Forecasting Reference Group (FRG) DRAFT MINUTES

MEETING: FRG #4 2021

DATE: Wednesday, 28 April 2021

TIME: 2:00pm – 4:40pm AEST

LOCATION: Teleconference

ATTENDEES:

Name	Company	Name	Company
Ben Skinner	AEC	Ngoc Nguyen Tho	ENET
Abbas Mohammadi	AEMO	Jason Polychronopoulos	Engie
Adrian Grantham	AEMO	Sandy Xu	Engie
Andrew Turley	AEMO	Manuel Arapis	ERA
Bella Pennington	AEMO	Kerina Heath	Ergon Energy
Cameron Potter	AEMO	Catriona McLeod	ESCO Pacific
Cristina Rocca	AEMO	Brent Hudson	Essential Energy
Dane Winch	AEMO	Maurits Evers	Evo Energy
Daniel Collins	AEMO	Evan Day	EY
Daniel Guppy	AEMO	Josh Whiting	EY
Debborah Marsh	AEMO	Tristan Edis	GEM
Gregory Staib	AEMO	Devvrat Patney	Hydro Tasmania
Helen Wang	AEMO	Jonathan Jorgensen	Hydro Tasmania
Joachim Tan	AEMO	Kate Farnsworth	Hydro Tasmania
Leslie Lay	AEMO	Riadi Tanzil	Hydro Tasmania
Levi Rosenbaum	AEMO	Jennifer Abedin	IES Advisory Services
Luke Dowling	AEMO	Robert Pane	InterGen
Magnus Hindsberger	AEMO	Michael Baker	Jemena
Matt Marston	AEMO	David Headberry	Major Energy Users
Milton Woods	AEMO	Penny Ling	Metro Power
Nicola Falcon	AEMO	Noel Schubert	NA
Shahzad Billimoria	AEMO	Sharon Young	NSW DPIE
Siobhan Attwood	AEMO	David Xu	Origin
Ashok Kaniyal	AER	Sarah-Jane Derby	Origin
Christian Rasmus	AER	Anna Livsey	PIAC
Craig Oakeshott	AER	Enrique Montiel	Powerlink QLD
Sarah Helms	AER	Dean Knight	Powerlink QLD
Nick Eaton	Alcoa	Bret Harper	RepuTex
Ed White	Ausgrid	Andrew Manson	SA DEM
Navid Haghdadi	Ausgrid	Marino Bolzon	SA DEM
Morteza Moallemi	AusNet Services	Elisia Reed	SA Power Networks
Nick Cimdins	AusNet Services	Helen White	SA Power Networks

Saliw Cleto	AusNet Services	James Bennett	SA Power Networks
Sunidhi Sharan	BHP	Matt Napolitano	SA Power Networks
Owen Pascoe	CEFC	Ron Logan	Shell Energy Australia
Sonja Lekovic	CitiPower Powercor United Energy	Andrea Handikadinata	Simply Energy
Thakshila Gunaratna	Clean Energy Council	Gareth Xu	Simply Energy
Jayanthi Thennakoon	Clean Energy Regulator	Noel Sligar	Sligar and associates
Sam Ingram	CleanCo QLD	Brett Janissen	SPR
Paul Graham	CSIRO	Philip Harrington	SPR
Ben Ganim	DISER	Joe Hemingway	Stanwell
Jonathon Rousseau	DISER	Heath Winning	Sunshot Energy
Katie Filippello	DISER	Sharon Raymond	TAS State Growth
Erdem Oz	ERA WA	Herath Samarakoon	TasNetworks
Alex Driscoll	Edge2020	Jochen Reitz	TasNetworks
Abu Abdullah	ElectraNet	Julie Morrison	TasNetworks
Rob Murray-Leach	Energy Efficiency Council	Prateek Beri	TasNetworks
Steven Kruit	Energy Policy WA	Sujeewa Vithana	United Energy
Craig Pollard	Energy Queensland	Catherine Laurie	VIC DELWP
Jakes Jacobs	Energy Skills Queensland	Daniel Dempsey	VIC DELWP
Kyle Lin	EnergyAustralia	Jean Paul Dussaubat	VIC DELWP
Lawrence Irlam	EnergyAustralia	Michelle Lam	VIC DELWP
Patrick Gan	EnergyAustralia	Niraj Garimella	VIC DELWP

1. Welcome and Introductions

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

- Closed actions.
- Asked for feedback on the March 2021 minutes to be provided by 30 April 2021.
- Open FRG Consultation on:
  - Draft Energy Efficiency forecasts. Submissions close on 12 May 2021.
- Submissions to Energy.forecasting@aemo.com.au are appreciated.

2. Presentation 1 – Final 2021 DER (PV and Battery) Forecasts – Green Energy Markets (GEM)

Tristan Edis (GEM) presented GEM's final DER forecasting methodology, assumptions and projections, to be used as an input in AEMO's IASR, Integrated System Plan (ISP) and Electricity Statement of Opportunities (ESOO) modelling.

Key topics raised by stakeholders during this session included:

- David Headberry (MEU): How is PV system degradation determined? for receptors, cleaning and damage?
  - GEM: Academic and manufacturer studies determine degradation rates. These are referenced in the 2020 report. Issues around residential systems not being cleaned regularly may have been overlooked.
- Enrique Montiel (Powerlink QLD): Does the model account for economic signal lags?
  - GEM: In the past year. PV installations were made as home improvements in anticipation, rather than in response to, economic signals.

- Patrick Gan (Energy Australia): What drives GEM's price per kWh for batteries that makes it so much lower than CSIRO (pre-subsidy)? What drives the aggressive drop in costs?
    - GEM: The starting point is quite high, at $1000/kWh, which therefore drops relatively rapidly. Currently, Australian prices are higher than world prices, which will fall as the market expands, as PV prices did.
- Philip Harrington (SPR): Have potentially cheaper forms of storage been investigated? Data on the extent of use of hot water solar diverters is unfortunately poor.
    - GEM: No, but GEM will watch this space in the future.

3. Presentation 2 (a) – Final 2021 DER forecasts – CSIRO

Paul Graham (CSIRO) presented CSIRO's final DER forecasts, including FRG Consultation and discussion feedback, to be used as an input in AEMO's IASR, ISP and ESOO modelling.

Key topics raised by stakeholders during this session included:

- Craig Oakeshott (AER): Do CSIRO and GEM use the same scenarios?
    - AEMO: Both consultants use the 2021 Inputs Assumptions and Scenarios Report (IASR) scenarios and used the 2020 ISP scenarios last year. There are slight differences in decarbonisation assumptions and propensity for DER uptake in slow growth scenarios to test the minimum demand risk.

4. Presentation 2 (b) – Final Electric Vehicle (EV) Forecasts – CSIRO

Paul Graham (CSIRO) presented CSIRO's final EV forecasts, to be used as an input in AEMO's IASR, ISP and ESOO modelling. The discussion and any subsequent submissions are to be included as input to an FRG Consultation.

Key topics raised by stakeholders during this session included:

- Ron Logan (Shell Energy Australia): In the export superpower scenario, hydrogen will be abundant in Australia. Does this incentivise hydrogen vehicle uptake?
    - CSIRO: Hydrogen vehicles are generally more expensive and require more electricity than EVs. Logistical reasons incentivise hydrogen long-distance trucks. However, the Export Superpower scenario assumes cheaper hydrogen fuel and increased availability of both hydrogen and fuel cell vehicles, so 5% of light vehicles are hydrogen powered.
- Abu Abdullah (ElectraNet): Is hydrogen a substitute for batteries?
    - CSIRO: There is some competitiveness, but it is not considered directly.
- Patrick Gan (Energy Australia): Will vehicle to grid (V2G) profiles be released?
    - AEMO: V2G will be modelled separately by AEMO, not by CSIRO. As with other centrally coordinated consumer devices, like VPPs, the profiles themselves will be a dynamic output of the modelling itself, and it's not possible to represent this as an input trace for release.

5. Presentation 3 – Draft Energy Efficiency (EE) forecasts – SPR

Philip Harrington (SPR) presented the methodology and assumptions and projections for 2021 EE. Debborah Marsh (AEMO) presented how EE projections will be used in AEMO's modelling. Previously used 20% discount factors were validated against SPR's EE savings. The presentation included feedback from the EE workshop, attended by 65 stakeholders.

Key topics raised by stakeholders during this session included:

- Rob Murray-Leach (Energy Efficiency Council): Does the modelling include the impact of EE at peak times?
    - SPR: These forecasts are annual EE savings. Government policies and their market impacts are evolving and will expand to peak demand mitigation schemes. Future forecasts can include other factors including behavioural changes, fuel switching and time of use incentives.
    - AEMO: Traditional EE that affects consumption across the entire year (e.g., lighting) or seasons (cooling/heating) will be reflected in peak demand through its linkage with consumption forecasts. EE targeted to specific peak demand

periods, e.g. driven by new government policies, will be modelled as part of Demand Side Participation (DSP).

- Nick Cimdins (AusNet Services): What year-on-year percentage reductions in energy consumption are SPR's projections expecting, including the impact on other schemes?
  - SPR: This can be done by re-basing to another year, as AEMO will do.
- Rob Murray-Leach: The base case modelling seems conservative and the scenario changes seem modest given the potential scale of retrofitting existing homes.
  - SPR: Since Australia does not have strong nationwide policy, the modelling stays within conservative boundaries in all scenarios. The cost effectiveness of various EE improvement measures was not analysed here. However, state energy savings measure assumptions have been lifted for Slow Growth and Current Trajectory.
  - AEMO: Modelling and studies on the implementation of more ambitious EE measures are welcome.
  - AEMO: Future EE scenario settings could explore potential technology, policy and market impacts on the energy sector, including demand management.

6. Meeting close

The next FRG meeting was held on Wednesday 5 May 2021 with presentations on:

- Large Industrial Loads (LIL)
- Electrification of other sectors
- Appliance Index and fuel switching

Appendix A Forecasting Reference Group (FRG) Actions Items

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

Item	Date Raised	Topic	Action required	Responsible	Details	Status
5.1.3	27/1/2021	Engage with Energy Australia regarding Daily Gas forecasts	AEMO to reach out to Energy Australia to provide information on how available data can be used by participants for daily forecasts.	AEMO	Task now exists in workplan	CLOSED