

Draft determination on request for protected event declaration

Reliability Panel invites submissions on draft determination

The Reliability Panel has released a draft determination on a request by AEMO for the declaration of a protected event to help AEMO maintain power system security in South Australia in the most cost-effective way. The Panel's draft determination is to declare a protected event in accordance with AEMO's request. Submissions are due by 9 May 2019.

Overview of AEMO's request

AEMO has requested that the Panel declare a protected event to manage the risk of loss of transmission elements causing generation disconnection when destructive wind conditions are forecast in South Australia. Declaring a protected event allows AEMO to incur the costs of managing the system at all times to limit the consequences of a low probability but high consequence system security event. AEMO's request is an outcome of its 2018 *Power System Frequency Risk Review (PSFRR)*, in which it noted that the risk of generation loss leading to unstable power swings on the Heywood interconnector is heightened at times of destructive wind conditions.

AEMO is currently managing this risk by constraining the amount of power being imported into South Australia on the interconnector when destructive winds are forecast. However, AEMO considers that declaring a protected event would enable it to develop a more cost-effective, transparent and fit-for-purpose mechanism for the ongoing management of the risks associated with destructive wind conditions (i.e. wind speeds above 140km/h) in the region, which occur approximately twice a year.

AEMO's request identified a number of potential options for managing the proposed protected event. AEMO's recommended option is to:

- upgrade the existing System Integrity Protection Scheme (SIPS), which is an Emergency Frequency Control Scheme (EFCS) that is designed to identify and counteract conditions that could result in a loss of synchronism between Victoria and South Australia, including through the rapid injection of power from batteries in South Australia; and
- limit the total import capacity over the Heywood interconnector to 250 MW at times when destructive wind conditions have been forecast in South Australia.

AEMO has assessed that its recommended option for managing the proposed protected event will result in an annual net economic benefit of between \$1.5 million and \$10 million.

Draft determination

Upon receiving a request to declare a protected event, the Reliability Panel is tasked with determining if there are net economic benefits from AEMO taking pre-emptive actions to manage a particular risk. Where the benefits of managing the event outweigh the costs, the Reliability Panel may declare the non-credible contingency event a protected event.

The Panel's declaration will allow AEMO to manage the protected event in accordance with the protected event EFCS, which encompasses the actions specified as part of AEMO's recommended option for managing the event. The first step in this process is for AEMO to implement the proposed upgrades to the SIPS. Once this has occurred, AEMO will be able to utilise the upgraded SIPS in combination with imposing a 250MW import

limit on the Heywood Interconnector during periods of forecast destructive wind conditions in South Australia.

What are the details of the Panel's protected event declaration?

The protected event the Panel proposed to declare is defined as:

"The loss of multiple transmission elements causing generation disconnection in the South Australia region during periods where destructive wind conditions are forecast by the Bureau of Meteorology."

The Panel is satisfied that AEMO has considered a range of reasonable options for managing this protected event and that, of the options identified, AEMO's recommended option is the most robust and cost-effective approach.

The Panel also considers that AEMO has undertaken an accurate and comprehensive assessment of the costs and benefits of its recommended option for managing the event.

The protected EFCS used by AEMO to manage the event will be subject to a number of target capabilities, including:

- The cost of upgrading the SIPS should be justified by the resulting improvement in its ability to manage the risks associated with the protected event. This requirement is satisfied by AEMO's request.
- The pre-contingent import limit applied to the Heywood Interconnector during forecast destructive wind conditions is to be initially set at 250 MW and reviewed by AEMO through the PSFRR or in the event of any power system conditions changing.
- The issuing of forecasts for destructive wind conditions in the South Australia region is an appropriate trigger event for the application of the pre-contingent import limit on the Heywood Interconnector by AEMO.
- The functionality of the upgraded SIPS should reliably detect a protected event and trigger the appropriate control action in accordance with the target capabilities identified in AEMO's request

Timing of declaration

The Panel's declaration will take effect immediately upon the publication of the Panel's final determination, which is due in June 2019. This will allow the protected event EFCS, including the necessary upgrades to the SIPS, to be implemented in full as soon as possible.

AEMO has estimated that these upgrades can be completed in approximately two years. In the meantime, AEMO will continue to manage the risk associated with the protected event through existing mechanisms under the National Electricity Rules.

Background

AEMO's request identifies a number of characteristics of the South Australian power system which can create challenges from a power system management perspective. AEMO noted that these characteristics contribute to the South Australian power system being vulnerable to the loss of a large amount of generation. In particular, if the region is importing a significant amount of power from Victoria over the Heywood Interconnector, a sudden increase in power flow and overload of the interconnector following the loss of generation in South Australia could lead to the disconnection of the interconnector and a potential black system event.

AEMO considers that the risk of a large loss of generation in South Australia leading to the loss of the Heywood Interconnector is increased during destructive wind conditions due to the heightened risk of occurrence and potentially greater magnitude of line failures and other transmission faults.

The Panel invites written submissions on this draft determination by **5pm, 9 May 2019**.

For information contact:

Executive General Manager, **Suzanne Falvi** (02) 8296 7883

Director, **Sebastien Henry** (02) 8296 7833

Media: Prudence Anderson 0404 821 935 or (02) 8296 7817
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