DRAFT MINUTES – Forecasting Reference Group (FRG)

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| MEETING: | #11 |
| DATE: | Tuesday 25 September 2018 |
| Contact: | [Energy.Forecasting@aemo.com.au](mailto:Energy.Forecasting@aemo.com.au) |

**ATTENDEES:**

| **NAME** | **ORGANISATION** | **LOCATION** |
| --- | --- | --- |
| Adrian Grantham | AEMO | Adelaide |
| Deirdre Butler | AER | Adelaide |
| Marino Bolzon | Department for Energy and Mining | Adelaide |
| Dane Winch | AEMO | Brisbane |
| Elijah Walker | AEMO | Brisbane |
| Faranak Golestaneh | AEMO | Brisbane |
| Jason West | AEMO | Brisbane |
| Michael Lee | ERM Power | Brisbane |
| Andrew Turley | AEMO | Melbourne |
| Annette Kelly | AEMO | Melbourne |
| Daniel Guppy | AEMO | Melbourne |
| Greg Staib | AEMO | Melbourne |
| Hua Min Situ | AEMO | Melbourne |
| Linton Corbet | AEMO | Melbourne |
| Neale Scott (Chair) | AEMO | Melbourne |
| Nicola Falcon | AEMO | Melbourne |
| Rachael Saw | AEMO | Melbourne |
| Ruchira Ray | AEMO | Melbourne |
| Vivian Mai | AEMO | Melbourne |
| Nick Cimdins | Ausnet | Melbourne |
| Ben Skinner | Australian Energy Council | Melbourne |
| Richard Paprzycki | Energy Australia | Melbourne |
| James Osborne | Jemena | Melbourne |
| Joseph Nunez | AEMC | Sydney |
| Alex Fattal | Origin | Sydney |
| John Sligar | Sligar and Associates | Sydney |
| Kevin Ly | Snowy Hydro | Sydney |
| Arindam Sen | Transgrid | Sydney |
| Damien Dwyer | Appea | Teleconference |
| Paul Grzinic | Aurora Energy | Teleconference |
| Paul Graham | CSIRO | Teleconference |
| Candice Hincksman | Energy Queensland | Teleconference |
| Shane Brunker | Energy Queensland | Teleconference |
| Jakes Jacobs | Energy Skills Queensland | Teleconference |
| Ron Logan | ERM Power | Teleconference |
| Brent Hudson | Essential Energy | Teleconference |
| Joel Gilmore | Infigen | Teleconference |
| David Xu | Origin Energy | Teleconference |
| Trevor Bornstein | Origin Energy | Teleconference |
| Steven Rawlins | Powerlink | Teleconference |
| Jennifer Brownie | Queensland Electricity Users Network | Teleconference |
| Joe Hemingway | Queensland Treasury Corporation | Teleconference |
| Sam Ingram | Queensland Treasury Corporation | Teleconference |
| James Bennett | SA Power Networks | Teleconference |
| Sujeewa Vithana | United Energy | Teleconference |

# Welcome and Introductions

Neale Scott (AEMO) welcomed attendees to the September 2018 Forecasting Reference Group (FRG) meeting.

# Previous minutes and action items

The meeting minutes from the 22 August 2018 FRG were accepted by attendees and finalised.

# Forward Plan for FRG

Nicola Falcon (AEMO) presented on the *Draft Forward Agenda* (included in the September 2018 meeting pack) highlighting planned workshops and FRG sessions from October to December 2018.

The draft timeline is aimed to allow stakeholders to have greater time to register and prepare for forums that are relevant to them. Stakeholders are encouraged to forward agenda items to interested colleagues within their organisation as well as give feedback to AEMO on the agenda items and proposed dates. Suggestions or queries regarding the forward plan are to be sent to [Energy.forecasting@aemo.com.au](mailto:Energy.forecasting@aemo.com.au) (Action 11.3.1).

# Forecasting Scenarios

Ruchira Ray (AEMO) presented on the *Forecasting Scenarios* slides (included in the September 2018 meeting pack). The presentation provided a review of assumptions, scenarios and sensitivities used in the 2018 Integrated System Plan (ISP) and also a summary of surveys responses AEMO had received from FRG participants prior to the forum.

Key points raised by stakeholders during this presentation included:

* Kevin Ly (Snowy Hydro) questioned whether the increased gas supply sensitivity AEMO previously implemented made any assumptions as to whether the gas was sent to Liquid Natural Gas (LNG) export terminals or was made available for domestic use. Andrew Turley (AEMO) responded that the approach taken for that sensitivity involved assuming that the domestic gas price was at the lower bound of central estimates, particularly to encourage increased gas powered generation. No assumption regarding it impacting LNG exports was made. The sensitivity was used to determine the extent to which a lower gas price would influence the change in the generation and transmission mix. Kevin Ly (Snowy Hydro) went on to query whether an analysis had been undertaken by AEMO to investigate the propensity for LNG exports to soak up excess domestic gas production and the effect it might have on the domestic price elasticity. Nicola Falcon (AEMO) responded that the increased role for gas sensitivity was used in the ISP to present the electricity generation & transmission outlook in a world in which gas supply is sufficient and gas prices are low. The different permutations of economic and policy drivers that would produce both sufficient gas and low gas prices were not explored.
* Richard Paprzycki (Energy Australia) noted that in the ISP thermal units were assumed to be operational during periods of high renewable generation, however overseas thermal units are often taken offline for days or weeks at a time during such periods. Richard Paprzycki (Energy Australia) went on to question whether a sensitivity mimicking this behaviour could be run in the future to assess how this could alter market outcomes. Nicola Falcon (AEMO) acknowledged that suggestions such as these are beneficial and will be taken into consideration going forward.
* Ben Skinner (Australian Energy Council) commented that the ISP appropriately investigates a whole range of scenarios and sensitivities which lead to a range of very different industry & network investments. He raised concern of the danger of policy makers ignoring the ‘outlier’ scenarios, and only concentrating on the “most likely” single scenario for decisions going forward. A further suggestion from Ben Skinner was that AEMO should have a scenario in which VRET and QRET are discontinued given this is relatively plausible. Nicola Falcon (AEMO) noted that assumptions around such government policies are a recurring issue for AEMO. The decision to take government policies as they are or to speculate on potential future amendments is regularly consulted upon with industry.
* Nick Cimdins (Ausnet) stated that the scenarios used, broadly speaking, are appropriate. However, it was questioned as to the slow change scenario has aggregated battery storage of 90% by 2050, whilst the fast change scenario has aggregated battery storage of 10% by 2050. It was also noted that the same applied to Demand Side Participation (DSP). Nicola Falcon (AEMO) answered that this was an attempt to ‘stretch the grid’ by having the lowest annual consumption with the lowest maximum demand and the highest annual consumption with the highest maximum demand. In order to achieve these scenarios, battery aggregation and DSP had to be low in the fast scenario and high in the weak scenario. In order to make these scenarios feasible it is suggested that technology is ahead of policy in one scenario and behind in the other.
* Nick Cimdins (Ausnet) also noted that an investigation into the effect of electricity network outcomes on the gas network is also a desired study.
* Richard Paprzycki (Energy Australia) noted that there were only two emission trajectories used in the scenarios which were 28% by 2030 and 52% by 2030.  He recommended that there is a big gap between the two trajectories, hence it would be beneficial to have a middle trajectory as well. Nicola Falcon (AEMO) responded that it was uncommon for these constraints to be binding when retiring coal units are not replaced with new coal in the models.
* Jennifer Brownie (Queensland Electricity Users Network) questioned if updates to the change log of the ISP Assumptions Workbook incorporated new information that had been released from the industry after ISP publication. Nicola Falcon (AEMO) answered that updates observed in the change log reflect corrections to the stated values used in the ISP modelling conducted prior to release of the ISP. Updates to this Assumptions Book do not represent data updates due to changing market conditions since publication.
* Jennifer Brownie (Queensland Electricity Users Network) enquired if AEMO made any considerations towards hydrogen as an alternative fuel source in the gas market or in vehicles. Nicola Falcon (AEMO) advised that hydrogen has not played a major role in any scenarios to date. Ben Skinner (Australian Energy Council) suggested that for the next 30-40 years it would be implausible to assume hydrogen would be used for more than 10% injection into the gas system, but also suggested it would be appropriate to consider hydrogen cells for use in automotive vehicles or other industrial usage. Nicola Falcon (AEMO) suggested that sensitivities relating to the role of hydrogen production in future can be discussed in upcoming workshops. (Action 11.4.1)
* Ruchira Ray (AEMO) sought feedback on AEMO’s assumptions on energy efficiency and internal consistency of these settings. FRG participants shared a general agreement that the energy efficiency assumptions are reasonable. High economic growth in the Fast Change scenario will lead to a likelihood of high affordability in taking up new technologies for energy efficiency savings and the reverse applied to Slow Change scenario. Ben Skinner (Australian Energy Council) made a comment that historically the strongest political effort put into energy efficiency was during prolonged periods of high demand. Jennifer Brownie (Queensland Electricity Users Network) suggested that surveys conducted in Queensland found that many small businesses could not afford to continue to improve their energy efficiency due to economic conditions, having invested already in efficiency improvements.
* Nicola Falcon (AEMO) concluded the session noting that the scenarios were intended to be finalized by the end of the year and will be applied for all the relevant publications in the upcoming year. Further discussion of the scenarios will be brought up in the upcoming workshops and forums. FRG participants are encouraged to get involved in shaping up the scenarios by participating in upcoming discussions in the coming months outlined in the Draft Forward Agenda or send emails to [Energy.forecasting@aemo.com.au](mailto:Energy.forecasting@aemo.com.au) (Action 11.4.2)

# Demand Back-casting Scope Discussion

Daniel Guppy (AEMO) presented on the *Demand Back-casting Scope* (included in the September 2018 meeting pack). The presentation provided the proposed backcasting approaches and sought industry feedback and discussion on the approaches.

Key discussion points during the presentation included:

* Ron Logan (ERM Power) added another purpose of backcasting is that to give jurisdictions greater confidence and trust in the industry. Ron Logan (ERM Power) went on to state that for the purpose of transparency, publications should be clear and easy to understand and are also able to be independently verified by the industry. It was also noted that scheduled operational demand should be the most important consideration to best allow comparisons to actual data available to the industry. Daniel Guppy (AEMO) acknowledged those points and noted that different stakeholders were interested in different metrics. Supply planners were primarily interested in operational demand while network operators/planners were interested in native demand. Daniel further added that AEMO runs a number of workshops with forecasters from around industry to build a platform for open discussions on the methodology that employed in the forecasts. Nicola Falcon (AEMO) also noted that the backcasting for the Forecasting Accuracy Report is to benchmark against actual demand coming from the grid which are operational and native demand.
* Ben Skinner (Australian Energy Council) stated that the trouble with the weather correction approach can give the readers the impression of reverse engineering to get the correct result. Hua Min Situ (AEMO) stated that planning for the 10th and 90th percentile, means that 80% of the time the actual result falls within this band. Daniel Guppy (AEMO) noted that one of the issues is the limited number of data points. The annual 10% probability of exceedance (POE) is a 1 in 10-year event. The seasonal and monthly 10% POE is still a 1 in 10-year event. So increasing the frequency of the forecasts does not give us more years with which to compare against because it is still by definition a 1-in-10 year forecast. For instance, the February 10% POE is the hottest February in 10 years. Futher, this would most likely be preceded by the hottest January in 10 years and followed by the hottest March in 10 years. So the unders and overs will not net out because of the corraltion between the months, driven by common weather dynamics.
* Ben Skinner (Australian Energy Council) suggested that when assessing long term forecasts for demand, energy should be considered over maximum demand to remove some of the weather dependency. Daniel Guppy (AEMO) concurred.
* John Sligar (Sligar and Associates) recommended that AEMO should place greater emphasis on assessing the discontinuity on government policies when assessing previous forecasts.
* Arindam Sen (Transgrid) questioned whether AEMO has done any work in examining the impact of different weather station choices on weather-adjusted demand. It was suggested that the results distribution is dependent on where the weather stations are located in a specific area of each state. Daniel Guppy (AEMO) responded that there has been work done in that area, in particular, at the connection level. Consumers respond to the temperature they feel. The weather station is simply used to observe the temperatures consumers are experiencing at the time. The weather observations should explain the variability in demand, not change the demand distribution. Nevertheless, in the context of forecasting accuracy, the same weather stations which were used in the forecast should be used in back casting. Ron Logan (ERM Power) added that increased transparency on weather stations selected is needed.
* Marino Bolzon (Department for Energy and Mining) asked whether AEMO would examine minimum demand in the Forecasting Accuracy Report. Daniel Guppy (AEMO) replied that minimum demand will be covered in the report which would be done in the exact process as maximum demand.
* Regarding questions that Daniel Guppy (AEMO) asked regarding whether a simple or complex approach to back casting is most suitable to FRG participants, Ron Logan (ERM Power) suggested that AEMO could employ the simple approach for the first few years and then roll out the complex approach when there will be sufficient number of data points. In addition to that, he highlighted the importance of AEMO being transparent not only in methodology but also inputs being fed into forecasting models, and maximum demand should be the focus of the accuracy report.
* Nicola Falcon (AEMO) invited and encouraged FRG participants to send feedback on the proposed forecast accuracy approaches and register for the upcoming workshops to improve AEMO transparency and accountability in order to build trust and confidence in AEMO forecasts. (Action 11.5.1)

# Other Business

Andrew Turley (AEMO) presented an overview and roadmap of the Distributed Energy Resources (DER) register rule change consultation process.

Annette Kelly (AEMO) gave an update of the Data Portal Project. The project status is progressing and a participant trial will commence in November 2018. This will be an opt-in option for participants. Together with the release, AEMO will provide documentation, demonstration, and support to all participants.

# Meeting Close

The next FRG meeting is scheduled for Wednesday 24 October 2018.

**Forecasting Reference Group (FRG) Actions Items**

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| **Item** | **Date Raised** | **Topic** | **Action required** | **Responsible** | **By** | **Status** |
| **11.3.1** | 25/09/2018 | Forward Agenda | Participants to send AEMO feedback on the agenda items and proposed dates | FRG Participants | 24 October 2018 | **Ongoing** |
| **11.4.1** | 25/09/2018 | Hydrogen Production Sensitivities | Participants to suggest ideas on hydrogen generation based scenarios for upcoming workshop | FRG Participants | 22 November 2018 | **Ongoing** |
| **11.4.2** | 25/09/2018 | Forecasting Scenarios | Participants to email AEMO feedback on forecasting scenarios | FRG Participants | 24 October 2018 | **Ongoing** |
| **11.5.1** | 25/09/2018 | Demand Back-casting Scope Discussion | Participants to email AEMO on their preferred demand back-casting approach | FRG Participants | 24 October 2018 | **Ongoing** |