

MINUTES

MEETING: National Electricity Market Operations Committee (NEMOC)

DATE: Friday, 17 September 2021

TIME: 10:00AM – 12:00PM (Sydney/Melbourne Time)

ATTENDEES:

NAME	COMPANY
Ken Harper <i>(Chair)</i>	AEMO
Lenard Bayne <i>(Secretariat)</i>	AEMO
Teresa Smit	AEMO
Tjaart van der Walt	AEMO
Wai-kin Wong	AGL/Clean Energy Council
Martin Cavanagh <i>(Proxy)</i>	AusNet Services
Ben Skinner	Australian Energy Council
Christian Zuur	Clean Energy Council
Simon Emms	ElectraNet
Naresh David	Energy Australia/Australian Energy Council
Verity Watson	Energy Networks Australia
Glenn Springall	Energy Queensland/DNSP Rep for ENA
Gary Edwards	Powerlink QLD
Mike Paine	TasNetworks
Kasia Kulbacka	TransGrid

GUESTS:

NAME	COMPANY
Callan Masters <i>(Item 4.1)</i>	AEMO
Daniel Lavis <i>(Item 5.4)</i>	AEMO
Darren Spoor <i>(Item 5.1)</i>	AEMO
Nilesh Modi <i>(Item 5.3)</i>	AEMO
Sujeewa Rajapakse <i>(Item 5.2)</i>	AEMO
Tim Daly <i>(Item 3.1)</i>	AEMO

APPOLOGIES:

NAME	COMPANY
Michael Gatt	AEMO
Tim Lloyd	AusNet Services

1. Welcome

Ken Harper (5 mins)

Ken Harper (Chair) welcomed members to the meeting and noted those apologies. In addition, Ken welcomed Christiaan Zuur - Clean Energy Council (CEC) and Kasia Kulbacka – TransGrid who are the newly appointed representative at NEMOC for their organisations. Both Christiaan Zuur and Kasia Kulbacka provided members with a brief introduction.

2. Previous meeting minutes and actions

Ken Harper (5 mins)

Previous meeting minutes were accepted with no changes made. NEMOC members approved 18 June 2021 meeting minutes to be published on [AEMO's website](#). Actions were updated accordingly, and amendments made.

3. Presentation

3.1. AEMO Cyber Security Update

Tim Daly (15 mins)

Tim Daly joined the meeting and provided a presentation on recent developments regarding AEMO's Cyber Security. Key messages from this presentation are outlined below.

- Ransomware threat is continuing to escalate. Hostile nation states are targeting electricity grids to be able to cause disruptions in times of conflict.
- Increasingly complex and interdependent system increasing attached surface.
- Energy Ministers have identified cyber security as a key priority and formed an official working group to develop and progress a work plan.

In addition, Ken Harper advised members that a review of the Data Comms Standards will be conducted over the next 6-12 months.

3.2. January 2020 Incident Report Restoration Plan and Lessons Learnt *Martin Cavanagh (15 mins)*

Martin Cavanagh provided a presentation on the restoration plans and lessons learnt that AusNet Services conducted as a result of the 31st January 2020 Cressy Transmission Towers event. The following points were discussed.

- Separation event took place at 1:24pm.
- The event was due to a localised extreme weather with the Bureau of Meteorology confirming a presence of severe convective downbursts.
- Catastrophic failure of 6 existing MLTS-MOPS 500kV towers within a 3km section with a 7th tower failing as a result.
- SA separated from the NEM.

Martin Cavanagh advised that a detailed report on this event is available on [AEMO's website](#).

4. Discussion

4.1. Reviewable Incident Report Summary

Callan Masters (15 mins)

Callan Masters provided a summary of the Reviewable Incident Report as per NER 4.8.15. A total of five reviewable incidents are currently being drafted with seven reports published on [AEMO's website](#).

It was noted that an internal review of the following incidents is progressing well and will be published in the coming months.

- 25 January 2021 SCADA failure.
- 12 March 2021 Torrens CT failure.
- 25 May 2021 QLD Load Shedding incident.

5. Working Group Updates

5.1. Power System Security Working Group (PSSWG)

Darren Spoor (15 mins)

Darren Spoor provided a brief overview from the PSSWG meeting which was held on 6 August 2021.

The PSSWG reviewed some significant power system events which included the Wandoan South Yuleba North 275kV lines on the 7th of December 2020. The PSSWG discussed the lessons learnt from this event which was shared amongst the TNSP's with the objective of identifying any similar risks in the NEM. In addition, the PSSWG reviewed the Torrens Island CT failure on the 21st of March 2021.

The PSSWG continued the review of the reclassification framework with a specific focus on the bushfire and generator reclassification framework. A member of the Generator Council facilitated discussions on generator reclassification requirements. The key issues have been referred to the Generator Council members and formal recommendations are expected at the next PSSWG meeting scheduled in November 2021.

The PSSWG also met with the NSW RFS in order to validate the existing bushfire reclassification framework. The TNSP's were tasked with confirming that the bushfire reclassification matrix remains fit for purpose.

The PSSWG invited the Bureau of Meteorology (BoM) to discuss recent space weather events and to confirm that AEMO and the TNSP's were correctly receiving the 'Geomagnetically Induced Current (GIC) Alerts'. It was agreed that the BoM would begin to test these alerts to ensure they were being received.

The PSSWG have referred previous discussions relating to the acceptability of some 'background' oscillatory behaviour in the power system to the Power System Modelling Reference Group (PSMRG). In addition, any recommendations will be endorsed by the PSSWG members before presentation to NEMOC.

It was agreed that the PSSWG membership and the associated Communications Taskforce required additional expertise to formally endorse the proposed HF emergency communications network. Consequently, the PSSWG convened several meetings with TNSP's communications experts where the requirement for a NEM emergency communications architecture was identified.

The PSSWG request NEMOC to endorse the establishment of a 'NEM Emergency Communications Working Group' for a fixed duration. The objective of this group would be to develop a 'NEM Emergency Communications Roadmap' to achieve the requirements of the System Restart Communications Protocol. The PSSWG has developed the functional specification embedded within the draft terms of reference (ToR) and were provided to NEMOC at this meeting.

- Recommendation 1:

That NEMOC membership to share outcomes of the ongoing review of the power system reclassification framework with constituent members

- Recommendation 2:

That the NEM Operations Committee approve the establishment of the NEM Emergency Communications Working Group pending the development of a 'NEM Emergency Communications Roadmap'.

It was noted that NEM Emergency Communications working group would be a sub working group of the NEMOC for a period of time, until the NEM Emergency Communications Roadmap was developed and implemented.

The NEMOC endorsed the establishment of the NEM Emergency Communications Working Group put forward by the PSSWG and in addition, requested that the ToR include clear objectives and deliverables.

The next PSSWG meeting will be held on 5 October 2021.

5.2. Operations Planning Working Group (OPWG)

Sujeewa Rajapakse (15 mins)

Sujeewa Rajapakse provided a brief overview from the OPWG meeting which was held 31 August 2021.

It was noted the Under-frequency load shedding (UFLS) review is progressing well, with the NEM UFLS review currently underway and in addition all modelling and data requirements have been completed. It was noted that the NEM UFLS is estimated to be completed by the end of October 2021.

Sujeewa Rajapakse added that a number of Over-frequency Generator Shedding settings (OFGS) observed with wind farms had experienced some issues as they were not operating in accordance with the expected performance standards, as they were tripping off at 51 Hz despite their settings being different. OPWG confirmed that these issues have been addressed as a priority. This OFGS review is planned to be carried out in the second part of 2021.

An outline of the actions planned for summer readiness were provided to NEMOC members which are outlined below:

1. Letters to Generators seeking information on their readiness. Large intermittent generation will also be included.
2. Survey of TNSP readiness will commence soon.
3. Stakeholder engagement following AEMO overall assessment is currently being planned.

In addition, Sujeewa Rajapakse advised that the Summer Network Outage Planning Guideline has been drafted and will be released shortly. Notable recommendations within this guideline will include:

1. AEMO proposed to allow one outage of critical network element during daytime with recall time not longer than 2 hours and completed by 1500 hrs AEST.
2. Outages with recall between 2 – 4 hours to be considered on case-by-case basis. There would be no limitation for night-time (2000 hrs to 0500 hrs AEST) outages for these lines and recall time should be less than 8 hours.
3. Outages of two critical network elements will be considered so long as the second outage has no material compounding effect on supply reliability of the affected region/s.
4. TNSP's proposed to extend the allowable outage duration to 1600 hrs AEST to allow more time for planned work to be completed.

The draft Summer Network Outage Planning Guideline will be provided to OPWG members for endorsement shortly following this meeting with a plan to finalise by early October 2021.

In addition, Ken Harper welcomed feedback from TNSP's regarding outage planning during the mild summer period to determine if there was opportunity to allow outages to take place. This would take some pressure off other parts of the year in terms of planned outages.

The three-yearly review of the Consultation of Congestion Information Resource (CIR) is progressing with two submissions received. Improvements that will be introduced will include requirements to publish more forward-looking static and limits advice information.

AEMO commenced meetings with TNSPs/DNSPs to implement short term actions, preliminary meetings were conducted with Powerlink, TransGrid, AusNet Services and ElectraNet to plan the program of work. Regional joint AEMO/TNSP/DNSP meetings will commence from late September 2021.

AEMO presented to the OPWG statistics of the number planned outages for primary plants and delays in return to service, for the awareness of TNSP's. These statistics were also used to guide the relaxing of the summer network outage planning guidelines.

The next OPWG meeting will be held on 23 November 2021.

5.3. Power System Modelling Reference Group (PSMRG)

Nilesh Modi (15 mins)

Nilesh Modi provided a brief overview from the OPWG meeting which was held 23 August 2021.

Key highlights from the PSMRG meeting are outline below.

- Graham Mills (AEMO) replaced Julian Eggleston who has resigned from the AEMO. Jahan Peris (TransGrid) replaced Richard Xu (TransGrid).
- PSMRG ToR reference was updated to reflect the discussion on NER 5.7.7. All responsibilities related to NER 5.7.7 sits outside PSMRG and with System Integration Steering Committee (SISC).
- Acceptable voltage oscillation thresholds have been discussed and agreed.
 - Connection and Planning : 0.1% peak-to-peak
 - Operations: 0.5% peak-to-peak
- AEMO is working on transition to PSCAD v5. NER framework does not give rights to AEMO to get source code for the PSCAD models. Transition to newer version of compiler need source code. AEMO currently uses a workaround to recompile all PSCAD models with a newer version of intel compiler. Any future upgrade to newer version of intel compiler would be extremely challenging and could halt transition to newer version of PSCAD and Intel compiler. The PSMRG agreed that current NER framework doesn't give rights to AEMO to get source code for the PSCAD models and therefore a framework change may be required.

Timothy Cervenjak (AEMO) joined the meeting to present a high-level overview of the NEM Simulator project. In addition, James Guest (AEMO) presented to the PSMRG members on AEMO's efforts to transition from PSCAD version 4 to version 5.

Jenny Riesz and Filip Brnadac (AEMO) presented on AEMO's developments of the composite load and DER models. AEMO proposed to operationalise the DER and load models in near future and seek feedback from NSPs at this stage.

James Guest and Ehsan Farahani (AEMO) presented on AEMO's investigation into intermittent sub-synchronous oscillations in the West Murray region. It noted that it appeared 17 Hz in RMS could be 33 Hz and 67 Hz when three-phase waveforms are analysed. AEMO are continuing this investigation in collaboration with NSP's and generators.

Marina Delac (AEMO) provided brief update on the progress on SSAT. Following provides high level summary of the progress.

SUMMARY AVRs, PSSs, Governors, FACTS					
	No. of models to develop (AVRs, PSSs, governors, FACTS)	No. of models to develop (AVRs, PSSs, no governors, no FACTS)	No. of models developed as at 19 Aug 21 (AVRs and PSSs)	Developed (AVRs, PSS, governors, FACTS)	Developed (AVRs, PSS)
QLD	36	23	11	31%	48%
NSW	28	21	0	0%	0%
VIC	32	30	0	0%	0%
TAS	30	8	8	27%	100%
SA	25	14	8	32%	57%

Nilesh Modi advised that a discussion was conducted with PSMRG members in regard to s5.2.5.10 with some members requesting more clarity when handling these types of oscillations. No consensus was reached to use a solution proposed by AEMO, however TNSP's agreed to use the scheme for monitoring purposes only.

5.4. Operations Training Working Group (OTWG)

Daniel Lavis (15 mins)

Daniel Lavis provided a brief overview from the OTWG meeting which was held 8 September 2021.

A presentation was provided to NEMOC members on the proposed National Training Framework – Courseware Development and Training Delivery. AEMO have continued to work on the development of an appropriate framework to deliver the objectives in adopting standardised training for Power System Operators. AEMO have engaged Thomson Bridge who are a registered training group with a view to consult with all NSP's including Northern Territory and Western Australia as well as a selection of generator operators.

The following phase approach and timeline for this framework are outline below.

- Phase 1
 - Collaboration and consultation to define a skills management and governance framework (the Framework) and the initial high level training needs analysis for the foundation suite of courses.
 - *Phase 1 would be conducted over a 3-month period, allowing for initial consultation, follow up tasks and validation of findings.*
- Phase 2
 - Based on the training needs analysis design and develop initial courseware, define delivery mechanisms, and conduct pilot programs with selected operators to validate and refine the approach.
 - *Phase 2 would be subject to the requirements defined in Phase 1; however it is envisaged that Phase 2 would take approximately 12 months.*
- Phase 3
 - Refine the overall approach for the management of the Framework including the design of an expanded suite of content, workplace performance and competency standards, content development and delivery modes, and program evaluation and improvement processes.
- Phase 4
 - Implement the Framework including ongoing evaluation and continual refinement.
 - *Phases 3 and 4 will be significantly dependent on the findings from Phases 1 and 2.*

6. Other Business

6.1. Proposed 2022 NEMOC Meeting Dates

Lenard Bayne (5 mins)

The secretariat provided members with a copy of the proposed NEMOC meeting dates for 2022. These invites have now been issued.

Next NEMOC Meeting & Workshop	
NEMOC Meeting #26	10 December 2021
NEMOC & EJPC Workshop #5	18 March 2020