

MINUTES

MEETING: National Electricity Market Operating Committee (NEMOC)

DATE: Friday, 21 June 2019

TIME: 09:30AM – 3:30PM (Central Standard Time)

LOCATION: Powerlink Office
33 Harold Street,
Virginia QLD

TELECONFERENCE DETAILS: 1-800-468-102

MEETING NUMBER: 571 937 170

ATTENDEES:

NAME	COMPANY / DEPARTMENT
Christian Schaefer	AEMO
Lenard Bayne	AEMO
Damien Sanford	AEMO
Teresa Smit	AEMO
Tim Llyod	AusNet Services
Verity Watson	Energy Networks
Blake Harvey	Energy Queensland
Ben Skinner	AEC
Naresh David	AEC
Lilian Patterson	CEC

PRESENTERS:

NAME	COMPANY / DEPARTMENT
Andrew Watkins	BOM
John Phillipotts	Energy Queensland
Sujeewa Rajapakse	AEMO
Darren Spoor	AEMO

1. Welcome

Christian welcomed the group to the meeting and noted those attendees that dialled in.

2. Previous minutes

Minutes weren't accepted.

3. Review of action items

4. Governance

- Damien Sanford addressed the committee as the incoming chair of the NEMOC, taking over from Christian Schaefer. Key points that Damien spoke to the group on were:

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- Forward looking NEMOC structure and collaboration with industry and government
- Intent and progress on the AEMO/CSIRO National Energy Simulator
- Increasing concerns around Cyber Security
- CSchaefer questioned the group regarding the focus and priorities of the NEMOC and the things that the committee should be focusing on, as well as the engagement with the NEMOC's fellow committee the EJPC.
- KSummers requested if there could be some expert advice brought to the NEMOC on Block Chain and Virtual Power Plant, in which Damien advised that he is currently working with GE to provide the NEMOC.
- DSanford raised the question to AEC/CEC on what their members want from this committee and in joining it, what were you hoping for?
 - LPatterson expressed that she would like to understand regarding the operational issues and policy changes.
 - BSkinner was reasonably happy with the scope of the NEMOC at this present time. In addition, BSkinner added that private investors in the market are hoping to get a competitive return in their investments.
- DSanford raised the question whether the group was forward looking enough and providing that forward looking advice so that some of the shocks such as constraints are coming as such a surprise to market participants.
- Members did express that the group needed to be more forward looking.
- Long/short term time frames influencing planning roles and solutions and collaboration with development of planning documents.

5. Operating in an increasingly interconnected network

MPaine and GEdwards facilitated a discussion on the topic of "Operating in an increasingly interconnected network". The presentation outlined the following points.

- Transmission planning
- Generation development
- Private asset management
- Outage planning

MPaine requested that the NEMOC work together to implement a strategic plan to manage these evolving issues.

- KSummers added that competing control strategies can adversely impact the power systems and can be inefficient and highly destructive.
- GEdwards stated that reports are developed by AEMO on when there is a significant event in the network.
- KSummers added that engineers must design the limits of what that equipment are can do. In addition, she recommended that it should be up to the NEMOC to ensure the correct controls systems where in place and within the boundaries of what is physically possible otherwise, we will set ourselves up for disaster.

CSchaefer asked the group to provide their concerns from their perspective for the purpose of developing a discussion paper. These concerns are outlined below.

- Hierarchy of system controls (deciding on the priority of economic versus security driven issues).
- Coordinated distribution and transmission control system design.
- Operational challenges relating to system strength.
- Growing impact of an increasingly dynamic distribution system.
- Operator training and requirements in an increasingly automated and dynamic power system: dealing with the complexity of the control room.
- Cross jurisdictional interaction: understanding the operating requirements of cross border networks.
- Integration and standardisation of Interconnector Special Protection Schemes (SPS).
- Managing runbacks and SPS of generating facilities in oversubscribed parts of the network; how should this be planned?
- Preparing for unexpected non-credible and High Impact Low Probability events.
- Establishing the boundary of the secure system operating envelope and the tools necessary to manage this; what part must dynamic stability assessment (DSA) tools and ancillary services (AS) play?
- Defining the impact and boundaries of employing untried technology.
- Simplification of concepts and terminology of the energy system for industry participants and policy makers.

6. Argentina Blackout Lessons learnt Presentation

CSchaefer provided a presentation on the recent blackout that occurred in Argentina where shortly after 7am on 16th of June a disruption in Argentina's interconnection system network causing a complete grid collapse. What AEMO knows so far regarding this event are outlined below.

- A 500-kV line was already out of service since April 2019 from Campana to Colonia Elia.
- A single or double contingency, as quoted by some sources, occurred on either the line between Belgrano and Colonia Elia or the line further north. These lines are close to the two Uruguay Interconnectors.
- Fault occurred on Sunday morning at around 7a.m. Currently demand was low and the 3.7GW hydro plants near the interconnector were operating at almost max output.
- One plausible scenario is transient instability in the Northeast region and the Yacyreta hydro plant in very far north tripped, this likely causing a fast frequency drop. It appears to be associated with a protection scheme to maintain stability.
- It seems like the Salto Grande hydro plant (1.9GW) similarly tripped due to instability.
- The main load centre at Buenos Aires was isolated from the North with the 500 kV lines down.
- It is expected that due to the resulting large generation deficit, the frequency plummeted, and the system collapsed. System separation seems to not have occurred correctly. Paraguay, Uruguay and some of Southern Brazil also went black.

- Some early articles have suggested it may have been due to mal-operation of under-frequency load shedding, possible insufficient frequency control and region separation not occurring properly.

7. Bureau of Meteorology (BOM) Presentation

Dr. Andrew Watkins from the BOM provided a review of the summer period 2018 – 19.

- It was noted that it was very warm for day and night time temperature across the eastern part of the country.
- BOM noted that prior to the summer period the BOM were advising that it was high possibility of;
 - Bushfire activity
 - Heatwaves
 - Drought
 - Dust storms
 - Increase solar/less cloud
- Summer Rainfall
 - Conditions were extremely dry and 18/19 was recorded to be the 10th driest summer on record for Australia (119 years).
 - There was a lot of rainfall in QLD primarily due to a tropical low activity.
- Maximum temperatures
 - It was recorded to have been the hottest summer days on record for Australia (109 years).
- January 2019 was the hottest month on record, averaging across the country.
- Hobart experienced 7 days above 30 degrees in January.
- It was recorded to have been a high evaporation rate experienced in the NT, Southern QLD, Northeast NSW and Northern SA.
- North Murray-Darling Basin water storage reduced to 9.3% with the South Murray-Darling Basin dropping to 47.6%.

For the period between July to September 2019.

The below predictions were made.

- It is predicted to be a very warm and dry spring.
- Stream flows are expected to remain low.
- Throughout July to September 2019 it is likely to experience less wind in SE Australia, with high pressures over SE Australia. This will mean fronts further to the south.
- Dam Water storage filling is expected to be below average with higher temperatures and high chance of increased evaporation.
- The El Nino likelihood has eased but still can't be completely ruled out for the remaining months in 2019.

- The Indian Ocean Dipole is likely to dominate winter-spring weather conditions across Australia.

8. EQL/AEMO Demand Response (DR) Trail

BHarvey introduced John Phillpotts to the committee who are currently collaborating with AEMO on the Demand Response Trials.

- With the increasing growth in battery uptake, there is a shift from a passive DR world to a more active DR world. This can be an issue as it may not be completely dispatchable.
- EQL are working on the ability to map constraints from a more localised level and to project dynamic constraints envelopes into the market. This will provide aggregators better awareness of local network constraints.
- EQL advised that they are currently working on new concept called State Estimation. This provides the ability to use a sample of data to accurately model what is happening at any point in the network.
- EQL also added that they are currently working with Open Energy Networks (OEN) process between ENA and AEMO. This program of work is looking at how the different conceptional models of the DSO are emerging and how this can shape OEN design.

AEMO added that they are looking at working with Google X and others to understand if there is an ability to be able to use satellite imagery, drone technology to map low voltage network.

9. Working Group Updates

9.1. Operations Planning Working Group (OPWG)

- AEMO has commenced a two-yearly Under-frequency load shedding (UFLS) review with a view to adjust the current UFLS settings in the NEM.
- Three SA wind farms have implemented over-frequency generator settings (OFGS) since November 2018 with one SA wind farm yet to implement. AEMO is liaising with the relevant participant to ensure their settings are implemented. These OFGS schemes are required to facilitate high power export across the Heywood Interconnector from SA to VIC.
- TransGrid and TasNetworks are in the preliminary stages of preparing a discussion paper on Voltage control in the NEM under light load conditions.
- The Summer Network Outage Planning Guideline prepared in consultation with OPWG was used in 2018/19 summer. OPWG members and AEMO acknowledged that the outage planning guideline was effective in managing network outages during this period.
- The OPWG discussed the communication (What communication, on what topic?) between relevant TNSPs, TNSPs and DNSPs as well as TNSPs and Generators and the use of Network Outage Scheduler (NOS) functionality to communicate between parties. The OPWG also focused on the DNSP outages affecting embedded generation. OPWG noted that the communication between the parties is generally effective and discussed possible improvements. The OPWG also noted the challenge in maintaining operational contacts of Generators and saw the value in maintaining a contact sharing platform.

- The next OPWG meeting will be held on 25th June.

9.2. Power System Security Working Group (PSSWG)

- A consultant was recently engaged by AEMO to assist in reviewing the power system reclassification criteria. Discussions included:
 - A review of TNSP survey results and the reclassification data from the last six years.
 - A review of the reclassification framework for bushfires, lightning and severe weather o It was agreed that the reclassification process is conservative but is appropriate and that the existing risk framework in 3715 was fit for purpose o A review of risks which cannot be effectively managed through reclassification, such as threats to SCADA or widespread environmental risks, etc.
- Satellite phone checks were discussed as these systems appear to be susceptible to poor weather conditions. The potential for additional backup links were discussed and are to be discussed further at the next meeting.
- The PSSWG is continuing to work towards the development of consistent procedures applicable to the manual re-closure of transmission lines.
- An inaugural meeting for the Control Room Operations Working Group (CROWG) will be held in Brisbane on the 6th August. Any recommendations will be referred to the PSSWG on the 7th August.

9.3. Power System Modelling Reference Group (PSMRG)

- Tabled. No commentary from chair.
- The PSMRG is working to contribute to the Australian Standards such as synchronous condensers and modelling response time.

10. January Bushfires

MPaine provided the committee a presentation on the recent bushfire activity in Tasmania throughout January.

- 2,400 lightning strikes onto dry vegetation throughout December -January led to the start of up to 70 active fires between 23rd and 26th of January.
- It was estimated that the fire burnt up to 200,000 ha, with a perimeter of over 1,800km. Within this area 7 properties where lost.
- Impacts to TasNetworks assets saw 150 transmission and distribution poles destroyed. Wooden poles were most venerable due to flying embers. In addition, the fires also posed threats to telecommunication assets.
- Key telecommunication sites survived due to good ground clearing.
- TasNetworks advised that the use of camera's positioned throughout their network was a critical tool. These visuals where also provided to the local fire department for their strategic planning to fight these fires. In addition, TasNetworks will be installing more cameras throughout their network.

11. Other business

No other business

12. Forward planning

Next meeting to be held in Sydney at AEMO's CBD office on the 13th of September. Dinner to be arranged with committee members on the 13th of September (Venue TBA).