

Forecasting Reference Group (FRG) DRAFT MINUTES

MEETING: FRG #9 2021
 DATE: Wednesday, 29 September 2021
 TIME: 2:00pm – 4:30pm AEST
 LOCATION: Teleconference

ATTENDEES:

Name	Company	Name	Company
Wallace Stark	ACCC	Brent Hudson	Essential Energy
Ben Skinner	AEC	Jordan Morse	EY
Abbas Mohammadi	AEMO	Krystian Krupa	EY
Adrian Grantham	AEMO	Christina Sutherland	GLNG Operations Pty Ltd
Andrew Turley	AEMO	Monika Blankenburgs	Hydro Tasmania
Bella Pennington	AEMO	Johanna Bowyer	IEEFA
Cameron Potter	AEMO	Jennifer Abedin	IES Advisory Services
Dane Winch	AEMO	Andrew Nance	ISP Consumer Panel
Daniel Collins	AEMO	Mark Grenning	ISP Consumer Panel
Deborah Marsh	AEMO	David Headberry	Major Energy Users
Ebby Thomas	AEMO	Reinzy Colle	NSW DPIE
Faranak Golestaneh	AEMO	Sharon Young	NSW DPIE
Greg Staib	AEMO	Sarah-Jane Derby	Origin
Magnus Hindsberger	AEMO	Aaron O'Brien	Powercor
Matthew Marston	AEMO	Ben McGregor	Powerlink
Nicola Falcon	AEMO	Dean Knight	Powerlink
Roberta Maher	AEMO	Jennifer Brownie	QEUN
Siobhan Attwood	AEMO	Jack Greenwood	Queensland Treasury Corporation
Vivian Mai	AEMO	Andrew Manson	SA DEM
Ashok Kaniyal	AER	Marino Bolzon	SA DEM
Burcu Ulusoy	Ausgrid	Elisia Reed	SA Power Networks
Morteza Moallemi	AusNet Services	Fraser Hampton	SA Power Networks
Saliw Cleto	AusNet Services	Steven Maxwell	SA Power Networks
Christiaan Zuur	CEC	Ron Logan	Shell Energy Australia
Owen Pascoe	CEFC	Noel Sligar	Sligar and associates
Thakshila Gunaratna	Clean Energy Council	Jean Dussaubat	Solar Victoria
Lisa Havas	CSIRO	Jack Thompson	Stanwell
Paul Graham	CSIRO	Joe Hemingway	Stanwell
Taryn Gale	DELWP	Sharon Raymond	TAS Growth
Ben Ganim	DISER	Julie Morrison	TasNetworks
Geoffrey Brett	DISER	Prateek Beri	TasNetworks
Justin Plant	DISER	Sujeewa Vithana	United Energy
Brian Spak	ECA	Gavin Dufty	Vinnies
Abu Abdullah	ElectraNet	Sara Hafeez	World Fuel Services

Lawrence Irlam	EnergyAustralia	Huzaifa Mohib	World Kinect Energy Services
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1. Welcome and Introductions

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

- Draft FRG Minutes – 25 August 2021
- An updated Forward Plan of agendas for the remainder of 2021.
 - Including calls for presentations and topics for the technical forecasting workshop on 10 November 2021
- Business Mass Market (BMM) energy intensity FRG Consultation report has been published.
- Submissions to Energy.forecasting@aemo.com.au are appreciated.

2. Presentation 1 – Current demand trace process

Daniel Collins (AEMO) presented an overview of AEMO's process for developing and using demand traces in 2022 ISP modelling. The presentation included the impacts of electrification and Electric Vehicles (EV) on demand. Although EV traces are not currently published, the IASR workbook contains sufficient details to suit the needs of most interested parties. ISP¹ and ESOO² demand traces are available on AEMO's website.

Key topics raised by stakeholders during this session included:

- Ron Logan (Shell Energy): Do yearly demand traces aggregate to annual consumption forecasts?
 - AEMO: The maximum demand simulations are not grown to any targets, but are used to define the probability of exceedance (POE) distribution. The average of the traces will be close to the forecast annual consumption. To create the traces used in the market simulations, the historical reference years are grown to meet both POE targets for maximum and minimum demand as well as annual consumption.
- Dean Knight (Powerlink) and David Headberry (MEU): Are fortnightly weather simulations done for each year? Are they NEM wide or at a regional level?
 - AEMO: NEM wide historical weather data from each fortnight of the past 20 years are used to create 3000 yearly simulations, representing the spread of weather possibilities across regions for each forecast year. These simulation outcomes are used to create POE distributions for maximum and minimum demands. For half-hourly modelling in the ESOO and ISP, the last 11 years' actual demand traces are used to create reference year load traces.
- Ron Logan (Shell Energy) What was the impact of electrification?
 - AEMO: The main impact was the addition of gas electrification to electricity forecasts. Slide 9 shows the different load shapes in summer and winter. In the faster changing scenarios, a carbon budget speeds up electrification.
- David Headberry (MEU) and Ben McGregor (Powerlink): Do electrification of gas forecasts account for costs involved at each step of the conversion process?
 - AEMO: These costs, including the timing of conversion for different industries and possible closures, are considered in Multi-sector modelling and in the 'flat' Large Industrial Loads (LIL) forecast.
- Ron Logan (Shell Energy): How are all years adjusted for climate change?
 - AEMO: Each year, including past years, are warmed by adjusting the temperature with an average annual increase (scenario dependent). This way, if warmed to for example 2050, each year maintains its characteristics; mild actual years become a mild 2050.
- Ron Logan (Shell Energy): How are historical years adjusted for the future through "bootstrapping"?
 - AEMO: Bootstrapping is used to create "new" weather years by sampling from fortnightly blocks of historical weather and stitching them together to form an

¹ Available under "Demand trace data" at: <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp/current-inputs-assumptions-and-scenarios>

² Available under "2021 ESOO Model" at: <https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo>

artificial new year. Historical weather is adjusted for climate change to match the relevant future year in this process. The bootstrapping process creates more simulation possibilities and caters for more diverse weather years.

3. Presentation 2 – Demand traces – why change?

Following Presentation 1, where Daniel Collins (AEMO) explained how traces were conducted in the past, Magnus Hindsberger (AEMO) presented, and asked the FRG to collaborate on, how AEMO can improve future demand traces.

Key topics raised by stakeholders during this session included:

- David Headberry (MEU): Perhaps the more recent past should be weighted more heavily than further past to capture the changing climate and demand profiles?
 - AEMO: Weighting may allow the use of more historical demand years to be used in the forecasting process.
- Ron Logan (Shell Energy): Scaling up all years to POE10 effectively removes mild years from the sample. Perhaps some years should be included without scaling to maintain some lower temperature sample years.
 - AEMO: Ideally, the sample will include enough actual demand traces to simulate all possibilities, without requiring artificial trace growth. The question is: “how do we get enough actual weather years?”
 - Ron Logan: This thinking, of simulating a diverse range of outcomes, should also be applied to EV traces too, since one specific charging method will not be adopted universally.
 - AEMO caters for a range of charging profiles/methods/uptakes, including coordinated EV charging, through the use of scenarios.

4. Presentation 3 – Methodology discussion – Better integrating economic and energy data

Greg Staib (AEMO) presented on the misalignment of current energy data with other data used in energy forecasts. Multi-sector modelling³ highlighted the need to adapt to the changing energy environment. Greater granularity of energy data, using perhaps the Australia and New Zealand Standard Industrial Classification (ANZSIC) “division” granularity⁴ or Australian Energy Statistics “Table F” database⁵, would better align energy data with economic and Multi-sector modelling, allowing for more informative insights from forecasts.

Key topics raised by stakeholders during this session included:

- David Headberry (MEU): Will cloud storage, an emerging category which will grow quicker than other BMM sectors, be modelled individually?
 - AEMO: Cloud storage is a sector of interest. The difficulty is in determining whether facilities used by Australian businesses are in Australia.
- Owen Pascoe (CEFC): Does this presentation refer to all energy?
 - AEMO: This presentation focuses on electricity, but improvements will be considered across all energy data sources and their interactions.
- Owen Pascoe (CEFC): Alignment with economic data is useful for sectors which evolve with projectable trends, namely BMM and residential. LILs, should not be forecast primarily based on economic projections.
 - AEMO interview LILs individually Their responses are complemented by economic projections to include electrification and other factors in forecasts. The scenarios explore various options for the long term composition of large business in Australia.
- Jennifer Brownie (QEUN): How will all consumers and businesses be captured? The sample sizes of BMM sub sectors will be too small to be useful.
 - AEMO: Hopefully this realignment will change the way AEMO receive data, to better understand the composition of BMM, the hardest sector to break down.
 - AEMO: The spatial impact on the grid will be developed as these ideas evolve.

³ Conducted by CSIRO and CAW, available under “Supporting materials for 2021” at: <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp/current-inputs-assumptions-and-scenarios>

⁴ Available at: <https://www.abs.gov.au/ausstats/abs@.nsf/0/20C5B5A4F46DF95BCA25711F00146D75?opendocument>

⁵ Available at: <https://www.energy.gov.au/publications/australian-energy-update-2021>

5. Meeting close

The next FRG meeting will be held on Wednesday 27 October 2021, with presentations on the 2021 Forecast Accuracy Report, 2021 Forecast Improvement Plan and FRG engagement.

Appendix A Forecasting Reference Group (FRG) Actions Items

FRG Action Items – OPEN (at 20 October 2021)

Item	Date Raised	Topic	Action required	Responsible	Due	Status
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