

MINUTES

MEETING: CROWG – Control Room Operations Working Group
DATE: Thursday, 18 April 2024
TIME: 9.30am – 12.30pm AEST
LOCATION: MS Teams Meeting, QLD Meeting “Hub”

[Microsoft Teams Meeting Details](#)

NAME	INITIALS	ORGANISATION
Mario Rositano	MR	AEMO (Chair)
Alexis Bowman	AB	AEMO
Bashar Derbas	BD	AEMO
Caroline Gurtler	CG	AEMO
Dave Bradley	DB	AEMO
Daniel Lavis	DL	AEMO
Darren Spoor	DS	AEMO
Mark Pollock	MP	AEMO
Benjamin Ruddick	BR	Acciona Energia
Todd Duckworth	TD	AEMO
Alan Jenkinson	AJ	AGL
Neil O’Leary	NO	AGL
Joo Ean Prasad	JEP	Ausgrid
Martin Cavanagh	MC	Ausnet Services
Phil Gay	PG	Ausnet Services
Simon Elliott	SE	Brisbane Airport
Hoang Tong	HT	Endeavour Energy
Ian Commerford	IC	Endeavour Energy
Rick Madden	RM	Energy Queensland
Russell Gordon	RG	Energy Queensland

NAME	INITIALS	ORGANISATION
Mark Epifanio	ME	ElectraNet
Dane Merkel	DM	Hydro Tasmania
Jordan Maxwell	JM	Iberdrola
Chris Van der Zalm	CV	Loy Yang B
Hal Jorgensen	HJ	Neoen
Ellise Janetzki	EJ	Overwatch Energy
James Tetlow	JT	Overwatch Energy
Robert McCann	RMC	Power & Water Corp
Vernon Lee	VL	Power & Water Corporation
Leanne Maurice	LM	Powerlink
Aren Sears	AS	SA Power Networks
Matthew Napolitano	MN	SA Power Networks
Mark Thorsby	MT	Squadron
Alex Hunnibell	AH	Tas Networks
Colin Sharp	CS	Tas Networks
Guy Holmes	GH	Tas Networks
Geoff Cook	GC	TransGrid
Adam Kew	AK	Western Power
Sup Lee	SL	

1 Welcome and Introduction | Mario Rositano

- 1.1 Roll Call taken in person and via MS Teams.
- 1.2 Welcomed current and new members, reviewed the agenda and discussed purpose of the meeting, including continued discussions on topics tabled at the last meeting.

2 Minutes / Actions | Mario Rositano

- 2.1 Minutes of the meeting 14 November 2023 – accepted by Hal Jorgensen, NEOEN - [14 November 2023 - Minutes](#)
- 2.2 Actions of the CROWG meeting 14 November 2023 – reviewed – [14 November 2023 – CROWG Actions Register](#)

ACTION: MR –Organise demonstration of [Indji Watch](#) (Weather hazard monitoring and alerting application used in the AEMO Control Room that looks at fires, earthquakes, lightning) for Jordan Maxwell of Iberdrola and how AEMO uses the data – invitation will include any member who would benefit from the demonstration.

3 CROWG Meeting Administration | Mario Rositano

3.1 Rotating CROWG "Chairing" role:

- No volunteers to take the Chairing role for this meeting. Volunteers will be sought for the August meeting.
- **** PLEASE NOTE: Volunteers will have full support and direction from Mario and Alexis as to the format, content and running the meeting. They will also assist during the meeting to ensure things stay on track. Volunteering can be for one meeting only, if preferred. ****
- MR will reach out to members again via email and were encouraged to contact Mario if interested.
- DS agreed that it is a great opportunity for control room staff within the TNSP organisations and could even be added to staff performance plans as way to demonstrate that their skill is being refined.

3.2 CROWG on the AEMO website

- Created on the AEMO Website –
 - [Forums and Working Groups section > List of Industry Forums and Working Groups > CROWG page.](#)
 - Feedback Survey link - [CROWG Feedback Survey.](#)

3.3 CROWG Mailbox

- Email account for Control Room Operations Working Group (CROWG) communications - CROWG@aemo.com.au.

3.4 Face to Face Meetings – what do we think?

- Members were asked for their input on continuing meeting face to face. The consensus was to keep the face-to-face meetings and provide the MS Teams option for those who cannot attend. It is envisioned that meetings will be held at DNSP and TNSP offices over the coming year.

4 Power System – Recent Events and What's on the Horizon

4.1 Update from members

- MR – Listed a few events that have occurred since the previous CROWG meeting in November 2023:
 - The event in Victoria 13 February 2024
 - Multiple non-credible contingencies
 - DPV curtailment in SA – 15 February 2024
- RG – asked if the last round of Geo weather caused any unexpected high-level, no neutral currents, earth fault currents or anything that was abnormal on the network that would be relevant to us as an industry to discuss further, given that there in May there is a National Emergency Management – Space Weather Exercise? Is there any practical experience or learnings that we can take with us to that exercise, whether in confidence or information that can be shared broadly?
 - MR advised that AEMO have updated the market notices that go out. Space weather alerts are received and certain levels are monitored in the AEMO Control Room. Some of the PMU work that is currently happening may be able to provide more information in real time when these things happen. It may be beneficial to speak with James Guest, Senior Engineer with Operational Analysis & Engineering to gain further information
 - PG discussed that they did not see anything significant during those events. They have monitoring at Hayward and at Hayward Terminal and did not pick up anything out of the ordinary. East-West orientation - Hazelwood Terminals, the Latrobe Valley in the East of the state and Hayward is on the SA border in the West of the state.
 - MR considered that it would be beneficial to distribute information to CROWG members about geomagnetic activity and some of the things we may be doing under these circumstances.

ACTION: MR – To send information to members about the Geomagnetic activity that occurred during the VIC System Event in February.

- Information can also be found on The Bureau of Meteorology's Australian Space Weather Forecasting Centre website <https://sws.bom.gov.au/> and;

- [Bureau of Meteorology | Australian Space Weather Alert System PDF](#)

4.2 Multiple Events – 13/02/2024 in Victoria

4.2.1 Preliminary Report – 13 February 2024 VIC System Event | Mario Rositano

- MR discussed the Preliminary Report - Trip of Moorabool - Sydenham 500kV No. 1 and No. 2 lines on 13 February 2024 – Event impact on the AEMO Control Room and Operators.

4.2.2 AusNet Perspective of 13 February 2024 VIC System Event | Martin Cavanagh

MC presented AusNet's perspective of the day, event, impacts and learnings.

- MST5-SYTS No. 1 and No. 2 Fault Event - Observations
- LOR3 Event – Loss of generation and constraints
- Hazelwood Island Event – A blue-phase to ground fault resulted in an islanding event
- Experiences managing multiple events – Alarms, Support, Communications, Call Prioritisation, Tracking Actions and Decisions, Situational Awareness

4.3 Winter Challenges – What does this mean for members?

- MR discussed that it will be interesting to see where things go with regards to big winter demand figures. It was definitely a colder winter last year, with a couple of records set.

5 Presentations, Addresses and Suggested Viewing Material

5.1 Airport Utilities | Simon Elliott, Energy Manager Brisbane Airport

[BAC Australia – Airport Utilities Presentation](#)

- SE provided an airport snapshot that included statistics on:
 - Footprint, Substations – power and lighting
 - Water usage
 - Green power PPA, Diesel generators, Zero emissions
- SE outlined challenges experienced by the airport including Largest privately owned HV distribution network in Australia – age of assets, renewable generation, increased power consumption and PPA expiry.
- JS – Asked about moving away from the SF6 gas and whether it is driven by the scope one and two requirements.
 - SE responded that yes, even though SF6 was chosen for its uniquely small footprint, but it is a large contributor to greenhouse gas and the emissions requirements around that. Also BAC must be part of an energy efficiency and sustainability program.
 - There are issues with some of the S6 switch gear leaking. To the point where there is a rolling program to replace the switch gear and at the same time, the organisation have mandated that any circuit breakers that currently have SF6 gas will no longer be replaced like for like. It will be a challenge to derive other solutions, since the circuit breakers were installed on the airport, the airport has grown, asset base around the airport and their customer base has grown around those HV assets. There will be a lot of relocation. Researching other solutions that are not believed to currently be in the market with a similar sort of footprint.
 - In addition, out of the 124 substations on the airport, approximately 90 have some variance of non-remote switchable and checking breakers. Considering the focus of arc flash and health and safety of the personnel switching operations etc, that is a large Capex project. Over the next five years, SE has to change all of the BAC HP switch gears to be remote operability.
- MR asked about the Brisbane airport being the perfect place for collecting rainwater, as they would have very large tanks installed.
 - SE agreed that they have large tanks that sit under the international terminal concourse. The water collected in these is predominantly used in the cooling towers. They also take in recycled water QLD Urban Utilities and use

the recycled water in the cooling towers to minimise their use of portable water where they can, but the portable water is there for backup.

- One of the latest buildings locally built is the Aramex building – a logistics company. It is currently the largest single span building – shed type of building in the Southern Hemisphere. BAC have just installed 1.2 megawatts of solar on their roof.
- MR asked about the baggage handler vehicles, whether they have speed limits enforced and what will happen when they move to electric vehicles:
 - SE confirmed that they do have speed limits. There is a team called the ASOS Safety Officers who look after everything related to FOD – Foreign Object Debris – everything left on the runway that could get ingested into the engines, all the way through to birds to mitigate bird strikes. That team police the internal roads, including the baggage handling vehicles.
 - They are trying to find electric slashers and electric tractors to maintain the large amount of grassland covering the airport, but it currently quite difficult to find that asset base.
 - SE discussed how Brisbane Airport has a partnership with a company called Stralis and they are looking to build the first hydrogen electric powered plane. This is currently in development out of Brisbane Airport. More details can be found in the following article:

<https://www.innovationaus.com/vic-electric-plane-development-centre-takes-off/>

5.2 Squadron Energy Overview | Mark Thorsby, Squadron Energy

- MT delivered an overview of Squadron Energy, who acquired CWP Renewables in late 2022, along with their development and operational projects. A statistical overview of Squadron Energy, who are in the Tattarang investment group portfolio of Andrew and Nicola Forrest. Squadron employ over 230 staff across 14 offices nationally. A new control room for Squadron is currently being built in Canberra.
- SE asked if Squadron plan to have an integrated control room that looks after all assets or are they going to split the electricity and gas functions.
 - MT advised that it will be split with the gas terminal having a controller on site. However, it is still to be determined whether the controller based in Canberra and looking after electricity will also carry out a few tasks in the gas area.
- PG asked if Squadron are planning on doing Control and Dispatch, or Control, Dispatch and planned work out of the Canberra Control Room?
 - MT advised that it will be mostly controlled dispatch and not taking charge of planned work.
 - PG discussed that one of their biggest issues currently is that the planned work is often allocated to a local person on a mobile phone and as such, they are often difficult to contact.
- JM asked if Squadron will be doing the trading function as well as the control function, or will they be separate teams?
 - MT confirmed that Squadron will be doing real time trading.
- MR asked EJ from Overwatch about the hand over process to Squadron from Overwatch, who are the interim asset custodians.
 - EJ discussed how they are happy supporting the Squadron team during the transition, it is not a process that Overwatch has done before and they are carefully looking at a high level, the way to transition, the way they have agreed to transition – as some of the rotating offline tasks that can be picked up by the Squadron team as they train and they can start to get used to the tasks with Overwatch in the background, shadowing to an extent. As the transition progresses and training will start to take over a few pieces of the real time operations, Overwatch will be in the background checking and overseeing things as they come up to speed. They will then have the final hand over in the background as well. Overwatch are also delivering six training sessions to the Squadron team to help them with awareness of what is happening, how Overwatch do things for their assets and what Overwatch have learned over the journey of doing this function for their assets.

- RG discussed a group called the ACRNA - [Australian Control Room Network Association](#) , in Salisbury Queensland, represent all control rooms, not just electricity and gas, but things like motorways are in their portfolio. They can introduce all of the supplier, provider and information people that have an impact on all things that are done in control rooms. The ACRNA is set up to support members with a resource gathering, sharing and development forum, and to provide a network of individuals and corporates who want to actively participate in pursuing control room best practice.
 - ACRNA have their [2024 annual conference](#) scheduled for 23-24 October at the Langham in Melbourne

5.3 WA Power System | Warren Mumme, Senior Network Controller Western Power (WA Representatives)

To be presented at the next CROWG meeting.

6 Cyber Phone Communications

6.1 A discussion on possible cyber communications in control rooms

- MR discussed that over the years have been quite a few incidents when a person on the other end of the phone, as part of Operational Communications, did not feel legitimate – both for calls received and made e.g. Generators, Loads, Traders, TNSPs, DNSPs. This will occur more as the power system becomes more complex and more participants are joining.
- MR put forward a discussion question to members. Are control rooms more vulnerable to cyber communications and are staff undertaking appropriate training to be able to recognise deceitful calls. For example, if companies have VOIP phones, they potentially have the ability to call control rooms and display as a particular generator or Trader.
 - HG confirmed that it has been a hot topic of late, however his concerns are about prank calls, random callers. Also as companies expand into different regions and use different contractors, are they certain the contractors are doing all the things that they required?
 - PG discussed how people may just know the right number and prank control rooms. It is up to controllers to call back for confirmation, as in the example provided, the prank caller just wanted to take the station offline.
- MR discussed how it is important for people just starting in the control room to have sound processes in place to make sure that you know they are legitimate, including calling the number back to confirm the request. Being in a real time environment, with things that need to be done right now, initial communications are very important.
- BR discussed an example of when he worked in his previous control room that their general crew phone number was mistakenly published on the AGE website. It was a typo as the AGE contact number was similar to the Control Room contact number. As a crew, they tried to get the AGE to update their website details, to no avail. They had to chance their number for their crews and then update their BT phone system to flag that the number is to the AGE, so every time it rang, controllers knew it was someone trying to contact the AGE and give them the correct contact number.
- JM put a link in the chat for an article about '[A finance worker at a multinational firm was tricked into paying out \\$25 million to fraudsters](#)' using deepfake technology to pose as they company's Chief Financial Officer in a video'.
- EJ also commented that a factor to be considered is high staff turnover. Organisations try to have a list of authorised contacts for each site. However, if someone is unsure that they are speaking to an authorised person, they can thank the caller and then themselves call a contact they know are authorised for confirmation. Even though it is challenging, it is important to keep the list of authorised contacts up to date.
- MR noted that Kim Clarke, Senior Analyst Cyber Education, Training and Awareness at AEMO is available to members to answer any cyber related questions. Contact Kim.Clarke@aemo.com.au. Kim provided information on Things to look out for, what to do, question options to ask callers. Details are in this [Cyber Security Information Sheet](#).
- JS discussed that they currently have staff training for bomb threats and that type of threat, but there is a gap in that they do not have specific training for their many controllers that is focussed on cyber/phone communications and this, along with potential controls will need to be addressed.

7 Workplace Health, Safety and Environment in Power System Operations

7.1 Discussion on how WHSE applies to the Power System

- Ongoing and carried over to the next CROWG meeting.

8 Power System Operator Training (PSOT) | Daniel Lavis

8.1 Update of Power System Operator Training Framework (PSOT) - Dan Lavis (AEMO)

[PSOT Pilot Development Update - Presentation](#)

- DL provided an update on the PSOT Pilot Project and development of the initial 3 modules, including the proposed timeline for delivery of module 1 by the end of the financial year.
- DL discussed the revised focus for module 1.17 Power Control and the Energy Market, the impacts of Controller's actions, on maintaining the security and reliability of the power system. It will include NER obligations and compliance, AEMO communication obligations for NEM Generation Participants, NEM Operations Etiquette (unspoken, informal guidelines relating to communications and protocols) that should be practiced in control rooms.
- DL provided a static demonstration of the 'RelyOn Nutec' application and module on Decision-Making Principles. It provided visuals on the look and feel of the product and modules, how the Learning Outcomes are implemented in the background, the availability of adaptive learning functions, self-assessment and confidence level checks, the ability to select different industry roles to ensure content delivered is fit for purpose, as well as real world scenarios to practice knowledge and skills learned during training and assess competency for the module.
- CV asked who the training will be available to.
 - DL advised that once complete, it will become a commercial product that can be adopted by an organisation on a subscription basis. Learners will have the ability to undertake the framework on a semi-curriculum basis completing all modules and levels within their sector of the framework or pick and choose the modules from the three ability levels to fill any knowledge gaps or scaffold current knowledge and skills of the learner.
- HT asked if there will be an opportunity for an overall assessment if organisations request learners to undertake the framework on a semi-curriculum basis.
 - DL advised that this has been noted and will be considered by the Steering Committee once module development is complete. In the interim, learners will receive completion certificates for individual modules.
- SE asked if there is a plan in place to notify learners if they require refresher training for updated modules and if there is a plan in place to keep content accurate and current.
 - DL agreed that it will be a challenge to keep content current but will be calling on industry feedback and input via learners who complete modules as to the accuracy and currency of content and Learning Outcomes. Process changes and rule changes will also be seen as a trigger to review accuracy and currency of training content. It will be an ongoing and challenging process to ensure this is met. It is a real-time method of ensuring things remain fit for purpose, as any feedback comes back to the Steering Committee for review and implementation.
 - The PSOT Framework modules have been developed to align with accredited training, so they can be used as a component of any RPL learners seek when completing accredited courses. It is designed to create a potential pathway to accredited training, whilst providing real world learnings and skills that can be applied in their role.

8.2 NEM Operations Academy program overview

- DL provided an overview and update on the second round of the AEMO Operations Academy. Further details are outlined in the PSOT Pilot Development Update presentation link above.

8.3 Restart Training

- DL advised that the next System Restart Training being delivered by the AEMO Operations Training Team is for the SA Region and is scheduled for September through to November. Invitations will be sent out in a couple of months.

ACTION: DL – Include with minutes – further details on the PSOT Framework and Pilot Project as per request from Chris Van der Zalm and Jordan Maxwell.

9 Shift Work | Mario Rositano

9.1 Update from members
9.2 Expectations of recent shift workers
9.3 Other business

- Ongoing and carried over to the next CROWG meeting.

ACTION: MR – Send information to members about the challenges of shift work in a control room. Members to review information and contribute to the informed discussion during the next CROWG meeting.

10 Communications | Darren Spoor

10.1 Seeking clarification on how we define reliable and resilient telephone connections – Darren Spoor (AEMO)

- There was an action item allocated to all members from the last meeting.
- A comment was passed back from the PSSWG about the best practise in operations voice communications, which was published in the NEM Generator Registration Guidelines. That document defines the need for participants to have PSTN contacts and reliable points of communication into voice communication networks.
- The existing best practice document lists PSTN networks i.e. Telstra and Optus prohibitively exclude the use of mobile phones, however the PSSWG asks whether we could instead define reliability requirements, rather than connection requirements, on the basis that some PSTN connections may be less reliable than some mobile connections.
- DS advised that he the wording in the existing best practice document would remain as is, but as an opportunity to refine if we see the need. MR asked members to provide feedback if they were interested, however if no feedback is received, wording will remain as is.
- Should this be more clearly defined to include an element of resilience or is it sufficient as it is.
- JM commented that may be good to review the paragraph and include solutions other than PSTN.
- CZ agreed that the only things they had was a hard-wired phone during the 13 February incident. They are investigating and implementing a backup internet connection via satellite link and a satellite phone. They were running blind on the day. Having more detail as what is required.
- DS advised that this is a minimum requirement for a wind or solar farm. If your plant is referenced in the SRAS plan, this can be used as reference as to why the plant must remain contactable. However, this sentence needs to be revised. [SRAS Communication Protocol \(aemo.com.au\)](https://www.aemo.com.au/sras-communication-protocol)
- JM discussed how PSTN is not referenced in other documentation, it is only in these guidelines that it is referenced, no where else in AEMO procedures.
- DS allocated an action item to JM, asking that he draft a revised sentence for the next meeting. The sentence should be aligned with schedule S5.2.6.2
- DS – discussed how AEMO lost BT phones for an hour during the week. TNSPs were directly called –Support Hub used as a contact – measures have been implemented to prevent a similar event in the future.
- DS – In the last two weeks the AEMO Control Room have checked satellite comms to Generators – 22 satellite phone checks – 6 were successful – 16 were unsuccessful, message banks and/or broken hardware. Members encouraged to test their phones by calling AEMO. MR confirmed AEMO Control Rooms are happy to receive satellite phone test calls.
- CZ discussed that the issue they had with their phone is that it does not work when inside, but they are installing better antennas and equipment to overcome the issue.
- PG advised they have 4 lines on the ETN system directly to AEMO and these can be used by CZ's team if required.
- VL asked for details about the issue with the BT Phones – DS advised that the server appeared to have gone down which affected NEM, Gas and WEM phones.

ACTION: JORDAN MAXWELL – Draft a revised sentence for 3.3.1 Section C: Operations Contact Details Requirements – align with schedule S5.2.6.2 - to be presented at the next meeting [NEM-Generator-Registration-Guide.pdf](https://www.aemo.com.au/nem-generator-registration-guide)

11 Electricity Industry Terminology and Phraseology

11.1 System Restart Document Update

- Final version created and been used as part of System Restart Training. Available for members on the CROWG page in the AEMO website.

11.2 Emergency and Time Critical Document Update

- Members will be asked to read and review the document as it needs amendments and additions. Comments are welcome. A meeting of the subgroup will be scheduled to finalise the document and it is envisioned that process will be concluded prior to the July CROWG meeting.

11.3 What's Next?

- Ongoing and carried over to the next CROWG meeting.

12 Control Room Technology and Ergonomics | Mario Rositano

12.1 What are the latest upgrades, ideas, proposals, projects, etc. What currently works and what issues have been experienced.

12.2 Headphones, phones, recordings, etc. What is best practice in the NEM?

- Ongoing and carried over to the next CROWG meeting.

13 Other Business

13.1 Feedback / Survey

13.2 Frequency of meetings. What should the CROWG aim for?

- Members were asked to consider if going forward there will be two CROWG meetings per year and if anyone would like a third meeting, they can initiate the chair for that meeting. Further discussions will be held at the next meeting.

13.3 VDS Update

- Ongoing and carried over to the next CROWG meeting.

14 Next Meeting

The next meeting will be scheduled in August 2024. MR will send out meeting invitations.

DATE	HOST	LOCATION
20 August 2024	TBA	TBA
08 November 2024	TBA	TBA

Meeting closed at 12.37pm (Market Time).