in solar, wind and storage in cooperation with communities, suppliers, vendors and project developers.

The Current System Strength Framework

The current framework for managing system strength in the NEM, in place since September 2017, comprises two separate arms. Firstly, under the "minimum system strength" requirements, the Australian Energy Market Operator (AEMO) is tasked with setting minimum fault levels at nodes across the NEM. AEMO then forecasts emerging shortfalls and may direct Transmission Network Service Providers (TNSPs) to procure system strength services to address any shortfalls. When directed, TNSPs must address those shortfalls by procuring system strength services.

Under the second arm of the system strength framework, new connecting generators must "Do No Harm" to the security of the power system caused by their connection, including remediating any adverse impact on system strength.

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Issues with the Minimum System Strength Requirements

We agree with the issues that AEMC has identified with the minimum system strength framework. The issue of greatest concern to innogy is the reactive nature of the framework. System strength shortfalls are not effectively forecast and mitigated or avoided in advance, leading to potentially significant impacts on generators in terms of delays in commissioning and interventions on operating plants, higher capital expenditure and ultimately higher costs for consumers.

We note that this is not the fault of AEMO or TNSPs, given the practical difficulties in forecasting over a 5-year period a number of variables that impact system strength, particularly the volume of inverter-based generation connecting to the grid. Once a system strength shortfall can be foreseen with sufficient certainty, the most efficient way to address the shortfall may no longer be available.

Nonetheless, we believe that changes to the regulatory framework could allow AEMO and TNSPs to operate in a more proactive and efficient manner.

Issues with the "Do No Harm" Requirement

We also agree with the issues AEMC has identified with the "Do No Harm" framework, particularly the inability to coordinate the procurement of system strength services across multiple generators. While scale-efficient system strength remediation is not prohibited by the rules, and indeed AEMO has tried to encourage this approach, the practical reality is many generators are competing for limited grid access and working to different investment timeframes, different risk and return requirements and ultimately different business models, not to mention the technical complexities in defining and determining appropriate remediation across multiple projects. This makes aligning multiple generators on a shared system strength solution extremely difficult, resource intensive for generators, AEMO and TNSPs, and is not, in our view, a practical solution going forward.

Unfortunately, the current model leads to a number of inefficient individual investments in system strength remediation schemes, which cannot be taken into account by subsequently-connecting generators, perpetuating further inefficient investments. The fact is, substantial further capital investment is required on these system strength remediation schemes, such as synchronous condensers, and no return on capital deployed is earned on these investments (in fact in our experience banks are not willing to lend on these investments given the non-revenue generating nature of this infrastructure).

We have also found there to be significant cost and time involved in the intensive and iterative modelling for a system strength impact assessment. We understand and appreciate the need for complex modelling in order to securely connect the large volume of inverter-based generators to the grid, and that in certain grid locations, a new connecting generator may prompt the need for a new system strength remediation scheme. However, the current framework is inefficient, and has resulted in innogy building greater contingencies into business cases for any new projects we have looked at. We expect many other investors, developers and owner/operators would also be incorporating increased contingencies into their business cases given the inefficiencies discussed above. Such contingencies can sometimes be the difference between a project meeting its hurdle rate or not, but even if the project does proceed, the higher project cost is ultimately a sub-optimal outcome for consumers.

The Future Framework for System Strength

AEMC has identified four models to be analysed under the current investigation:

- A centrally coordinated approach, where AEMO or TNSPs would be responsible for procuring necessary volumes of system strength to meet a central plan;
- A decentralised approach where a competitive market plays the central role in coordination and delivery of system strength services;
- A mandatory service provision approach, where all generators are required to actively contribute to system strength, similar to the current "Do No Harm" requirement; and
- An access standard approach, where all generators are required to have a "passive" system strength withstand capability.

In our view, the most efficient method to address the issues with the current framework is through the centrally coordinated approach. This appears to be the only model that coordinates the efficient procurement of system strength services for the system as a whole, allowing a more proactive and more efficient way forward. From a generator's perspective, the centrally coordinated model, if designed well, will facilitate a more streamlined connection process and reduced risk of subsequent market interventions, further reducing the risk premium and the levelized cost of electricity for future projects. This will ultimately lead to better outcomes for consumers. The need for scrutiny of such a coordinated approach to ensure the most efficient outcome will need to be carefully balanced against the need to avoid lengthy delays in addressing system strength issues and the consequent impacts on generation and consumer outcomes.

We note that the AEMC is considering who should pay under a centralised coordinated model, whether it be generators paying through a connection fee (in the same way that generators currently pay under the "Do No Harm" requirements) or whether it be TNSPs (as under the current minimum system strength requirements when a shortfall needs to be addressed). While the TNSPs would directly pass any costs they incur through to consumers via increased transmission use of system charges, generators would indirectly pass costs through to consumers via higher prices. As a generator, we are not averse to paying an upfront fee for system strength assurances with respect to our plant's point of connection, provided the calculation of the fee is open, transparent and is known prior to final investment decision, and provided the fee is reasonable given the degree of certainty we could have about connection timeframes and the level of immunity we would have from subsequent market interventions.

If the preferred design is a generator-pays model, we are interested in optionality for "generator-led" system strength remediation if the generator can do so to the same standard but at a lower cost than the system strength portion of a connection fee. This would provide one useful check or balance to ensuring a coordinated model does in fact lead to the most efficient outcome for consumers.

One final point we would make about the future framework for system strength relates to information publication. While AEMO publishes minimum fault levels at nodes across the NEM, and publishes reports about areas facing shortfalls, it would be beneficial for prospective investors in new generation assets to have a consolidated resource, updated regularly which set out for existing transmission lines, as well as for Group 1 ISP projects:

- stability-related limits i.e. ones which curtail output prior to thermal limits being reached;

- fault levels and short circuit ratios that new generators would be required to perform to;
- existing constraints and any proposed ones that are public; and
- available thermal capacity, taking into account all generation that has reached financial close or due to reach financial close.

Thank you for your work on this important review. If you would like to discuss any of the above, please do not hesitate to contact us.

Yours sincerely,

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