DRAFT MINUTES – Forecasting Reference Group (FRG)

MEETING: #3

DATE: WEDNESDAY 26TH FEBRUARY 2020

CONTACT: Energy.Forecasting@aemo.com.au

ATTENDEES:

Attendee	Company	Site
Adrian Grantham	AEMO	Adelaide
Pedro Carvalho	AEMO	Adelaide
Steve Fraser	SAPN	Adelaide
Andrew Turley	AEMO	Brisbane
Kent Hanh	AEMO	Brisbane
Magnus Hindsberger	AEMO	Brisbane
Ben Skinner	AEC	Melbourne
Greg Staib	AEMO	Melbourne
Natasha Sinclair	AEMO	Melbourne
Nicola Falcon	AEMO	Melbourne
Jacquie Bridge	AusNet Services	Melbourne
Norman Jip	DELWP	Melbourne
Chadrajit Biswas	Energy Australia	Melbourne
Richard Paprzycki	Energy Australia	Melbourne
Victor Petrovski	Energy Australia	Melbourne
Anita Zhao	Engie	Melbourne
Ric Brazzale	Green Energy Markets	Melbourne
Tristan Edis	Green Energy Markets	Melbourne
Peter Condon	Western Power	Perth
Helen Wang	AEMO	Sydney
Leslie Lay	AEMO	Sydney
Alex Driscoll	Edge Energy Services	Sydney
Michelle Cartwright	GHD	Sydney
Richard Hickling	GHD	Sydney
John Sligar	Sligar & Associates	Sydney
Arindam Sen	Transgrid	Sydney
Paul Grzinic	Aurora Energy	Teleconference
Ali Habibi Khalaj	AEMO	Teleconference
Ana Orozco Perez	AEMO	Teleconference
Anula Abeygunawardana	AEMO	Teleconference
Bella Pennington	AEMO	Teleconference
Ben Tudman	AEMO	Teleconference
Craig Price	AEMO	Teleconference
Daniel Guppy	AEMO	Teleconference
Debborah Marsh	AEMO	Teleconference
Grace Liu	AEMO	Teleconference
Jin Han Lim	AEMO	Teleconference

Joachim Tan	AEMO	Teleconference
Juliana Nunes	AEMO	Teleconference
Matthew Marston	AEMO	Teleconference
Roberta Maher	AEMO	Teleconference
Nick Cimdins	Ausnet Services	Teleconference
Cameron Mathie	CER	Teleconference
Paddy Aicken	CER	Teleconference
Praneel Pradhan	CitiPower and Powercor	Teleconference
Paul Graham	CSIRO	Teleconference
Shira Samocha	Deloitte	Teleconference
Marino Bolzon	Department for Energy and Mining, SA Government	Teleconference
Harrison Bradley	Electranet	Teleconference
David Havyatt	Energy Consumers Australia	Teleconference
David Hoch	Engie	Teleconference
Emma White	ERM Power	Teleconference
Ron Logan	ERM Power	Teleconference
Brent Hudson	Essential Energy	Teleconference
Mark Grenning	EUAA	Teleconference
Pippa Williams	Hydro Tasmania	Teleconference
Jennifer Abedin	IESYS	Teleconference
Budi Soetantijo	Jemena	Teleconference
Ju-ai Ng	Jemena	Teleconference
David Headberry	Major Energy Users	Teleconference
Sarah Jane Derby	Origin Energy	Teleconference
Enrique Montiel	Powerlink	Teleconference
Bret Harper	Reputex	Teleconference
Joe Hemingway	Stanwell	Teleconference
Herath Samarakoon	TasNetworks	Teleconference

1. Welcome and Introductions

Greg Staib (AEMO) welcomed everyone to the February FRG meeting.

2. Previous Minutes

Minutes from the previous FRG meeting were accepted.

3. Presentation 1: CER Insights on DER trends

Cameron Mathie (CER) presented the CER insights on the renewable energy target for small-scale and mid-scale systems. Topics for small-scale systems included installation, capacity, system size and payback trend for PV and battery. For mid-scale systems, CER modelling results for capacity and the LGC floor price potential were presented.

Key topics raised by stakeholders during this section included:

- Andrew Turley (AEMO) asked whether the system capacities presented were as AC or DC. Cameron Mathie (CER) replied that data in the presentation was AC

capacity, and that data for different battery models, sizes and categories were available in the Quarterly Carbon Market Report[1].

- David Headberry (Major Energy Users) raised concerns about the numbers of panels that had been removed and asked if the CER had information on retired panels. Cameron Mathie (CER) responded that the number for panels being retired had not been stripped out and work was being done in this area. David Headberry (Major Energy Users) enquired whether the installed capacity presented was export capacity or rated capacity. Cameron Mathie (CER) replied that installed capacity was expressed as total rated installated capacity.
- Ron Logan (ERM Power) asked if inverter size was also captured when talking about PV system size. Cameron Mathie (CER) confirmed that the inverter size was captured. Ron Logan (ERM Power) commented that the battery capacity would be a useful addition to the installation numbers on slide 9. Cameron Mathie (CER) responded that this will be considered and more information may be released in future.
- Natasha Sinclair (AEMO) asked if consideration had been given to individuals that consider themselves 'locked in' due to currently receiving a favourable feed-in tariff and can't replace or upgrade their system as they will lose their favourable rate. Cameron Mathie (CER) responded that this issue will be considered in future and acknowledged that the issue will begin to emerge over the next decade as tariff rates end.

4. Introducing the 2020 Distributed Energy Resources forecasts

Andrew Turley (AEMO) acknowledged the magnitude of feedback received to AEMO's 2020 Inputs and Assumptions Consultation[2], and provided a summary of feedback particularly relevant to the forecasts of Distributed Energy Resources (DER). Andrew also provided a summary of key DER-related policy settings pertaining to the Central scenario across Federal and state jurisdictions.

5. Draft DER forecasts and methodology overview - CSIRO

Paul Graham (CSIRO) presented on CSIRO's draft DER methodology and projections prepared for AEMO. Topics included: projection methodology, draft assumptions and projections for PV, batteries and electric vehicles.

Key topics raised by stakeholders during this section included:

[1] http://www.cleanenergyregulator.gov.au/DocumentAssets/Pages/Quarterly-Carbon-Market-Report---December-Quarter-2019.aspx
[2] https://www.aemo.com.au/consultations/current-and-closed-consultations/2020-planning-and-forecasting-consultation-on-scenarios-inputs-and-assumptions/

- Peter Condon (Western Power) asked whether the demographics of the statistical area level 2 (SA2) blocks used in the projections were held constant over time or if they varied. Paul Graham (CSIRO) confirmed that the demographics do vary over time due to CSIRO having trend data on different aspects of demographics. More information can be found in the “Reference – CSIRO Draft Methodology and Assumptions 17-02-2020” pdf in the meeting pack.
- Steve Fraser (SAPN) asked about the reasoning behind the two-year timeframe for the short term trend model as opposed to a longer period of five years. Paul Graham (CSIRO) responded that two years was the longest period of time that he was confident in applying a trend driven forecast. For a period of five years, some real factors may begin to impact the model resulting in unanticipated changes.
- Mark Grenning (EUAA) asked what assumptions were made on levels of DNSP investment to facilitate the forecasts. Paul Graham (CSIRO) responded that CSIRO and AEMO had discussions on the issue of hosting capacity for rooftop PV, and discussed whether hosting capacity would become a model constraint or if the network had to spend money to enable rooftop PV. CSIRO’s current approach in the model was to degrade the amount of export that investors had access to, implying that there won’t be an automatic expansion by DNSPs to increase hosting capacity and that there will be curtailment instead.
- David Havyatt (Energy Consumers Australia) expressed surprise that CSIRO considered the recent low uptake of EVs to be a limitation on the potential uptake of EV and ability to replace the existing fleet, believing that the recent low uptake was due to consumers deferring purchases until prices decline. Paul Graham (CSIRO) agreed that individuals may be waiting for low cost EVs but noted that sales had an inverse relationship with the current scrapping rate. Paul stated that if it took a long time for consumers to get rid of their old vehicles, it will take a longer time to get new zero emission vehicles into the fleet. David responded that the large number of individuals waiting for low cost EVs was distorting the current scrapping rate, making the current scrapping rate not a good predictor of the future scrapping rate.
- David Havyatt (Energy Consumers Australia) was concerned that AEMO would be using any modelling, especially in the Step Change scenario, that did not assume a carbon neutral car fleet. Paul Graham (CSIRO) clarified that zero emissions did not necessarily mean 100% electric vehicles. Alternative vehicles, such as fuel-celled vehicles (FCVs) or internal-combustion engines (ICEs) converted to run on alternative fuels such as biodiesel may well be part of the future zero emissions fleet. CSIRO was considering whether to assume 100% EVs, for a zero emission transport sector, or to allow other types of zero

emission vehicles to be present, and was open to further considerations. David reiterated that the ISP must deal with the issue of total vehicle market share within the scenarios as zero emission vehicles such as FCVs will have an impact on the electricity system. Andrew Turley (AEMO) responded that this challenge was outside of CSIRO's current scope as they were asked to investigate EVs. *Based on FRG feedback and discussion, AEMO has advised CSIRO that the Step Change scenario should assume all private and light commercial vehicles (i.e. cars, utes, etc) are electrified, with FCV (and/or biofuels) being part of the heavy vehicle fleet as appropriate. This would reflect one of a number of future scenarios that may unfold to decarbonise the transport sector, and would provide perspective if a high proportion of EVs were part of the solution. The holistic energy needs of EVs and FCVs, and the implications for electricity and/or gas system impacts of potential hydrogen production, will be considered by AEMO in a future hydrogen scenario.*

- Ron Logan (ERM Power) asked where the battery costs projections on slide 10 came from. Paul Graham (CSIRO) responded that the values came from CSIRO's GenCost report[3], noting that battery costs were expressed as both a whole of system cost and as separate storage and balance of plant components, potentially causing confusion.
- Ron Logan (ERM Power) asked why CSIRO believed the balance of plant costs would fall so significantly as seen on slide 10. Paul Graham (CSIRO) responded that the balance of plant costs were based on learning rates that are historically observed which are then projected into the future.

6. Draft DER forecasts and methodology overview – Green Energy Markets (GEM)

Tristan Edis and Ric Brazzale (GEM) presented Green Energy Markets' draft DER forecasts and methodology. Topics included forecasts for residential, small commercial and large commercial solar and battery installations for the Central scenario, a comparison between the Central and Step Change scenarios and their drivers, and next steps in the modelling process.

Unlike CSIRO, GEM's forecasts focused only on PV and battery forecast, not EVs and alternative fuelled vehicles.

Key topics raised by stakeholders during this section included:

- Ben Skinner (AEC) enquired about the reasoning behind the volatility in solar installation rates. Tristan Edis (GEM) explained that the Victorian solar homes rebate stepping off in 2029 corresponds to an abrupt change in the model,

[3] https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/Inputs-Assumptions-Methodologies/2019/CSIRO-GenCost2019-20_DraftforReview.pdf

causing volatility, particularly in the Step Change scenario. A precipitous decline in daytime energy value, and therefore feed-in tariffs, is another driver of volatility, and has been observed in the past with regards to changes in feed-in tariffs.

- Victor Petrovski (EnergyAustralia) asked whether the forecasts included consideration for retail price indices, and how tariffs were modelled in the long run. Tristan Edis (GEM) responded that, with regards to tariff structure, there is only so much that solar can be pushed in terms of reponse to tariffs. Tristan further explained that the model assumed a smear tariff until 2022, then transitions through to a time-of-use tariff in 2030. It was assumed that network costs remained constant, while wholesale prices were driven by the cost of a new entrant solar farm for the solar section, and CSIRO GenCost for peak prices using a blend of technologies e.g. existing coal and gas, new entrant gas.
- Mark Grenning (EUAA) commented that, with two contrasting consultant DER forecasts, it seems that AEMO has chosen the middle course. Greg Staib (AEMO) clarified that the middle course between the CER's two consultant forecasts, presented by the CER at the start of the FRG, was the CER's chosen approach to its own modelling of the near term small and medium-scale trends. This is not related to AEMO's own forecasts. Nicola Falcon (AEMO) said that a decision on how to incorporate the two forecasts was the next step for AEMO after the consultants delivered their final forecasts.
- Ron Logan (ERM Power) asked whether there was a scenario where mandatory time-of-use rollout doesn't occur. Tristan Edis (GEM) noted that the Slow Change scenario involved more retail charges moving towards fixed charge and away from variable, however this probably still doesn't fully address such a scenario.

7. Other Business

Magnus Hindsberger (AEMO) advised participants that the updated FRG Terms of Reference were now available on the AEMO FRG website[4].

Magnus also advised that the first stage of consulation on AEMO's Demand Side Participation (DSP) forecast methodology was now open and invited stakeholders to provide feedback before 5.00pm (AEST) on Friday 27th March 2020 to the Energy Forecasting inbox at energy.forecasting@aemo.com.au (Action 7.7.1). Additional information can be found on the AEMO website[5].

[4] https://aemo.com.au/en/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/forecasting-reference-group-frg
[5] https://www.aemo.com.au/consultations/current-and-closed-consultations/demand-side-participation-forecast-methodology-consultation

Nicola Falcon (AEMO) reiterated that this was one of several methodologies outlined in AEMO's Interim Reliability Forecast Guidelines, which must be consulted on at least every four years using the consultation process specified in the Australian Energy Regulator's Interim Forecasting Best Practice Guidelines.

We wish to inform FRG participants that AEMO Forecasting has made the decision to postpone the Energy Efficiency workshop, that was originally scheduled for Tuesday 17 March in Sydney, as a precautionary measure to safeguard participants from an increased risk of exposure to coronavirus.

We will inform you of the revised date in due course. In the meantime, should you wish to provide some initial feedback on AEMO's current methodology, you are welcome to contact Debborah Marsh at Debborah.Marsh@aemo.com.au by Tuesday 17 March.

8. Meeting Close

The next FRG meeting is scheduled for Wednesday 25th March, 2020.

Forecasting Reference Group (FRG) Actions Items – OPEN (as at 13 March 2020)

Item	Date Raised	Topic	Action required	Responsible	By	Status
3.1.2	25/09/2019	Information sharing	Consider developing a mechanism for sharing inbox submissions with the wider FRG group. FRG to provide suggestions to AEMO.	AEMO and FRG	TBC	**OPEN** In interim, have included out of session submissions in meeting pack
6.2.1	29/1/2020	Additions to final report	More detail on the short run and long-run drivers and the transition will be added into the appendix of the report.	Sarah Hunter (BIS Oxford Economics)	Release of final report	**OPEN**
7.7.1	26/2/2020	First stage of consultation on AEMO's DSP forecast methodology	Participants to submit feedback to energy.forecasting@aemo.com.au	FRG Participants	27/3/2020	**OPEN**

Forecasting Reference Group (FRG) Actions Items - CLOSED

Item	Date Raised	Topic	Action required	Responsible	By	Status
6.4.1	29/1/2020	Short form consultation for forecast improvement program	Participants to submit feedback to energy.forecasting@aemo.com.au on the following questions: *Is the forecasting improvement plan reasonable, and does it focus on the areas that will deliver the greatest improvements to forecast accuracy?* *If not, what alternative or additional improvements should be considered for 2020 ESOO or beyond?*	FRG Participants	14/2/2020	**CLOSED** Consultation closed on 14/2/2020