

# MINUTES

MEETING:	NATIONAL ENERGY MARKET OPERATIONS COMMITTEE   NEMOC	
DATE:	Friday, 16 September 2022	
TIME:	1000am – 12.00pm	
LOCATION:	Boardroom   Rydges Sydney Central   28 Albion Street Surry Hills NSW	
TELECONFERENCE DETAILS:	<a href="#">Click here to join the meeting</a> <b>Join with a video conferencing device</b> aemo-au@m.webex.com Video Conference ID: 132 770 936 5	<b>Or call in (audio only)</b> <a href="#">+61 2 8318 0090,826179761#</a> Australia, Sydney Phone Conference ID: 826 179 761# <a href="#">Find a local number</a>   <a href="#">Reset PIN</a>

## ATTENDEES:

NAME			COMPANY DEPARTMENT		
Tjaart van der Walt	TvdW	AEMO <i>(Chair)</i>	Joel Aulbury	JA	Delta
Alexis Bowman	AB	AEMO <i>(Secretariat)</i>	Doug Deans	DD	ElectraNet
Alireza Fereidouni	AF	AEMO	Gary Adkins	GA	ElectraNet
Ken Harper	KH	AEMO	Sageran Naicker	SN	ElectraNet
Teresa Smit	TS	AEMO	Glenn Springall	GS	ENA (DNSP Rep) /Energy QLD
Tim Lloyd	TL	AusNet Services	Gary Edwards	GE	Powerlink
Ben Skinner	BS	AEC	Wayne Tucker	WT	TasNetworks
Christiaan Zuur	CZ	CEC	Ross Burridge	RB	TasNetworks
Laurent Francisci	LF	CEC/Neoen	Jennifer Hughes	JH	TransGrid

## GUESTS:

NAME			COMPANY DEPARTMENT		
Callan Masters	CM	AEMO	Sujeewa Rajapakse	SR	AEMO
Luke Robinson	LR	AEMO	Darren Spoor	DS	AEMO

## APOLOGIES:

NAME			COMPANY DEPARTMENT		
Michael Gatt		AEMO	Naresh David		AEC/Energy Australia
Callan Masters		AEMO	Verity Watson		ENA

## 1 WELCOME

Tjaart van der Walt (Chair) welcomed members to the meeting and noted the apologies.

## 2 PREVIOUS MINUTES AND ACTIONS REGISTER

- Previous meeting minutes (29 July 2022) were accepted with no changes made.
- NEMOC members approved publication of previous meeting minutes on AEMO's website.
- Actions Register was reviewed and actions amended accordingly.

## 3 PRESENTATION

### 3.1 NEM Reviewable Incident Trends FY21-22

Luke Robinson delivered a presentation on NEM Reviewable incident trends for the financial year 2021-2022.

- The presentation included:

- ROIs FY21-22 overview
- ROI trends and details
- ROI Guidelines update
- Significant market events
- A copy of the presentation was included with the meeting pack and can also be accessed via the following link:  
[NEM Reviewable Incidents FY21-22 Review](#)

#### i. MEMBER QUESTIONS AND DISCUSSION

- Slide 7 states that there were two incidents related to “Incorrect Settings”. Define the term “Incorrect settings”.
  - There have been past cases where protection settings have not been applied based on the expected settings, so when the engineer or field engineer reviews the relay, they see incorrect settings in the device.
- How many incidents are potentially related to the adequacy of the design standards and things not being set up as they should have been?
  - There are not too many related to design standards, in terms of renewable events. It is difficult to gauge whether it is a design standard, a condition, a maintenance issue or something else. It is not always possible to delve back to the design standards, however in terms of the protection issues/settings issues, it is more the application of the settings, as opposed to the design.
- A recommendation from a recent incident report was for NSPs, considering their work practices, to cross-check available sources of isolation information, including drawings, databases, as-built diagrams and establish the isolation requirements before commencing work. Feedback on this recommendation was welcomed and it was noted that this topic would be raised with the PSSWG.
- Slide 7 – discussion question “What can be done to reduce the number of ROIs from protection and control system maloperations” –what is the preferred method to receive feedback for this question?
  - Due to time constraints, members were encouraged to either provide feedback via email after the meeting.
- If LH and team see any commonalities for TNSPs around potential root causes when reviewing the reports, provide feedback during the NEM Reviewable Incidents discussion in December.
  - LH confirmed that is one purpose of the review and he may summarise results for demonstration of the quality control processes around application and checking settings, along with the correct documentation.
- It was noted that LH will further explore defining synchronous condenser performance standards as part of the performance standards review that AEMO is currently initiating.
- In relation to the list of 14 ROIs and the reports review, is it correct to claim that during analysis, if it is identified that there are particular areas that require focus, or are of growing concern, is it likely that the number of multiple parties that are involved in the industry compartmented to historic years is increasing the rate of these?
  - In terms of contractors, yes that has been an element of driving some of the events, however not all.
- It was noted that there is interest in understanding whether the increasing complexity and the integration of our protection schemes is causing wider spread problems? Are we seeing that or are we actually getting better protection operations? That way it gets more widespread and more integrated.
  - This matter will be taken forward to the PSSWG.
- Is the GPSRR currently out for comment? Is there anything LH and team are seeking relating to input and feedback?
  - Anything that aligns with the GPSRR objective, potential to result in cascading failures, supply disruptions or anything AEMO should really focus on. NSP engagement and feedback is encouraged with the risk review.
- Points that AEMO can reflect on include what if the recent “energy crisis” events had occurred at a different time and learnings from the events. How does AEMO ensure they have the right level of discretion and also consider the risks when we are defining the right reporting approach. AEMO will engage with the PSSWG and the NSPs around the learnings before the report is published.
- It was noted that it is great that we are undertaking the risk review, however where we are at, in terms of the transitioning network, does that warrant a specific, industry wide, think tank to pull together a brains trust to consider the issue further? Potentially a workshop exercise with the operational view, as opposed to just reviewing the document. NSPs would also benefit from collaborating with other NSPs and their previous experiences.
  - AEMO have engaged very closely with each NSP around priority risks and the GPSRR. An engagement session or workshop approach is also being considered, to further engagement and collaboration with NSPs.

**ACTION – LR to coordinate a consultation session with relevant NSPs to work through scenarios of potential incidents.**

- GS asked about SYNCONS – noting that there is not a set of access standards for SYNCONS, is it a 539? What is going to happen on the ground for these assets?
  - In some cases it is correcting things, or potentially from a TransGrid perspective there would be a connection agreement that defines the technical standard, which would make it contractual. The preference would be to work through the contract, rather than a performance standard and compliance process through the AER.
- Affirmation was given that Transgrid is not obliged or required to monitor performance, other than from a contractual perspective. This produces a grey area that involves self-reporting mechanisms.
  - The Access Standard is currently up for comment and NSP consultation and engagement will be included as an issue to not in the issues paper on the act of standards.

## 4 WORKING GROUP UPDATES

### 4.1 NEM EMERGENCY COMMUNICATIONS WORKING GROUP (NEMEC WG) DARREN SPOOR

Luke Robinson provided an overview of the NEMEC WG meeting held 18 August 2022.

#### i. MEETING DISCUSSION AND AGREEMENTS

- NSPs are continuing investigation of OTN hardening/interconnection (likely to be part of the suggested solution).
- The Wireless Institute Civil Emergency Network (WICEN) group are supporting the NEMEC and have completed an interstate HF radio communication test. The results are very promising with three successful NEM-wide tests on 3.6 and 7MHz. WICEN also presented a theoretical 96% availability over 5 frequencies using 100W equipment without digital processing.
- The HF option being explored would have access to 8 frequencies and run on 400W equipment with digital processing.
- Starlink and modern satphones do not appear suitable to meet our emergency communications requirements.
- HF radio emergency communication is likely to be the most suitable method of meeting the requirements of the System Restart Communications Protocol.
- Snowy Hydro are attending NEMEC meetings to ensure SRAS provider are represented.
- Next NEMEC meeting is scheduled for 28 October 2022.

#### i. MEMBER QUESTIONS AND DISCUSSION

- When is it expected the recommendations will be tabled?
  - It is expected within the next 12 months, with interim recommendations potentially available by end of 2022.
- Is it expected that one outcome will be that every SRAS provider will be required to have one of the communication services?
  - This is going to be considered in the framework. The framework is broken up into two components. Firstly, the long-haul hop, and secondly, the short haul hop i.e. how to communicate Interstate and then how to communicate intrastate. At the moment, all the effort has been on the Interstate communications. Communication between NSP's and the restart participants is still something that is a body of ongoing work.
  - The intent is that intrastate communications will be facilitated or coordinated from the NSP control room.
  - The current focus by this working group is trying to get the long-haul communication paths established.

### 4.2 POWER SYSTEM SECURITY WORKING GROUP UPDATE (PSSWG) DARREN SPOOR

Darren Spoor provided an overview of the recent PSSWG meeting.

#### i. GENERATOR RECLASSIFICATION CRITERIA

- The PSSWG has engaged the support of representatives from the Energy Council to assist in developing a new section on generator reclassification requirements in SO\_OP\_3715.
- The Energy Council have provided initial commentary on the identification of conditions which introduce a single point of failure for the station. This will be formalised at the next meeting.

## ii. INDISTINCT EVENT RECLASSIFICATION FRAMEWORK

- The meeting was primarily allocated to reviewing the proposed categorisation of the risks that had been previously identified, with the objective of documenting operational actions for indistinct risks where there is suitable operational awareness.
- The group spent some time reviewing tsunamis and earthquakes, although most of the discussion continued with a review of cloud cover. There is presently no operational awareness of cloud cover risks in the NEM control rooms, but the TNSPs were able to relay any associated abnormal conditions with AEMO.
- The next meeting will include a review of the triggers and potential actions for each identified risk.

## iii. LOSS OF TELEMETRY COMMUNICATIONS

- The PSSWG discussed the potential impacts following a loss of voice communications between control centres. It was noted that the historical norms involve maintaining generation patterns and dispatch on the assumption that any communications loss would be localised. The group are reviewing a new section in SO\_OP\_3715 entitled "telemetry system outages covering general principles".

## iv. INDUSTRY BEST PRACTICE FOR OPERATIONAL COMMUNICATION

- The PSSWG were briefed on the recommendations from the Control Room Operations Working Group (CROWG). The CROWG have finalised their work on defining industry best practice for operational communication and this is being proposed for inclusion in SO\_OP\_3707.

## v. MEMBER QUESTIONS AND DISCUSSION

- It was commented that in the PSSWG it was noted that the risk cannot be ignored. Responding may be challenging, but what that looks like is actively being reviewed. The controls are quite limited at this time.
- TL commented that he cannot see a point where it cannot be considered, given potential impact on the performance of the network and network security.
  - DS agreed and confirmed that this is also the consensus view of the working group as well.
- CZ asked if wind variability has been identified as an indistinct risk?
  - Weather has its own categorisation, however not specifically wind speed variability. Only wind speed magnitude exceeding the known capability of assets. That is a distinct risk if you know where the assets are, it is an indistinct risk if the weather itself is across a widespread area and you do not know what the tripping sequence might be.
- Expanding on the above question, presumably if cloud cover is an indistinct event, it would be linked to certain weather conditions where there is a risk of something like the West Australian event occurring?
  - Theoretically yes. But the challenge here moving forward is not so much identifying it as an indistinct risk, but now working out what categorization and triggers we apply to it, and that is where we are still working as a group to produce the awareness required. As with all of these risks, they all have trigger conditions and controls.

**ACTION – DS on behalf of the PSSWG, has been asked to review Luke Robinson's report and discuss whether there are any systemic issues around isolation and protection and controls. The emerging and increasing trends and the scale. Provide an update at the December NEMOC meeting.**

## 4.3 OPERATIONS PLANNING WORKING GROUP (OPWG)

SUJEEWA RAJAPAKSE

Sujeewa Rajapakse provided an overview of the recent OPWG meeting held 30 August 2022.

### i. EXTREME FREQUENCY MANAGEMENT

#### a. UNDER-FREQUENCY LOAD SHEDDING (UFLS) REVIEW

NEM intact and separation studies have been finalised; analysis has also been finalised. Report has been finalised. AEMO Systems Performance are preparing presentations to NSPs.

#### b. IMPLEMENTATION OF OVER-FREQUENCY GENERATOR SHEDDING (OFGS) SETTINGS

AEMO has completed the development of the OFGS settings in SA and Western VIC. The final report is now with ElectraNet for review. There was an additional recommendation to include 'extended over-frequency trip setting' to cater for 10 min requirements of the Frequency Operating Standard. Key recommendations are:

- Increase OFGS capacity
- Implement delayed trip settings to meet FOS
- Modify existing RoCoF trip settings for MacarthurWF

## ii. TRANSMISSION EQUIPMENT RATING ADVICE PROCESS

The spreadsheet-based rating advice process being used is cumbersome hence AEMO has commenced a review. This review is intended to address immediate issues as well as to develop requirements for a more efficient long-term process. Improvements to the rating advice process used in the WEM is also in scope.

AEMO has received issues and pain points from all TNSPs. AEMO is considering options for implementing improvements.

## iii. EMERGING OPERATIONAL ISSUES

### a. OPERATION OF SEMI-SCHEDULED GENERATION

The OPWG discussed power system security issues caused by large increases of semi-scheduled generation in dispatch intervals immediately following dispatch intervals with semi-scheduled cap applied. TransGrid presented several ideas to manage this.

After considering all options, OPWG has reached the position that application of a network constraint to limit the output of the semi-scheduled generation in question to its Unconstrained Intermittent Generation Forecast (UIGF) as the best solution to avoid system security issues. AEMO internal advice is that this approach is not violating NER provisions.

## iv. STATISTICS OF PLANNED NETWORK OUTAGES

AEMO presented statistics of planned network outages up to Aug 2022 determined with some improvements to the methodology. The outage statistics as well as the raw data were provided to TNSPs for review.

The OPWG decided to have an out of session meeting to discuss strategies for future outage planning with less synchronous generation and high levels of IBR.

## v. PRESENTATIONS

AEMO presented the draft list of critical network outages that are proposed to be taken into consideration in the new System Strength Requirements Methodology (SSRM) currently being consulted. SSRM comes into effect in 2025, transitional arrangement to use the methodology up to 2025 has also been proposed. The list of critical network outages is expected to be finalised by the end of September 2022.

## vi. NEXT MEETING

The next OPWG meeting is scheduled for 29 November 2022.

## vi. MEMBER QUESTIONS AND DISCUSSION

- Regarding operation of semi-scheduled generation, this is something that has been developed within the TNSPs and it some impact on the market. We understand the problem covered during previous meetings, however this solution does not seem intuitive, even if it may be expedient. The solution proposed to effectively create an artificial network constraint that does not actually exist as a mechanism to stop the semi-scheduled generator increasing in an uncontrolled way. Can this be considered a reasonable summary of the proposed solution?
  - The OPWG interpretation is that power system security is assessed based on the unconstrained intermittent generation forecast and therefore application of a constraint for those specific generators, where it becomes a network issue, is considered a reasonable approach.
- Expanding on the previous question, what is concerning is that the network might be able to cope with more than just what the UI GF says, regardless of what the network condition is. The issue is that you do not want a generator having had the cap removed to increase to a level that is beyond what the dispatch engine knows about at this time. That is something that should be more appropriately dealt with. For example through a compliance arrangement. It

may require a rule change to get the generator to comply with the UI GF, at least in the short term, but the application of a network constraint where no physical network constraint exists seems to me problematic. That doesn't seem like a reasonable long-term solution to this problem. Are you going to be publishing material transparent around this particular unusual application of a network constraint.

- Preliminary advice is that there is no rule compliance issue here.
- NSPs need to know why this type of technique is being used and how to obtain transparency around using the technique. Then analysis can commence on whether it is a sensible long-term approach to the issue. It would be good to understand whether there are alternative solutions that may be considered as well. There are changes that can be made to the forecasting processes, to address issues around whether or not the generator is going to meet its forecast dispatch or not. It would be great to see some of the reasoning behind the solution, with an opportunity for industry input and feedback.
  - Mike Davidson's or Ben Jones' group run six monthly forecasting forum that is attended by a number of semi scheduled generators. This may be an appropriate forum to share and discuss this issue. There has been previous discussions on this topic, but nothing recently.
  - It was agreed that there should be more discussion in the public space and the forecasting forum is the correct platform to allow for relevant input and feedback on why the network constraint is used.
- It was noted that the information should be added to SO\_OP\_3705 – Dispatch, as it is a key dispatch decision being made and it will affect market outcomes.
- A question was asked about the solution provided during the update. Was it feedback from the OPWG about a potential solution, or was it a conclusion the OPWG made that this is the feasible solution and it is being presented to the NEMOC as the proposed solution to be implemented?
  - This is a suggestion of the best solution that the OPWG can produce, however it requires broader consultation and further consideration.
- Participants were asked if the NEMOC should take the solution further, or should they direct the OPWG to put further thought into the solution, including broader consultation and input?
- Participants agreed that further consultation should occur, as working groups do not always have full NSP representation, nor generator representation and as this is an important decision for the network and generators. The decision has broader implications than the existing representation can decide on. There should be some mechanism that incorporates the representation of generators.
  - This has happened with the CROWG. If there is a subject that extends across generation, they are invited to that specific meeting and the subject is discussed there.

**ACTION – ALL – Going forward, the NEMOC will assist each working group include generators in relevant discussions.**

- It was asked whether this issue would be considered with the rules consultation procedure.
  - That is correct. If the solution is accepted, there will be other operational changes and the OPWG have not investigated this impact enough. Further investigation will include consultation with generators.

**ACTION – OPWG – Undertake further investigation for the proposed solution, including consultation with generators and potential alternative solutions, then provide an update at the NEMOC meeting in December.**

- When the OPWG sought rules advice, was it advised that SO\_OP\_3705 would formal alteration prior to implementing?
  - Only preliminary legal advice was sought on whether there would be any showstoppers from the rules perspective. The advice was that the solution proposed by the OPWG was reasonable.

## 4.4 POWER SYSTEM MODELLING REFERENCE GROUP (PSMRG)

NILESH MODI

Nilesh Modi provided an overview of the recent PSMRG meeting.

### i. KEY HIGHLIGHTS

- Change in the convenor: The group unanimously agreed to appoint Mark Gordon (AEMO) as the next convenor of the group with an immediate effect. The group thanked Nilesh Modi (AEMO) for his work during his term.



- PSCAD v5: AEMO released an update of PSCAD v5 in July 2022. All NSPs have started using v5 and are progressing well to fully transition to v5 in near future. NSPs are also requesting v5 compatible models from new connections.
- Review of Power System Model Guidelines: AEMO presented issues paper. Two key issues being addressed through this review are 'inverter-based load models' and 'future proofing EMT models'. The group agreed to meet more frequently during the review process.
- Electrolyser / Hydrogen load : Danfoss Drive (invited guest) presented on Electrolyser / Hydrogen load, its configuration and interface to grid. The group found the discussion very interesting and appreciated its linkage to power system performance. This new type of loads, if properly configured, can support the grid e.g. fast frequency control.
- Load and DER model: AEMO presented update to the load and DER model. AEMO discussed issues the volt-var response of the model and recommended to disabled it for now. The model is sensitive to pre-disturbance voltages and DPV model is updated to capture relativeness of the bus voltage differences. The updated load and DER model can now be configured to adapt different capacity factors for QLD area.

## ii. MEMBER QUESTIONS AND DISCUSSION

- In regard to appointing Mark Gordon from AEMO as the next convenor of the PSMRG, a question was asked about the original strategy of appointing Sachin Rajapakse as the convenor.
  - The original strategy had to be reconsidered for two reasons. First is the existing term of reference for the PSMRG, which mentions that the AEMO provides a convener and secretary support. That was one thing we cannot go around that in terms of reference. Second, Sachin suggested he is already tied up with what is on his plate and it would be difficult for him to provide justice to this role. On this basis, we had to come up with a backup plan. We now have a very good person who a core modelling person from AEMO. So group suggested that they are happy to work with Mark Gordon.
- A status update was requested for an earlier discussion item about the situation where there is a battery retrofitting behind an existing connection point and the issue with misalignment between your legacy PSSE models and the new PSCAD model that needs to be developed for the for the latency wind farm. Has that progressed? It was understood that this was going to be discussed at the next PSMRG consultation, is that still the case?
  - Yes, that one and the other items are all scheduled for the next PSMRG. What was highlighted during this update were the two key focus areas, along with the PSS and PSCAD model for the battery behind the connection point. There are small changes which need to be made and will be discussed in the next PSMRG.

## 5 GENERAL BUSINESS

- Prioritisation of work streams for different working groups. This item will be disseminated and tabled as part of the ToR discussion at the December NEMOC meeting.

**ACTION – Secretariat – Add to December meeting agenda – Prioritisation of work streams for different working groups.**

## i. MEMBER QUESTIONS AND DISCUSSION

- TL noted that the feedback provided by working groups in the summaries is reasonable, however they would be more effective if specific dates and timeframes could be added to the updates. Active dates on when it is expected that analysis will be concluded.

## 6 MEETING CLOSE

- The meeting closed at 12.01pm.

MEETING / WORKSHOP	DATE
NEMOC MEETING No.30	9 December 2022 (Location TBD)
NEMOC & EJPC WORKSHOP No.7	TBD