DRAFT MINUTES – Forecasting Reference Group (FRG)

MEETING: #5

DATE: WEDNESDAY 26TH JUNE

CONTACT: Energy.Forecasting@aemo.com.au

ATTENDEES:

Attendee	Company	Site
Adrian Grantham	AEMO	Adelaide
Mike Davidson	AEMO	Adelaide
Adam Day	AER	Adelaide
Andrew Turley	AEMO	Brisbane
Debborah Marsh	AEMO	Brisbane
Greg Staib	AEMO	Brisbane
Magnus Hindsberger	AEMO	Brisbane
Nicola Falcon	AEMO	Brisbane
Siobhan Attwood	AEMO	Brisbane
Alex Driscoll	Edge Energy Services	Brisbane
Justin Gardner	Energy QLD	Brisbane
Steven Rawlins	Powerlink	Brisbane
Sam Ingram	Queensland Treasury	Brisbane
Joe Hemingway	Stanwell	Brisbane
Ben Skinner	AEC	Melbourne
Ali Habibi Khalaj	AEMO	Melbourne
Bella Pennington	AEMO	Melbourne
Ben Jones	AEMO	Melbourne
Daniel Guppy	AEMO	Melbourne
Dean Soste	AEMO	Melbourne
Alessio Bonato	AGL	Melbourne
Anshubhi Karolia	Ausnet Services	Melbourne
Justin Harding	AusNet Services	Melbourne
Nick Cimdins	AusNet Services	Melbourne
Adam Ryan	CitiPower / Powercor	Melbourne

Norman Jip	DELWP	Melbourne
Sujeewa Vithana	United Energy	Melbourne
Stephen James	AEMO	Sydney
Ed White	Ausgrid	Sydney
Richard Hickling	GHD	Sydney
John Sligar	Sligar & Associates	Sydney
Arindam Sen	TransGrid	Sydney
Anula Abeygunawardana	AEMO	Teleconference
Dane Winch	AEMO	Teleconference
Grant McKinnon	AEMO	Teleconference
Joachim Tan	AEMO	Teleconference
Leslie Lay	AEMO	Teleconference
Nick Culpitt	AEMO	Teleconference
Alister Rathie	Alinta Energy	Teleconference
Paul Grzinic	Aurora Energy	Teleconference
Craig Tupper	AusGrid	Teleconference
Paul Graham	CSIRO	Teleconference
Alice Munro	Department of the Environment and Energy	Teleconference
Terry Hogan	Department of the Environment and Energy	Teleconference
Mark Ainsworth	DNRME	Teleconference
Patricia Hurikino	DNRME	Teleconference
Dai Huynh	Endeavour Energy	Teleconference
Franki Lee	Endeavour Energy	Teleconference
Florie Fong	Energy Australia	Teleconference
Khai Chang	Energy Australia	Teleconference
Michelle Shek	Energy Australia	Teleconference
David Havyatt	Energy Consumers Australia	Teleconference
Craig Pollard	Energy QLD	Teleconference
David Hoch	Engie	Teleconference
Maya Muthuswamy	Engie	Teleconference
Emma White	ERM Power	Teleconference
Pippa Williams	Hydro Tasmania	Teleconference
Tahlia Nolan	Infigen	Teleconference
Ju-ai Ng	Jemena	Teleconference
Angus Wright	Macquarie	Teleconference
Tristan Nolan	Macquarie	Teleconference
David Headberry	Major Energy Users	Teleconference
Bill Nixey	NSW Department of Planning & Environment	Teleconference

Liam Ryan	NSW Department of Planning & Environment	Teleconference
Jennifer Brownie	Queensland Electricity Users Network	Teleconference
Phil Pollard	Queensland Electricity Users Network	Teleconference
Herath Samarakoon	TasNetworks	Teleconference

1. Welcome and Introductions

Andrew Turley (AEMO) welcomed everyone to the 26 June FRG meeting.

2. Previous minutes, action items, and forward plan

The meeting minutes from the 24 April 2019 FRG were accepted by attendees and finalised. Nicola Falcon (AEMO) announced the forward plan for the next three FRG meetings, to be circulated prior to the 31 July 2019 FRG meeting (Action 2.1).

3. Inputs to consumption and maximum demand forecast changes: overview and introduction

Andrew Turley presented an overview of the scenario descriptions for the 2019 Electricity Statement of Opportunities (ESOO), to aid understanding of the drivers behind the draft consumption forecasts. The reference group was informed that the scenarios were developed with input from the Scenarios Consultation Workshop as part of the Planning and Forecasting Consultation, and will also be used in the 2019 Integrated System Plan (ISP).
Greg Staib (AEMO) presented the draft consumption forecasts for the 2019 ESOO, focusing on the key drivers behind input trajectories and assumptions when compared to 2018 ESOO forecasts. The 2019 draft ESOO results forecast a decrease in Operational Demand, and Residential and Business underlying and delivered consumption forecasts for the Central scenario when compared to ESOO 2018.

Key topics raised by stakeholders during this section included:

- Richard Hickling (GHD) sought to clarify the methodology of AEMO's half hourly model for Maximum Demand (MD), and whether AEMO compares its' forecasts to other external forecasts. Daniel Guppy (AEMO) responded that the underlying data is at half hourly granularity for each region, rather than running one model for each half hour. Further, regional forecasts are compared with the relative state organisations forecasts to assist in determining the accuracy of any assumptions or definitions. Greg Staib (AEMO) added that all inputs are benchmarked against many reputable public sources.
- Ed White (AusGrid) queried the level of Electric Vehicle (EV) segmentation and whether this information would be made public post-publication. Greg Staib

(AEMO) confirmed that granular EV data will be published along with other ESOO data post-publication.

- Ed White (AusGrid) questioned why the 2019 Business Energy Efficiency (EE) forecast was approximately three times larger than the 2018 forecast. Debborah Marsh (AEMO) responded that the scope of the business sector has changed since 2018 to include SME's, which affected each region differently. Additionally, the application of the forecasts and greater access to state data has driven some of the increase. The changes observed in the Step Change scenario in particular are related to two measures related to future building and equipment standards and better representation of state schemes. Alessio Bonato (AGL) sought to clarify if the two additional measures applied to both Business and Residential EE. Debborah Marsh (AEMO) clarified that both measures applied to both sectors, to varying degrees, with building code measures translating into star ratings for Residential purposes. In response to Sam Ingram's (Queensland Treasury) query about the EE consultant's data, Nicola Falcon (AEMO) confirmed that the consultant report will be published.
- Ron Logan (ERM Power) questioned whether Large Industrial Loads (LIL) disclosed any information about government subsidies during LIL interviews, and whether AEMO forecasts take subsidies into account. Greg Staib (AEMO) responded that during interviews, LIL's are asked about their sensitivity to electricity prices along with any other operating costs. The spread of scenarios seeks to capture the risk of LIL closures and load reductions in the wider economic environment.
- Nick Cimdins (AusNet Services) questioned the drivers behind the approximately three times large EE forecast for 2019 in the short term. Greg Staib (AEMO) answered that recent access to historical data has allowed AEMO to more accurately capture the relationships, and in turn effects, of EE through regression model analysis. Greg notes that the Victorian scheme is ongoing, with further impacts expected, and have been applied in the current forecasts. The relevant jurisdiction (DELWP) had also reviewed the model that the consultant had used in the ESOO 2018 forecasts.
- Jennifer Brownie (Queensland Electricity Users Network) referred to the waterfall graph on slide 20, Underlying Residential Forecast with Key Drivers, and sought to clarify if the Price Behavioural component equated to tariffs. Greg Staib (AEMO) responded that Price Behavioural is not tariff specific information and represents a price elasticity effect. AEMO is currently investigating whether there is any observable difference in annual consumption in response to different tariffs. Jennifer further questioned whether a wholesale price model would be published. Andrew Turley (AEMO) confirmed that the consultants' wholesale prices have now been published.

- Liam Ryan (NSW Department of Planning & Environment) asked for clarification on whether the EE consultants understood the construction codes policy, with focus on understanding whether the EE forecasts include only the 2025 construction code changes or also the three-year rolling changes included in COAG's plan. Debborah Marsh (AEMO) answered first that AEMOs' EE consultants (SPC) were involved in the COAG policy development, then followed that the trajectory incorporated into the AEMO EE forecasts was the 2025 trajectory[1]. Debborah Marsh (AEMO) will confirm with the consultants whether the 2028 and onwards changes were modelled specifically (Action 3.1).
    - Since the June meeting, it has been confirmed that the 2025 trajectory includes adjustments in 2028 and 2034 (pg. 36 Achieving Low Energy Commercial Buildings in Australia: Final Report).

4. Draft consumption and maximum demand forecasts by region

Greg Staib (AEMO) and Daniel Guppy (AEMO) presented the draft regional consumption and maximum demand forecasts for the 2019 Electricity Statement of Opportunities (ESOO), with focus on the changes in assumptions when compared to 2018 ESOO forecasts.

4.1 New South Wales

The 2019 draft NSW ESOO results forecast a decrease in Operational Demand, and Residential and Business underlying and delivered consumption forecasts for the Central scenario when compared to ESOO 2018. The probability of exceedance (POE) bands for MD are forecast to tighten, increasing compared to ESOO 2018 forecasts.

Key topics raised by stakeholders during this section included:

- Arindam Sen (TransGrid) queried whether step ups in load not captured in historical data are added to the top down MD forecast. Daniel Guppy (AEMO) replied that the large industrial loads are forecast on a scenario basis, so loads not captured in historical data are added on top of the MD forecast.
- Ben Skinner (AEC) sought to clarify that the effective EE on peak load is greater than the average effect on annual consumption. Daniel Guppy (AEMO) confirmed that the net impact on annual forecasts relative to ESOO 2018 is due to greater EE, however EE is less effective during time of peak demand.
- It was questioned how the spread between POE 10 and POE 90 reduced (Ben Skinner, AEC), and what factors could cause variations in the spread of POE

[1] 2018, COAG, *Achieving Low Energy Commercial Buildings in Australia: Final Report*. http://coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/Achieving%20Low%20Energy%20Commercial%20Buildings%20in%20Australia_0.pdf

distribution (Alessio Bonato, AGL). Daniel Guppy (AEMO) responded that in previous years AEMO adopted a half hourly model, which was a mean prediction model, and represented a wider distribution of MD. The Generalized Extreme Value (GEV) model used for ESOO 2019 allows the mean and the variance of MD to change over time relative to previous years. Further, changes in technology is changing the spread, as it changes the time of day of peak demand in turn changing the variance of MD.

- Ron Logan (ERM Power) queried the impact of temperature on MD, referencing the 2019 MD. As discussed in previous reference groups, it was explained that temperature is a deterministic driver of MD, along with numerous other drivers.

4.2 Queensland

The 2019 draft QLD ESOO results forecast an increase in Operational Demand, with a short-term increase in Residential underlying and delivered consumption forecasts and increased Business underlying and delivered consumption forecasts for the Central scenario when compared to ESOO 2018. The POE bands for MD in both states are forecast to tighten, increasing compared to ESOO 2018 forecasts.

Key topics raised by stakeholders during this section included:

- Justin Gardner (Energy QLD) questioned the connections for DER forecasts. Nicola Falcon (AEMO) confirmed that AEMOs consultants provided uptake trajectories at a regional level.
- Mark Ainsworth (DNRME) sought to clarify the 2019 draft Rooftop PV forecasts compared to 2018 ESOO, and how these revisions affect MD. Daniel Guppy (AEMO) responded that Rooftop PV is a negative growth driver for MD, which has implications on the time of MD, and in turn effects other factors such as the level of EV charging and battery charging at times of MD. Compared to 2018, lower forecast Rooftop PV is not shifting MD as late into the day.
- Mark Ainsworth (DNRME) asked for confirmation of the actual MD in summer 2019 compared to the POE 50. Daniel (AEMO) confirmed that the operational as sent-out generation during 2019 MD was approximately 9.5 GW and explained that this was somewhere between the forecast POE 10 (which was approximately 100MW higher) and the POE 50 (which was approximately 100MW lower). Removing the impact of LNG places the actual MD closer to the forecast POE 50 value.
- Jennifer Brownie (QEUN), questioned the feasibility of the size of the QLD Underlying Business Forecast SME wedge without significant tariff reform. Greg Staib (AEMO) thanked Jennifer for her feedback and noted that AEMO continually examines the interaction between tariffs and electricity consumption and consider other macro-economic variables to assist in understanding the SME sector.

- Craig Pollard (Energy QLD) noted the tight gap between the POE 50 and POE 10 forecasts for MD, questioning the potential inconsistency of the forecasts with regards to increasing temperature sensitivity and positing that solar irradiance could impact the variance of MD. Daniel Guppy (AEMO) responded that the last 3 MD events in QLD have been very consistent in both time and temperature. Further, in approximately 10 years the time of MD in QLD will shift to the late evening, reducing the contribution of PV to the variance between POE forecasts.

4.3 South Australia

The 2019 draft SA ESOO results were broadly similar to the 2018 ESOO forecasts, with key improvements in the short-term (1 – 3 years) due to the capturing of a specific state-based scheme, consistent with recent operational demand observations. Maximum demand forecasts for South Australia were not dissimilar from the 2018 ESOO forecasts, however time was taken to examine Large Industrial Load (LIL) behaviour in history, noting that LILs have engaged in demand-side participation (DSP) for the last few years.

Key topics raised by stakeholders during this section included:

- Ron Logan (ERM Power) raised concerns over adding back DSP or any price-response mechanisms to the forecasts, noting that the forecasts should take this into account. Magnus Hindsberger (AEMO) confirmed that DSP is modelled separately to the maximum demand forecasts presented. Nicola Falcon (AEMO) further clarified that the maximum demand forecasts are before any demand response activity.
- Ron Logan (ERM Power) asked for clarification as to what demand-response activity would be ‘added back’ into observed operational demand in calculating obligations under the Retailer Reliability Obligations (RRO), noting that the rules have specific language around ‘allocated contracts’. Mike Davidson (AEMO) confirmed that this was correct, and it may be useful for AEMO to provide further clarifying information around the calculation of demand under the RRO framework.
- David Headberry (Major Energy Users) asked if the forecasts could be presented with y-axes not starting from zero, noting that this would assist in exploring the variability of the forecasts. Nicola Falcon (AEMO) commented that this is a well-discussed point, and that there exists a trade-off between examining differences and preserving magnitude/scale. The data behind the charts will eventually become available, enabling participants to examine the data in their own preferred format.

4.4 Victoria

The 2019 draft VIC ESOO results were consistent with the input forecasts showcased across the previous states, with particular focus on improvements in the small-medium enterprise

(SME) business forecast. Annual operational consumption sat significantly below the 2018 ESOO projections, mainly driven by the SME and energy efficiency components. Maximum demand forecasts for 2020 were similar but slightly higher than their 2018 ESOO counterparts, mainly due to higher LIL activity. Long-term trajectories for the POE10, POE50 and POE90 were all significantly lower, following the annual consumption terms presented earlier.

Key topics raised by stakeholders during this section included:

- Nick Cimdins (AusNet Services) asked for clarification on the drivers impacting the roughly 1 GW difference between the 2018 ESOO POE50 in 2025 and the draft 2019 ESOO POE50 in 2025, noting that large changes like this year-to-year can make planning extremely difficult. Daniel Guppy (AEMO) responded that this is mainly due to business and large industrial loads at time of maximum demand, with energy efficiency contributing at a reduced rate due to saturation. Maximum demand in 2025 is forecast to occur between 16:00 and 19:00 where business load is roughly 60% of demand.
- Justin Harding (AusNet Services) queried whether the Victorian Government's 'Solar Homes' policy had been factored into Rooftop PV uptake. Greg Staib (AEMO) confirmed that the report provided by Paul Graham (CSIRO) for the consultant Rooftop PV forecasts mentions state-wide policies such as the Solar Homes initiative, however it may be the case the policy had only been modelled up to June 2019. Further clarification on the modelling of this scheme will be provided at the next FRG meeting (Action 4.4.1).

4.5 Tasmania

The 2019 draft TAS ESOO results featured a slight decline from 2018 ESOO figures, notably driven by lower residential and business consumption in the long-term. A brief dip was observed for financial year 2028 due to a large industrial load indicating extended outages in survey responses. Maximum demand showed a flatter trajectory due to the annual consumption trend combined with better knowledge on large industrial loads. Particular focus was given to the impact of EV trucks on maximum demand, noting the early morning peaks coincide with EV truck charging times.

5. General Questions

Key topics raised by stakeholders during this section included:

- Sam Ingram (Queensland Treasury) questioned the timeline for releasing the EE consultants' report. Greg Staib (AEMO) responded that there is no expected date for publication at this stage, however, it will be communicated to the FRG when the report is available.

- Ron Logan (ERM Power) queried when the forecasts will apply in the MTPASA timeline. Magnus Hindsberger (AEMO) answered that this typically occurs the week of publication of the ESOO.

6. Meeting Close

The next FRG meeting is scheduled for Wednesday, 31 July 2019.

Forecasting Reference Group (FRG) Actions Items

Item	Date Raised	Topic	Action required	Responsible	By	Status
2.1	26 June 2019	FRG Forward Plan	Distribute forward plan to FRG	AEMO	31 July 2019	**Open**
3.1	26 June 2019	Confirm with the EE consultants whether the 2028 and onwards changes in building codes policies were modelled specifically	Confirmation to be addressed in the meeting minutes	Debborah Marsh	31 July 2019	**Closed**
4.4.1	26 June 2019	Further clarification on the modelling of state-wide policies such as the Solar Homes initiative within the consultants Rooftop PV forecasts.	Provide information on the modelling of state-wide policies within the consultants' PV forecasts	Greg Staib / Paul Graham (CSIRO)	31 July 2019	**Open**