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By online Submission

Melbourne, 16. May 2025

Dear Ms. York,

**Re: R1 Capability Assessment Guideline consultation**

Vestas welcomes the opportunity to provide our feedback on AEMO's Draft R1 Capability Assessment Guideline, shared on 16 April 2025.

Vestas' vision is to become the global leader in sustainable energy solutions, and everything we do revolves around the development and deployment of these solutions.

We would like to express our general support to AEMO's Draft R1 Guideline under consultation, in response to AEMC's National Electricity Amendment (Enhancing investment certainty in the R1 process) Rule 2024.

Vestas is of the view that AEMO should implement a more prescriptive capability assessment process, which would limit the scope of additional data and information requests, avoiding different interpretations and unexpected issues later in the project.

Nevertheless, the consultation paper allows AEMO and NSP to modify the scope at any time during the capability assessment and it does not mention whether those requests are also limited to the list in Appendix B of the Guideline.

Please refer to the appendices for our feedback on specific topics in the Draft Guideline and the questions raised in the consultation paper.

Should you wish to discuss any aspect of our comments, please contact Marco Aurelio Lenzi Castro via [mlzto@vestas.com](mailto:mlzto@vestas.com) or 0488 152 925, or the undersigned.

Yours sincerely

**Vestas - Australian Wind Technology Pty. Ltd.**



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## Appendix 1: Comments on the Draft R1 Capability Assessment Guideline

### Section 2.2.2

- It is noted *“The following inputs from the NSP and AEMO may also inform the scope of the assessment”*:
  - **External changes**, such as newly committed generation, are additional considerations. These were not typically part of the R1 assessment unless specified in the 5.3.4A letter. Including them introduces additional risks for generators if not included in the 5.3.4A letter.
  - **Known model or performance issues** should be explicitly addressed in the 5.3.4A letter as conditions to manage registration (R1) risks.

### Section 4.2 – Tolerances in Connection Applications

- Some NSPs do not permit any tolerance at the connection phase. For example, **main transformer impedance tolerances** are defined in standards. It should be standard practice to allow generators to account for these tolerances during the connection application phase to ensure realistic and achievable performance assessments.

### Appendix A – Converter Parameter Adjustments

- **How are fine-tunings of converter parameters categorized and assessed?**

If compliance with the agreed performance standards is demonstrated through studies, would that be sufficient to approve the proposed changes?

A clear framework is needed to determine when study-based evidence is adequate for approval, especially for minor tuning adjustments.

## Appendix 2: Consultation Questions

### ➤ Capability assessment process

**Is the proposed capability assessment process where the data and information requirements are divided into two main parts appropriate? If not, why not?**

Yes, it is appropriate. The scope of work must be clearly defined to ensure the registration process is not affected by unexpected requirements. Having the work divided into two or more parts shouldn't pose any issues, as long as the expectations at each stage are clearly outlined and the scope remains consistent throughout.

**Would a more prescriptive capability assessment process better meet the requirements of the NER and be more consistent with the NEO? If so, why and what would a more prescriptive process entail?**

Yes, implementing a more prescriptive capability assessment process would be more appropriate as it would limit the scope of what AEMO and NSP can request, avoiding different interpretations and unexpected issues later in the project. Appendix B should state the full list of additional data and information requirements and why they would be needed.

The consultation paper leaves plenty of room for AEMO and NSP to change the scope at any time during the capability assessment and it does not mention whether those requests are also limited to the appendix B list, as follows:

*"As the capability assessment is carried out AEMO or the NSP may identify additional issues that were not considered when the scope of the capability assessment was developed. In these circumstances AEMO or the NSP may request further clarifications and/or data and information, depending on the findings of the assessment."*

Ideally, this assessment could be defined early on—potentially even at the R0 stage—based on the specific design of the project.

While compliance assessments are already well established within the industry, there are additional operational scenarios that often necessitate further capability assessments. These typically include:

- STATCOM and out-of-service scenarios
- Harmonic filters, capacitor banks, or shunt reactors in out-of-service conditions
- Main transformers in out-of-service scenarios
- Variations in the number of online turbines
- 33kV feeders and their out-of-service scenarios

Clearly accounting for these situations in the initial capability assessment would provide greater certainty and reduce the risk of delays or redesigns. However, some level of flexibility should be available to deal with dynamic adjustments on STATCOM control modes, for example.

**Is it sufficient that the data and information submission focuses on changes since the connection agreement was executed? Should other matters inform the contents of the initial data and information submission?**

Yes, this is appropriate. Quantifying the changes is the first step in defining the scope for the R1 Capability Assessment.

However, for hybrid systems (Wind + STATCOM + BESS), the control interaction risks should still be assessed, even if both systems were previously approved separately.

**Are the proposed initial information and data requirements in Appendix A appropriate?**

Yes, it is appropriate.

**Is the proposed Request Form suitable to support the submission of the initial information and data?**

Yes, it is appropriate.

**Appendix B identifies a range of additional information and data requirements that may be required to support the capability assessment, and the reason(s) they may be required. Are there additional information and data items that should be included in Appendix B, or that should be removed from Appendix B? Why?**

Some of the content in Appendix A and Appendix B is complementary—for example, the GS/IRS models in Appendix A and the models and user guides in Appendix B. It would be helpful to clarify the rationale behind separating this information across the two appendices to avoid confusion and ensure consistency.

In addition, we suggest adding grid impedance scan results at different equipment terminals, such as STATCOM and WTG for harmonic/oscillation risk, as well as STATCOM out of service with a clearly defined scope for what studies would be required.

In Table 3 (Appendix B), the wording under the “Local limit implementation detail” should be improved to avoid different interpretation: is it referring to creating new PQ charts for variations based on equipment availability? Or is it restricting P for variations to meet fixed GPS Q? Vestas supports the first option.

➤ **Materiality of non-compliance**

**Is the proposed list of example conditions to guide the approach to address non-compliance with performance standards in Appendix C appropriate? What alternatives do you suggest?**

Yes, it is appropriate. It is standard practice to assess compliance at the registration stage using as-built data. Modelling and analysis are essential tools for quantifying and verifying compliance with the GPS requirements, as well as for identifying and addressing any non-compliances.

**Is it appropriate that AEMO’s interpretation of what constitutes an adverse impact includes an assessment of materiality? What alternatives do you suggest?**

Yes, it is appropriate. This is especially important for hybrid system, where small deviations may have little impact, but poor damping or improper coordination can lead to significant voltage or oscillation issues across the system. Therefore, materiality should be assessed not only by the magnitude of the deviation but also by its potential to cause dynamic instability.

➤ **Conditions on registration**

**Are the proposed circumstances when conditions on registration could apply appropriate? If not, what alternatives do you suggest?**

There are situations that may impact the commissioning of plants, such as technical issues or non-compliances. However, the proposed terms and conditions can provide flexibility, allowing generators to proceed with commissioning activities while addressing these issues in parallel.

**Is the list of terms and conditions that could be applied on registration appropriate? Are there terms and conditions that should be removed, or that should be included? Why?**

Yes, they are appropriate. Having clearly defined terms and conditions supports generators when dealing with technical issues or non-compliances. This flexibility can enable projects to continue progressing rather than being halted, which often leads to significant delays.

Ideally, these scenarios and their corresponding conditions would be predefined. However, it's also understood that such situations can be complex, highly situational, and specific to each project.