

Mr John Pierce
Chair
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

Dear Mr Pierce ^{Joh}

As you are aware, at its meeting of 7 October 2016, the Council of Australian Governments (COAG) Energy Council (the Council) agreed to direct the Australian Energy Market Commission (AEMC) to review the factors which contributed to the 'black system' event experienced in South Australia (SA) on 28 September 2016. I am writing to request the AEMC undertake this review as per the attached Terms of Reference (TOR).

The review should build on work being conducted by the Australian Energy Regulator (AER) and the Australian Energy Market Operator (AEMO), focused on the compliance of market participants with requirements in the National Electricity Law and National Electricity Rules and technical issues contributing to the event respectively. The AEMC should consult with AEMO, the AER, ElectraNet, SA Power Networks and the SA Government in conducting the review, along with other stakeholders as appropriate. The AEMC is requested to advise the Council on how it proposes to conduct the review by 1 February 2017, with the final report provided within six months of the completion of both AEMO's investigation report and the AER's compliance report on the 'black system' event.

If you require further information, please contact Mr James O'Toole, Assistant Secretary, Electricity Branch, Department of the Environment and Energy at james.o'toole@environment.gov.au or on (02) 6275 9023.

Yours Sincerely



The Hon Josh Frydenberg MP

Chair
COAG Energy Council
December 16

TERMS OF REFERENCE

REVIEW OF THE SYSTEM BLACK EVENT IN SOUTH AUSTRALIA ON 28 SEPTEMBER 2016

1. BACKGROUND

South Australia experienced a 'system black' event at 16:18 AEST on Wednesday 28 September 2016. The event occurred during a period of extreme weather.

The Australian Energy Market Operator's (AEMO) updated preliminary report indicates that, immediately prior to the event, a mix of South Australian wind (883 MW) and gas generation (330MW) and imports from Victoria (613MW) were meeting 1895MW of electricity demand from South Australian consumers.

AEMO's updated preliminary report indicates that the sequence of events resulting in system black included the loss of three major transmission lines, generation reductions at a number of wind farms coinciding with a voltage drop at each generator's connection point, a resulting overload and trip of the Heywood interconnector with Victoria leading to the islanding of South Australia from the rest of the National Electricity Market (NEM). This resulted in a rapid reduction in power system frequency, which was greater than the design of the under frequency load shedding scheme, and greater than performance standards required of generation. Accordingly, frequency ultimately fell to zero and generation tripped off to avoid damage.

As required under clause 4.8.15 of the National Electricity Rules, AEMO is currently undertaking a detailed examination of the technical issues that contributed to the event, including a thorough examination of how each component of the electricity system responded. AEMO is also required to report on the suspension of the spot market under clause 3.14 of the Rules. AEMO published a preliminary report on 5 October 2016, an update to the preliminary report on 19 October 2016, and is expected to publish further reports as more information and data is provided.

In addition, the Australian Energy Regulator (AER) is given powers under Section 15 of the National Electricity Law to investigate compliance with the Law and the Rules by market participants and AEMO.

The potential for system black events, such as that experienced by South Australia on 28 September 2016, has led to the initiation of several work streams focused on identifying, and developing solutions to address, vulnerabilities in the grid architecture and operational processes as an increasing proportion of renewable generation is integrated into the NEM.

The Australian Energy Market Commission (AEMC) is conducting the System Security Market Frameworks Review, in cooperation with AEMO. As part of this work the AEMC is considering a number of rule change requests focused on the procurement of and standards for ancillary services which can support power system security. The AEMO's Future Power System Security (FPSS) programme is examining operational challenges arising from the changing generation mix, and technical options to address these challenges. While these work streams are operating to separate timelines, they are interdependent and are expected to collectively inform advice to Ministers on potential system-wide reforms.

2. PURPOSE

The purpose of this review is to build on the work currently being conducted by the AEMC and AEMO through identification of any systemic issues that contributed to the system black event in South Australia, or affected the response, and provide a report to Ministers on:

- Any recommended actions or amendments to the regulatory frameworks, whether the NEL, NER or other jurisdictional instruments, that should be taken to address these broader systemic issues; and/or
- How the recommendations will be addressed in the AEMC's ongoing work programme, to the extent that there are suggested changes to the NER.

The Council of Australian Governments (COAG) Energy Council requests this report under section 6 of the *Australian Energy Market Commission Establishment Act (SA) 2004*.

3. SCOPE

In carrying out this review, the AEMC must have regard to the National Electricity Objective, in particular to have regulatory frameworks that support investment in and operation of infrastructure that provides for the long term interests of consumers.

The AEMC will need to consider the incident report prepared by AEMO under the rules noted above and any compliance reporting on these events by the AER.

In particular the AEMC should take into account any reporting by the AEMO and the AER on:

- the causes of the system black event, including the role of the transmission sector and the role of the generation sector in contributing to the event or the response;
- why a state-wide system black event occurred, rather than being contained within limited parts of the network;
- any conclusions as to whether the power system security frameworks and procedures specified in the National Electricity Rules operated effectively leading up to, during and following the event, in particular, the effectiveness of power system restart processes following the event; and
- any implications of vulnerabilities identified with respect to the South Australian electricity system for the stability and security of the grid as a whole.

The AEMC should take into account any other reports prepared and published concerning the SA events including the findings to date of any of its own current studies that may be relevant. The work of the review should be complementary to, and inform where appropriate, the broader Independent Review into the Reliability and Stability of the National Electricity Market underway.

In the light of any issues identified through the reports or otherwise, the AEMC must consider and report on:

- the needs of high energy users to maintain secure and reliable energy supplies so that they maintain international competitiveness, and how these needs may be met;
- the nature of the economic costs of disruption to the power system, similar to the system black event that occurred in South Australia on 28 September 2016;
- the effectiveness of the power system security framework established under the National Electricity Rules, and other relevant regulatory frameworks to manage high impact, non-credible events;
- any improvements in existing processes, tools available to the system operator or to components of the electricity system in South Australia (for example, the availability of additional ancillary/system balancing services, additional interconnection with eastern states) that would assist in preventing a recurrence of the events experienced; and
- whether additional synchronous generation (or any viable alternative technology with equivalent functionality) in the South Australian region would have helped in preventing the black system event on 28 September 2016 in SA.

4. CONSULTATION

In conducting the review, the AEMC must consult with AEMO, ElectraNet, SA Power Networks, the AER and the South Australian Government. The AEMC may consult with other stakeholders, including consumers and high energy users, as necessary to complete the review.

The AEMC will provide its report to the COAG Energy Council six months after the conclusion of both AEMO's investigation report and the AER's compliance report. The AEMC will provide to the COAG Energy Council an approach setting out how it proposes to carry out its work and including the provision of updates and status reports.