

27 June 2022

Mr Brett Redman  
Chief Executive Officer  
TransGrid  
201 Elizabeth Street,  
Sydney NSW 2000

Via Email: [REDACTED]

Dear Mr Redman,

### **Notice under clauses 4.11.1(d) and (e) of the National Electricity Rules**

AEMO currently has extremely limited real-time visibility of emerging power system stability phenomena, primarily related to low system strength, low system inertia and higher penetrations of inverter-based generation. Low system strength has been shown through theoretical simulations as well as actual observations to cause instability, such as voltage oscillations, which can be a threat to power system security and the problem is exacerbated by low minimum demands currently being experienced.

In addition, the magnitude of undamped inter-area electromechanical oscillations has been increasing due to a reduction of synchronous machines with power system stabilisers online.

As more inverter-based generation connects, these power system security issues will become more common and important to address.

Existing SCADA systems are unable to detect and respond to these power system phenomena. Without any visibility the control room cannot determine power system security in real-time and would need to pre-emptively constrain inverter-based generation or direct on synchronous generation. Both actions can have serious market and political implications.

WAMS (Wide Area Monitoring System) is a smart-grid technology that allows real-time detection of these issues by utilising a network of high-speed monitoring devices.

Installation of high-speed streaming devices (such as phasor measurement units, or PMUs) throughout the power system will provide the required data for WAMS, enabling AEMO to detect and respond effectively to rapidly developing power system issues and more accurately model the power system.

AEMO has identified critical locations in the New South Wales network at which high-speed streaming of power system data is required and is issuing the attached notice requesting TransGrid to install and configure the devices.



Existing high-speed monitoring (HSM) devices should be retained and if any meter is decommissioned, it must be replaced with a PMU. AEMO's view is that ultimately, and only after we have strong confidence in the PMU/WAMS systems, would we no longer require HSMs. We think it should be a slow and methodical transition to PMUs before HSMs are decommissioned, if that is the action decided upon in the future.

Should you have any questions in relation to this matter please don't hesitate to contact me on [REDACTED] or at [REDACTED]

Yours sincerely,

[REDACTED]

Michael Gatt

**Executive General Manager – Operations**

cc:

[REDACTED]  
[REDACTED]

Attachments: 

1. TransGrid - Notice under clause 4.11.1(d) and (e)\_June 2022
2. Notice Attachment 1 PMU Specification (NSW) June 2022