Forecasting Reference Group (FRG) DRAFT MINUTES

MEETING: FRG #5 2021

DATE: Wednesday, 26 May 2021

TIME: 2:00pm – 4:30pm AEST

LOCATION: Teleconference

ATTENDEES:

Name	Company	Name	Company
Harriet Tienstra	Acil Allen Consulting	Paul Graham	CSIRO
Jack Simpson	AEMC	Arthi Pillapakkam	DELWP
Abbas Mohammadi	AEMO	Ben Ganim	DISER
Adrian Grantham	AEMO	Daniel Burlutsky	DISER
Ali Habibi Khalaj	AEMO	Katie Filippello	DISER
Andrew Turley	AEMO	Abu Abdullah	ElectraNet
Bella Pennington	AEMO	Patrick Gan	EnergyAustralia
Ben Jones	AEMO	Ngoc Tho	ENET
Carla Ziser	AEMO	Sandy Xu	Engie
Craig Price	AEMO	Kerina Heath	Ergon Energy
Cristina Rocca	AEMO	Brent Hudson	Essential Energy
Dane Winch	AEMO	Andrea Schaller	EY
Daniel Collins	AEMO	David Heard	Finncorn Consulting
Dean Soste	AEMO	Alanna Gibson	GLNG
Debborah Marsh	AEMO	Christina Sutherland	GLNG
Elijah Walker	AEMO	Devvrat Patney	Hydro Tasmania
Faranak Golestaneh	AEMO	Jennifer Abedin	IES Advisory Services
Gregory Staib	AEMO	Andrew Nance	ISP Consumer Panel
Helen Wang	AEMO	John Cheong-Holdaway	Jemena
Levi Rosenbaum	AEMO	David Headberry	Major Energy Users
Magnus Hindsberger	AEMO	David Havyatt	NICE
Milton Woods	AEMO	Sarah-Jane Derby	Origin
Nicholas Culpitt	AEMO	Anna Livsey	PAIC
Nicola Falcon	AEMO	Aaron O'Brien	Powercor
Shayne D'Lima	AEMO	Dean Knight	Powerlink
Siobhan Attwood	AEMO	Enrique Montiel	Powerlink
Tim Iredale	AEMO	Jennifer Brownie	QEUN
Vivian Mai	AEMO	Phil Pollard	QEUN
Ashok Kaniyal	AER	Bret Harper	RepuTex
Nick Eaton	Alcoa	Marino Bolzon	SA DEM
Paul Grzinic	Aurora Energy	Elisia Reed	SA Power Networks
Ed White	Ausgrid	James Bennett	SA Power Networks

Morteza Moallemi	AusNet Services	Ron Logan	Shell Energy Australia
Nick Cimdins	AusNet Services	Noel Sligar	Sligar and associates
Saliw Cleto	AusNet Services	Stephen Meiklejohn	Stanwell
Owen Pascoe	CEFC	Herath Samarakoon	TasNetworks
Jayanthi Thennakoon	CER	Julie Morrison	TasNetworks
Jeff Anderson	CitiPower Powercor UE	Prateek Beri	TasNetworks
Neil Gascoigne	CitiPower Powercor UE	Sujeewa Vithana	United Energy

1. Welcome and Introductions

Daniel Collins (AEMO) welcomed everyone and covered the following:

- Completion of the Electricity Demand Forecasting Methodology consultation.
- FRG Consultations:
  - Distributed Energy Resources (DER) report published online.
  - Energy Efficiency (EE) report published online.
  - Forced Outage Rates presentation 30 June. Submissions close 14 July 2021.
- Submissions to Energy.forecasting@aemo.com.au are appreciated.

2. Presentation 1 – Draft 2021 Demand Side Participation (DSP) forecasts

Tim Iredale (AEMO) presented a summary of submissions to AEMO's 2021 DSP Information Portal, the methodology and draft 2021 DSP forecasts. Feedback was requested on assumptions around Wholesale Demand Response (WDR).

Key topics raised by stakeholders during this session included:

- Prateek Beri (TasNetworks): Demand response duration is important to networks; can DSP analysis include duration in addition to price response?
  - AEMO: These DSP forecasts are average aggregated regional responses; characteristics of individual site responses are not analysed - but any constraints from duration will implicitly be reflected in regional averages.
- Ed White (Ausgrid): Ausgrid plan to use these forecasts for historical analysis to determine unmitigated demand. Will (WDR) data allow for more granular forecasts?
  - AEMO: Yes, once implemented, WDR will provide more granular data.
- David Headberry (MEU): The uniqueness of 2020 highlights the issue of historical data failing to capture potential DSP that did not eventuate. For a better understanding, and to reduce conservatism, demand response triggers other than price should be analysed. Perhaps data from times of higher market prices, 6 years ago, can be used. James Bennett (SAPN) added: Randomly occurring high price events will become more common than predictable events. DSP forecasts should be based on triggers rather than historical response.
  - AEMO: DSP forecasts are based on at least 3 years of historical delivered DSP and 3 years of potential future responses, a large enough sample for statistically significant average responses. There is a delicate balance to understand triggers; several are assessed, including lagged price responses and pre-dispatch price, but dispatch price was found to be as accurate as the others, and is most easily adopted into the market modelling. The DSP forecast accuracy is assessed in the Forecast Accuracy Report (FAR). AEMO consulted on both DSP[1] and FAR[2] methodologies in 2020.
- David Headberry (MEU): Is the methodology applicable to 5-minute settlement (5MS)?
  - AEMO: Yes. AEMO has not yet estimated the impact of 5MS on DSP.
- Jennifer Brownie (QEUN): Are "Time of Use" tariffs considered dynamic?
  - AEMO: No. Dynamic tariffs are irregular and have no timing pattern.

[1] Available at: https://aemo.com.au/consultations/current-and-closed-consultations/demand-side-participation-forecast-methodology-consultation
[2] Available at: https://aemo.com.au/consultations/current-and-closed-consultations/demand-side-participation-forecast-methodology-consultation

3. Presentation 2 – Climate change factors and assumptions

Ben Jones (AEMO) presented an overview of AEMO's approach for analysing and incorporating climate change, specifically focusing on weather, hydro and bushfire adjustment factors. A case study on compound weather events and possible extreme event risk management will be published by the Electricity Sector Climate Information (ESCI) project. The 2022 Integrated System Plan (ISP) will feature further case studies.

Key topics raised by stakeholders during this session included:

- Jennifer Brownie (QEUN): Why are the drying trends for the North Queensland hydro region more uncertain than southern Queensland?
    - AEMO: AEMO assessed 16 climate models, some indicate increasing moisture in North Queensland while some show increased drying. The median drying for the region is zero, unlike more certain trends in other regions.
- Prateek Beri (TasNetworks): A previous ESCI presentation showed that 5 or 6 desalination plants will be required as Melbourne's population increases. Are these factored into the hydro forecasts?
    - AEMO: Streamflow factors are applied to existing desalination plants. More ambitious desalination projections are not included.
- Prateek Beri (TasNetworks): If there are zero carbon emissions in 2050, how will temperatures increase by 2.6%?
    - AEMO: The path towards the Net Zero 2050 scenario includes carbon emissions before 2050. Multi-sector modelling will be presented in the June FRG. Publication of the IASR will provide more context to each scenario.
- Owen Pascoe (CEFC): Does the bushfire related transmission outage risk consider vegetation burn-off? Are transmission outage forecasts only for extreme scenarios?
    - AEMO: There is a positive correlation between the enhanced Forest Fire Danger Index and bushfire days. The index shows long term bushfire weather trending upwards. Ignition risk fluctuates each year, but the overall bushfire risk is rising. These transmission line outages are not extreme scenarios, they are POE50 forecasts, important for reliability.
- Ron Logan (Shell Power AUS): Will extreme events be allocated a probability value?
    - AEMO: Temperature, bushfire and weather factors are probability assigned and a most likely projection is identified. Compound extreme case studies will not be probability assigned; they will be used to stress test the power system and to identify areas to increase long term resilience when comparing development pathways.
- David Headberry (MEU): As the trend for electric heating rises, should the possibility of peak demand in winter be investigated?
    - AEMO: Climate factors are applied to heating in winter too. Multi-sector modelling in the June FRG will explore fuel switching.

4. Presentation 3 – Draft 2021 electricity consumption forecasts

Debborah Marsh (AEMO) presented draft forecasts for each component and the aggregate consumption projections for use in the 2021 ESOO.

Key topics raised by stakeholders during this session included:

- Neil Gascoigne (CitiPower Powercor UE): How are growing data centres forecast?
    - AEMO: Data centres are currently modelled in aggregate consumption. New participants are being engaged and tracked in anticipation for future forecasts.
- Jennifer Brownie (QEUN): Do transmission networks only use AEMO's forecasts for their Transmission Annual Planning Reports (TAPR)?
    - Saliw Seto (AusNet Services): AEMO produces the Victorian Annual Planning Report and forecast.
    - Enrique Montiel (Powerlink): Powerlink use AEMO forecasts for the Queensland TAPR, specifically, the central, slow and step change scenarios.
    - Brent Hudson (Essential Energy): The New South Wales distribution networks supply connection points forecasts for TransGrid's TAPR.

    - Neil Gascoigne (CitiPower Powercor UE): The Victorian distribution networks produce the Transmission Connection Planning Report, separate from AEMO.
- David Headberry (MEU): ISP electricity infrastructure projects will function for more than 50 years. Australia's manufacturing landscape will look different during the life of these assets. Therefore, deeper analysis is required on the structure of Australia's manufacturing industries to better model Large Industrial Loads (LILs).
    - David Havyatt (NICE) – In the Hydrogen Superpower, Australian manufacturing should grow. Cheap energy will drive Australian investment in less labour intensive processes. E.g., lithium can be made from local renewable energy, without sending coal to China.
    - AEMO: End of life is the only closure criteria currently credibly estimated. The scenario spread captures the more uncertain restructure of some industries through energy intensity. The June FRG Multi-sector presentation will provide a window into potential subsectors of the future Australian economy.
- John Cheong-Holdaway (Jemena): Why is electrification "high" in the hydrogen superpower scenario, hydrogen should replace gas? Jemena and the Victorian government are modelling hydrogen, biomethane and other renewable gas pathways.
    - David Havyatt (NICE): LNG forecasts should be falling as 2050 approaches.
    - David Heard (CEFC): Hydrogen will substitute for electrification in the 2030's in heavy transport and high heating industries.
    - AEMO: "High" is relative; the hydrogen superpower features high hydrogen use and electrification. Multi-sector modelling will be presented in June.
    - CSIRO: In Hydrogen Superpower, 90% of articulated trucks run on hydrogen by 2045, some light vehicles and small trucks do too[3].
- David Havyatt (NICE): What drives the significant inflection of Electric Vehicles (EV) before 2040? Why are other vehicles still in the model after 2040?
    - CSIRO: The EV forecasts include a 10 year notice in 2030 that Internal Combustion Engine Vehicles (ICEV) will no longer be registered, accelerating fleet transition. The forecasts feature hard cut-off dates for worldwide ICE vehicle sales around the end of this forecast horizon[3].
- Jennifer Brownie (QEUN): How do AEMO validate historical connection data?
    - AEMO: Operational Demand as Sent Out is the consumption forecasting benchmark; it is then disaggregated to components. Meter and ABS household data are used to forecast short term connections growth, but embedded networks make it hard to accurately capture each component.
    - AEMO are open to updates from networks.
- David Havyatt (NICE): Can Distributed PV generation (Slide 17) be represented as a measure of the proportion of potential rooftop PV being realised?
    - AEMO: Useful graphs can be created and circulated to the FRG (Action 5.5.1)
- David Havyatt (NICE): Can forecasts presented be provided as data workbooks too?
    - AEMO: The data is still changing; final data will be published with the IASR.

5. Other business

Key topics raised by stakeholders during this session included:

- Ron Logan (Shell Power AUS): Why did the ESOO update for Yallourn's 2028 closure include the Interim Reliability Measure (IRM), which ceases in 2025? (Action 5.5.2)
    - AEMO: The update was to the 2020 published ESOO and, consistent with the 2020 ESOO, reports against both the Reliability Standard and the IRM for information.

6. Meeting close

The next FRG meeting will be held on Wednesday 30 June 2021 with presentations on: Forced Outage Rates (FRG Consultation), Multi-sector modelling and Maximum and minimum demand forecasts.

[3] CSIRO's EV report is available at: https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2021/csiro-ev-forecast-report.pdf?la=en
Their EV presentations at the 2021 February, March and April FRG meetings, are available at: https://aemo.com.au/en/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/forecasting-reference-group-frg

Appendix A Forecasting Reference Group (FRG) Actions Items

FRG Action Items – OPEN (as at 21 June 2021)

Item	Date Raised	Topic	Action required	Responsible	Due	Status
5.5.1	26/5/21	Additional graphs	AEMO to provide a graph on distributed PV generation as a measure of the proportion of potential rooftop PV being realised	AEMO	July 2021	In Progress

FRG Action Items – CLOSED (as at 21 June 2021)

Item	Date Raised	Topic	Action required	Responsible	Details	Status
5.5.2	26/5/21	IRM	Why was the IRM included in the 2028 related ESOO update?	AEMO	See May minutes	CLOSED