MINUTES – Forecasting Reference Group (FRG)

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| MEETING: | #4  |
| DATE: | Tuesday 27 February 2018 |
| Contact: | Energy.Forecasting@aemo.com.au  |

 **ATTENDEES:**

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| **NAME** | **ORGANISATION** | **LOCATION** |
| Magnus Hindsberger | AEMO | Brisbane |
| Daniel Guppy | AEMO | Melbourne |
| Greg Staib | AEMO | Melbourne |
| Jo Dean (Secretariat) | AEMO | Melbourne |
| Nicola Falcon | AEMO | Melbourne |
| Song Li | AEMO | Melbourne |
| Tania McIntyre (Chair) | AEMO | Melbourne |
| Dee Butler | AER | Adelaide |
| Justin Gardner | Ergon Energy | Brisbane |
| Connie Ganser | Stanwell | Brisbane |
| Nick Cimdins  | AusNet Services | Melbourne |
| Ben Skinner | Australian Energy Council | Melbourne |
| Richard Paprzycki | Energy Australia  | Melbourne |
| Maya Muthuswamy | Engie | Melbourne |
| Neil Gascoigne | Powercor Australia | Melbourne |
| Panos Priftakis | Snowy Hydro | Melbourne |
| David Moore | Planning NSW | Sydney |
| John Sligar | Sligar and Associates | Sydney |
| Jacqui Biro | AEMC | Teleconference |
| Ed White | Ausgrid | Teleconference |
| Jackie Bridge  | AusNet Services | Teleconference |
| David Whitelaw | Dept. of Environment and Energy | Teleconference |
| Jakes Jacobs | Energy Skills Queensland | Teleconference |
| David Hock | Engie | Teleconference |
| Shane Brunker | Ergon Energy | Teleconference |
| Geoff Bongers | Gamma Energy Technology | Teleconference |
| David Moore | NSW Dept. of Industry | Teleconference |
| Keith Rulan | Powerlink | Teleconference |
| Jennifer Brownie | QLD Electricity Users Network | Teleconference |
| Herath Samarakoon | TasNetworks | Teleconference |

#### 1. Welcome and Introductions

Tania McIntyre (AEMO) welcomed the participants of the FRG to the second meeting of 2018.

#### 2. Previous minutes and action items

Tania McIntyre (AEMO) ran through the Action Items from the January 2018 FPRG meeting. The meeting minutes were accepted and noted as final.

Updates on outstanding Action Items have been appended below.

#### 3. Demand Forecast Updates

Nicola Falcon (AEMO) informed the FRG of the scheduled March 2018 release of the Gas Statement of Opportunities (GSOO) publication and the Gas Demand Forecast has been delayed. These will now be published in June 2018.

Nicola outlined the timelines of Publications:

* Demand and Gas Supply will be presented in one publication.
* The Electricity Demand Forecast is expected to be an August publication. The Demand and Electricity Statement of Opportunities (ESOO) will also be published in one paper.
* A Minor update on the electricity forecasts will be published in the coming month.
* Moving forward AEMO will publish minor updates on a more regular basis, when AEMO considers there has been a material change.

John Sligar (Sligar and Associates) requested that AEMO create a document for the website that lists the cut off, publication dates and locations of each publication on the website.

**ACTION: 4.3.1:** Nicola Falcon (AEMO) to explore the possibility of creating a one page document on the AEMO website outlining cut off and publication dates of each publication, noting that not all dates are known yet.

**ACTION: 4.3.2:** Jackie Biro (AEMC) to discuss the implications of timing changes with Nicola Falcon (AEMO) offline.

Any further feedback or queries can be directed to energy.forecasting@aemo.com.au

# 4. March Electricity Forecast Updates

Greg Staib (AEMO) spoke on the Annual Energy Forecast being released March 2018 on the AEMO Forecast Interface.

Most of the changes to these updates have been discussed in previous FRG meetings and the March release covers Liquefied Natural Gas (LNG), Electric Vehicle (EV), Coal Seam Gas (CSG) and light industrial load adjustments along with new calculations on historical demand. New Demand Side Participation (DSP) projections will also be published.

Greg presented on Neutral, Weak and Strong updates from 2017. Nick Cimdins (AusNet Service) queried what the proportion of the total fleet were represented as electric vehicles, Greg confirmed that in 2037 the neutral case of the fleet was at 20%, the strong case 10.5M is 50% of fleet with the weak being 6% of fleet. Greg commented forecasts show that there would be a rapid uptake post 2027 in the Strong.

Greg clarified that the forecast outlook for the grid operational demand was for the total electricity demand from operational generators.

Jacqui Biro (AEMC) commented that the 2024-25 forecast current update in the Neutral scenario is higher than the 2017 ESOO. Greg advised that the assumptions on large industrial load are driving this in the short term. Greg informed the FRG that the process to capture large industrial load is done through a survey, media searches and via TNSP’s when they come on line as well as internal modelling.

Justin Gardner (Ergon) queried whether AEMO will be able to forecast losses associated through small scale PV going back to the sent-out level if that demand was met by the large scheduled generators instead. Greg confirmed that is something AEMO are currently working on. As a rule of thumb, add 5% for losses to the forecast generation of Rooftop PV to achieve the equivalent generation required by a transmission connected generator to meet the same consumption at a distributed level.

Jennifer Brownie (QLD Electricity Users Network) queried the flat demand for business in Queensland and doesn’t believe that the figures are accurate for the state and sought further information on the reduction for climate change and requested a graph by state on the Electric Vehicle numbers.

**Action 4.4.1** Greg Staib (AEMO) to review the data interface for QLD data and confirm location of requested information with Jennifer Brownie (QLD Electricity Users Network).

**ACTION 4.4.2** Greg Staib (AEMO) to forward to Jennifer Brownie data on EV in QLD.

#### 5. Status of Current Work and Next Steps

Daniel Guppy (AEMO) informed the FRG on the summer analytics program adding that more detail on these topics would be covered in a future methodology workshop.

Daniel informed the FRG that the summer analytics was divided into two parts – heatwaves and climate change. The summer research project has completed its study on the impact of heatwaves on demand. We are currently researching how climate change will impact the maximum temperatures and change the frequency, length and intensity of heatwaves in the future.

The first stage of the maximum demand methodology aims to snapshot consumer behaviour in response to weather effects. The summer analytics study aimed to improve this stage with a focus on heatwaves. The study used data from the past five years to identify consumer behaviour related to heatwaves. This behaviour is then simulated through different weather events to present 17 counter factuals and enable a review of the demand under these events. The second aspect of the summer analytics project is researching climate change to warm these 17 historical years to current and forecast temperatures.

AEMO has 24 models for any given region capturing every hour of the day. This is not seasonal data. The maximum demand was captured from 5pm – 6pm and minimum demand was 3am - 4am or, with solar PV, around noon.

Justin Gardner (Ergon Energy) confirmed that the maximum demand is net of battery discharge.

AEMO’s research explored different heatwaves variables:

* Daily rolling average (1 - 3 days), a continuous variable that can be expressed as a cool wave or a heat wave
* Excess heat factor (EHF) – many publications recommend EHF as a means of capturing heatwaves
* Heatwave dummy variable
* Humidity was not included in the modelling, due to multicollinearity with heatwaves

AEMO’s research found:

* The impact of a heatwave contributed 5% to overall demand.
* The Dummy and EHF models worked best in capturing the response to demand. The next electricity demand forecast update (in August) will implement further variables to capturing heatwaves.

Shane Brunker (Ergon Energy) queried whether any wind speed variable had been factored in. Daniel advised that the BOM identified different wind variables and that wind speed can change temperature observation, however to include this in the model created multicollinearity issues with temperature.

AEMO is currently looking at climate change and its impact on demand. To forecast demand, the simulation collected 17 years of data to ensure alternative weather conditions were represented. To capture climate change, the current approach is to lift temperatures up by 0.5°c per 20 years.

AEMO have met with climate scientists who have forecast out to 2100 and will be further researching the risk of climate change over the coming four weeks. This research will look at the impact of climate change on the frequency and intensity of heatwaves.

Forum members highlighted that other power system vulnerabilities include storms - dark cloud cover from thunder storms (impacting PV output) and large hail stones damaging equipment. It would be useful to understand the projected increased frequency of these events.

#### 6. Demand Side Participation Forecast update, Approach and Results

Magnus Hindsberger (AEMO) presented an update on Demand Side Participation (DSP) advising the FRG that the present 2018 DSP Forecast will published at the end of March 2018.

The methods have been evolving over time with Magnus explaining that the types of DSP AEMO are capturing in the forecasts are

* **Semi Regular** (Frequent): price driven, back-up generator, industrial loads.
* **Occasional** (Rare):Reliability driven, critical peak pricing programs, peak smart air conditioners.

The regular (daily) DSP consisting of tariff driven or timer based response is embedded into the maximum demand forecast.

The major change to the methodology is the exclusion of Reliability and Emergency Reserve Trader (RERT) and Australian Renewable Energy Agency (ARENA) DSP. Other changes include using the updated survey data, and revising the method to use meter data analysis for all DSP loads and not just industrial loads.

The revised method classifies DSP into three baseline types based on the metered consumption profile:

* Industrial load (flat)
* Daily load shape
* Irregular loads

The DSP response against those baselines is calculated by wholesale price levels or Lack of Reserve (LOR) conditions.

Magnus commented that the observed DSP outcomes highlights that it is - from a system level - a probabilistic resource that can produce a wide range of outcomes, depending on the position at the time of the controlling aggregators or retailers.

The DSP forecast is used by AEMO in Medium Term Projected Assessment of Medium Term Projected Assessment of System Adequacy (MT PASA), Electricity Statement of Opportunities (ESOO). It is not being used in short term processes such as Short Term Projected Assessment of System Adequacy (ST PASA).

Ben Skinner (AEC) commented that in his view, DSP should also be included in ST PASA assessments as it would give market participants a more true picture of supply adequacy.

Nicola Falcon (AEMO) asked if Network provider DSP should be included in the assessment:

* Ben Skinner (AEC) suggested that Network Providers should be included, if it is assumed that the network has installed the services in conditions that are likely to be correlated in peak demand circumstances.
* Ausnet Services flagged that there can be a large variation in the extent of any response to critical peak pricing programs, and this is an area that they are wanting to better understand.
* Powercor cautioned inclusion of all network provider DSP as some is used to manage local issues, not specifically to provide regional reliability support.

Jennifer Brownie (QLD Electricity Users Network) commented that in a webinar by the Energy Security Board, the Minerals Council stated that demand response is up to $60,000 per MW hour which is much higher than what has just been presented. AEMO has excluded RERT and ARENDA DSP. Jennifer requested clarification from AEMO on this point. As this was raised by Minerals Council in a different forum, it would be more appropriate for QEUN to follow this up with them directly.

The next major update on DSP information is in April 2018 as part of the new DSP information guidelines process with a workshop for participants scheduled 6 March 2018.

Any further feedback or queries can be directed to energy.forecasting@aemo.com.au

#### 7. Other Business

No new business was raised.

# 9. Meeting Close

The next Forecasting Reference Group meeting is scheduled for Tuesday 27 March 2018.

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

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| **Item** | **Date Raised** | **Topic** | **Action required** | **Responsible** | **By** | **Status** |
| **4.3.1** | 27 Feb 2018 | Demand Forecast Updates | AEMO to explore feasibility of creating a one page document listing the release timings. | Nicola Falcon(AEMO) | Ongoing | **Open** |
| **4.3.2** | 27 Feb 2018 | Demand Forecast Updates | AEMC to discuss offline the implications of the minor reports on projects.*27/03 Update:* Nicola’s details emailed over to Jackie on 20 March. | Jackie Biro(AEMC)Nicola Falcon(AEMO) | 20 March 2018 | **Open** |
| **4.4.1** | 27 Feb 2018 | March Electricity Forecast Updates | AEMO to review data interface for QLD data and confirm flat demand in business and the reduction in climate change. *27/03 Update:* Greg to add historical data to dynamic interface. | Greg Staib(AEMO)Jennifer Brownie (QLD Electricity Users Network). | 09 March 2018 | **Open** |
| **4.4.2** | 27 Feb 2018 | March Electricity Forecast Updates | A request to have the graphs presented state by state (QLD specifically).*27/03 Update:* This information will be available on the interface once it is published on 29 March 2018. | Greg Staib(AEMO)Jennifer Brownie (QLD Electricity Users Network). | 09 March 2018 | **Open** |
| **3.1.1** | 30 Jan 2018 | Generator Information | Sample of the ‘questions table’ in new portal to be distributed to FPRG. | Matt Marston(AEMO) | March 2018 | Closed |
| **3.1.2** | 30 Jan 2018 | Generator Information | Tadipatri Prasad to discuss upcoming projects off line | Tadipatri Prasad (NSW Govt.)Nicola Falcon(AEMO) |  | Closed |
| **5.1.1** | 30 Jan 2018 | Integrated System Update | Discussion of ISP details to be held offline. | Nicola Falcon,Craig Price(AEMO)Craig Oakeshott(AER) | 10 February 2018 | Closed |
| **1.4.1** | 19-Sep-17 | Summer Analytics Program | Chat with Ausnet Services regarding the ARENA project with Solcast. GS Update – Spoke with Luke at Solcast – insights to be released in future. Commitment from Siro for 1 resource. *20/11 Update –* Yet to commence program.*30/01 Update* – Vivian Mai, Price and Consumer demand behaviour and Song Li, Climate/Heatwaves will present on in the coming months. *27/02 Update* – Song Li presented on Climate/Heatwaves.  | Greg Staib (AEMO) | 24-Oct-17 | Open |