

# MINUTES

**MEETING:** CROWG – Control Room Operations Working Group

**DATE:** Tuesday, 8 November 2022

**TIME:** 9.30am – 12.30pm

**LOCATION:** Remote via Microsoft Teams

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## ATTENDEES:

NAME	INITIALS	ORGANISATION
Mario Rositano	MR	AEMO (Chair)
Alexis Bowman	AB	AEMO
Dalibor Balicevic	DB	AEMO
Darren Spoor	DS	AEMO
Daniel Lavis	DL	AEMO
Diego Aljure	DA	AEMO
Ken Harper	KH	AEMO
Adam Budzynski	ABU	AGL
Adrian Pang	AP	CWP Renewables
Alan Jenkinson	AJ	AGL Loy Yang
Adam Budzynski	ABU	AGL
Alex Hunibell	AH	TasNetworks
Anthony Stanczak	AS	Delta Electricity
Chris Van der Zalm	CV	AGL Loy Yang
Duane Brooks	DB	ElectraNet
Duncan Griffin	DG	Power and Water Corp
Ed Sellwood	ES	PowerLink

NAME	INITIALS	ORGANISATION
Hal Jorgensen	HJ	NEOEN
James Sherrin	JS	Hydro Tasmania
Jonathon Dyson	JD	Overwatch Energy
Leanne Maurice	LM	PowerLink
Michael Dugdell	MD	Stanwell
Michael Paine	MP	Snowy Hydro
Paul Clark	PC	AGL
Paul Vickers	PV	Hard Software
Phil Gay	PG	AusNet
Robert McCann	RM	Power and Water Corp
Rod Joyce	RJ	Endeavour Energy
Rowan Gaze	RG	Habitat Energy
Sam Gard	SG	RES Group
Tony Saker	TS	Goldwind Australia
Warren Wood	WW	Essential Energy
Warwick Slee	WS	TransGrid
Wyatt Leung	WL	Endeavour Energy

## GUESTS:

NAME	INITIALS	ORGANISATION
Warren Mumme	WM	Western Power
Wai Loong	WL	Western Power
Ryan Pike	RP	Energy Queensland
Ellise Janetzki	EJ	Overwatch Energy

## 1 Welcome and Introduction | Mario Rositano

- 1.1 Roll Call taken via MS Teams.
- 1.2 Welcomed members and discussed purpose of the meeting, including continued discussions on topics tabled at the last meeting.
- 1.3 Introduced new members/guests, including intermittent generation participants.
- 1.4 Reminder to members and advised guests that there is a short CROWG survey AEMO is asking them to complete, which provides the opportunity to give feedback on the CROWG and how it performs. The survey can be accessed via the following link:

[Control Room Operations Working Group \(CROWG\) | Feedback Survey](#)

## 2 Minutes / Actions | Mario Rositano

- 2.1 Minutes of the CROWG meeting 19 July 2022 – seconded by Hal Jorgensen of NEOEN  
[19 July 2022 CROWG Minutes](#)
- 2.2 Actions reviewed

## 3 Rotating CROWG “Chairing” Duties and Amendments to TOR | Mario Rositano

- 3.1 Update on Rotating CROWG “Chairing” role:
  - Call for volunteers for future meetings, commencing with the first meeting in 2023. MR will reach out to members again in the new year.
- 3.2 Draft proposal of Changes to the TOR
  - Confirmed that the PSSWG has approved the two changes, the TOR will be uploaded into the AEMO website, in the [Forums and Working Groups section](#).
  - Any other relevant documents will also be uploaded to this section in the future e.g. restart terminology.

## 4 Seasonal Readiness | All Participants

- 4.1 Update from members
  - AusNet | PG – The OSSCA scheme they use to control overloads in their transformers and its limitation with not looking at Rooftop solar. If they lose one of their transformers at one of the terminal stations, the disturbance will cause the solar to drop off and therefore loading on the two transformers will be a lot higher than pre-contingent. AusNet are considering ways to model how much rooftop solar might shake off. Potentially using a date or a temperature trigger.
    - OSSCA is an in-house application written by one of the ElectraNet SCADA team.
  - ElectraNet | DB – They also do not have any solutions on how to effectively model overloads and consideration will be given to modelling as part of their summer readiness plan.
  - Snowy Hydro | MP - Impacts of the June energy crisis. It forced Snowy Hydro to do more generation, rather than more thinking. A lot of hours have been spent positioning themselves so that they have enough energy for the upcoming summer. The recent flooding also saw impacts of being locked by particular constraints, so the Hydro scheme is not making the flooding worse.
    - MR asked if the limits have changed for how much water the Snowy Hydro scheme can send downstream?

- No, the limits are defined in the Snowy Hydro licence and have not changed. There are different triggers at different times that dictate how much water can be sent downstream.
- AGL | ABU - AGL are in a similar situation to Snowy Hydro. For example, Dartmouth. It is the biggest dam in the Murray Bar, Darling Basin, has been on spill since around the 23rd of September and is part of the operating agreement between AGL and the dam operator. Effectively it can't operate just with some limitations there. With trying to manage water, trying to manage downstream implications we deal with a couple of water authorities as well, just with the with the dam locations and where they flow into. It has been quite challenging and continues to do so. Nearly every catchment on the East Coast of Australia is full. That's the that's a key point as well. Maryam, Biggie, the Murray Darling.

#### 4.2 Status of flood/weather affected participants

- AEMO | DB - The BOM and Weatherzone have advised that La Nina may run out of steam early in 2023, but AEMO will continue to seek advice and get further updates. For November, there certainly was above average rain falls forecast. And then it should slow down and return to neutral mode.
- Snowy Hydro | MP - The Bush hasn't recovered. We clean out all of the aqueducts and drains and dams, then during the next rainstorm, all the material continues to wash off the hill. Another thing that's happening at the moment is the loss of all of our access tracks due to floodings. On top of that, the bushfires have not stopped yet.
  - AGL | ABU - Adam Budzynski – AGL are experiencing landslips up in the high country of Victoria, that are blocking major roads. There's a quite a large landslip there just above Bogong village and several landslips also around the various access tracks around the M1 scheme. The Mackay scheme as well. The heavy rainfall is causing further issues with access to key assets being blocked or alternative routes need to be taken to get to critical assets, which makes it challenging from a remote work perspective as well. It is 24/7 in the control room in Melbourne and the controllers are also the first point of contact for any in vehicle monitoring or safety issues. The control room gets the alarms from vehicles.
- TasNetworks | AH – When the damage from the flooding is viewed, it really shows the power of water. The huge rocks that were moved, some were the size of a house. Destroys everything in its path. This causes severe impacts for TasNetworks.

## 5 Presentations and Suggested viewing material

- 5.1 Presentations – WA Representatives – Steve Stannard will present at the next CROWG meeting, providing a perspective from Western Power.
- 5.2 SCADA – Goldwind Australia | TS – Exploring different SCADA systems that can do everything in one place and other systems that are more spread out. Where do we see industry best practice for SCADA now and into the future? – A presentation will be ready to deliver at the next CROWG meeting.
  - AEMO | DS - that AEMO has just finalised the review of the data communication standard. Second round consultations closed a few weeks ago. It is likely that there will be a new data comms standard issued formally in the next few weeks.
  - AEMO | MR – There is a PMU User Group underway in Brisbane this week and that will cover the SCADA side of things,
  - Snowy Hydro | MP – Asked a question around data sharing, particularly with generators. Currently it is shared via this meeting, emails and phone calls. When we have fault finding problems with generators etc, data sharing

processes would be handy. In order know what was happening with the reactor at the time etc. It would be good to know the process about how we go about requesting access to certain data and what we can see?

- AEMO | DS – If data is for sharing during meetings such as this, if it is not data for your organisation and if it is available via ICCP, AEMO will generally facilitate the transfer of that data. However, it does require permission from the other organisations. There is not a formal process documented, however the informal protocol currently in place, has worked until now.

### 5.3 Cyber security – discussion on suggested viewing material

Below are the links to information on cyber security passed on from the AEMO Cyber Security team.

- <https://www.youtube.com/watch?v=opRMrEfAlil>
- [https://www.youtube.com/watch?v=UzvPP6\\_LRHc](https://www.youtube.com/watch?v=UzvPP6_LRHc)
- <https://www.youtube.com/watch?v=lc7scxvKQOo>
- <https://www.youtube.com/watch?v=aHaBH4LqGsl>
- [https://www.youtube.com/watch?v=8ThgK1WXUgk&ab\\_channel=C%26MNewsbyrress.at](https://www.youtube.com/watch?v=8ThgK1WXUgk&ab_channel=C%26MNewsbyrress.at)
- Hydro Tasmania | JS – discussed that they found that someone had plugged a phone charger into the console and controllers were using it to charge their phones, not realising that made their phone vulnerable. The charger has since been removed. Recently been in discussions around security cameras. Not anything like security gates, just the surveillance system and that it puts a new lens on considerations about whether we are penetration testing a lot of our assets, who has access to these things and how many lines are differentiated between.
- AEMO | MR – Discussed the cameras AEMO have in the control room and DTS training rooms. Consideration is made around how easy it may be to hack into those cameras from outside and the security impact that may have.
- Further group discussion was held around the risk of calls coming into the control room are not legitimate and the mechanisms used to confirm legitimacy before discussions begin.

## 6 Phone pre-recorded messaging | Mario Rositano

### 6.1 Discussion on disabling the telephone pre-recorded messaging and beeping when calling control room to control room

- Discussed the additional volume of work, phone call related, especially during the market suspension event. It was found the pre-recorded messages become very frustrating for AEMO controllers when needing to get things actioned quickly. There was a huge volume of calls made and received.
- The question put to the group: What is your stand on pre-recorded phone calls? Are you in favour of them? There is a legal requirement and that is the primary reason we have the messages, however does anyone have any examples of pros and cons, or thoughts on where we stand potentially as a group on these pre-recorded messages?
  - Essential Energy | WW - Looking into this recently, I'll have one question for the group, which will be, does anyone here not record their phone calls? Presently we do not record our operational phone calls. We are looking to go to a system that will accommodate that. It is legally required that the person on the other end of the call is aware that the phone call is recorded. There is nothing that he can point to specifically that says you have to tell them that in the recording. You can make it a condition of your working relationship with the number or the call centre you are contacting. For example, between Evo Energy and TransGrid, we might include that in the operating protocol to advise, if they are applying this protocol, be aware that your phone calls recorded. Similarly for people we authorised to switch on our network, we can say, 'You are now authorised

to operate on the network and as part of that authorisation you declare that you understand that your phone calls are recorded'. WW was advised that this would be sufficient from a legal standpoint.

- Essential Energy | WW - Has anyone got any information to counter that or is there something better that we can lean on?
- AEMO | MR – Confirmed with the group that most members present have their calls recorded, with the exception of AGL Loy Yang and Snowy Hydro only record calls to AEMO, not to other participants.
- AusNet | PG – Advised that AusNet record all calls, but do not have the pre-recorded message. They make it a condition of their working relationships that people be aware that their calls are being recorded when they ring AusNet. It is a condition to enable the phone numbers to be given out. Some of the newer phone systems also can select which numbers get the pre-recorded message and which ones do not.
- Hydro Tasmania | JS – commented that it would be beneficial if there was an industry standard or agreement amongst the industry or common organisations that we communicate with. Potentially a distribute a memorandum of understanding around the protocols and that calls are recorded. This industry standard could then potentially influence the act and lead to amendments.

**ACTION:** MR to contact PG to discuss a memorandum of understanding for communication and recording of phone calls, as well as discuss current phone upgrades and systems.

**ACTION:** All members are to investigate the possibility of developing an industry wide memorandum of understanding around the recording of phone calls to participants, then present any findings at the next CROWG meeting.

## 7 Indistinct Events | Dalibor Balicevic

### 7.1 Update on consultation – Dalibor Balicevic [Indistinct Events Rules Change Summary](#)

- Preventing or reducing the impact of abnormal conditions on power system security and how current rules and mechanisms could be enhanced and further develop resilience in how the power system is operated. Also looking at the existing contingency management framework and incorporating indistinct events in the reclassification criteria, so AEMO can reclassify loss of multiple elements as a credible event when abnormal conditions are present.
- Hydro Tasmania | JS – asked if there is any categorisation e.g. low risk or high risk?
  - DB – it has only been done at a very high level and consideration was not given to which one had the higher or lower impact. Some can be identified as more frequently occurring and likely to be continuing. In Australia, there are bushfires, earthquakes, floods etc and it is difficult to prioritise low risk and high risk.
- Hydro Tasmania | JS – asked if there is a way to enhance operational visibility?
  - DB – that is occurring in in some of these areas and we will continue to revise and update these as we get that information or that metrics when they become available.
- Overwatch Energy | JD – commented that it would be useful to add the geographic components of it. E.g. the landslide example on the page. The landslide that kicked through Tasmania a few weeks ago was a short, sharp, sudden event took out a transmission tower which caused obviously the separation event, whereas the landslide that Adam was talking about earlier was a slow-moving landslide that had different aspects associated with There is a geographic and there's an isolated nature of it. There's the intensity of it and the GIS information associated with

storms and or floods and or winds and or solar. It is becoming more complex as our power system transitions. How would you start to integrate that GIS component to it?

- DB – It is something that will continue to be developed further as we progress. But AEMO are currently looking at part of this consultation and part of development of these criteria for what options are now available. Find out how can I get a bit more understanding of where the high risk of flooding zones or areas might be and how we can consider that a lot of these will come down to asset owners and understanding where the location of their assets is and then the risks. What hazards they pose to individual assets and then notifying via email of any hazards and risks as they become aware of it. There is a lot of geographic GIS components that may not necessarily be available at this stage. Some information is available through various sources being explored and viewed as part of this consultation.
- Overwatch Energy | EJ – looking to understand what the process looks going forward. Following consultation, what does the process look like between now and March next year to get this in place?
  - DB – the process from here is to update power system security guidelines where reclassification criteria is defined. Expand on the existing reclassification criteria.
  - For contingency events, non-credible contingency events and reclassifying those events are being looked at, based on these abnormal events and risks existing.
  - You will see from now on that that through PSSWG we will look at how the criteria looks going forward.
  - It may be an appendix where we address each of these topics in a separate appendix and we talk about these topics. We talk about what is the abnormal condition, what is the risk that it poses to the past system security, what are some of the triggers, metrics, procedures that AEMO end industry would take and what is the process? What will trigger actions effectively?
  - There will be a list of actions that we could take and overall, they are going to be common for all these events.
  - Consideration around what market notices we've got in place now and what market notices we may need from 9th of March.

## 8 Training | Daniel Lavis

8.1 Daniel Lavis, Manager of Operations Training delivered an update on the status of the Power System Operator Training Framework that is being developed in collaboration with Industry Control Room staff and nominated RTO's

- Status update for module development
- Update on the process of engaging Registered Training Organisations (RTO's) to develop fundamental level modules and will provide an update to the steering committee members shortly after that to work through the detail.
- One interesting development in the training space, from the perspective of a report that AEMO is preparing now, into what is required for 100% renewables, Chris Davies team is trying to road map exactly what that looks like and what the master must have are for 100% renewables operation. Training has been identified as a key component of that, ensuring that with new people coming into our control rooms, getting them up to speed in the right areas, fundamentals of power system operations. Understanding the equipment that they are monitoring and switching directly, protection systems etc. AEMO want to uplift and get some consistency, some standards across training in in that regard and PSO Training Framework will provide that. We are looking forward to seeing it continue to develop and hopefully deliver content for you all very soon.

- ELECTRANET | DB - discussed the need for his controllers to attend AEMO System Restart training, face-to-face in Brisbane, enabling controllers to use the simulator and speak with the AEMO controllers in person. If there is no SA System Restart training planned for the near future, there may be a separate opportunity for ElectraNet Controllers to visit the AEMO Brisbane office and DTS.
  - DL advised that QLD is the next region for System Restart training and SA System Restart training is scheduled for the second half of 2023, however if that is too far away, AEMO can organise for ElectraNet controllers to have a separate visit the Brisbane DTS for an introduction into the AEMO Control Room, DTS, as well as communication protocols.
- AENO | MR - discussed that it would also be good to have the AEMO controllers visit the ElectraNet Control Room to gain a better understanding of what happens. DB will consider this and will communicate with MR and DL further.

**ACTION:** DB to email DL with names and details of controllers that would like to visit the Brisbane DTS and/or undertake SA System Restart training in the second half of 2023.

**ACTION:** DL to speak with RTO Managers and the RTO Training Team about ElectraNet Controllers visiting the Brisbane DTS | Introduction to AEMO - Introduction to the AEMO Control Room and DTS - Meet and greet with AEMO Controllers – Facilitate discussion around communication protocols.

## 9 Shift Work | Mario Rositano

### 9.1 Fatigue Management Discussion | Mario Rositano

- There was robust discussion on this topic during the last CROWG meeting and support for a standalone meeting on this subject. Please find below links to information on fatigue management and shift work (from the last meeting). Along with details in the previous minutes, this will form the basis of standing discussions on the agenda item.
  - [Guide for managing the risk of fatigue at work | Safe Work Australia](#)
  - [Fatigue management - a worker's guide | Safe Work Australia](#)
  - [Tackling The Night Shift: Top 10 Tips \(healthcareaustralia.com.au\)](#)
  - [Sleep Health Foundation - Australia's Leading Advocate for Healthy Sleep](#)
  - [Sleep Foundation | Better Sleep for a Better You](#)
  - [Shift Work Disorder: Overview and Complications | Sleep Foundation](#)
  - <https://www.energex.com.au/home/fatigue-calculator>
  - <http://www.vgate.net.au/fatigue.php>
- The key outcomes from the discussion during July's meeting include travel, health and working on your own.
- AGL | ABU - AGL have recently employed an additional controller bringing their total to seven controllers. Drivers for this were fatigue and the inability for controllers to take good breaks away from work. They did not have the staff hours over a long duration to give people who are on shift five weeks annual leave. Plus, the accumulation of leave is a liability that is currently through the roof. When it was analysed, it was found that AusNet did not have the capacity to send people away for more than six weeks and it has accumulated.
- AEMO | KH – Discussed how for the East Coast, AEMO rotate two controllers out of the control room and into RTO Training, to be able to run dedicated training for controllers on roster. This allows AEMO more depth in terms of



roster. If we do experience unplanned situations or COVID, then the specialists can be put back on the shift roster. Another advantage is remote working arrangements, allowing specialists to deliver training remotely and for participants to attend online. In the WEM, there is not the ability to supplement the roster and one of our Norwest control room retirees was brought back on a part time basis, to make sure that the training is not impacted. There is more of a hybrid approach implemented there as well, to make sure we have a little bit more depth, however when the roster is tight, we find that it becomes difficult. Mario isn't it to have that dedicated staff to then ensure we're running appropriate training for the control room.

- AEMO | DL – advised that in AEMO, controllers are required to undertake 80 hours of face-to-face training, whether it is remote or face to face in our DTS training rooms. Eighty hours for each operator is quite an undertaking and it is technical training within our simulation environment. It is quite a large target, but we think that is where it needs to be, to keep up with the evolving needs of the power network.

## 10 Communications | Darren Spoor

### 10.1 Security in communications update

- Two aspects discussed were the best practice guideline, that was shared with the PSSWG at the last meeting. The guideline has not been formally endorsed at this stage. It was left with the group for consideration. For our next meeting, which is scheduled for, I believe next Thursday or Friday, 10-11 November. At this stage it is likely to be endorsed, then following, we need to decide where it will be published, possibly within one of AEMO's external procedure's locations on the website. Members will be advised. The work that this group has done on defining those items as best practice, is worth commendation to it all, everyone within this meeting. The guidelines are to be used for existing and new participants, as a guide on what we expect operational telephony to look like in terms of reliability, availability and quality.
- The other one worth noting also, are discussions with the NEM Emergency Communications Working Group, which was a temporary working group established under the NEMOC structure, looking at ways and means of providing emergency voice comms in times of crisis. In the System Restart Communications Protocol, there is an obligation to have 24-hour comms availability in the event of a black start. It is envisioned that a recommendation will be submitted to NEMOC in the coming months, to trial an HF link. The first would be between Brisbane and Hobart. If deemed successful, that could then be the basis of a wider NEM comms network. That seems to be the direction that the NEMEC are going to be recommending.

## 11 Electricity Industry Terminology and Phraseology

### 11.1 System Restart Document Update

- To be uploaded on the AEMO website with the TOR update.

### 11.2 Time Critical and Emergency Document Update

[Time Critical and Emergency Events Terminology and Phraseology | Document](#)

- Updated spreadsheet sent to the EITP subgroup for feedback - still finalising. Will be distributed with the minutes in a draft, for approval. Again, to be uploaded on AEMO website in the working group section.

[Draft | CROWG Time Critical and Emergency Events Terminology and Phraseology | Spreadsheet](#)



- AEMO | KH – Discussed a recent challenge during the Market Suspension around fuel limitations and finding out how many tonnes of coal or gigajoules were available. It did not tell us what that meant for megawatts and megawatt hours. It may be helpful to include that type of language in this document

## 12 Control Room Technology and Ergonomics | Mario Rositano

12.1 What are the latest upgrades, ideas, proposals, projects, etc.

- Members were shown the [OPENNEM.org.au](https://opennem.org.au) website, an open platform for National Electricity Market Data, that aims to make the wealth of public NEM data more accessible to a wider audience. It facilitates a better understanding of the market, can improve energy literacy and enable a more informed national approach to Australia’s energy transition in the long-term interest of consumers. The website assists users with their queries. For example, it is difficult to remember the 331 generators and their generation technology, so this website can be used to find out that information. If a user needs to know how many coal units there are in Australia, they can use this site to work that out. The site provides information on location and descriptions of assets

12.2 What currently works and what issues have been experienced.

- Carried over to the next meeting.

## 13 COVID-19 & Flu Season

13.1 Update from members – Control Set-ups, issues, etc.

- There has been a slight rise in the number of recent COVID cases, which are being monitored and necessary precautions put in place.

## 14 Other Business

14.1 Feedback Survey

- Carried over to next meeting.

14.2 VDS Update

- Carried over to next meeting.

## 15 Next Meeting

- The next meeting will be scheduled for early 2023 – Mario will propose dates and invitations will be sent to members.
- Nominations for members to take on the facilitation role for the next meeting will be sent with the minutes.

## 16 Meeting Close

16.1 Meeting closed at 12.21pm (Market Time).

### Meeting Forward Plan

DATE	HOST	LOCATION
Early 2023	TBA	TBA