DRAFT MINUTES – Forecasting Reference Group (FRG)

MEETING: #8

DATE: WEDNESDAY 25TH SEPTEMBER

CONTACT: Energy.Forecasting@aemo.com.au

ATTENDEES:

Attendee	Company	Site
Luke Sumner	AEMO	Adelaide
Adam Day	AER	Adelaide
Andrew Turley	AEMO	Brisbane
Magnus Hindsberger	AEMO	Brisbane
Nick Culpitt	AEMO	Brisbane
Alex Driscoll	Edge Energy Services	Brisbane
Dean Soste	AEMO	Melbourne
Greg Staib	AEMO	Melbourne
Linton Corbet	AEMO	Melbourne
Nick Cimdins	AusNet Services	Melbourne
Norman Jip	DELWP	Melbourne
Sujeewa Vithana	United Energy	Melbourne
Luke Dowling	AEMO	Perth
Matt Shahnazari	Western Power	Perth
Ben Skinner	AEC	Sydney
Leslie Lay	AEMO	Sydney
Quinn Patterson	AEMO	Sydney
Richard Hickling	GHD	Sydney
Arindam Sen	Transgrid	Sydney
Bella Pennington	AEMO	Teleconference
Debborah Marsh	AEMO	Teleconference
Roberta Maher	AEMO	Teleconference
Roy Kaplan	AEMO	Teleconference
Craig Oakeshott	AER	Teleconference
Lachlan O'Neil	CSIRO	Teleconference
Paul Graham	CSIRO	Teleconference
Jasmine Zheng	Deloitte	Teleconference
Marino Bolzon	Department for Energy and Mining, SA Government	Teleconference
Harrison Bradley	Electranet	Teleconference
Franki Lee	Endeavour Energy	Teleconference
Georgina Snelling	Energy Australia	Teleconference
Ron Logan	ERM Power	Teleconference
Brent Hudson	Essential Energy	Teleconference
Pippa Williams	Hydro Tasmania	Teleconference
David Headberry	Major Energy Users	Teleconference

Bill Nixey	NSW Department of Planning, Industry and Environment	Teleconference
Jennifer Brownie	Queensland Electricity Users Network	Teleconference
Phil Pollard	Queensland Electricity Users Network	Teleconference
Owen Logan	Snowy Hydro	Teleconference
Joe Hemingway	Stanwell	Teleconference
Herath Samarakoon	Tas Networks	Teleconference
Katelyn Purnell	UNSW	Teleconference

1. Welcome and Introductions

Magnus Hindsberger (AEMO) welcomed everyone to the September FRG meeting.

2. Previous Minutes, Action Items and Forward Plan

Minutes and action items from the previous FRG meeting were addressed, and the forward plan was discussed.

Key topics raised by stakeholders during this section included:

- Ron Logan (ERM Power) requested the circulation of a submission made to the forecasting inbox about the 70th percentile of historical temperature outcomes at reference weather stations. Nick Culpitt (AEMO) advised that he will circulate the submission to the wider FRG (Action 3.1.1).
- Ron Logan (ERM Power) suggested the communication between AEMO and FRG participants should not just be one-way, but to circulate ideas with each other and reach the best possible outcome. Andrew Turley (AEMO) replied that AEMO will consider a mechanism for information sharing with the FRG going forward (Action 3.1.2).
- Jennifer Brownie (QEUN) asked whether AEMO will request temperature to power curves from wind farms under AWEFS, as per a comment from the previous FRG meeting. Nick Culpitt (AEMO) replied that AWEFS is not within the scope of the Forecasting team, but feedback will be passed onto the Operational Forecasting team.
- Jennifer Brownie (QEUN) enquired whether AEMO will consider shareholder motions in its forecasting. Nick Culpitt (AEMO) replied that it's unclear whether topics raised at an AGM, unless resulting in a firm announcement, would be actionable from a forecasting perspective.
- Jennifer Brownie (QEUN) asked whether there would be a hydrogen component in AEMO's forecasting models. Andrew Turley (AEMO) replied that discussions are ongoing regarding the inclusion of hydrogen in the GSOO, and that it would not be included at a quantitative level in the ISP due to a lack of reliable data.

3. Presentation 1a: DER Register

Roy Kaplan (AEMO) presented on the upcoming Distributed Energy Resource (DER) Register. An overview of the rule obligations around the register, its inputs and broader benefits, and the data model were discussed in detail.

Key topics raised by stakeholders during this section included:

- Jennifer Brownie (QEUN) enquired as to whether customers, as well as the electrical contractor, will be able to upload data directly to the register. Roy Kaplan (AEMO) replied that it is the obligation of the network to upload the data, and that networks usually arrange to retrieve the data from accredited installers.
- Bill Nixey (NSW Planning) asked whether the register will include demand response enabled (DRED) devices. Roy Kaplan (AEMO) confirmed that the register will indicate whether a device is DRED-enabled.
- Jennifer Brownie (QEUN) asked whether the number of mandatory fields for the register has changed. Roy Kaplan (AEMO) replied that for the register itself, all fields are mandatory, while for historical data, the number of mandatory fields has not changed.
- Jennifer Brownie (QEUN) mentioned that the Queensland Electricity Users Network is looking to delay the go-live date of the DER Register until the 1st of March, as getting it correct is important, and solar installers are ill-prepared for the register going live. Roy Kaplan (AEMO) clarified that AEMO did not choose the date, but rather it was subject to industry rule.
- Ron Logan (ERM Power) asked whether solar panel orientation would be included in the register. Roy Kaplan (AEMO) replied that it was considered, but ultimately decided through consultation that it would be too difficult to acquire, adding that there could be large sites with several different panel orientations.
- Ron Logan (ERM Power) asked how differently sized PV strings and inverters within the same site would be captured by the register. Roy Kaplan (AEMO) detailed that the AC connection level of the data model will support as many inverters as necessary under a single NMI, and that likewise each inverter will support as many connected devices as necessary.
- Joe Hemingway (Stanwell) asked whether the register will be compulsory for all future and existing installations. Roy Kaplan (AEMO) clarified that it will be compulsory for all future installations from the 1st of December, and that there is an obligation on distributors to provide information on existing installations before then.
- Ben Skinner (AER) asked how comprehensive the data on existing installations is. Roy Kaplan (AEMO) replied that ongoing discussions with NSPs suggest a high level of confidence that the data will be very comprehensive.

4. Presentation 1b: DER Register Application to Forecasting

Linton Corbet (AEMO) and Greg Staib (AEMO) presented on the potential applications of the DER Register to long-term forecasting. Discussion centred around general uses of the register, as well as more specific applications of the register to spatial demand forecasting.

Key topics raised by stakeholders during this section included:

- Nick Cimdins (AusNet Services) suggested looking at interval data to analyse the impact of PV systems on peak demand, and asked whether AEMO will extract NMI-level tariff information and analyse consumption patterns based on tariff. Linton Corbet (AEMO) confirmed that this will be looked into, particularly for customers on time of use tariffs with PV systems, and customers switching tariffs.
- Lachlan O'Neil (CSIRO) asked whether information on retail tariffs will also be included. Greg Staib (AEMO) replied that it will probably come from a separate source, such as the DSP register, and that AEMO is looking to ensure that analysis is done on whatever tariff the customer sees.
- Craig Oakeshott (AER) asked how AEMO will look to enforce compliance on the registration of new installations without the financial incentive of STCs. Roy Kaplan (AEMO) acknowledged that enforcement will be challenging as there is not a lot that AEMO can do directly, and that the obligation is on the NSPs with the expectation that they will comply with their rule obligations.
- Craig Oakeshott (AER) asked how AEMO plans to reconcile existing installations that might want to participate in the register against those that are already in the system. Roy Kaplan (AEMO) clarified that data on existing installations will be verified on other datasets such as CER submissions to confirm whether installations are already in the system.
- Jennifer Brownie (QEUN) raised the issue that PV system output will not be recorded under the DER Register, citing that PV systems in different locations and under different conditions vary in actual performance. Magnus Hindsberger (AEMO) explained that there is a separate process for estimating PV generation that is calibrated against system performance and degradation, and that individual system performance is not necessarily important as long as aggregated performance is understood. Andrew Turley (AEMO) added that the purpose of the NEAR Program[1] is to validate these observations, and that there are limitations to what the register can provide, such as being a repository of half-hourly profiles.
- Ron Logan (ERM Power) asked whether there was consideration to having customers provide data to the register. Roy Kaplan (AEMO) replied that this

[1] https://www.csiro.au/en/Research/EF/Areas/Electricity-grids-and-systems/Economic-modelling/Energy-Use-Data-Model

would be more difficult than getting the data from installers, and that the obligation is still on the NSPs to collect the data.

- Phil Pollard (QEUN) asked who would have access to the DER Register, and how will security on this be maintained. Roy Kaplan (AEMO) replied that the Rule only allows access to the register by AEMO and NSPs. Access will be via existing NEM systems security mechanisms. There will be public reporting on an aggregated basis published on our website.

5. Presentation 2: DSP Update

Linton Corbet (AEMO) and Magnus Hindsberger (AEMO) presented on AEMO's Demand Side Participation (DSP) portal. DSP forecasts from current data, quality of current data and future improvements were discussed in detail.

Key topics raised by stakeholders during this section included:

- Ben Skinner (AEC) expressed concern that the DSP forecasts presented were unrealistically low compared to what is observed in the market. Specific reference was made to Sun Metals, SA Water and AGL, any of which alone provide more DSP than was indicated in the tables presented. These concerns were echoed by David Headberry (Major Energy Users). Magnus Hindsberger (AEMO) explained that this could be because the data is for responses that are expected at least 50% of the time, but may not be there always.
- Joe Hemingway (Stanwell) asked whether large industrial loads were being included in the DSP forecast. Linton Corbet (AEMO) confirmed that they were, except where their response was part of a RERT contract.
- Ron Logan (ERM Power) requested that the tables provided have an extra row that shows that total amount of DSP capacity registered through AEMO's DSP portal, and shared his view that small non-scheduled generation forecasts should be captured through DSP rather than demand forecasting. Magnus Hindsberger (AEMO) agreed that small 'other' non-scheduled generation could be captured dynamically through DSP rather than assuming a static contribution netted off demand, and suggested that AEMO should investigate whether this is something that can be done for next year (Action 3.5.1).
- David Headberry (Major Energy Users) said that AEMO should consider talking to aggregators to capture DSP that may not currently be included in our portal. Magnus Hindsberger explained that we will be working to try to cover this, but must be careful to avoid double counting.
- David Headberry (Major Energy Users) suggested that AEMO contact retailers to find out how many customers are on pass through contracts.

- Craig Oakeshott (AER) suggested that AEMO consider allowing participants to provide data without their contract qualifying under RRO. Magnus Hindsberger (AEMO) noted this for consideration of the DSP portal update. (Action 3.5.2).
- Ben Skinner (AEC) suggested that DSP forecasting should not be limited by being based on DSP survey results, but that AEMO should use actual market observations and other sources to predict growth and align the forecast with realistic values. Magnus Hindsberger (AEMO) noted that this was discussed at AEMO's ISP and RRO workshops, and as AEMO gain confidence in growth, for example from looking at trends in reported DSP vs observed, a growth trajectory can be included reflecting new initiatives, such as the Wholesale Demand Response rules change. AEMO will consult further on the method for forecasting DSP as part of a formal consultation early next year (Action 3.5.3).

6. Presentation 3: Electric Vehicle Modelling Roadmap

Greg Staib (AEMO) presented on how AEMO is modelling Electric Vehicle adoption and charging.

Key topics raised by stakeholders during this section included:

- Bill Nixey (NSW Planning) mentioned that the NSW Department of Planning has commissioned and will soon release a scoping study for an Electric Vehicle mapping tool for use by charging station developers, which has commentary on availability of data which AEMO may find useful for Electric Vehicle forecasting. Bill also mentioned that a NSW Department of Planning report was being finalised that analyses international charging tariff structures for Electric Vehicles which AEMO may find useful as well. Greg Staib (AEMO) said that we would include these reports in the FRG minutes if Bill could send them to the FRG mailbox when they are released (Action 3.6.1).
- Jennifer Brownie (QEUN) suggested taking state government policies into account surrounding Hydrogen and Electric Vehicles. She also raised concerns about road fuel tariffs and charging from rooftop solar panels. Greg Staib (AEMO) noted that AEMO has recently integrated some major state policies into its electric vehicle forecasting, and said AEMO would take into account fuel tariffs as a driving factor behind its modelling.
- Jennifer Brownie (QEUN) asked whether there was any information about the cost of installing residential electric vehicle chargers. A consensus was not reached, but it was noted by Andrew Turley (AEMO) that there is nothing stopping a consumer from charging their car from a regular wall socket, without a specific charger.

- Katelyn Purnell (UNSW) asked for clarity around how EV truck and LCV profiles are generated given the lack of publically available data out there. AEMO to reference CSIRO report and follow up directly with Katelyn (Action 3.6.2).

7. Meeting Close

In relation to Action 3.1.2, Andrew Turley (AEMO) asked the FRG to provide feedback to the Energy Forecasting mailbox about how they would like to receive updates on issues raised at the FRG meetings.

The next FRG meeting is scheduled for Wednesday 30th October 2019.

Forecasting Reference Group (FRG) Actions Items

Item	Date Raised	Topic	Action required	Responsible	By	Status
2.3.1	28/08/2019	Generation Information survey formatting	Review the advice given to participants when asking them to provide seasonal availability	Nick Culpitt	TBC – will bring back to FRG when discussing methodology for derating generating units over summer	**OPEN**
2.3.2	28/08/2019	Trace Methodology Session	AEMO to assess efficacy of trace session in FRG	Andrew Turley	25/09/2019	**CLOSED** Will be combined with action arising from Submission 2 below
2.4.1	28/08/2019	Power Station FOM Costs	AEMO to ask power station operators how FOM costs can be adequately modelled during times when units are allowed to sit idle	Luke Sumner	TBC Will report back to FRG once consultation is complete.	**OPEN** Consultation on this is progressing

2.4.2	28/08/2019	Revenue Sufficiency Approach	FRG participants to provide feedback to the forecasting inbox on AEMO's proposed revenue sufficiency approach and other possible approaches	FRG participants	25/09/2019 Extended for one more month, to increase opportunity for feedback.	**OPEN**
3.1.1	25/09/2019	Proposed Change to Seasonal Generator Capability Ratings (see email submission 1 below)	Circulate Ron Logan's submission to the forecasting inbox about 70th percentile temperature outcomes	Nick Culpitt	30/10/2019	**CLOSED.** Submission attached to these minutes
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	Tbd	**OPEN** In interim, have included a table at end of minutes to capture ideas from these submissions.
3.5.1	25/09/2019	DSP Update – small non-scheduled generation	Investigate whether small non-scheduled generation can be moved from demand forecasting to DSP forecasting.	Magnus Hindsberger	31/1/2020	**OPEN**

3.5.2	25/09/2019	DSP portal modifications	Discuss with AER, options for allowing participants to provide DSP data without their contract qualifying under RRO.	Magnus Hindsberger and Craig Oakeshott	30/11/2019	**OPEN**
3.5.3	25/09/2019	DSP forecasting methodology	Consult on methodology for forecasting DSP, including choice of exclusions (eg due to RERT or overlapping programmes)	Magnus Hindsberger	Early 2020	**OPEN**
3.6.1	25/09/2019	Electric Vehicle Modelling Roadmap	Share NSW Department of Planning Electric Vehicle reports from Bill Nixey with FRG when they are published.	Bill Nixey (NSW Planning) / Greg Staib	30/10/2020 If anyone would like these reports, please contact AEMO through the Energy Forecasting mailbox	**CLOSED**
3.6.2	25/09/2019	Provide more details around electric vehicle traces, especially truck and LCV profiles.	Details are provided in the CSIRO report. AEMO to follow up directly with Katelyn.	Greg Staib	30/10/2020	**OPEN**

Submissions captured from out-of-session interactions

Submission	Date Raised	Topic	Raised by	Possible action	Responsibility	Status
1	29/08/2019	Proposed Change to Seasonal Generator Capability Ratings	Ron Logan	AEMO to consider Ron's suggestion in developing method for derating generators over summer	AEMO	**OPEN** Will bring this discussion back to November FRG when presenting proposed methodology for derating over summer.
2	23/09/2019	Use of historical demand traces for wind and solar generators (see email below)	Ron Logan	AEMO to report back, when ready, on research underway to use weather data directly to generate future traces, thereby removing anomalies attributed to market responses.	AEMO	**OPEN** This is currently a work in progress. AEMO now uses weather data to derive some, but not all of the generation traces. Further work to derive more granular historical weather data is ongoing, through collaboration with CSIRO and BoM, so that we may extend this method further.

3	17/10/2019	MT PASA Graphs – size of USE by month seems unusually large for winter (see email below)	Ron Logan	Request was for AEMO to assess performance of its MTPASA reliability forecasts given unusually large USE values observed in charts.		**CLOSED** AEMO clarified that the graphs in question showed (for the periods where USE occurred) the range of half-hourly USE outcomes for the month. They simply show the size of USE events when they occurred, but not how likely they were to occur. In the examples provided, the largest expected USE for the month was 5.7 MWh, or 0.00001% of annual demand. It therefore has an immaterial impact on the reliability standard and variations from week to week simply reflect dynamic maintenance scheduling and changes in inputs.

4a	17/10/2019	Grid delivered energy Q32019 vs Q3 2018 (see email below)	Ron Logan	Monitor monthly energy consumption by region, and check the range of forecasts across scenarios captures the possibility of smelter closures.	AEMO	**CLOSED** AEMO continuously monitors consumption on a monthly basis. AEMO also confirms that the slow change scenario includes possibility of closures.
4b	17/10/2019	MT PASA daily POE demands (see email on Grid delivered energy below)	Ron Logan	Concerns were raised around the accuracy of the MTPASA daily POE demands, despite these demands NOT actually being used by AEMO in any part of the MTPASA process. AEMO considers it more important to assess accuracy of the maximum demands from the demand traces that ARE used in the MTPASA process.	AEMO	**OPEN** The reported MTPASA daily POE peak demands are not used within AEMO for any reliability forecast. AEMO is currently exploring the feasibility of reporting the range of maximum demands from the input demand traces instead. At a minimum, AEMO will include some reporting of MTPASA demand trace performance in the upcoming Forecast Accuracy Report.

5	25/09/2019	Vic maximum demand outcome post 2009 (see email below)	Ron Logan	AEMO to clarify how counter-factual actual demand is calculated for the purpose of assessing forecast accuracy, including how actual USE, RERT, DSP and household disconnections are added back on to load in order to better train the forecasting models.	AEMO	**OPEN** Will include in a Forecast Accuracy Report methodology paper to be consulted on early next year.

6	25/09/2019	DSP portal functionality	NSP	AEMO may wish to consider making the data input a bit more flexible by allowing DSP programs to be entered, rather than NMIs.	AEMO	**CLOSED** The potential response field can be included at the program-level. Guide to DSP CSV files indicates that the metadata (where a potential response value can be entered) can be associated with a program or a connection. AEMO acknowledges many participants found making a submission difficult. AEMO will review the portal and guidelines more broadly in 2020 to determine what improvements can be made.

Submission 1

From: Ron Logan
Sent: Thursday, 29 August 2019 18:39

Subject: Proposed Change to Seasonal Generator Capability Ratings

Nick

Thank you for heading the discussion at the FRG meeting yesterday on the proposed change to seasonal generator capability ratings.

At the meeting with regards to the discussion on the reference temperatures to be used for the "typical or normal" days, I suggested that rather than the mean of the maximum daily temperature values over the summer period that potentially the 70th percentile of the maximum daily temperature values may be an acceptable value as this adds a small level of conservatism to the forecast of generator capability on the "typical or normal" days.

I had a quick look at what the 70th percentile values would be for the mainland regions, I didn't look at Tas given the 10% POE events occur during the winter months.

Bankstown	Mean	27.1
	70th	30
	Region Ref Temp	42
Archerfield	Mean	29.5
	70th	31
	Region Ref Temp	37
Melb Airport	Mean	24.8
	70th	29
	Region Ref Temp	41
Adelaide	Mean	26.9
	70th	31
	Region Ref Temp	43

I have used Melb Airport rather than Olympic Park as it has more historical observations.

As indicated yesterday, I believe that from a consistency perspective the same process should be adopted for both the ESOO and the MT PASA processes. The routine MTPASA submission would be made on the basis of the expected temperature outcomes on the "typical or normal" days and for the 5 extreme temperature days these could be flagged in AEMO's internal modelling process and the ESOO's extreme temperature days values used in the MT PASA in exactly the same way as the ESOO modelling.

In the proposed change is implemented, is the intention to include both the "typical or normal" and "extreme" days reference temperature in the RSIG?

I am happy for this email to be circulated to the FRG membership to facilitate further comment and discussion.

Regards

Ron Logan

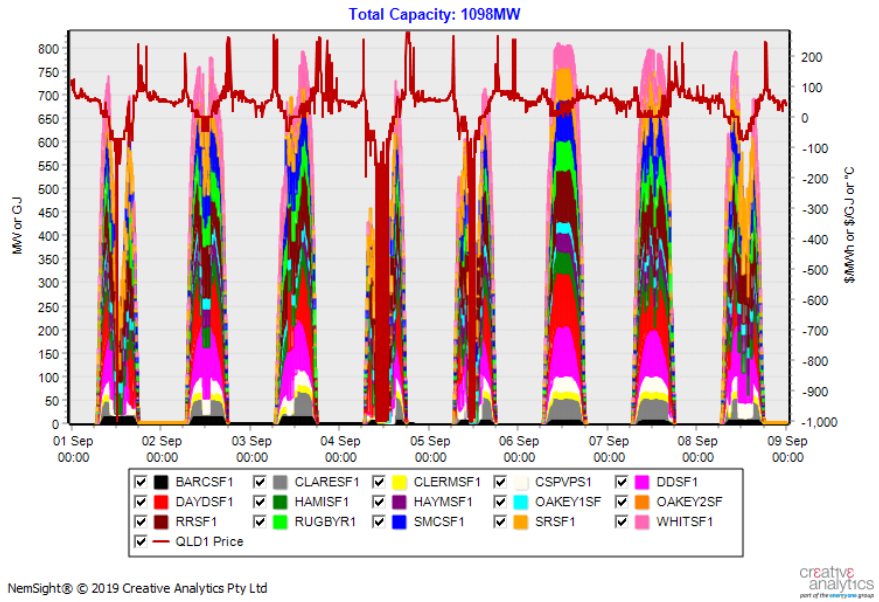
Submission 2

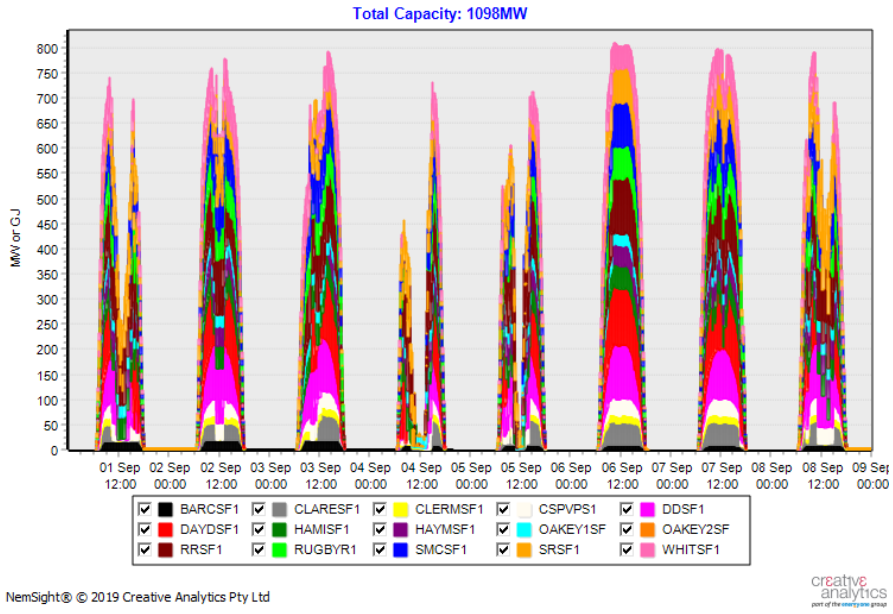
From: Ron Logan
Sent: Monday, 23 September 2019 20:11

Subject: Use of Historical Demand Traces for Wind and Solar Generators

Hi Nicola and Team

An area that could be reviewed and discussed at the FRG is with regards to the response of some VRE generators to low spot price outcomes. Whilst historically PPA's for VRE generators were firm to the market floor price, most new PPA's are firm to $0 or sometimes the negative value of a REC. This is resulting in outcomes where some VRE generators are choosing to turn off when prices fall below a specific value.





This has repercussions for the use of historical VRE output values in the forward reliability modelling as from an input energy perspective VRE output would be higher absent the very low price outcome. Whilst in general the historical VRE output data would have been aligned with underlying energy input, going forward this may not be the case.

In my view the reliability assessment needs to be based on the physical capabilities of the VRE units rather than reflect an the economic output at the time and by doing so we would run the risk of underestimating potential VRE output at times of system reliability requirements where RRP would be sufficient to maximise physical operating capability.

Happy for you to circulate to other FRG members for consideration.

Regards

Ron Logan

Submission 3

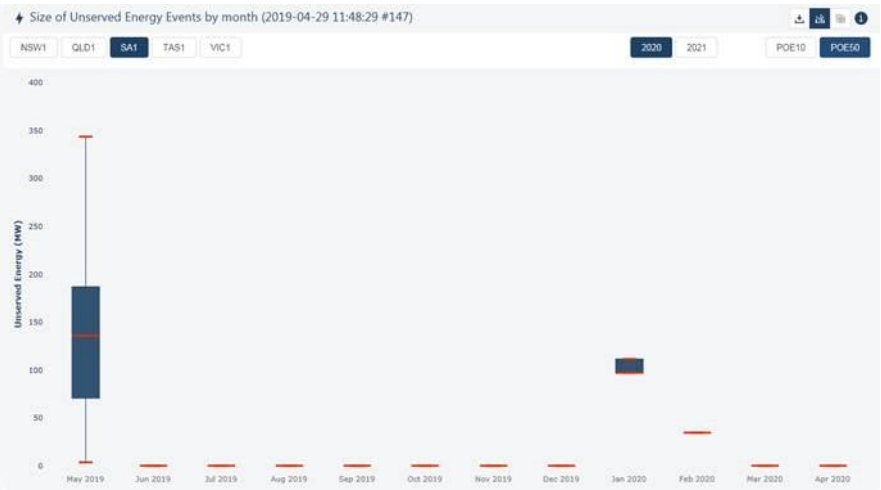
From: Ron Logan
Sent: Thursday, 17 October 2019 23:16

Subject: MTPASA Graphs

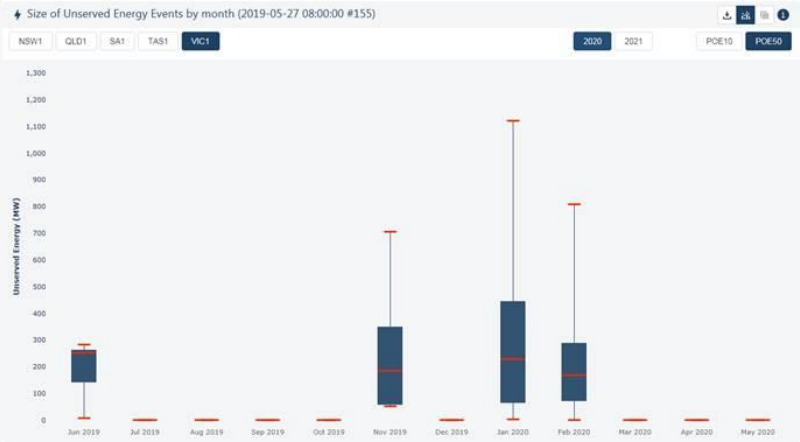
Hi Nicola

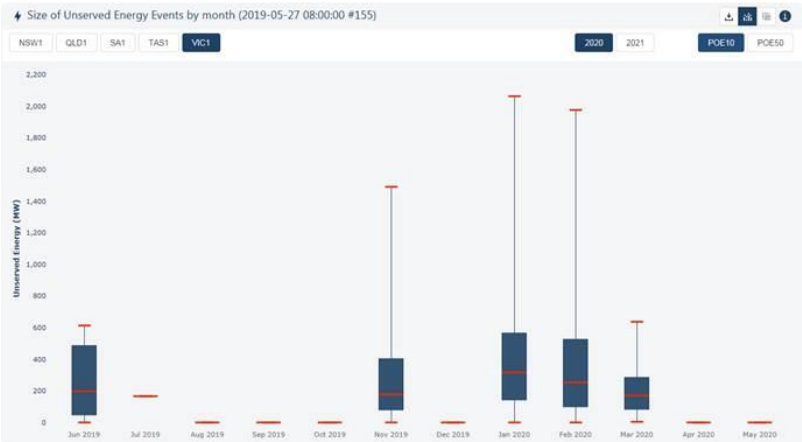
As indicated today, please find attached AEMO graphs from the MTPASA MMS interface.

At end of April



At end of May


Size of Unserved Energy Events by month (2019-05-27 08:00:00 #155)
NSW1 QLD1 SA1 TAS1 VIC1
2020 2021
POE10 POE50
Unserved Energy (MW)
Jun 2019 Jul 2019 Aug 2019 Sep 2019 Oct 2019 Nov 2019 Dec 2019 Jan 2020 Feb 2020 Mar 2020 Apr 2020 May 2020


Size of Unserved Energy Events by month (2019-05-27 08:00:00 #155)
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2020 2021
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Unserved Energy (MW)
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Size of Unserved Energy Events by month (2019-05-27 08:00:00 #155)
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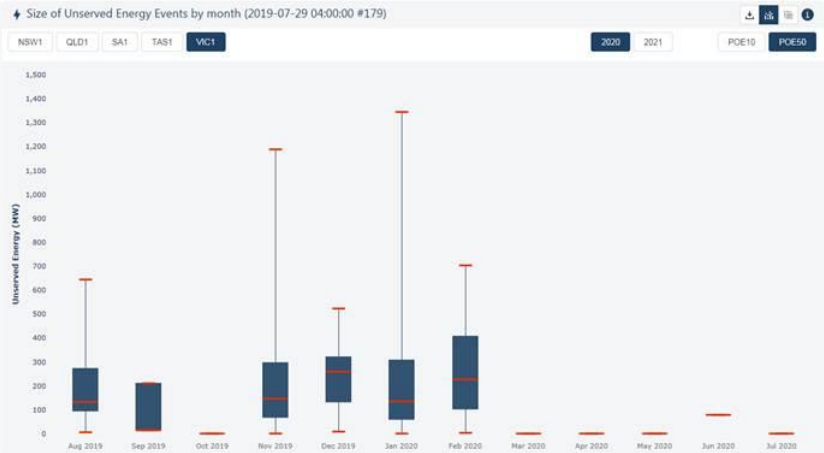
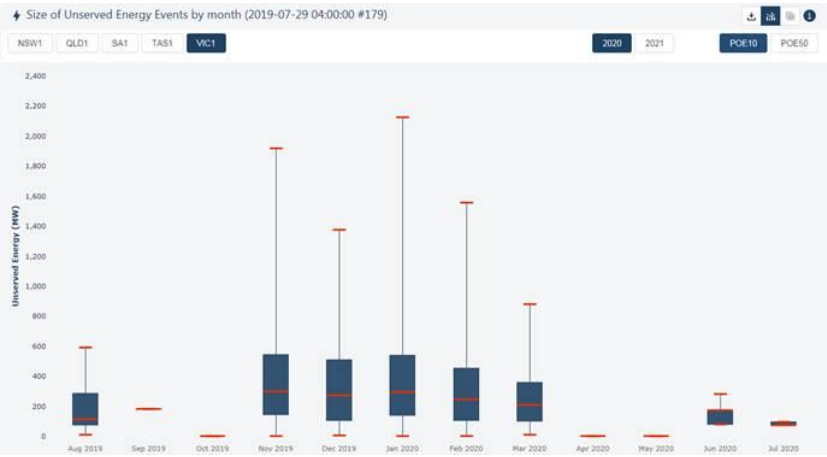
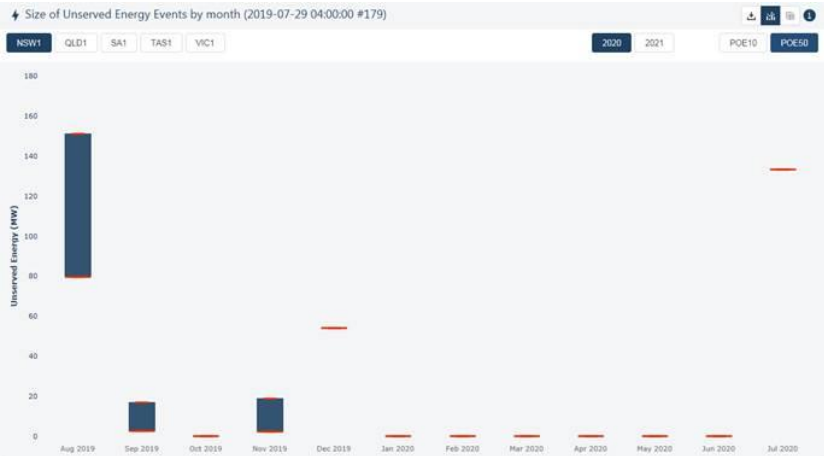
2020 2021
POE10 POE50
Unserved Energy (MW)
Jun 2019 Jul 2019 Aug 2019 Sep 2019 Oct 2019 Nov 2019 Dec 2019 Jan 2020 Feb 2020 Mar 2020 Apr 2020 May 2020

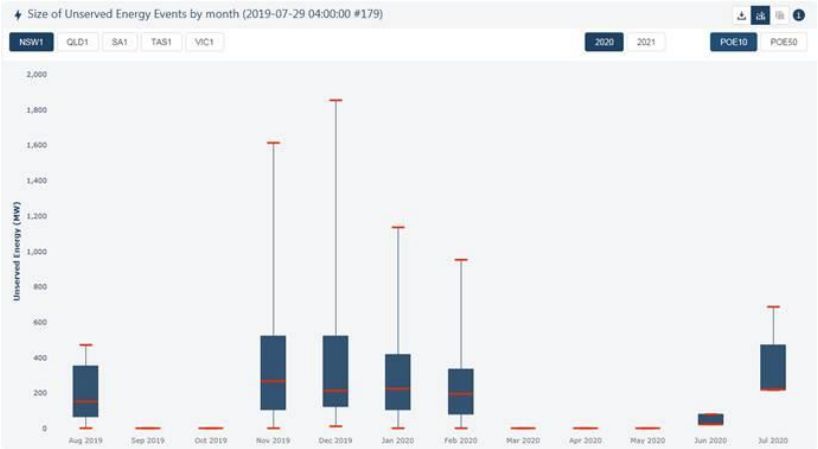
At end of June

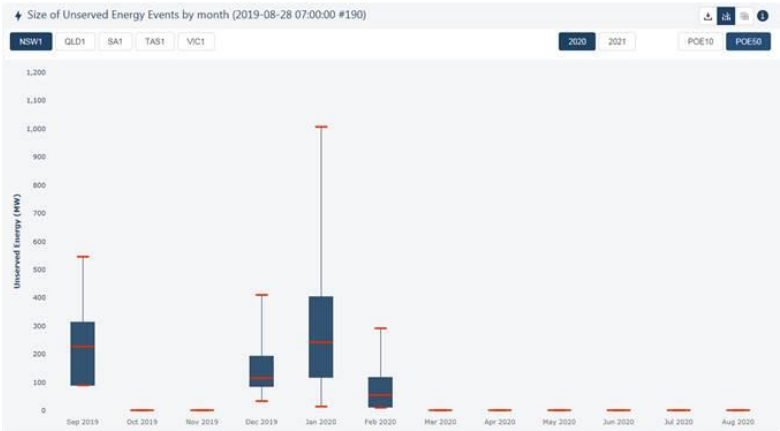
At end of July











I am happy for these to be circulated to other members of the FRG.

These are simply AEMO graphs that I took screen shots of and saved at the end of each month.

Kind regards

Ron Logan

Submission 4

From: Ron Logan
Sent: Thursday, 17 October 2019 23:40

Subject: Grid Delivered Energy Q3 2019 vs Q3 2018

Hi Nicola

Just following on from our discussion re grid delivered energy for Vic, here is a little table I keep track of where I use AEMO data to calculate grid delivered energy as we move through the year. Data compares Q3 2019 to Q3 2018 and also to AEMO's energy consumption growth forecast from the ESOO data (operational as generated).

	July to Sept			Change	Actual	AEMO	AEMO
	2018/19	2019/20	Change	Average	Change	2019 ESOO	Forecasting
	GWh	GWh	GWh	1/2 hr MW Load	%	Forecast	Error
Qld	13,418	13,105	-314	-142	-2.3%	0.2%	-2.5%
NSW	18,402	18,200	-202	-92	-1.1%	-2.0%	0.9%
Vic	11,944	11,887	-57	-26	-0.5%	2.0%	-2.5%
SA	3,219	3,227	8	4	0.3%	1.7%	-1.4%
Tas	3,010	2,887	-123	-56	-4.1%	-2.0%	-2.1%
NEM	49,994	49,307	-688	-311	-1.4%	-0.1%	-1.3%

Based on data to the end of September, Vic will struggle to reach 44,000 GWh in this FY in the trend continues.

Vic grid delivered energy has pretty much decreased year on year for the last 10 years. If Portland was to close we would lose approx. 12.8% of Vic grid demand.

Below is the data I downloaded from your portal

						Sent Out	Auxiliary	As Generated
22/08/2019	VIC	2020	ALL	Operational	Slow change	41,972.5	3,000.2	44,973
22/08/2019	VIC	2020	ALL	Operational	Step change	42,837.8	2,860.7	45,698
22/08/2019	VIC	2021	ALL	Operational	Central	41,491.9	2,877.8	44,370

None of the scenarios seem to match a Portland closing scenario. I didn't see a sensitivity case in the ESOO reliability forecasting analysis that I could identify.

For October, this is the monthly forecasts I extracted from the MTPASA compared to MTD actual, but more importantly historical outcomes. Post GFC max demand outcomes are also shown below the tables.

October Monthly Highest of MaximumTemperature Outcomes						
	Historical Outcomes				2018	Days >
	90th Percentile	95th Percentile	Maximum	Year	Maximum	90th
Archerfield	31.3	35.4	39.4	2005	33.2	
Bankstown	30.8	35.3	39.7	1988	33.9	
Canberra	25.0	28.9	32.7	2015	28.1	
Melbourne	25.8	31.1	36.4	2006	28.9	
Adelaide	28.9	33.9	38.9	1919	31.8	
Hobart	22.5	28.0	33.4	2006	28.9	
Hobart						

October Monthly Peak Demand Outcomes					
	AEMO Forecasts		Actual	Historical	Maximum
	50% POE	10% POE	Peak	Maximum	Ocurred
Qld	8,811	9,138	7,960	8,076	2017
NSW	11,807	12,615	9,062	11,323	2006
Vic	7,172	7,873	6,116	7,916	2006
SA	2,129	2,281	1,705	2,162	2014
Tas	1,579	1,627	1,350	1,653	2003
NEM	29,860	31,790	25,491	27,418	2006

October Monthly Lowest of Maximum Temperature Outcomes						
	Historical Outcomes				2018	Days <
	10th Percentile	5th Percentile	Maximum	Year	Maximum	10th
Archerfield	23.1	20.3	17.5	1997	23.4	
Bankstown	18.7	16.6	14.5	1973	21.8	
Canberra	14.5	10.9	7.2	1967	16.3	
Melbourne	14.2	12.1	10.0	1957	13.3	
Adelaide	15.9	13.6	11.2	1968	16.8	
Hobart	14.3	10.6	6.9	1958	13.1	

October Monthly Peak Demand Outcomes					
	AEMO Forecasts		Actual	Historical	Maximum
	50% POE	10% POE	Peak	Maximum	Ocurred
Qld	8,811	9,138	7,960	8,076	2017
NSW	11,807	12,615	9,062	11,323	2006
Vic	7,172	7,873	6,116	7,916	2006
SA	2,129	2,281	1,705	2,162	2014
Tas	1,579	1,627	1,350	1,653	2003

Notes	Maximum temperature is the maximum recorded temperature on a working weekday
	Post GFC Max Demands. NEM - 26,666 (2009), NSW - 10,581 (2009), Vic 7,078 (2009) and Tas 1,530 (2011)
	NEM Forecast 10 and 50% POE demands based on the sum of the regional forecast multiplied by average weather diversity for October of 94.8%

Happy for this data to be circulated to the FRG to promote further discussion.

Kind regards

Ron Logan

Submission 5

From: Ron Logan
Sent: Friday, 18 October 2019 10:30

Subject: Vic Maximum Demand Outcome Post 2009

Nicola

Yesterday there was a disagreement between stakeholders views around the Vic 10% POE demand forecasts vs actual outcomes and AEMO's view.

Below is the data provided by AEMO's real time systems for the Vic peak demand in the summer of 2013/14. Based on AEMO's published data maximum demand that summer occurred on 17 January at Trading Interval 14:00.

	VIC1 Scheduled Demand	VIC1 Non-scheduled	Vic 1 Operational Demand
17/01/2014 14:00	10,211	79	10,290

The 2013 NEFR which supplier the operational demand forecast used in the 2013 ESOO, the ESOO issued immediately prior to the summer of 2013/14 which would be the ESOO used had the RRO existed at the time indicated the following.

Note The 2013 NEFR still indicated demand forecasts on an Operational as Generated basis.

2013 NEFR operational summer maximum demand forecasts (MW) - VIC										
	Actual	2013								
		High (Scenario 2, Fast World Recovery)			Medium (Scenario 3, Planning)			Low (Scenario 6, Slow Growth)		
		90%	50%	10%	90%	50%	10%	90%	50%	10%
2005-06	8,730									
2006-07	9,062									
2007-08	9,818									
2008-09	10,576									
2009-10	10,105									
2010-11	9,914									
2011-12	9,160									
2012-13	9,774									
2013-14		8,883	9,761	10,614	8,765	9,580	10,473	8,453	9,342	10,190

Based on this, Vic actual peak demand during summer 2013/14 did not exceed or in fact meet the Vic 10% POE planning/central forecast as represented by AEMO at the meeting yesterday.

I am happy for this to be shared with the FRG membership.

Kind regards

Ron Logan