

MINUTES

MEETING: National Electricity Market Operations Committee (NEMOC)
DATE: Monday, 21 September 2020
TIME: 10:00AM – 1:30PM (Sydney Time)

ATTENDEES:

NAME	COMPANY
Ken Harper <i>(Chair)</i>	AEMO
Lenard Bayne <i>(Secretariat)</i>	AEMO
Michael Gatt	AEMO
Tjaart van der Walt	AEMO
Teresa Smit	AEMO
Tim Lloyd	AusNet Services
Ben Skinner	Australian Energy Council
Lillian Patterson	Clean Energy Council
Wai-kin Wong	AGL/Clean Energy Council
Doug Deans <i>(Proxy)</i>	ElectraNet
Naresh David	Energy Australia/Australian Energy Council
Verity Watson	Energy Networks Australia
Blake Harvey	Energy Queensland/DNSP Rep for ENA
Gary Edwards	Powerlink QLD
Mike Paine	TasNetworks
Andrew Power	TransGrid

GUESTS:

NAME	COMPANY
Chris Davies <i>(Item 3.1)</i>	AEMO
Chris Stewart <i>(Item 4.1)</i>	AEMO
Michael Lyons <i>(Item 4.1)</i>	AEMO
Darren Spoor <i>(Item 6.1)</i>	AEMO
Babak Badrzadeh <i>(Item 6.3)</i>	AEMO
Sujeewa Rajapakse <i>(Item 6.2)</i>	AEMO
Daniel Lavis <i>(Item 6.4)</i>	AEMO

APOLOGIES:

NAME	COMPANY
Simon Emms	ElectraNet

1. Welcome

KHarper welcomed members and noted those apologies. In addition, Ken Harper introduced AEMO's new Chief Operations Officer Michael Gatt.

2. Previous meeting minutes and actions

Previous meeting minutes were accepted with no changes made. NEMOC members approved 19 June 2020 meeting minutes to be published on [AEMO's website](#). Actions were updated accordingly, and amendments made.

3. Presentations

3.1. Renewable Integration Study (RIS) Update

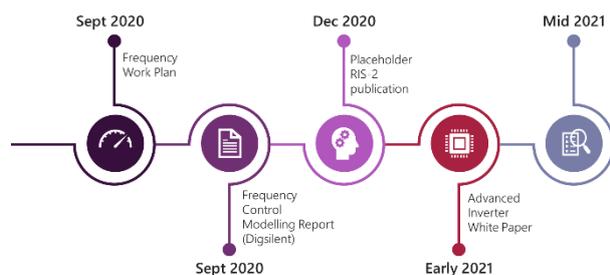
CDavies joined the meeting to provide a progress update on the RIS stage 1 consultation report actions and next steps.

CDavies advised that the new integration study was published in April 2020 this year which captured 12 months' worth of studies that looked at the limits for instantaneous penetration of wind and solar in the NEM. Key findings of the study showed that by 2025 instantaneous penetration of wind and solar would exceed 50%. An action plan has been established to securely meet penetration up to and beyond 75%. CDavies added that should actions not be taken, wind and solar may become limited to 50-60% of instantaneous generation, however it was noted there was no reason why the NEM couldn't operate securely at higher levels.

CDavies added that AEMO has developed an integrated roadmap of priority security activities and anticipate publishing this roadmap by Q2 2021. In addition, AEMO identified 15 recommended actions which will be integrated into the roadmap with other related work. CDavies advised that in addition to the recommended actions, AEMO will develop a detailed frequency control workplan to improve system strength coordination and intend to publish this workplan by October 2020.

CDavies advised AEMO has conducted a high-level engagement process that involved a variety of public forums and is currently finalising the consultation report. It was noted that AEMO has received a large amount of comments from this engagement seeking more clarity on how the work aligns with the current Integrated System Plan (ISP) and how AEMO intends to align it with the next ISP. Other feedback received from this engagement was focused around the cost benefit analysis on the different recommendations that were put forward. CDavies added that there were also several comments around the distributed PV recommendations and in particular the recommendation AEMO has made regarding emergency generation shedding capability. AEMO observed a large amount of interest from individual consumers and solar citizens with a total of 580 submission being received. AEMO will collate all engagement feedback received regarding this program of work going forward.

Next steps are outlined below.



BSkinner raised the question relating to the anticipated frequency report. BSkinner noted that there have been discussions with Australian Energy Council (AEC) members regarding the preferred approach for economically procuring it and would consider AEMO's expertise in terms of what would be required. BSkinner added that a review on how to facilitate the economic procurement in the longer term would require industry to have in place the right performance and investment signals to continue it into the future. AEC will share with AEMO their preferred approach in the next few days.

4. Discussion

4.1. High Speed Monitoring (HSM) Phase 1 Report

CStewart and MLyons joined the meeting to provide an overview of the HSM phase 1 report which was considered read.

It was noted that HSM is required to manage the power system operation and more so now with the changing elements in the power system. Several Transmission Network Service Providers (TNSP) are currently rolling out the installation of phasor measurement units (PMU's) with AEMO aiming to make the best use of the existing high-speed data by arranging access to it. It was noted that HSM will generally be with the PMU's. CStewart advised that more locations are required, noting that aiming to install HSM in all high priority locations by June 2021 and lower priority ones by June 2022.

CStewart noted that priority locations are essential this financial year to assist with maintaining secure power system operation and adding that other locations were essential as more changes occur in the power system. It was proposed that the installation process of HSM would be best managed by the Operations Planning Working Group (OPWG) with the guidance of the NEMOC. Coordination by the OPWG might include activities such as consistency in approaches with specification between regions and aligning the installation work to coincide with planned attendances on sites such as metering, protection and communications field staff.

The next steps would be for the NEMOC members to endorse the coordination and management of the installation of the PMU's via the OPWG to ensure consistency between the regions. In addition, formal letters will be issued to TNSP's, Generators and some DNSP's relating to HSM data requirements.

4.2. Reviewable Incident Report

LRobinson provided a summary of the Reviewable Incident Report as per NER 4.8.15. Information was considered read. A total of 21 incidents were presented to members with 11 reports being published on AEMO's website. AEMO will continue to provide this information to the NEMOC moving forward.

5. Break

6. Working Group Updates

6.1. Power System Security Working Group (PSSWG)

DSpoor provided a brief overview from the PSSWG meeting which was held on 7 August 2020.

It was noted that the group conducted a detailed review of the bushfire event in VIC on 10 January 2020. It was noted that there remains some ambiguity over the acceptability of

cascading trips while reaching a secure state. The PSSWG is expected to develop a formal position on this issue at the next meeting in November 2020 and in addition a detailed review of the bushfire event in NSW on 4 January 2020 will also be discussed.

DSpoor advised of a productive discussion regarding the validity of lightning reclassification zones with a focus on some 500kV lightning events that had occurred earlier this year. DSpoor advised that the Control Room Operations working group has been doing some productive work with coordinating and facilitating discussions between the NEM control rooms with a key focus on a consistent approach when using operational terminology to avoid misinterpretation following several incidents between NSP's and participants.

DSpoor elaborated on an action that was given to the Operational Communications Taskforce in September 2019, regarding a backup communications facility across NEM capital cities. The PSSWG provided a conceptual design to NEMOC members in June 2020. An action from that meeting requested the PSSWG were to provide an invoice for the development of the conceptual design. More details are covered in agenda item 6.1.1 in this meeting pack.

6.1.1. Long Range Digital Radio Voice and Messaging Solution

As an action at the previous NEMOC meeting in June 2020, members had tasked DSpoor to provide an invoice for the development of a conceptual backup communications facility between NEM Control Rooms which was included in this meeting pack. This conceptual design and costings were discussed in this meeting and was endorsed by members, noting that each NEM region and AEMO would share this cost.

6.1.2. Review of Non-Credible Contingencies

DSpoor provided a summary of Non-credible contingencies to the NEMOC members. Currently there is a total of 5 events being reviewed and reported on by AEMO. In addition, there is a further 3 events that are yet to be developed and reported on. The PSSWG will continue to provide this information to the NEMOC moving forward.

6.2. Operations Planning Working Group (OPWG)

SRajapakse provided a brief overview from the OPWG meeting which was held on 1 September 2020.

The OPWG finalised AEMO's Guidelines for Transmission Network Outage Planning – 2020 Summer period with some minor adjustments made to maintenance outages and limitations on some high voltage lines. Feedback was received by OPWG TasNetworks representative, suggesting the need to broaden the Summer Network Outage Planning Guideline by using a risk-based approach that applied throughout the year for planned outages when the power system was at a higher risk state. Collectively the OPWG agreed that it was good to have an outage plan that was specific to summer due to the known risk. OPWG determined that it was more practical to apply a guideline that was specific to a heightened period with known risk and suggested that those high risk would leverage from the same principles outlined in the summer Network Outage Planning Guideline.

It was noted that the guideline for summer 2020/21 will be in effect from 16 November 2020 to 21 March 2021. A review of the guideline in early March 2021 will aim to identify possibilities of accommodating more high-risk outages, should mild weather be forecasted.

The OPWG discussed a method to efficiently communicate with the asynchronous generation that required turbines and inverters to be disconnected, or constrained. It was noted that the current process was time consuming and impacted AEMO's control room resources and TNSPs. The OPWG is continuing to work through these challenges and aim to determine an efficient approach and will provide an update to the NEMOC when a solution is determined.

Included in this meeting pack was the discussion paper on Voltage Control under light load conditions which incorporated feedback from all TNSP's and DNSP's and was considered read. OPWG were seeking approval from the NEMOC to discuss actions listed within section 5.0 (Short-term and medium-term measures for voltage control) and section 6.3 (Available actions to mitigate voltage control issues in DNSP networks) of this discussion paper and prepare a plan for implementation.

GEwards suggested that section 7 (Areas for further investigation) be reviewed in order of priority and for the OPWG to draft an action plan for NEMOC review. In addition, KHarper suggested submitting a similar paper for discussion at the Executive Joint Planning Committee (EJPC) to create an awareness of these emerging issues.

6.2.1. AEMO Guideline for Transmission Network Outage Planning – 2020-21 Summer Period

Refer to agenda item 6.2.

6.2.2. Voltage Control Under Light Load Conditions

Refer to agenda item 6.2.

6.3. Power System Modelling Reference Group (PSMRG)

BBadrzadeh provided an overview of the recent PSMRG meeting held on 24 August 2020.

It was noted that preparation for the virtual System Strength workshop was in the final stages and is scheduled to commence in mid-October 2020. BBadrzadeh added that the workshop will include TNSP's and DNSP's providing presentations on System Strength issues and sharing their experiences.

BBadrzadeh elaborated on the 4-State PSCAD model which essentially is an opportunity for the PSMRG to provide NSP's an understanding of what can expect. A meeting/workshop has been scheduled for 2nd of October. This will provide the NSP's an overview of how it will look and how they can use the model for their studies. In addition, the workshop will discuss how the information will be updated moving forward.

It was noted that the Dynamic Model Acceptance Guidelines was discussed at the PSMRG with feedback received from various NSP's. BBadrzadeh added that this document would be a critical enabler to ensure individual plant models were submitting enough quality information to NSP's and AEMO to be used for connection/planning and system security studies. AEMO anticipates publishing this document by the end of October 2020.

BBadrzadeh advised that the PSMRG had three guest presentations at their meeting. AEMO engaged a consultant Pouyan Pourbeik for small-signal stability analysis. Recommendations for small signal modelling priorities are outlined below.

- The use of BESS for active damping of small-signal modes

- Determine whether small-signal stability analysis can predict large-signal sustained post-disturbance oscillations with a dominant frequency of 5-8 Hz
- Small-signal modelling of wind and solar farms

The PSMRG is in the preliminary stage of a joint co-funded consultancy between AEMO and TNSP's on small signal stability with battery energy storage systems with a view to use batteries to improve damping oscillation. PSMRG will provide an update to NEMOC as more information becomes available.

The PSMRG were provide presentation on a project that is being led by Monash University. Key contributors where from ARENA, AEMO, AusNet Services and Hitachi ABB and other NSPs and OEM's in the stakeholder reference group. The overall project will look at several stability issues and possible solutions including modified control of grid following inverters, the use of synchronous condensers, and the use of grid forming inverters.

A presentation was provided to the PSMRG on the need for inclusion of dynamic models for protection relays in power system dynamic analysis and with simulation case studies.

6.4. Operations Training Working Group (OTWG)

DLavis provided an overview of the recent developments in the OTWG. It was noted that the group hasn't met since the last NEMOC meeting but are scheduled to meet on 12 November 2020.

DLavis elaborated on the progress of establishing a National Training Framework (NTF) with a Registered Training Organisation (RTO) who specialises in Power System education, with the purpose of understanding the necessary requirements. The OTWG is at the early stages of developing a pilot program to demonstrate a modularised course, targeted for new renewable generation operators and with the view to include other generators over time. DLavis advised that further modules could be added to extend modules incrementally across the industry. It was noted that simulation technology is being considered for this pilot program to assist with training and assessment outcomes. DLavis added that a web-based simulation tool would be a cost-effective solution to support this initiative. The OTWG intend to provide a demonstration of the pilot program to their members in November and in addition provide more details of the overall framework structure.

The OTWG will be provided with a Behavioural training package presentation at their next meeting from Transpower's Technical Training lead, Darshan Shetty.

In addition, each OTWG member will be present a short training summary for Summer Readiness 2020/21.

7. Decision

7.1. NEMOC/EJPC Risk Workshop outcomes and priorities

The NEMOC/EJPC Risk Workshop outcomes and priorities were considered final and will be included as part of the October workshop. The chair requested that members review and highlight any areas that may have changed since the initial draft prior to the October workshop.

7.2. October NEMOC/EJPC Workshop - Date Change

NEMOC members agreed that the next workshop will take place on Wednesday 21 October 2020. The workshop will commence at 2pm and conclude at 5pm (Sydney time).

7.3. Distribution of Working Group Updates

This agenda item was not discussed. The NEMOC secretariat will submit a question via email regarding any concerns with distributing working group updates to other NEMOC working groups to enable transparency and identify collaboration opportunities.

7.4. NEMOC Terms of Reference (ToR)

NEMOC members approved minor amendments to the ToR. The final copy will be placed on [AEMO's website](#).

8. Other Business

No other business.

Next Meeting/Workshop

NEMOC & EJPC Workshop #1	21 October 2020
NEMOC Meeting #22	11 December 2020