Forecasting Reference Group Minutes

Forum:	October FRG 2022 (#10)
Date:	Wednesday 30 November 2022
Time:	2:00pm – 4:00pm AEDT

Attendees:

Name	Organisation	Name	Organisation
Finlay Barr	ACCC	Swaantje Grunefeld	Clean Co Qld
Abbas Mohammadi	AEMO	Carolyn Moore	CSIRO
Alice McLaren	AEMO	David Green	CSIRO
Andrew Turley	AEMO	Glen Whitehead	DISER
Ben Tudman	AEMO	Jillian Thirkell	DISER
Chang Liu	AEMO	Katie Filippello	DISER
Claus Larsen	AEMO	Laura Skinner	DISER
Deb Marsh	AEMO	Tony Tsai	DISER
Ebby Thomas	AEMO	Caroline Valente	ECA
Jay Stein	AEMO	Dennis Van Puyvelde	ENA
Keith Ruddell	AEMO	Florie Fong	Energy Australia
Kent Hanh	AEMO	Shoaib Amjad	Energy Australia
Leo Ma	AEMO	Jessie Yeung	Engie
Levi Rosenbaum	AEMO	Kerina Heath	Ergon
Lin Han	AEMO	Cam Potter	FMGL
Maggie Du	AEMO	Jack Munro	Iberdrola
Magnus Hindsberger	AEMO	Jennifer Abedin	IESYS
Mark Taylor	AEMO	Christina Sutherland	Individual
Myra Horomidis	AEMO	Cory Bremmer	Individual
Natasha Sinclair	AEMO	Jim Crosthwaite	Individual
Ngoc Tho	AEMO	Chotima Micallef	Lochard Energy
Puwasala Gamakumara	AEMO	Richard Hickling	Mott Mac
Rachael Saw	AEMO	Stephanie	Nexa Advisory
Reinzy Colle	AEMO	Blake Kirby	NSW DPIE
Roberta Maher	AEMO	Fabiano Nunez Costa	Origin Energy
Sayani Gupta	AEMO	Craig Memery	PIAC
Siobhan Attwood	AEMO	Dean Knight	Powerlink
Tim Abernethy	AEMO	Jennifer Brownie	QEUN
Yee Lee	AEMO	Linda Yu	QLD DEPW
Gavin Bhorla	AER	Huyen Nguyen	QTC
Monami Das Gupta	AER	Marino Bolzon	SA Gov
Elsie Zhao	AGIG	Connor Mcleod	Shell Energy
Peter Bucki	AGIG	Ron Logan	Shell Energy
Will Chivell	AGIG	Noel John Sligar	Sligar and associates
Jordan McCollum	APGA	Joe Hemingway	Stanwell
Nick Cimdins	Ausnet Services	Rudy Khong	Stanwell
Mathias Hammer	CCA	Herath Samarakoon	TasNetworks
Jacob Hyslop	CEC	Laurenz Ramdohr	Western Power

Disclaimer

This document provides an overview of the main points of discussion on the November Forecasting Reference Group meeting agenda.

Readers, please note that:

- This document is a summary only and is not a complete record of discussion at the forum.
- For presentation purposes, some points have been grouped together by theme and do not necessarily appear in the order they were discussed.
- The views expressed at the forum and reflected here are not necessarily those of AEMO.

1 Welcome and Introductions

Levi Rosenbaum (AEMO) welcomed everyone and covered the following:

- Publication of draft FRG minutes.
- Upcoming publication of the Draft 2023 Inputs, Assumptions and Scenarios Report (IASR) on 16 December 2022. Consultation submissions to forecasting.planning@aemo.com.au are open until 16 February 2023.
- Changes to the GSOO procedures following consultation
- Submissions can be made to Energy.forecasting@aemo.com.au.

2 Presentation 1 – Draft 2022 gas consumption, peak day and LNG forecasts

Debborah Marsh (AEMO) presented AEMO's draft 2023 gas consumption forecasts for use in the 2023 Gas Statement of Opportunities (GSOO). Magnus Hindsberger (AEMO) presented peak day gas forecasts. Tim Abernethy (AEMO) presented AEMO's Liquified Natural Gas (LNG) forecasts.

Key topics raised by stakeholders during this session included:

- Jennifer Brownie (QEUN): When were Large Industrial Load (LIL) surveys returned? And what percentage of gas customers participate in LIL surveys?
  - AEMO: The surveys were returned in November 2022 from 70 LILs, covering around 70% of all industrial customers by volume. The 2022 GSOO methodology paper[1] includes details on the survey questions.
- Jennifer Brownie (QEUN): How many Tariff V (small customers) are surveyed? And how often?
  - AEMO: Gas surveys are provided to consumers that consume over 500TJ per annum. Smaller industrial consumers (10 to 500TJ/a) are aggregated and forecast via an econometric model rather than surveyed explicitly[2]. Residential and commercial customers (tariff V) are similarly forecast in aggregate.
- Ron Logan (Shell): Has AEMO considered the recently published revised RBA economic forecast, which included a significant downgrade to the growth forecast?
  - AEMO: BIS Oxford Economics' long term forecasts are used.
- Ron Logan (Shell): Has the impact of potential gas price caps been considered?
  - AEMO: The effect of price caps has arisen in some targeted LIL interviews, however at this stage the effect of these is uncertain, and are not included in the forecasts.
- Jordan McCollum (APGA): Does energy use which transitions from natural gas to hydrogen or biomethane disappear from this analysis? Even though this would be picked up again once the National Gas Law (NGL) changes allow AEMO to consider these other gases, but can this be articulated in the GSOO? Could it be included as non-gas or electricity data?
  - AEMO: The 2023 GSOO will provide relevant commentary and NGL changes will address this gap.
- Nick Cimdins (AusNet): What does the 'effective' MIRN forecast mean? Are the remaining MIRNs fully or partially gas connected?
  - AEMO: The 'effective' MIRN forecast is the approach taken to incorporate multisector modelling into the Tariff V forecast to account for electrification. The reduction in connections represents the assumed number of connections if each

[1] Available at: https://aemo.com.au/-/media/files/gas/national_planning_and_forecasting/gsoo/2022/2022-gas-statement-of-opportunities-methodology-demand-forecasting.pdf

[2] See chapter 4 of https://aemo.com.au/-/media/files/gas/national_planning_and_forecasting/gsoo/2022/2022-gas-statement-of-opportunities-methodology-demand-forecasting.pdf

connection retained its average residential and commercial consumption level in each region. In effect, the reduction represents a reduction in the average load per consumer, and represents that some connections will be partially electrified.

- Nick Cimdins (AusNet): Is Victorian gas substitution roadmap[3] considered?
  - AEMO: AEMO and DELWP have discussed how the multisector modelling outputs compare with the roadmap. However, the modelling approaches, least cost optimisation and bottom up, are very different and not easily comparable.
- Ron Logan (Shell): Why is Victoria's first year POE5 significantly higher than historical outcomes, even after cold winters?
  - AEMO: There's a slight upward trend in demand and fluctuations are not only driven by weather. Slide 23 shows that the POE5 sits much higher than the other values. Additionally, new LILs would increase peak demand.
- Jennifer Brownie (QEUN): How do AEMO consider consumer acceptance of hydrogen blends for small customers and the impact on electrification?
  - AEMO: Consumer acceptance is very important. The economics of switching determines whether gas is substituted to hydrogen or electricity. For most scenarios, a 10% maximum blending limit is applied as an upper bound (but does not reflect the actual blending figure). The Draft IASR provides some further detail on the actual blending outputs.
  - Craig Memery (PIAC): Most consumers are unaware of hydrogen blending. The only likely impact will be increasing the cost of gas causing increased electrification.
  - Ron Logan (shell): Does the forecast include hydrogen blending, or only gas?
    - AEMO: Hydrogen is not currently included in these gas forecasts.
- Craig Memery (PIAC): Why is hydrogen forecast to become so common in gas networks? It is not economical to use in electricity generation, so we should not assume that the existence of hydrogen exporting will make hydrogen work for domestic consumption.
  - AEMO: Since the technology is not evolved, only the *Hydrogen Export* scenario assumes significant hydrogen use, where the scale of supply is assumed to improve the economics of hydrogen for both export and domestic use.
- Jordan McCollum (APGA): Is appliance cost included when considering transitioning from natural gas to electricity or other energy forms?
  - AEMO: Appliance information[4] is included in the multisector model, which chooses the most economical outcome.
- Jordan McCollum (APGA): Will more than 10% hydrogen be considered?
  - AEMO: The forecast is the regional average, potentially including some 100% hydrogen localities; this average is capped at 10%. Biomethane has no upper limit.
- Jennifer Brownie (QEUN): Is the assumption that LNG exporters will export Hydrogen?
  - AEMO: Not specifically. *Hydrogen Export*, following the International Energy Agency's Net Zero 2050 scenario[5], assumes that global LNG demand will be replaced by hydrogen from 2035.
    - Jennifer Brownie: This defies global investment in LNG terminals and contracts.

[3] See https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap
[4] From the residential baseline study: https://www.energyrating.gov.au/document/report-residential-baseline-study-new-zealand-2000-2030
[5] See https://www.iea.org/reports/net-zero-by-2050

3 Presentation 2 – Draft 2022 Gas Powered Generation (GPG) forecasts

Ben Tudman and Rachael Saw (AEMO) presented AEMO's draft 2023 GPG forecasts, for use in the 2023 Gas Statement of Opportunities (GSOO).
Key topics raised by stakeholders during this session included:

- Ron Logan (Shell): It would be better to show more than the past 10 months.
  - AEMO will re-publish the presentation with more historical data. (Action 1)
- Ron Logan (Shell): Why does coal impact variability post 2035, after coal retires? Is this instead driven by expected variability in VRE output?
  - AEMO: Yes. From 2035, other than deep storage, GPG becomes increasingly the primary large-scale flexible dispatchable generation as most coal generation will have retired (some exceptions remain).
- Ron Logan: For transparency, split weather variability from temperature and VRE.
  - AEMO: Historical weather patterns cannot be split easily.
- Caroline Valente (ECA): Does the weather variability impact incorporate future climate change projections, including milder winters?
    - AEMO: Currently, weather variability uses the impact of historical weather patterns on demand. The Forecasting Improvement Plan is aiming to derive more future oriented weather features.
- Jennifer Brownie (QEUN): Slide 3 shows the variability of GPG and slide 4 shows its importance as it becomes the transitional fuel. Therefore, forecast accuracy, from hourly to annually, is very important for investors and all stakeholders.
  - AEMO: The GSOO now captures unknown events, including the 2022 "coal unavailability" sensitivity, which happened to occur. Only the *Step Change* scenario is shown, other scenarios and sensitivities will be included in the GSOO.
- Joe Hemingway (Stanwell): What drives the significant drop from 2025? Does this assume a lot of renewables are built to replace coal closures?
  - AEMO: Yes, the forecasts include significant VRE investment, building on Generation Information[6] projects and Project Energy Connect from 2025.
  - Joe Hemingway: Does this consider short term connection delays?
    - AEMO: The ISP only starts building non committed/advanced projects from FY2024. The ISP has assumed lead times, which take years to flow through. The downward trend is due to the pipeline of VRE.

4 Meeting close

The next FRG meeting will be held in 2023. Visit the FRG webpage for the forward plan of agenda topics for 2023.

[6] See https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information

Forecasting Reference Group (FRG) Actions Items

Table 1 FRG Action Items (at 14 February 2023)

Item	Date Raised	Topic	Action required	Closing comments	Status
1	30/11/2022	GPG forecast accuracy graphs	AEMO to re-issue Presentation 2 with more historical forecast accuracy data	Presentation 2 includes 2022 monthly (slide 3) and 2017-2022 historical (Slide 7) GPG forecast accuracy.	**CLOSED**