

2016–17 Wholesale Electricity Market Report to the Minister for Energy

Appendices

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Appendix 1: Reporting requirements

The Australian Energy Market Operator (AEMO) is responsible for collection and primary analysis of data to monitor the effectiveness of the market. It is required to compile specific data into a Market Surveillance Data Catalogue and provide that data to the Economic Regulation Authority (ERA). The market rules also set out certain analysis AEMO must undertake and provide to the ERA.

The ERA is responsible for monitoring the effectiveness of the market in meeting the wholesale market objectives, and must investigate any market behaviour that may have resulted in the market not functioning effectively. The ERA, assisted by AEMO, must monitor:

- ancillary services contracts, including the criteria and processes used to procure services;
- inappropriate and anomalous market behaviour (such as bidding in the Short Term Energy Market (STEM) and balancing markets, as well as in the making of availability declarations, ancillary services declarations and fuel declarations);
- market design problems or inefficiencies; and
- problems with market structure.

The ERA must review the effectiveness of:

- the market rule change process and procedure change process;
- the compliance monitoring and enforcement measures in the market rules and regulations; and
- AEMO (including System Management) in carrying out its functions under the regulations, the market rules and market procedures.

The annual report to the Minister for Energy should include:

- a summary of the information and data compiled by AEMO and the ERA under clause 2.16.1, including the Market Surveillance Data Catalogue;
- an assessment of the effectiveness of the market, including the effectiveness of the IMO and System Management in carrying out their functions, with discussion of each of:
 - the reserve capacity market;
 - the market for bilateral contracts for capacity and energy;
 - the STEM;
 - balancing;
 - the dispatch process;
 - planning processes; and
 - the administration of the market, including the market rule change process;
- an assessment of any specific events, behaviour or matters that reduced market effectiveness; and
- any recommended measures to increase the effectiveness of the market in meeting the wholesale market objectives to be considered by the Minister.

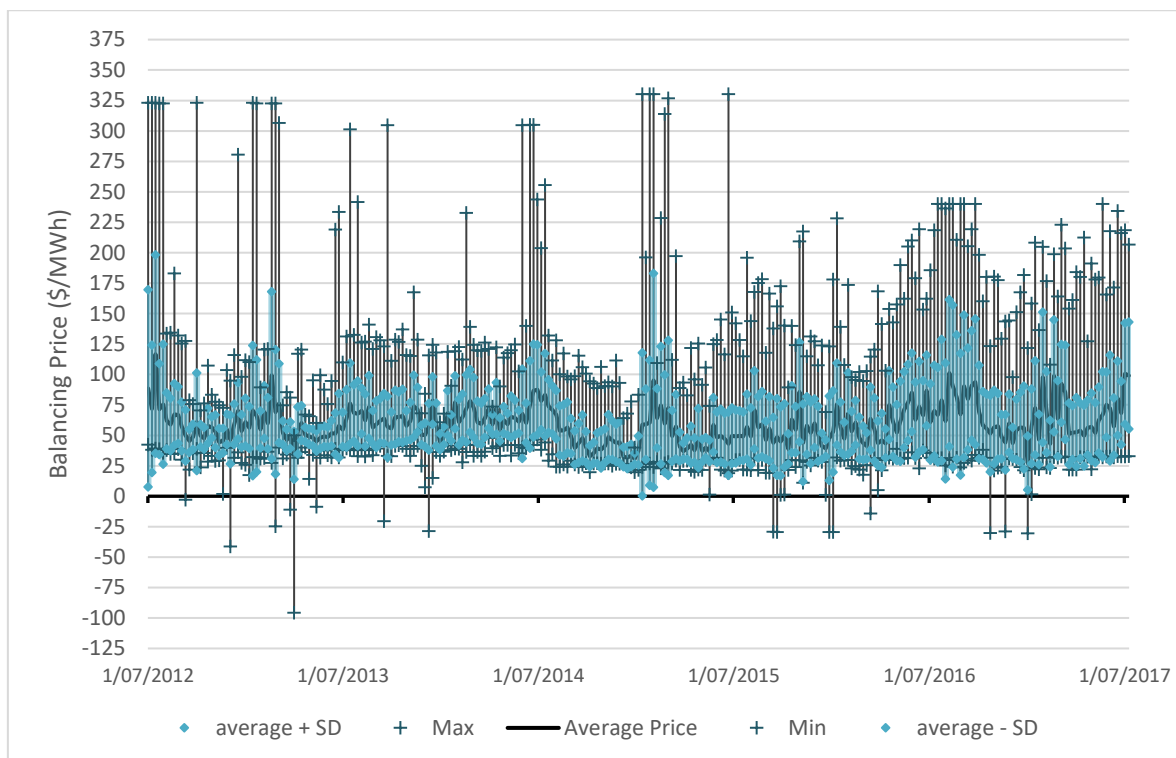
Appendix 2: Additional Market Commentary

1. Balancing Market

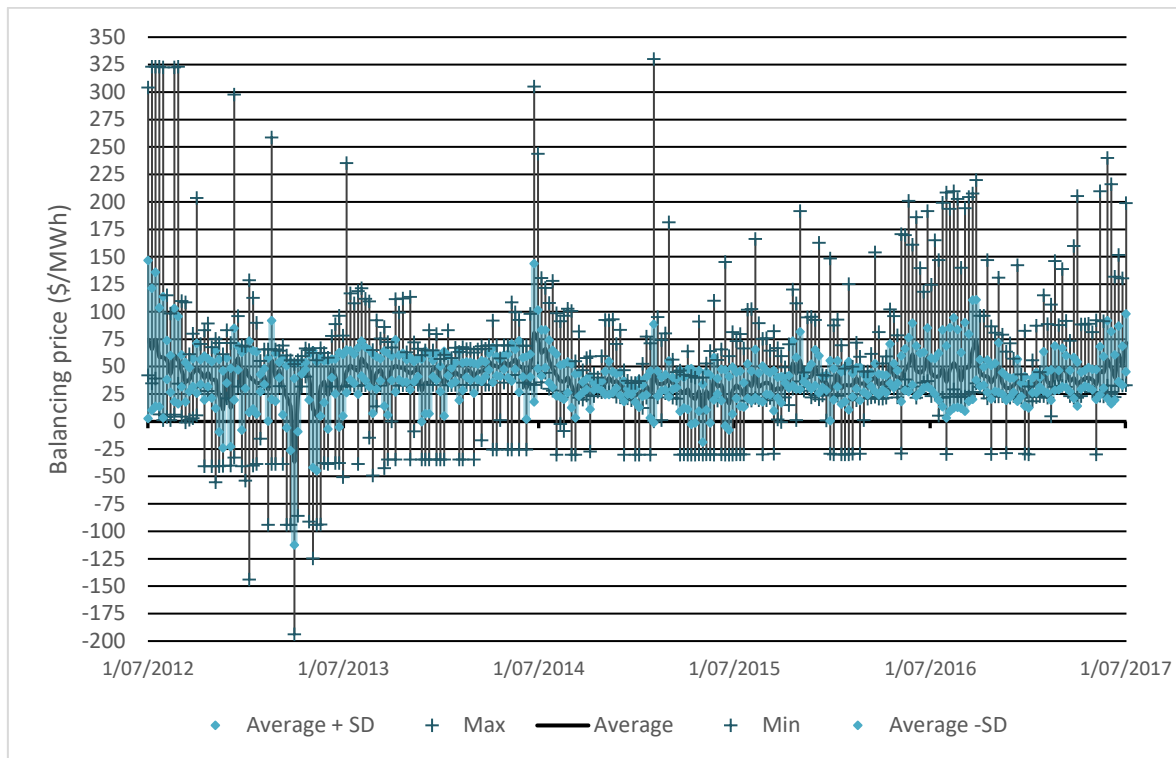
Figure 1 and Figure 2 below show weekly average prices in the balancing market in peak and off-peak intervals, with the maximum and minimum values and one standard deviation around the average also displayed on the chart.

Balancing market prices and price volatility in 2016-17 were consistent with the trend toward substantially higher prices that emerged in the last quarter of the 2015-16 financial year. The frequency of prices reaching the Max STEM price (the non-liquid fuels price cap) was also greater, with the price cap being reached even in off-peak periods, during the shoulder season (see section 2).

Figure 1 – Weekly balancing market summary data – peak intervals



Source: AEMO

Figure 2 – Weekly balancing market summary data – off-peak intervals

Source: AEMO

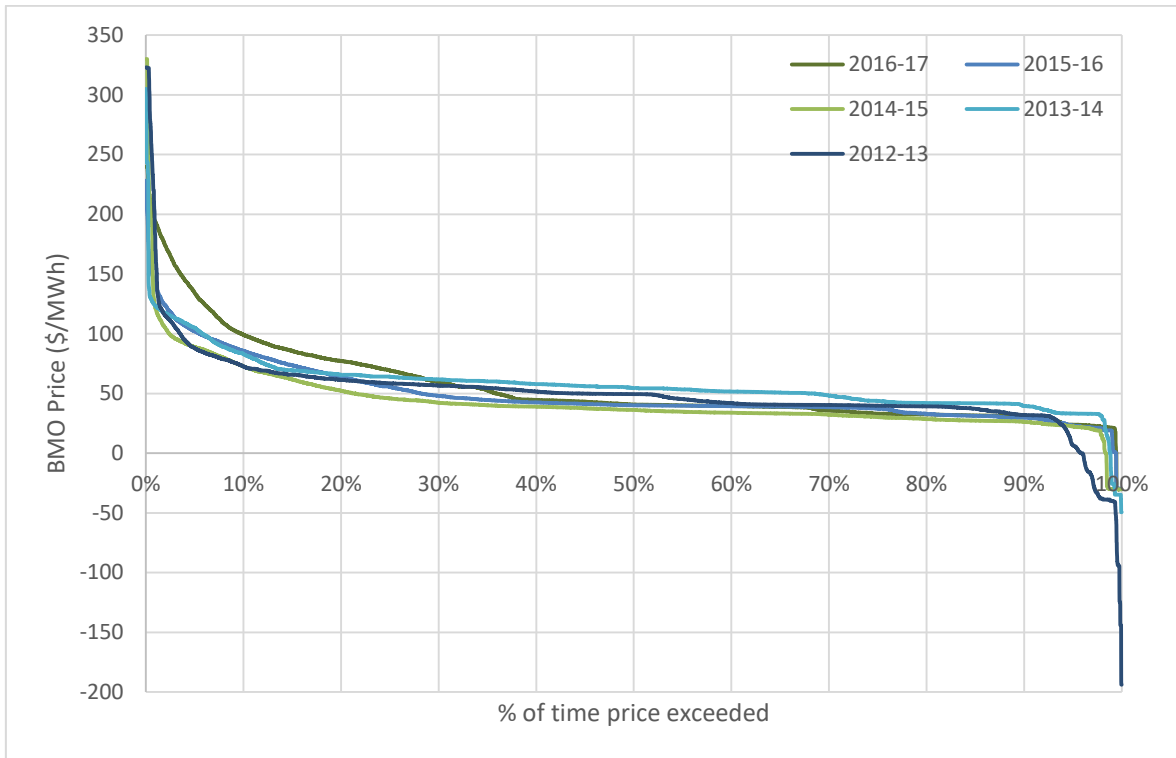
Average balancing market prices were comparable to those when the carbon pricing mechanism was in effect.¹ While average pricing outcomes are similar in both periods, the price distribution is not. In 2015-16, the balancing price in three quarters of intervals was below \$55/MWh. In 2016-17, the balancing price in three quarters of intervals was below \$70/MWh.

Under the carbon pricing mechanism, the price distribution was fairly stable. There was a greater incidence of intervals priced between \$50 and \$75 dollars per MWh in comparison to the period following the repeal of the carbon pricing mechanism. It was the intervals priced between \$50 and \$75 that increased weighted average prices relative to the period after its repeal. Although weighted average prices in 2016-17 were similar to 2013-14, this is driven by an increased frequency of higher priced intervals; those priced between \$125 and \$225 per MWh.

Figure 3 shows the price duration curves for the balancing market from its start in 2012-13 to 2016-17. The curve for 2016-17 shows a distinct uplift for prices for the highest quartile of intervals (the left most quarter of the horizontal axis). This increase in pricing is not matched by a comparable increase in demand (shown in Figure 4).

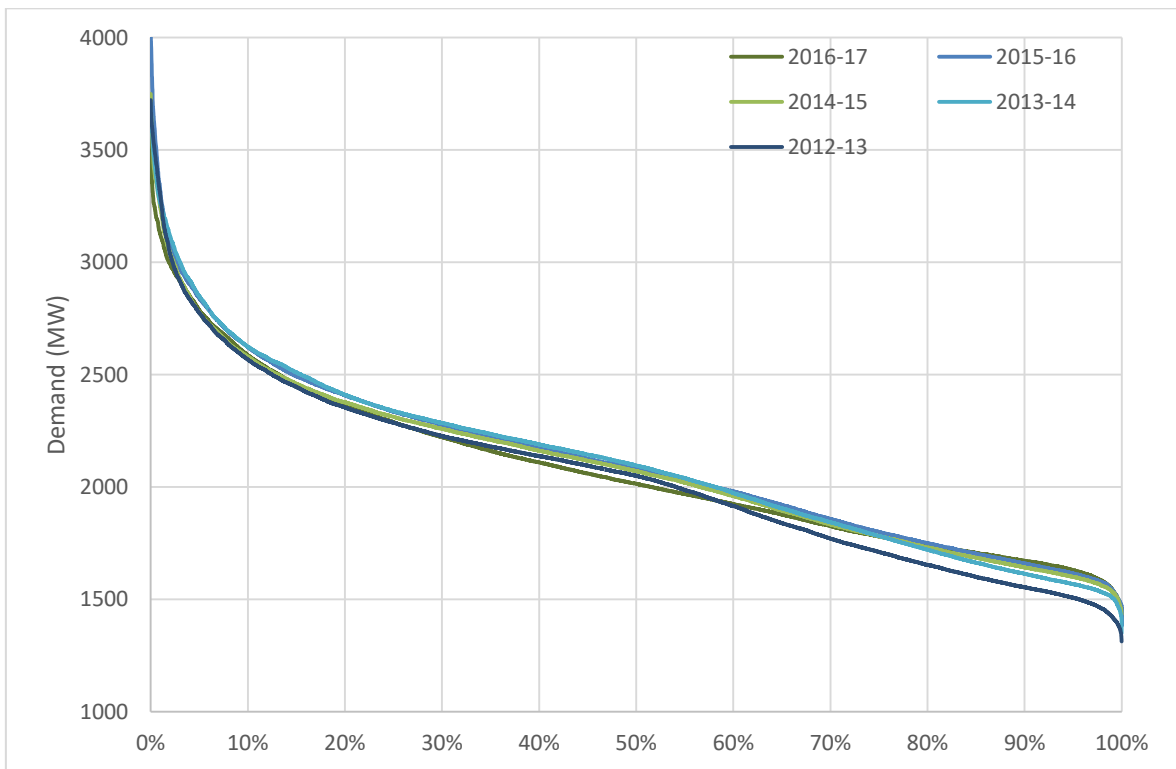
¹ The carbon pricing mechanism was an emissions trading scheme that put a price on the carbon emissions produced by liable large business and industrial facilities (including from electricity generation) in the 2012-13 and 2013-14 financial years. For each financial year, these entities were required to surrender one eligible emissions unit for every tonne of carbon dioxide equivalent that they produced. In 2012-13, carbon units could be purchased for a fixed price of \$23 per unit, and in 2013-14, they could be purchased for \$24.15 per unit. The mechanism was repealed, with effect from 1 July 2014. See: <http://www.cleanenergyregulator.gov.au/Infohub/CPM/About-the-mechanism>

Figure 3 – Price duration curves 2012-13 to 2016-17



Source: AEMO

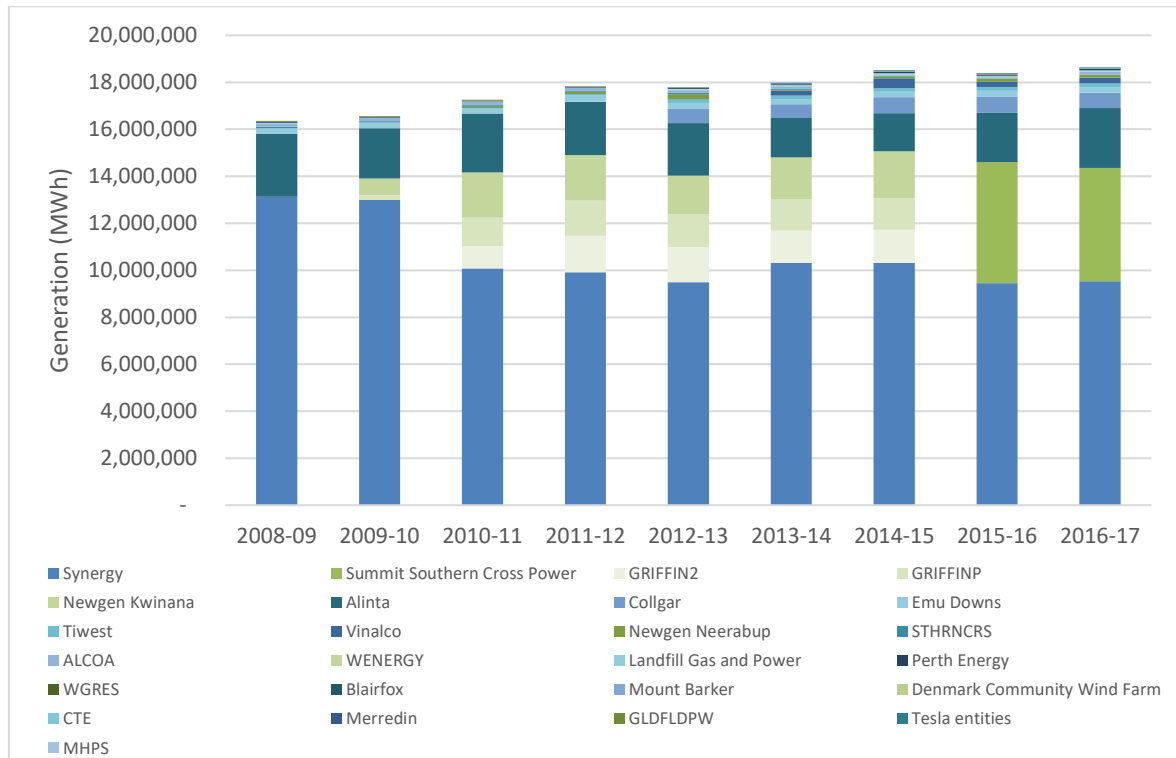
Figure 4 – Load duration curves 2012-13 to 2016-17



Source: AEMO

Figure 5 shows generation by market participant. Synergy continues to generate around half of all electricity in the market. Collectively, Summit Southern Cross Power, Alinta Energy and Synergy generate around 90% of electricity in the Wholesale Electricity Market. Summit Southern Cross Power generated marginally less in 2015-16 due to the extended outage of Bluewaters Unit 2. Otherwise, the outcomes are largely unchanged in comparison to 2015-16.

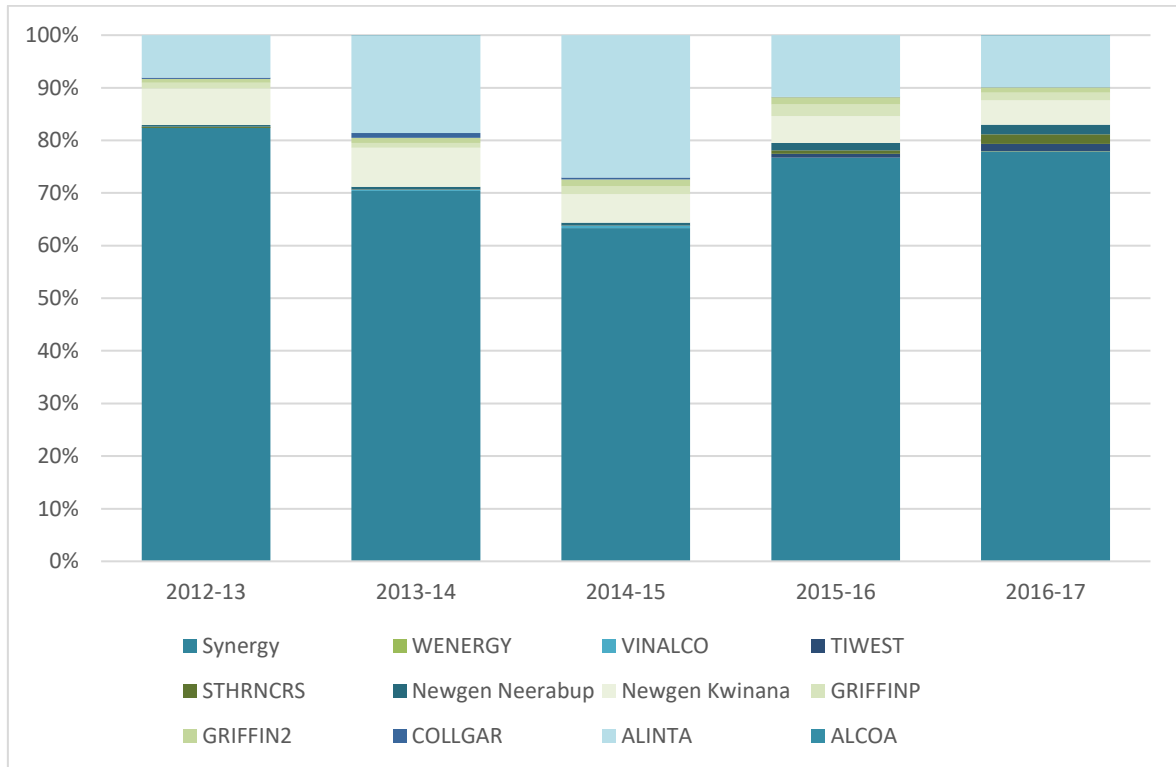
Figure 5 – Generation by participant (SCADA output)



Source: AEMO

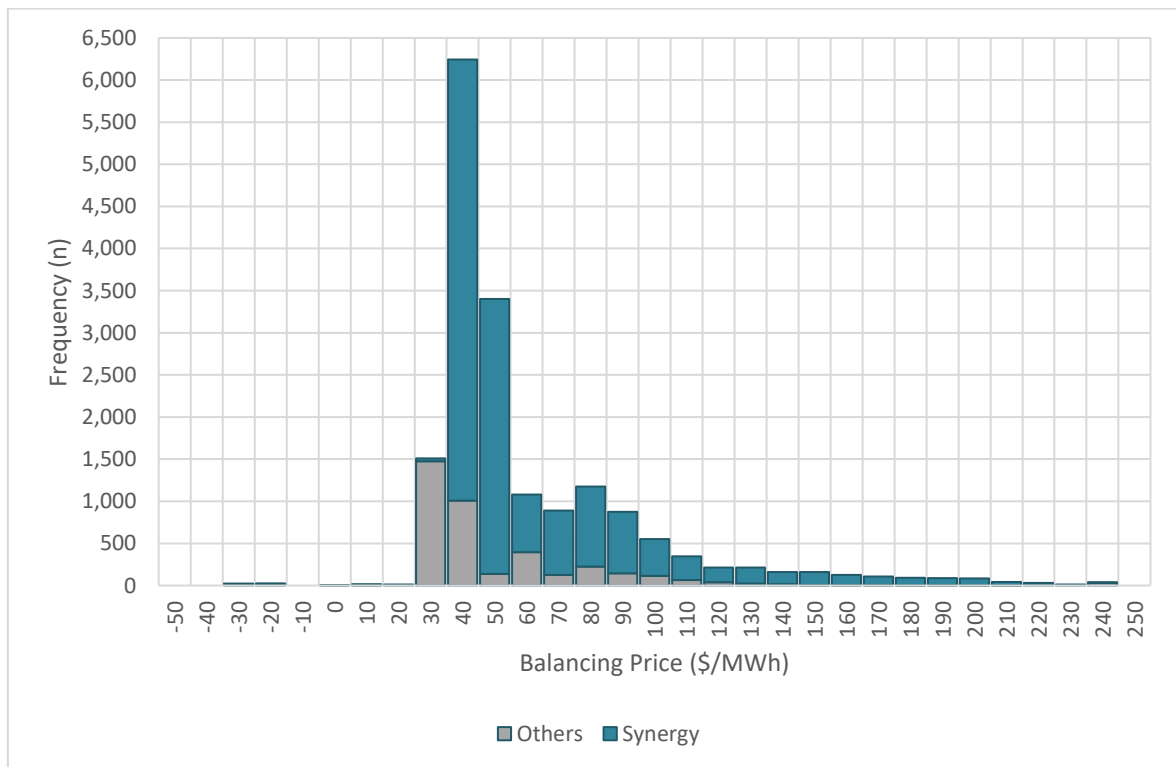
Synergy continues to set the prices in the market three quarters of the time (Figure 6). This is unchanged since 2015-16. Figure 7 shows the distribution of marginal prices, by price band, for Synergy and other market participants. The distribution of marginal prices indicates that Synergy may face limited competitive tension between \$40/MWh and the cap.

Figure 6 – Balancing Market marginal generator



Source: AEMO

Figure 7 – Distribution of marginal price by market participant

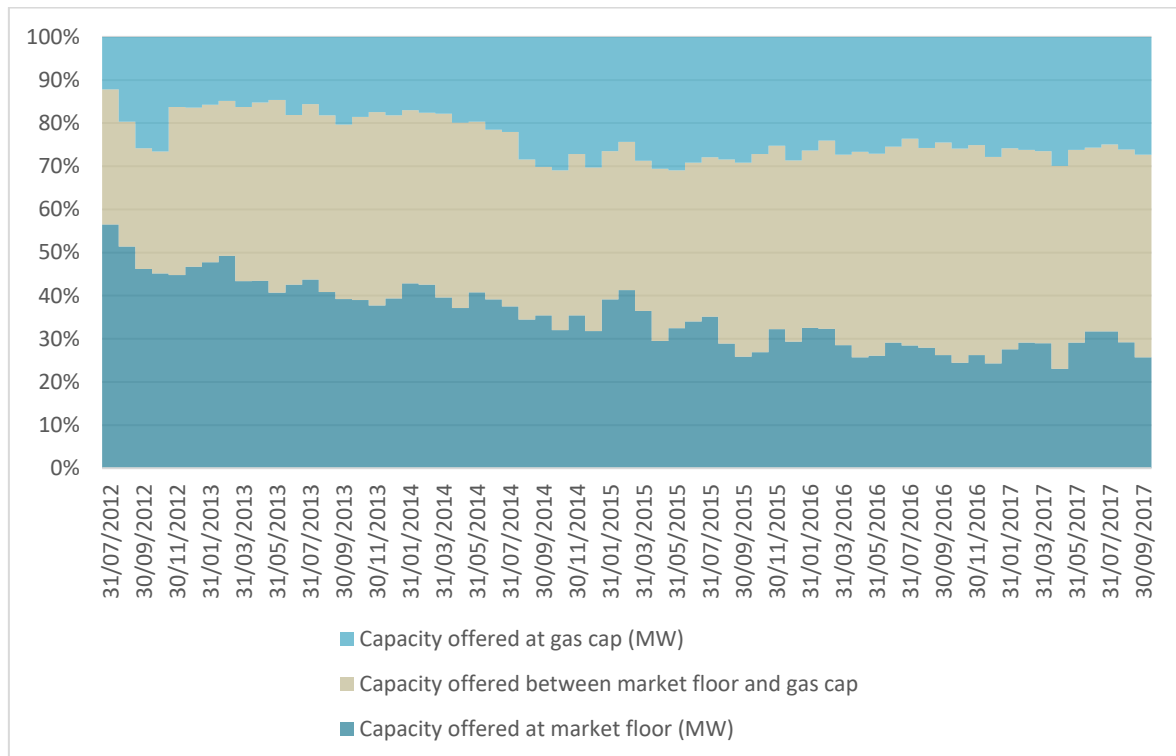


Source: AEMO

Figure 8 shows the proportion of pricing at the floor, between the floor and MAX_STEM (the non-liquid or gas price cap) and at the gas cap. This shows the proportion of capacity bid at the max STEM price increased from around 20 per cent to 30 per cent coinciding with the repeal of the carbon pricing mechanism. The proportion of capacity bid at the cap has changed little since mid-2014. Almost all liquid capacity is bid at the liquid cap.

There are indications that the gas spot market price has been fairly low at just over \$4/GJ, with limited volatility since April 2016.² With high balancing market prices and low fuel prices, the proportion of capacity offered at the cap should reduce, instead of staying constant as shown in Figure 8.

Figure 8 – Proportion of generation bid at the market cap.



Source: AEMO

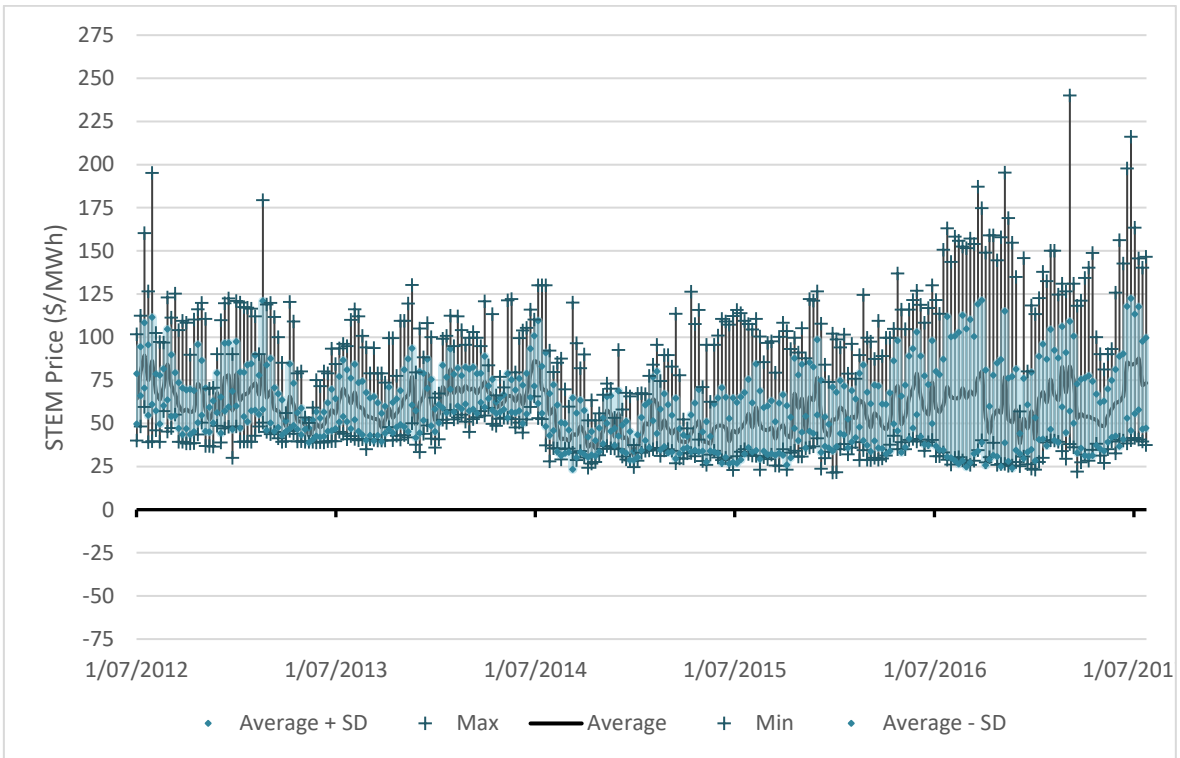
2. Short Term Energy Market

Outcomes in the STEM mirror those in the balancing market. Figure 9 and Figure 10 show weekly average STEM prices, one standard deviation around the average, and maximum and minimum values for peak and off-peak intervals from 2012-13 to 2016-17.

Peak STEM prices were higher in 2016-17 than in the years since the repeal of the carbon pricing mechanism. The volatility, particularly during peak periods, is higher than in 2015-16. Despite higher prices, trading patterns remain largely unchanged since early 2015 (Figure 11).

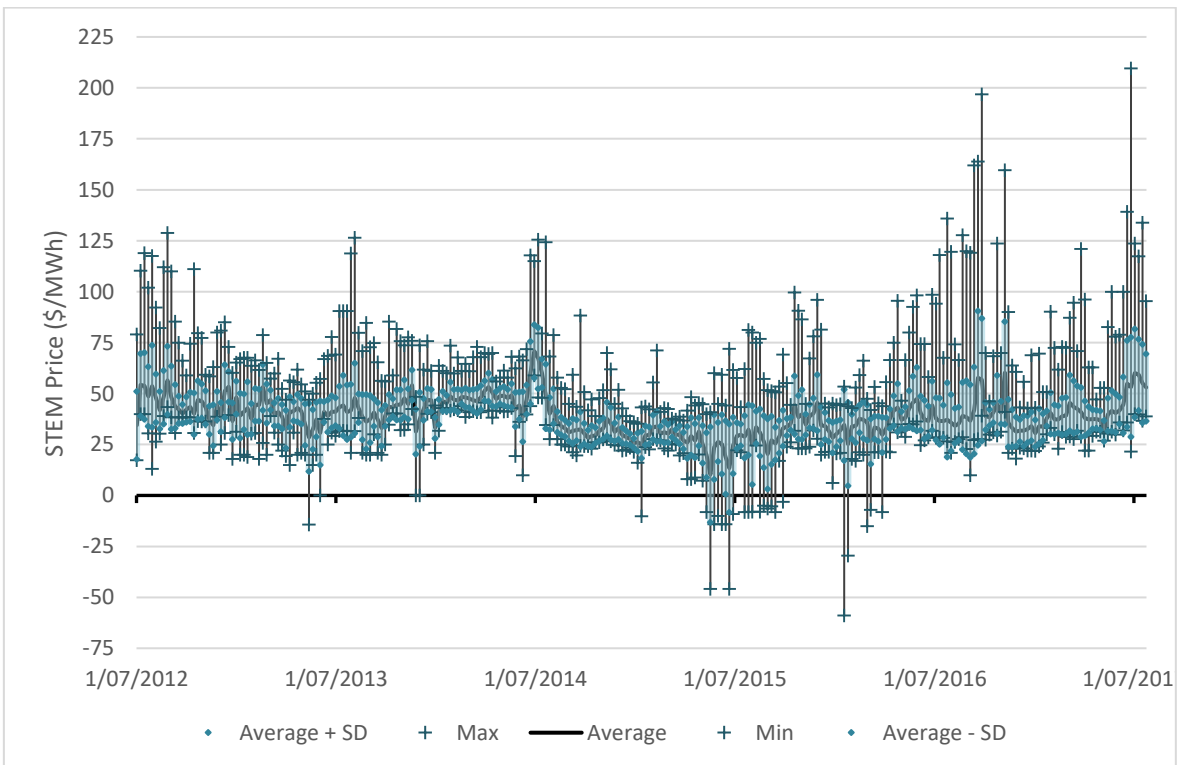
² Gas trading provides some market indications on prices, price range and volumes. This indicates very small spread between the minimum and maximum prices since April 2016 in response to similar demand conditions since late 2014 early 2015. <http://www.gastrading.com.au/spot-market/historical-prices-and-volume.html>

Figure 9 – STEM Weekly summary data – peak intervals



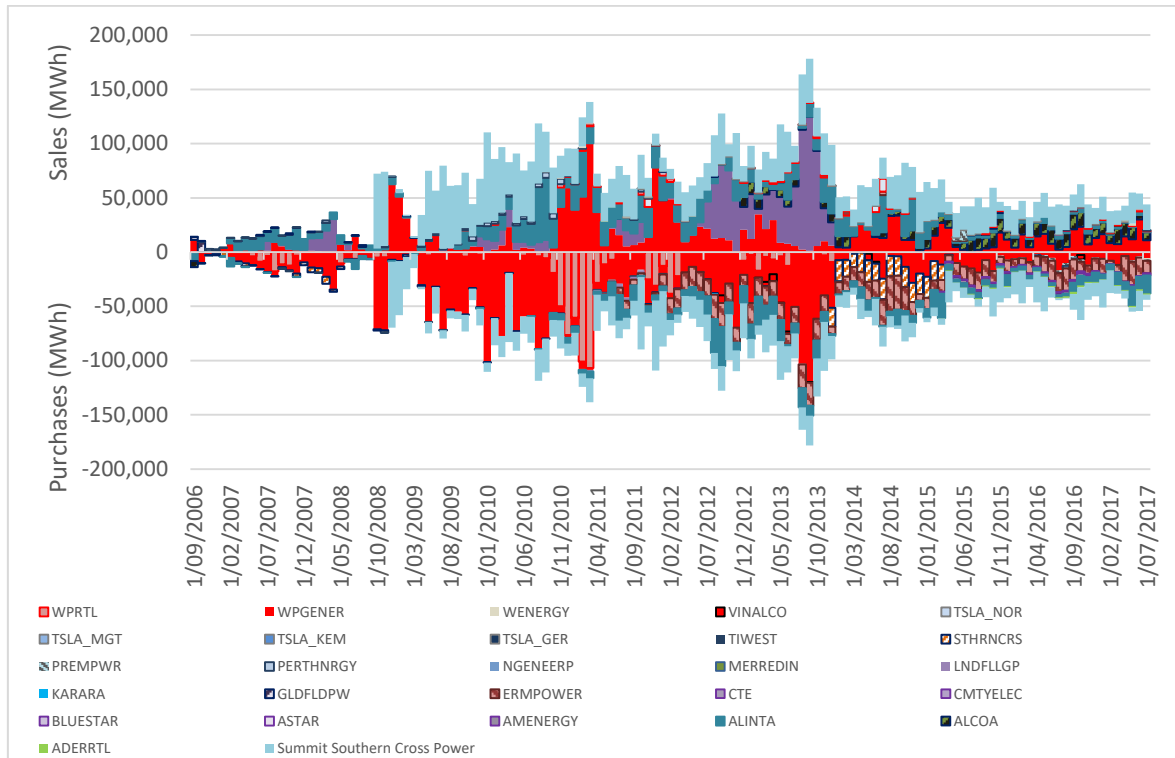
Source: AEMO

Figure 10 – STEM Weekly summary data – off-peak intervals



Source: AEMO

Figure 11 – Monthly STEM activity by market participant

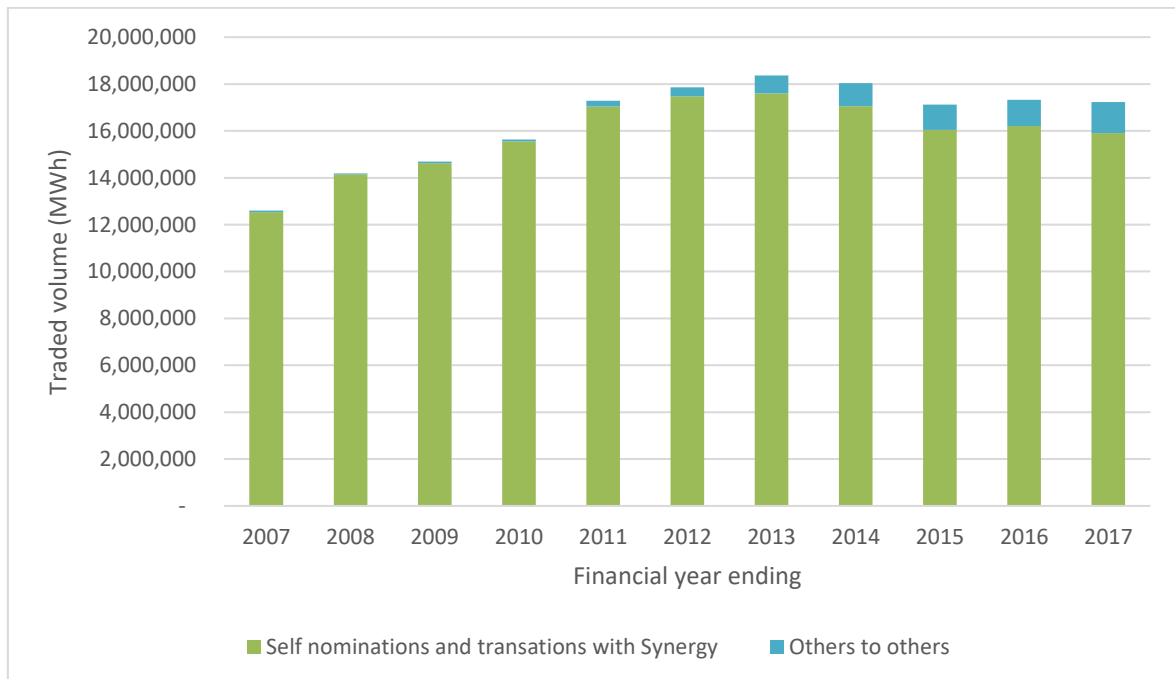


Source: AEMO

3. Bilateral trading

Figure 12 shows bilaterally traded quantities aggregated into nominations between Synergy's generation and retail arms (self-nominations), bilateral sales to and from Synergy by other participants, and bilateral sales between other market participants.

Self-nominations comprise the largest single block of bilateral trades, followed by trades from mid-sized participants to Synergy, and from Synergy to mid-sized participants. The self-nominated volume is gradually reducing over time, whilst volumes supplied by Synergy to others increased in 2016-17 by [REDACTED]. There have also been slight increases in the 'others to Synergy' and 'others to others' categories.

Figure 12 – Scheduled bilateral quantities (aggregated)

Source: AEMO

4. Ancillary services

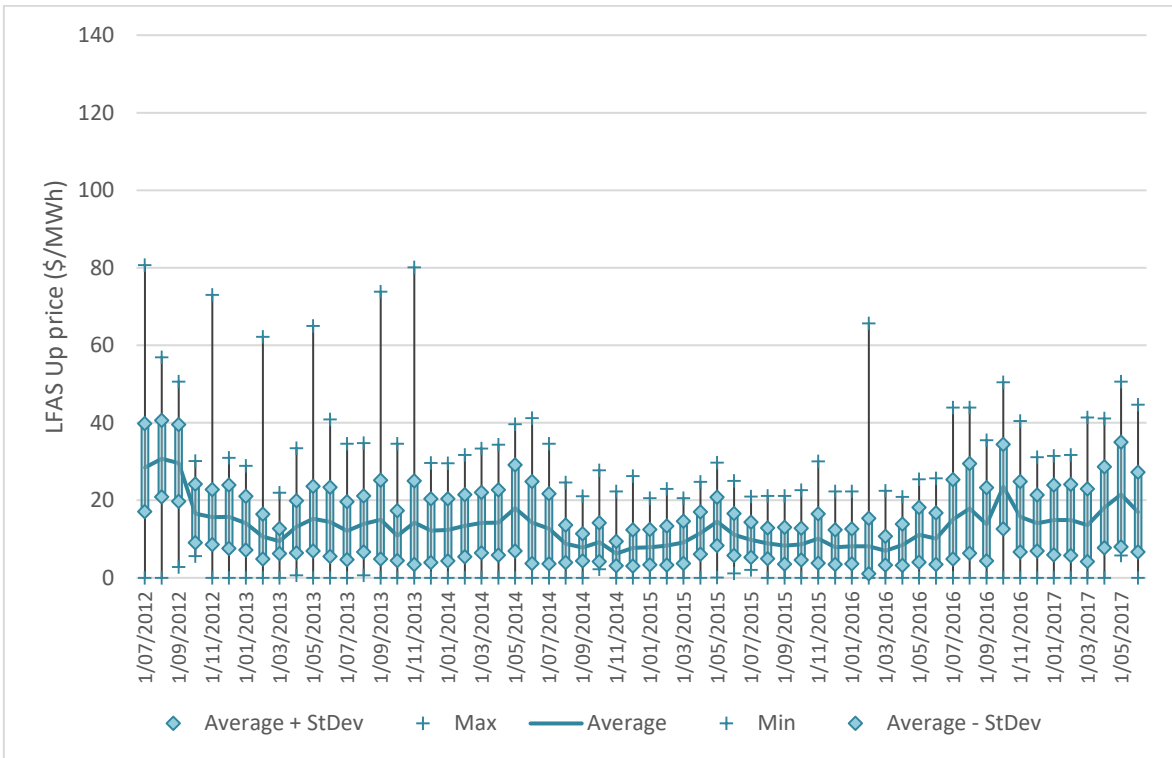
There was a step change in Load Following Ancillary Service (LFAS) costs in the 2016-17 financial year, with an associated increase in LFAS price volatility (Figure 16 shows monthly spinning reserve payments. Spinning reserve costs changed in 2015 following plant retirement and a method change correcting for generation plant that provide LFAS but are incapable of providing spinning reserve.

Figure 13 and Figure 14). The change is not marked in the LFAS up summary data. However, in the case of LFAS down, the 2016-17 prices are generally more than double those observed in 2015-16, when prices were relatively stable.

Synergy set the price in nearly all intervals. Although there are private sector load following providers, Synergy is the pivotal supplier and its generation is needed to meet LFAS quantities. Figure 15 shows monthly LFAS payments.

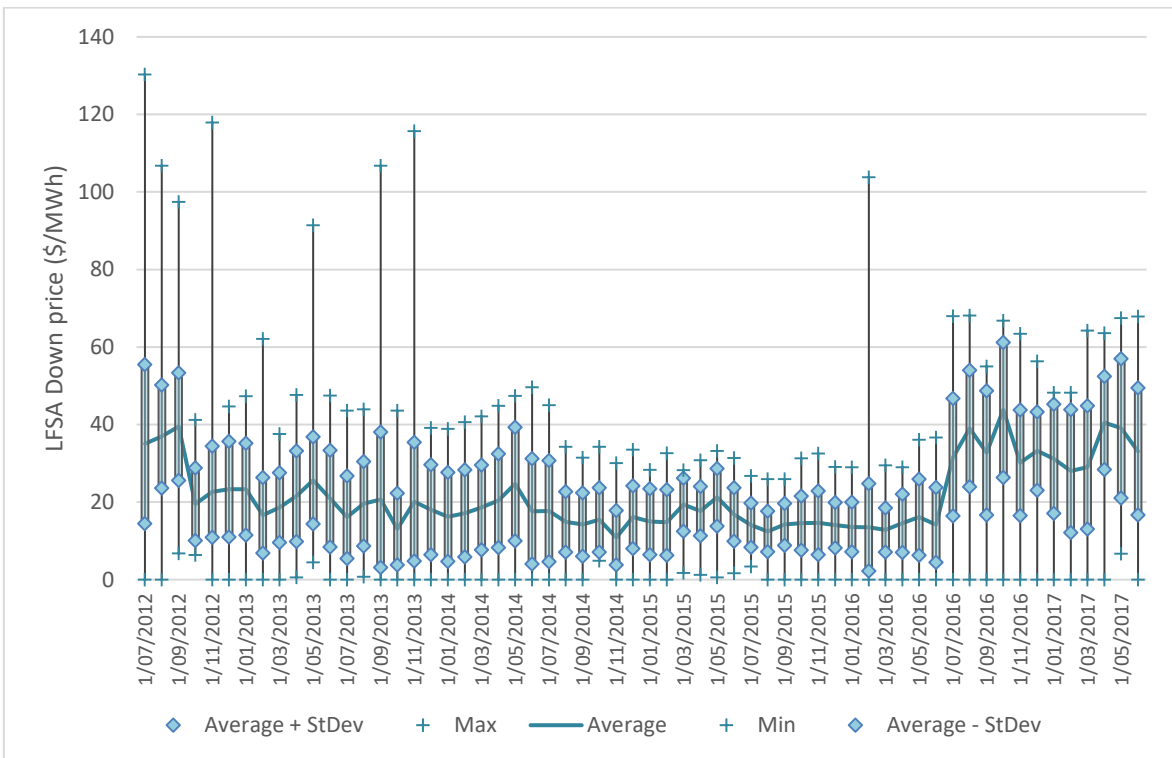
Figure 16 shows monthly spinning reserve payments. Spinning reserve costs changed in 2015 following plant retirement and a method change correcting for generation plant that provide LFAS but are incapable of providing spinning reserve.

Figure 13 – Monthly LFAS Up summary data



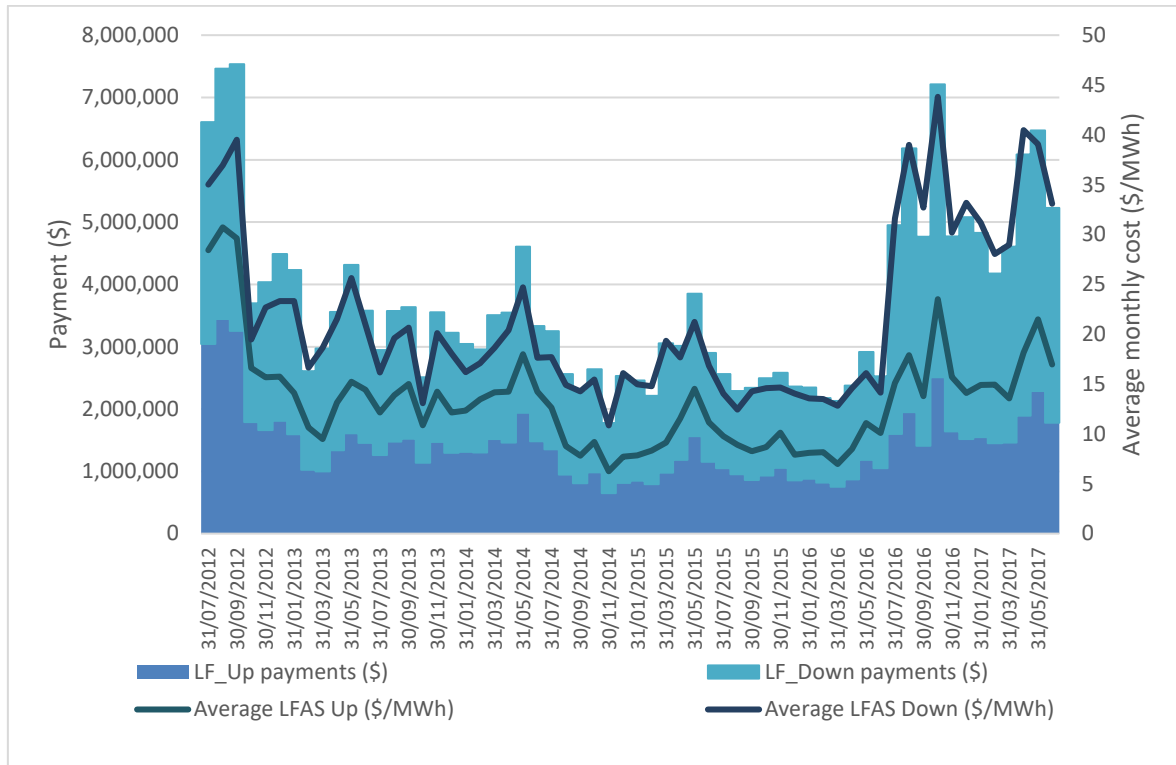
Source: AEMO

Figure 14 – Monthly LFAS Down summary data



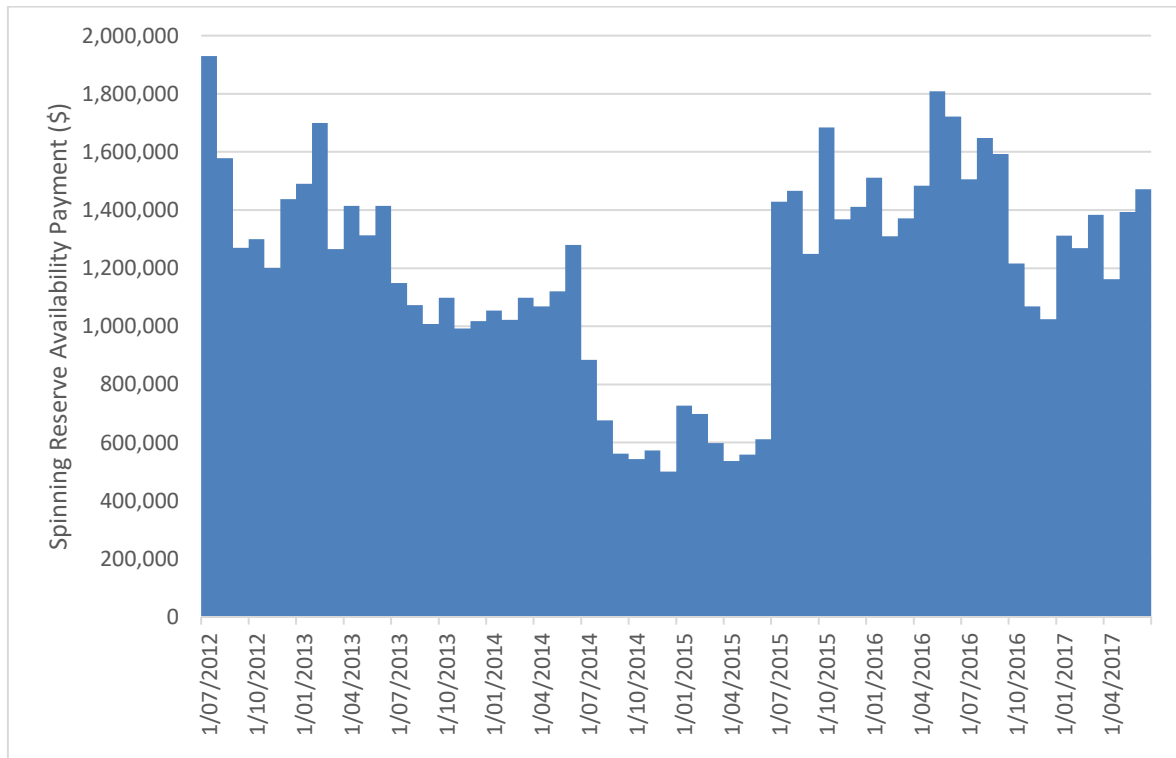
Source: AEMO

Figure 15 – Monthly LFAS payments



Source: AEMO

Figure 16 – Monthly spinning reserve payments



Source: AEMO

5. Outages

Outages by participant, facility and type are summarised in Table 1. The outage for Bluewaters Unit 1 was the most pronounced outage in 2016-17. Other generators with outages exceeding 15% included Cockburn CCG1, Kemerton GT12, Kwinana GT2 and GT3, Pinjar GT11, Pinjar GT9, and Muja G1 and G8. The planned outages for Pinjar GT9 and Muja G1 were substantial, with plant unavailable for around one third of the year (Pinjar GT9) and two fifths of the year (Muja G1).

Table 1 – Outages by type, participant and facility 2012-13 to 2016-17

PARTICIPANT	FACILITY NAME	INSTALLED CAPACITY (MW)	FORCED OUTAGES (%)					PLANNED OUTAGES (%)					EQUIVALENT UNAVAILABILITY FACTOR (%)					AVERAGE UNAVAILABLE CAPACITY (MW)				
			2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17
ALCOA	ALCOA_WGP	25	0.04	0.25	0.01	0.02	0.03	0.30	0.09	0.03	0.01	0.00	0.33	0.34	0.05	0.03	0.03	8.3	8.6	1.2	0.9	0.9
ALINTA	ALINTA_PNJ_U1	143	0.00	0.00	0.00	0.00	0.00	0.05	0.14	0.09	0.07	0.03	0.05	0.14	0.09	0.07	0.03	7.8	20.3	13.1	9.6	3.7
	ALINTA_PNJ_U2	143	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.06	0.09	0.02	0.13	0.13	0.06	0.10	0.03	18.3	18.8	9.0	13.6	3.7
	ALINTA_WGP_GT	190	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07	0.04	0.06	0.03	0.07	0.07	0.05	0.07	4.9	12.4	13.4	9.3	12.5
	ALINTA_WGP_U2	190	0.01	0.01	0.00	0.00	0.00	0.02	0.07	0.07	0.03	0.06	0.03	0.07	0.07	0.04	0.07	5.6	13.7	13.5	7.3	12.5
	ALINTA_WWF	89.1	-	0.00	0.00	0.00	-	-	0.00	0.00	-	-	-	0.00	0.00	0.00	0.00	-	0.0	0.2	0.1	0.0
COLLGAR	INVESTECH_COLLGAR_WF1	206	0.00	-	0.00	-	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	1.0	0.3	0.5	0.0	-
EDWFMAN	EDWFMAN_WF1	80	0.00	-	-	-	-	-	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.3	0.1	-	0.0	0.0
GLDFLDPW	PRK_AG	68	-	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.02	0.02	0.2	0.2	0.4	1.6	1.6
Summit Southern Cross Power	BW2_BLUEWATERS_G1	217	0.00	0.00	0.01	0.01	0.46	0.11	0.09	0.08	0.11	0.10	0.12	0.10	0.09	0.12	0.56	25.7	21.3	20.6	26.8	122.4
	BW1_BLUEWATERS_G2	217	0.05	0.02	0.00	0.00	0.01	0.09	0.13	0.09	0.16	0.02	0.14	0.15	0.09	0.16	0.03	30.1	32.4	20.5	35.5	7.1
	NEWGEN_KWINANA_CC G1	335	0.00	0.01	0.00	0.01	0.00	0.03	0.02	0.03	0.14	0.06	0.04	0.03	0.03	0.15	0.06	12.2	8.7	9.0	50.8	21.3
MERREDIN	NAMKKN_MERR_SG1	82	0.01	0.01	0.00	0.01	0.01	0.03	0.03	0.09	0.07	0.02	0.04	0.05	0.09	0.08	0.03	3.2	3.8	7.7	6.7	2.5
NGENEERP	NEWGEN_NEERABUP_GT1	342	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.01	0.02	0.01	0.05	0.06	0.01	0.02	0.01	17.1	20.1	4.2	6.8	3.6
STHRNCRS	STHRNCRS_EG	23	0.03	0.00	-	-	-	0.03	0.00	-	-	-	0.06	0.00	-	-	-	1.3	0.1	-	-	-
TIWEST	TIWEST_COG1	42.1	0.01	0.06	0.02	0.01	0.01	0.02	0.07	0.01	0.01	0.09	0.03	0.13	0.03	0.02	0.10	1.2	5.5	1.3	0.9	4.3
TSLA_GER	TESLA_GERALDTON_G1	9.9	-	-	-	-	-	0.25	0.04	0.02	0.01	0.02	0.25	0.04	0.04	0.01	0.03	2.5	0.3	0.4	0.1	0.3
TSLA_KEM	TESLA_KEMERTON_G1	9.9	-	-	-	-	-	0.09	0.01	0.01	0.01	0.01	0.10	0.01	0.01	0.01	0.02	1.0	0.1	0.1	0.1	0.2

PARTICIPANT	FACILITY NAME	INSTALLED CAPACITY (MW)	FORCED OUTAGES (%)					PLANNED OUTAGES (%)					EQUIVALENT UNAVAILABILITY FACTOR (%)					AVERAGE UNAVAILABLE CAPACITY (MW)				
			2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17
TSLA_MGT	TESLA_PICTON_G1	9.9	-	-	-	-	-	0.02	0.02	0.01	0.00	0.01	0.02	0.02	0.01	0.02	0.01	0.2	0.2	0.1	0.2	0.1
TSLA_NOR	TESLA_NORTHAM_G1	9.9	-	-	-	-	-	0.05	0.01	0.01	0.05	0.02	0.05	0.02	0.01	0.05	0.03	0.5	0.2	0.1	0.5	0.3
WENERGY	PERTHENERGY_KWINANA_GT1	116	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.01	0.09	0.07	0.03	0.01	0.01	0.09	0.10	3.2	1.7	1.3	10.4	11.2
Synergy	ALBANY_WF1	21.6	-	-	-	-	-	0.00	-	-	-	-	0.00	0.00	-	0.00	0.00	0.0	0.0	-	0.0	0.0
	COCKBURN_CCG1	236.6	0.00	0.00	0.00	0.00	0.01	0.03	0.08	0.06	0.13	0.18	0.04	0.09	0.07	0.13	0.18	9.4	20.2	15.7	30.8	43.4
	COLLIE_G1	318	0.01	0.02	0.01	0.01	0.00	0.03	0.16	0.05	0.07	0.08	0.04	0.18	0.06	0.08	0.09	12.8	56.5	19.5	25.3	28.0
	GERALDTON_GT1	15.9	-	0.01	0.57	0.16	-	0.15	0.03	0.01	-	-	0.15	0.06	0.59	0.16	-	2.4	0.9	9.3	2.6	-
	GRASMERE_WF1	13.8	-	-	-	-	-	0.00	-	-	-	-	0.00	0.00	-	0.00	0.00	0.0	0.0	-	0.0	0.0
	KEMERTON_GT11	154	0.00	-	0.00	0.00	0.00	0.13	0.01	0.05	0.03	0.14	0.13	0.01	0.05	0.03	0.14	19.8	2.1	8.0	5.3	21.6
	KEMERTON_GT12	154	0.00	-	0.00	0.00	0.00	0.01	0.16	0.01	0.03	0.16	0.02	0.16	0.01	0.03	0.16	2.8	24.6	1.5	5.2	24.5
	KWINANA_G5	177.5	0.05	0.05	0.02	-	-	0.08	0.08	-	-	-	0.12	0.14	0.02	-	-	22.2	25.7	2.9	-	-
	KWINANA_G6	184	0.03	0.02	0.02	-	-	0.13	0.19	0.10	-	-	0.16	0.22	0.12	-	-	30.0	39.7	21.6	-	-
	KWINANA_GT1	20.8	0.00	0.01	0.04	-	0.03	0.16	0.04	0.07	0.08	0.01	0.16	0.05	0.11	0.08	0.05	3.3	1.1	2.2	1.6	1.0
	KWINANA_GT2	100.1	0.02	0.01	0.01	0.02	0.02	0.07	0.24	0.17	0.18	0.16	0.09	0.25	0.18	0.20	0.19	9.1	24.5	17.7	20.3	18.6
	KWINANA_GT3	100.1	0.03	0.01	0.04	0.03	0.01	0.05	0.19	0.13	0.12	0.18	0.09	0.20	0.18	0.15	0.19	8.7	19.6	17.8	15.4	19.0
	MUJA_G5	195.7	0.01	0.02	0.02	0.08	0.00	0.14	0.23	0.05	0.14	0.04	0.15	0.24	0.07	0.23	0.05	29.5	47.4	14.0	45.1	9.1
	MUJA_G6	190.75	0.01	0.01	0.21	0.02	0.01	0.47	0.05	0.02	0.22	0.04	0.47	0.06	0.23	0.24	0.05	90.3	10.9	43.9	46.2	10.2
	MUJA_G7	211	0.03	0.00	0.23	0.01	0.00	0.03	0.09	0.21	0.14	0.14	0.06	0.09	0.44	0.15	0.14	11.8	19.8	91.9	31.2	30.2
	MUJA_G8	211	0.02	0.02	0.06	0.01	0.00	0.07	0.02	0.31	0.11	0.17	0.09	0.05	0.36	0.12	0.17	19.9	10.0	77.0	25.1	35.5
	MUNGARRA_GT1	37.2	-	0.01	-	0.02	0.00	0.09	0.09	0.14	0.00	0.03	0.09	0.10	0.14	0.02	0.03	3.3	3.6	5.2	0.8	1.2
	MUNGARRA_GT2	37.2	0.00	0.00	0.00	0.01	0.01	0.00	0.09	0.01	0.00	0.02	0.01	0.09	0.01	0.01	0.03	0.2	3.4	0.5	0.3	1.1
MUNGARRA_GT3	38.2	0.00	0.02	0.01	0.00	-	0.17	0.01	0.10	0.06	0.03	0.17	0.02	0.11	0.06	0.03	6.6	0.8	4.2	2.3	1.0	
PINJAR_GT1	37.2	0.00	-	0.01	0.00	0.00	0.01	0.04	0.00	0.06	-	0.01	0.04	0.01	0.06	0.00	0.5	1.6	0.3	2.4	0.0	
PINJAR_GT10	116	0.00	0.01	0.01	0.01	0.01	0.09	0.37	0.00	0.07	0.09	0.09	0.37	0.01	0.07	0.09	10.4	43.3	1.3	8.6	10.6	
PINJAR_GT11	123	0.00	0.00	0.06	0.01	0.01	0.06	0.11	0.08	0.10	0.18	0.06	0.11	0.14	0.11	0.19	7.5	13.8	17.7	13.2	23.9	

PARTICIPANT	FACILITY NAME	INSTALLED CAPACITY (MW)	FORCED OUTAGES (%)					PLANNED OUTAGES (%)					EQUIVALENT UNAVAILABILITY FACTOR (%)					AVERAGE UNAVAILABLE CAPACITY (MW)				
			2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17
	PINJAR_GT2	37.2	-	0.00	0.01	0.00	-	0.06	0.05	0.00	0.06	0.00	0.06	0.06	0.01	0.06	0.00	2.1	2.1	0.2	2.2	0.1
	PINJAR_GT3	38.2	-	0.00	0.00	0.01	0.01	0.13	0.00	0.10	0.03	0.00	0.13	0.00	0.10	0.05	0.01	5.0	0.1	3.9	1.9	0.4
	PINJAR_GT4	38.2	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.21	0.03	0.00	0.07	0.01	0.22	0.03	0.01	2.7	0.2	8.3	1.3	0.3
	PINJAR_GT5	38.2	-	0.00	0.00	-	-	0.06	0.00	0.00	0.09	0.00	0.06	0.01	0.00	0.09	0.00	2.3	0.2	0.1	3.5	0.1
	PINJAR_GT7	38.2	0.00	0.00	0.00	0.00	0.00	0.01	0.10	0.00	0.00	0.04	0.01	0.10	0.00	0.01	0.04	0.5	3.7	0.1	0.3	1.4
	PINJAR_GT9	116	0.00	0.00	0.03	0.03	0.01	0.19	0.01	0.21	0.02	0.35	0.19	0.01	0.24	0.04	0.36	22.5	1.3	27.8	4.8	41.3
	PPP_KCP_EG1	85.7	0.01	0.00	0.02	-	0.00	0.09	0.06	0.05	0.04	0.02	0.10	0.06	0.07	0.04	0.02	8.3	4.9	6.0	3.1	2.0
	SWCJV_WORSLEY_COGEN_COG1	116.4	0.00	0.00	0.01	-		0.03	0.07	0.02	0.02	-	0.03	0.07	0.03	0.02	-	3.9	8.0	3.1	2.9	-
	WEST_KALGOORLIE_GT2	38.2	-	0.02	0.01	0.00	0.00	0.09	0.09	0.03	0.00	0.00	0.09	0.11	0.04	0.03	0.01	3.6	4.4	1.6	1.0	0.2
	WEST_KALGOORLIE_GT3	24.6	0.00	0.01	0.00	0.01	0.02	0.23	0.02	0.03	0.00	0.03	0.23	0.03	0.04	0.02	0.06	5.7	0.8	1.0	0.6	1.4
VINALCO	MUJA_G1	55	0.74	0.68	0.05	0.00	0.00	-	-	0.05	0.02	0.42	0.74	0.68	0.11	0.02	0.42	40.8	37.2	5.8	0.9	23.1
	MUJA_G2	55	0.74	0.59	0.02	0.02	0.02	-	0.00	0.03	0.00	0.07	0.74	0.59	0.10	0.02	0.08	40.8	32.2	5.3	0.8	4.5
	MUJA_G3	55	0.50	0.05	0.02	0.00	0.00	0.04	0.10	0.04	0.02	0.12	0.54	0.14	0.05	0.02	0.13	29.8	7.9	2.9	1.0	7.1
	MUJA_G4	55	0.38	0.05	0.01	0.00	0.01	0.07	0.05	0.02	0.09	0.07	0.45	0.10	0.03	0.09	0.08	25.0	5.2	1.6	5.2	4.3
GRNOUGH	GREENOUGH_RIVER_PV1	10	-	0.00	-	-	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-	0.0	0.0	0.0	-
MUMBIDA	MWF_MUMBIDA_WF1	55	-	-	0.00	0.00	-	-	-	0.00	0.00	-	-	-	0.00	0.00	-	-	-	0.3	0.1	-

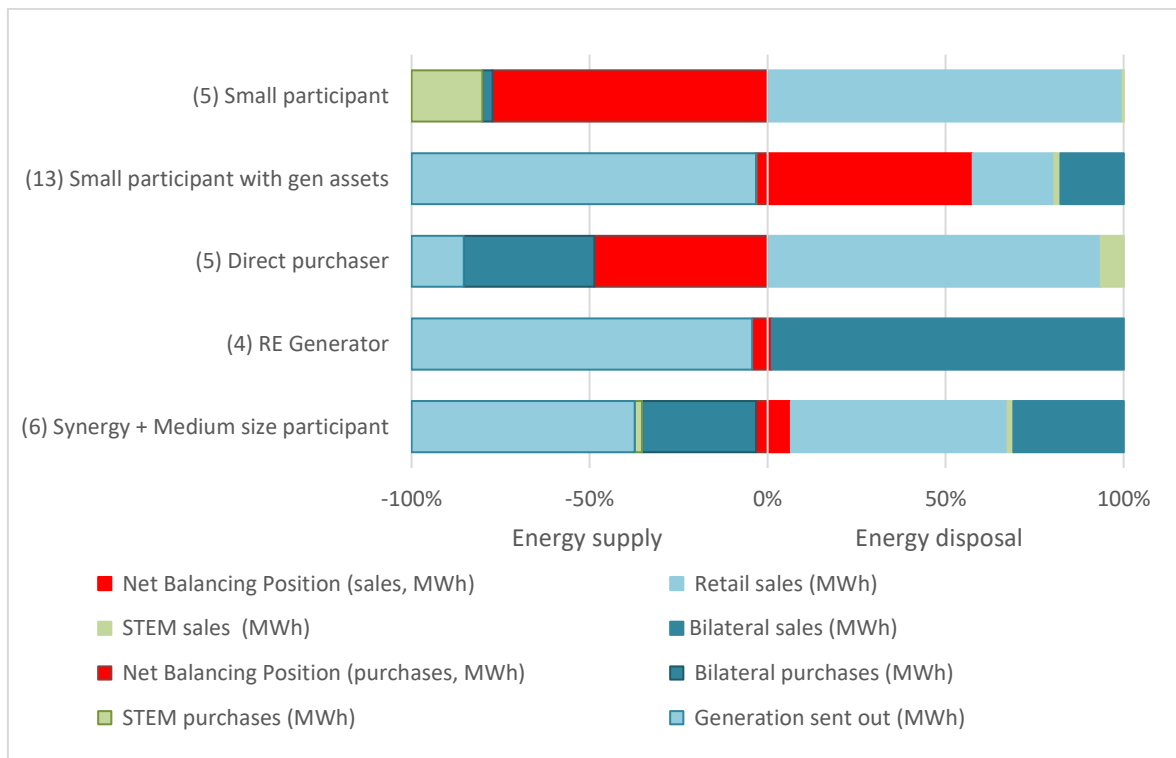
6. Market participant activity

Wholesale Electricity Market activity by market participant type is shown in Figure 17, where market participants are grouped into:

- small participants with a market share below 2.5%;
- small participants with generation assets with a market share below 2.5%;
- large entities that purchase directly from the balancing market (these may or may not have generation assets);
- renewable energy generators;
- medium sized participants; and
- Synergy and its subordinate entities.

Small market participants remain largely unhedged and source their generation from either the STEM or balancing market. Since 2015-16, one small market participant has registered no trading activity, although it continues to be registered. Synergy remains long on generation, with output that could hedge other market participants traded in the balancing market.

Figure 17 – Market activity by participant class (proportion of total energy supply and disposal in MWh)

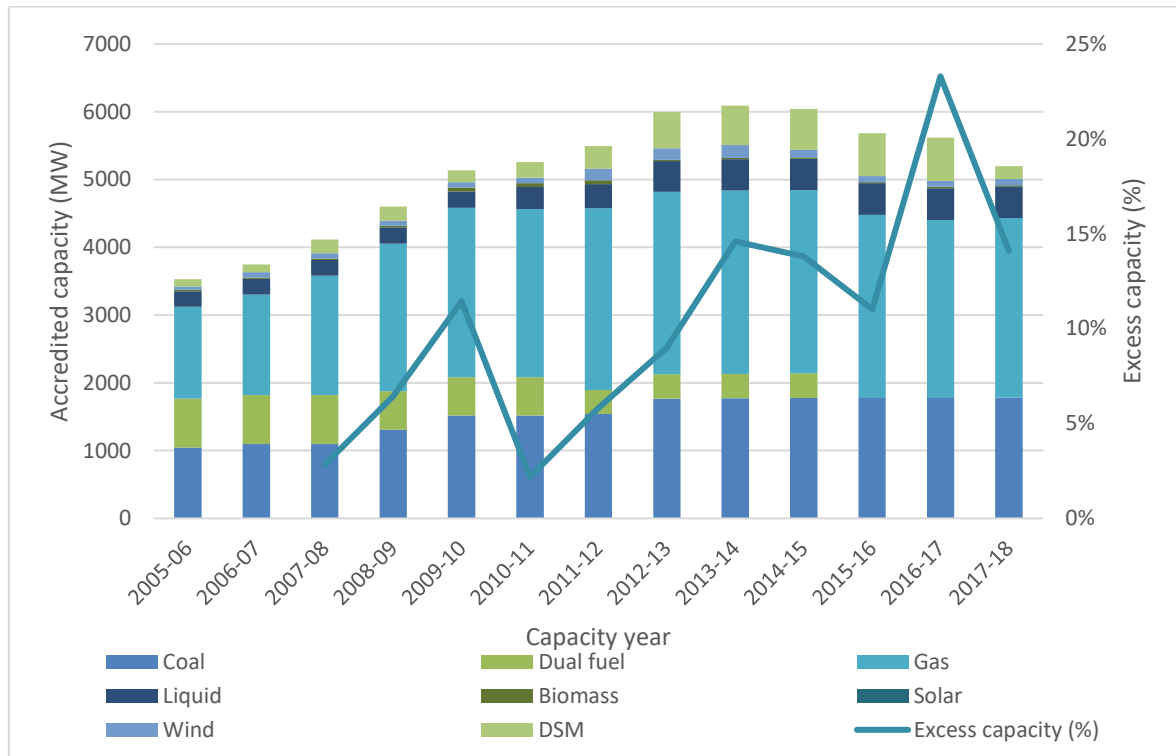


7. Reserve capacity mechanism

Figure 18 illustrates the amount of capacity procured since the commencement of the market.

Since the 2010-11 capacity year, AEMO has procured a growing amount of excess capacity, beyond the reserve capacity requirement. In capacity year 2016-17, the amount of excess capacity peaked at 23 per cent of the reserve capacity requirement.

Figure 18 - Historical accredited capacity by fuel type and excess capacity



8. Specific events and behaviours

On 1 September 2017, the Electricity Review Board (ERB) handed down its decisions on the Independent Market operator's (IMO's) applications on Vinalco Energy's Pty Limited (Vinalco's) offers into the balancing market while constrained on out of merit for two periods in 2014.

The ERA had previously found that Vinalco had offered prices into the balancing above its reasonable expectations of its Short-run Marginal Costs (SRMC) and that these prices were related to market power during the periods between 23 February to 24 March 2014 and between 9 June 2014 and 30 June 2014.³

³ ERA (2015) First Investigation into Vinalco's Pricing Behaviour, Notice, 30 October 2015, <https://www.erawa.com.au/cproot/13938/2/Notice%20-%20First%20Vinalco%20Investigation.pdf>

Also ERA (2015) Second Investigation into Vinalco's Pricing Behaviour, Notice, 30 October 2015, <https://www.erawa.com.au/cproot/13939/2/Notice%20-%20Second%20Vinalco%20Investigation.pdf>

The ERA referred its findings to the IMO on 30 October 2015. Under then Rule 2.16.9H, if the ERA refers a matter to the IMO, the IMO must refer the relevant matter to the ERB for a contravention of Rule 7A.2.17.

In recording its decision, the ERB noted Vinalco's admission that it had contravened Rule 7A.2.17.⁴

The IMO and Vinalco issued a 'Joint Statement of Agreed Facts and Issues' and a 'Joint Submissions on Liability and Penalty'.⁵ The ERB drew on these documents in issuing its decision and in fining Vinalco \$1,000 for the first contravention and \$1,500 for the second contravention.

On 31 July 2017, the ERA began an investigation into Synergy's pricing behaviour for the period after 31 March 2016 and including the 2016-17 financial year. The ERA is investigating whether Synergy's price-quantity offers may have exceeded its reasonable expectation of the short run marginal cost of generating the electricity; and if the behaviour relates to market power. The ERA must publish its results by 26 January 2018.⁶

9. Market planning

Wholesale Electricity Market planning processes or the 'Projected Assessment of System Adequacy' or PASA consist of:

- Short-term planning undertaken weekly with a six-hourly resolution over a three week outlook period.⁷
- Medium-term planning undertaken monthly with a weekly resolution and an outlook period of three years,⁸
- Long-term planning, the Long Term Projected Assessment of System Adequacy, undertaken annually with a yearly resolution and a ten year outlook,⁹

The short term PASA is used to inform decisions concerning ancillary service requirements, capacity availability and final outage approval. System Management undertakes the study

⁴ Independent Market Operator v Vinalco Energy Pty Ltd (2017) Reasons for Decision between, No.1 of 2016 In the Western Australian Electricity Review Board, Perth, Page 4, Paragraph 3
<http://www.edawa.com.au/cproot/18206/2/Application%20No%20of%202016%20-%20Decision%20-Independent%20Market%20Operator%20and%20Vinalco%20Energy%20Pty%20Ltd.pdf>

⁵ Independent Market Operator and Vinalco Pty Ltd (2017) Parties' Statement of Agreed Facts and Issues and Joint Submissions on Liability and Penalty,
<http://www.edawa.com.au/cproot/18207/2/Application%20No%20of%202016%20-%20Parties%20Statement%20of%20Agreed%20Facts%20and%20Issues%20and%20Joint%20Submissions%20on%20Liability%20and%20Penalty.pdf>

⁶ ERA (2017) "Notice: ERA starts investigation into Synergy's pricing behaviour", 31 July 2017, ERA, Perth, available from
<https://www.erawa.com.au/cproot/18115/2/ERA%20Investigation%20into%20Synergy%20s%20pricing%20behaviour.pdf>

⁷ Market rule 3.17

⁸ Market rule 3.16

⁹ AEMO (2017) 2017 Electricity Statement of Opportunities, AEMO, Perth,
<http://aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Planning-and-forecasting/WEM-Electricity-Statement-of-Opportunities>

every Thursday covering every six-hour period from 8AM the following Friday with a three week forecast period. Short term PASA are published on AEMO's website.

System Management undertakes the medium-term PASA monthly, on the fifteenth day of every month. The medium term PASA has a weekly resolution for a forward period of three years. It is used to assist in setting annual ancillary service requirements, capacity availability and outage planning.

The long-term PASA is used to determine the reserve capacity target for each year of the ten year forecast horizon. The results are published by AEMO in the annual Electricity Statement of Opportunities.

10. Market dispatch

In the balancing market, participants provide balancing submissions for each trading interval, specifying prices at which their facilities may be dispatched and by how much. AEMO uses these prices to construct the Balancing Merit Order (BMO), used by System Management for real time dispatch.

System Management uses the most recent BMO to determine and issue dispatch instructions to generators, to meet the expected demand trend during the trading interval. System Management may only depart from the BMO if it is necessary to maintain system security and reliability. It may issue dispatch instructions to demand side programmes or dispatchable loads as necessary.

System Management publishes a quarterly status report setting out the number and type of dispatch instructions issued, together with details of any non-compliance by market participants. The ERA is required to publish these reports¹⁰.

The ERA also undertakes a quarterly process to investigate non-compliance with dispatch instructions. These investigations are carried out under Market Rule 7.10.8. The investigations also consider whether any out-of-merit constrained off or on payments received by non-compliant participants need to be recovered.¹¹

The investigations use dispatch non-compliance reports and constrained payments data from the AEMO.¹² Where the ERA identifies non-compliance, it meets with participants to review these issues.

Figure 19 shows the total number of intervals investigated by the ERA, together with the value of the constrained payments for those intervals during 2016/17. Also shown, is a summary of the monies recoverable for those intervals where the ERA observed non-compliance in the 2016/17 financial year.

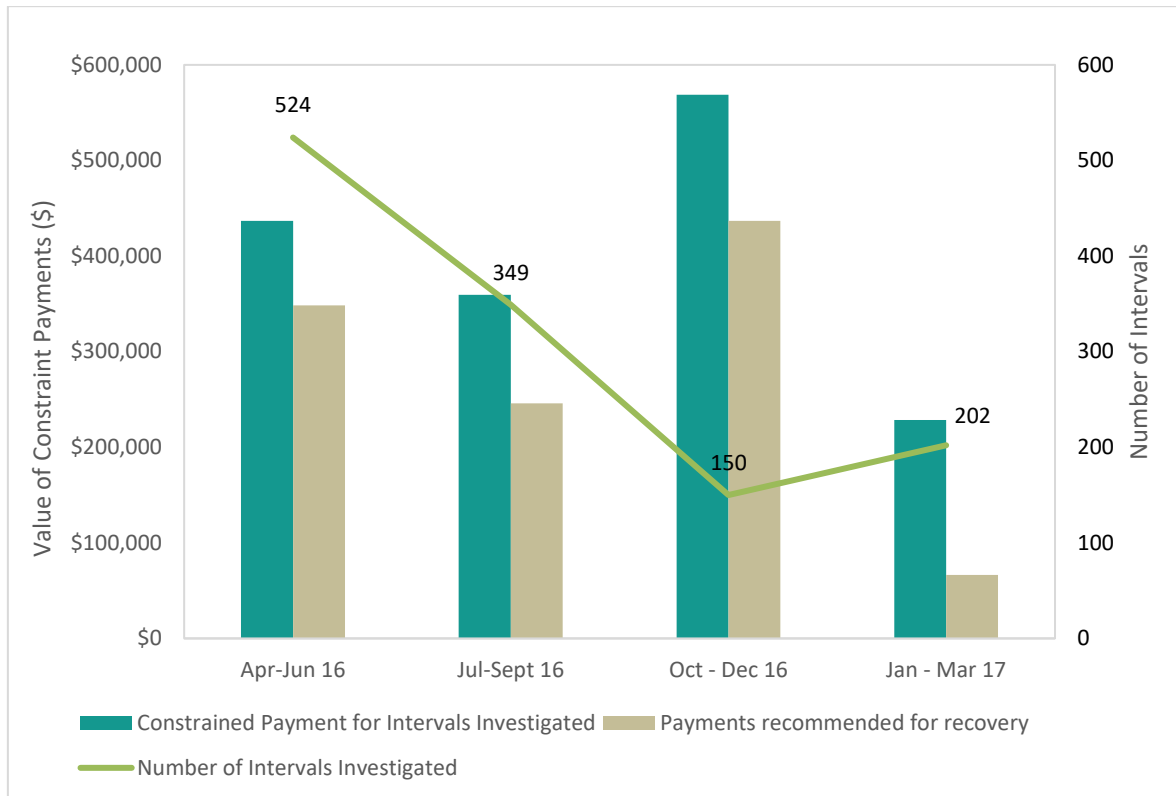
During the period, common reasons for non-compliance with dispatch instructions included plant operator errors, control system issues and equipment failure. None of these matters was identified as threatening power system security.

¹⁰ Refer to: <https://www.erawa.com.au/electricity/wholesale-electricity-market/compliance-and-enforcement/system-management-quarterly-dispatch-status-reports>

¹¹ Where a Market Participant's Facility's actual generated quantity was materially different from its balancing submission quantities then it may be entitled to Out of Merit constrained off or on compensation as per clause 6.16A of the WEM Rules, unless it was non-compliant with a Dispatch Instruction under clause 7.10.1.

¹² Including in its capacity as System Management.

Figure 19 Number of intervals investigated and value of constrained payments from quarterly Non-compliance with Dispatch Instructions process (investigations completed between 1 July 2016 and 30 June 2017)



11. Market governance and administration

The ERA is required to report on the effectiveness of the compliance monitoring and enforcement measures in the wholesale electricity market rules.

The ERA became responsible for the compliance and enforcement functions in the market rules on 1 July 2016. The Monitoring Protocol Market Procedure¹³ describes how the ERA monitors participants' compliance with the market rules.

Over the 2016/17 financial year, the ERA registered 102 alleged market rule breach reports¹⁴ (Figure 20). The largest number of alleged breaches registered occurred in July 2016 (27 matters in total). This coincides with the transfer of the compliance function, including 26 open alleged WEM rule breach matters, from the Independent Market Operator to the ERA on 1 July 2016.

¹³ Refer to: <https://www.erawa.com.au/cproot/17925/2/FINAL%20Monitoring%20Protocol%20clean%20version.pdf>

¹⁴ Note, an alleged breach report may consist of multiple individual breach events.

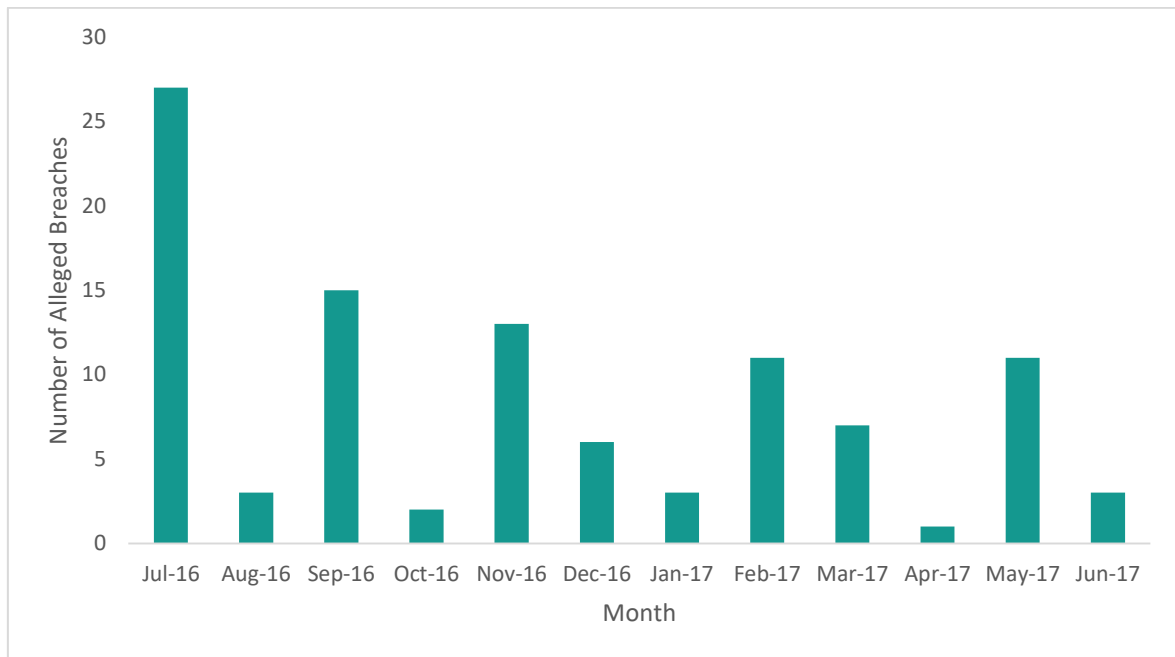
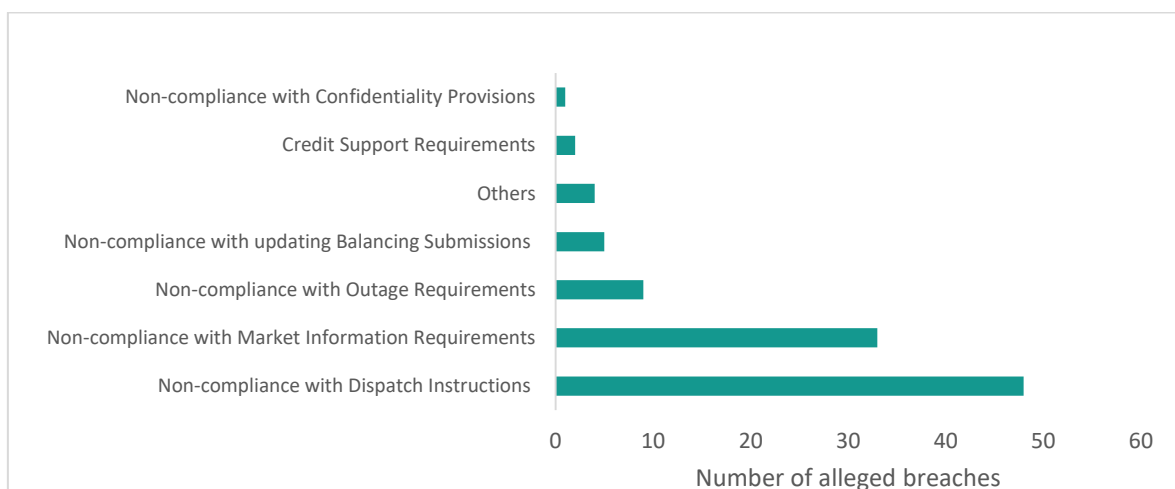
Figure 20 - Monthly number of alleged breaches registered by the ERA in 2016-17

Figure 21 below shows total alleged breaches reported by issue. Participants' non-compliance with dispatch instructions under the market rules accounted for 47 per cent of the total alleged breaches (i.e. 48 reports).

Participants' non-compliance with market information requirements accounted for 32 per cent of total alleged breaches (i.e. 33 reports). These matters include cases where participants failed to submit data or information by the deadline, or provided incorrect data/information.

Non-compliance with Market Rule obligations to update Balancing Submissions and comply with outage requirements accounted for 14 per cent of the breaches reported since 1 July 2016 (14 reports).

Rule obligations concerning dispatch, Balancing Submissions and Outages are central to ensuring the economic and efficient operation of the electricity market and the dispatch process. The ERA has a quarterly process for investigating these obligations.

Figure 21 - Total number of alleged breaches registered by issue in 2016-17

Where the ERA determines that a breach has occurred, it has statutory compliance responses available to it (e.g. warnings and commencement of proceedings before the Electricity Review Board) and administrative responses, such as education advice.

Figure 22 summarises the outcomes of investigations carried out by the ERA in the 2016-17 financial year. During the period, the ERA conducted 49 breach investigations. Six investigations found no breach.

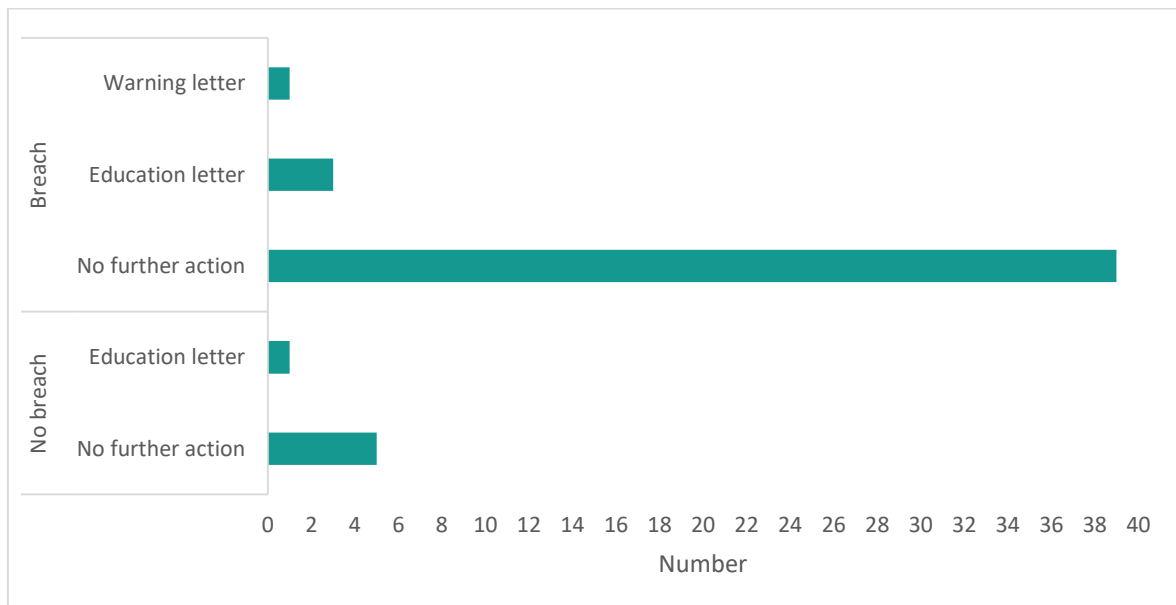
There were 39 investigations where the ERA determined that a breach occurred but no further action was required, as the matters were considered low risk. Of these matters, 28 were investigations of non-compliance with a dispatch instruction, six concerned market information provisions, three were for outage non-compliance, two were for non-compliance with balancing submission requirements, and two were for credit support matters.

For all these cases, after carrying out its investigations, the ERA was satisfied that the participants had implemented sufficient controls to mitigate the risk of the breach re-occurring.

The ERA issued four education advice letters to participants. In each of these cases, the ERA considered it appropriate to provide the participants with information to mitigate the risk of further non-compliance with the relevant obligation. Most of these matters related to non-compliance with outage rule requirements.

During 2016-17, the ERA carried out one targeted investigation of a participant for non-compliance with the Forced Outage requirements. The ERA issued a warning letter to the participant under clause 2.13.10(d) of the market rules for its behaviour.

Figure 22 - 2016-17 Investigation outcomes



12. Rule change process

The ERA is required to report on the effectiveness of the market rule change process and procedure change process.

The Rule Change Panel was created under the *Energy Industry (Rule Change Panel) Regulations 2016* (WA) (Regulations) and is now responsible for the rule change process. The Regulations commenced on 23 November 2016.

Members were appointed to the Rule Change Panel on 1 January 2017 and the panel's power to make and amend rules commenced on 3 April 2017. Since then, four rule changes have commenced and three are in development. The panel is also processing a number of rule changes that were previously on hold. Refer to the Rule Change Panel website for further details¹⁵.

The Regulations require the ERA to provide an Executive Officer and other staff, services and facilities to the Rule Change Panel. Ring-fencing arrangements are in place to mitigate against any perceived or actual conflict of interest and perceptions of bias from the ERA providing staff and services to the Rule Change Panel.

Both the ERA and Rule Change Panel are now responsible for development and maintenance of their own Market Procedures and there is no longer a central approval role for procedure changes. During 2016-17, procedure changes have been completed by AEMO¹⁶, the Rule Change Panel¹⁷ and the ERA¹⁸.

13. AEMO and System Management

The ERA became responsible for the compliance and enforcement functions in the Market Rules on 1 July 2016. The ERA is also required to report on the effectiveness of AEMO (including in its capacity as System Management) in carrying out its functions.

On 3 May 2017, as part of its new functions, the ERA provided an annual report to the Minister for Energy on AEMO's (including System Management's) compliance with the market rules¹⁹.

The report included the audit reports of AEMO's compliance with the rules as well as investigations carried out for the eight months to 28 February 2017. The ERA found that most non-compliance matters were minor.

The ERA noted recurring problems with information technology systems affected AEMO's System Management functions. The ERA will monitor this in the next reporting period.

14. ERA's compliance with market rules

As part of its new compliance and enforcement responsibilities, clause 2.14.5A of the Market Rules requires the ERA to annually provide a report to the Minister for Energy on its own compliance with the Market Rules and Market Procedures.

To assess its compliance, the ERA engaged consultants 2020 Global to independently audit its compliance with the Market Rules and Market Procedures for the period 1 July 2016 to 30 June 2017²⁰.

¹⁵ Refer to: <https://www.erawa.com.au/rule-change-panel/market-rule-changes>

¹⁶ Refer to: <https://www.aemo.com.au/Electricity/Wholesale-Electricity-Market-WEM/Procedures/Procedure-changes/AEMO-Procedure-Change-Proposals>

¹⁷ Refer to: <https://www.erawa.com.au/rule-change-panel/market-procedure-changes>

¹⁸ Refer to: <https://www.erawa.com.au/electricity/wholesale-electricity-market/market-procedures>

¹⁹ Refer to: <https://www.erawa.com.au/electricity/wholesale-electricity-market/compliance-and-enforcement/annual-reports-to-the-minister-on-aemos-compliance>

²⁰ Refer to: <https://www.erawa.com.au/electricity/wholesale-electricity-market/compliance-and-enforcement/annual-reports-to-the-minister-on-eras-compliance>

The auditor concluded that the ERA has complied in all material respects with the Market Rules and Market Procedures for the period 1 July 2016 to 30 June 2017. There were no instances of non-compliance.

The auditor made four recommendations for improvements to internal procedures and documentation, concluding that these findings were minor and did not affect the ERA's overall compliance. The ERA will implement these recommendations in the 2017/18 financial year.

Appendix 3: Retail competition in other markets

Lessons from the introduction of Full Retail Competition (FRC) to jurisdictions in the National Electricity Market (NEM) and to the Western Australian gas retail market may help inform decisions about the introduction of FRC to the Western Australian electricity market and its possible effects on reducing cost pressures for consumers.

In its annual reviews of retail competition in the NEM, the Australian Energy Markets Commission (AEMC) employs a structure, conduct and performance paradigm to review a range of interrelated indicators of competition in each jurisdiction. The AEMC's assessment covers:

- The structure of each market through measures of market concentration and consideration of barriers to entry, expansion and exit.
- Market conduct is measured through consideration of consumer activity, retail pricing strategy, retail energy prices and product and service innovation.
- Consumer satisfaction and the number of customer complaints are assessed in the measurement of market outcomes and performance.

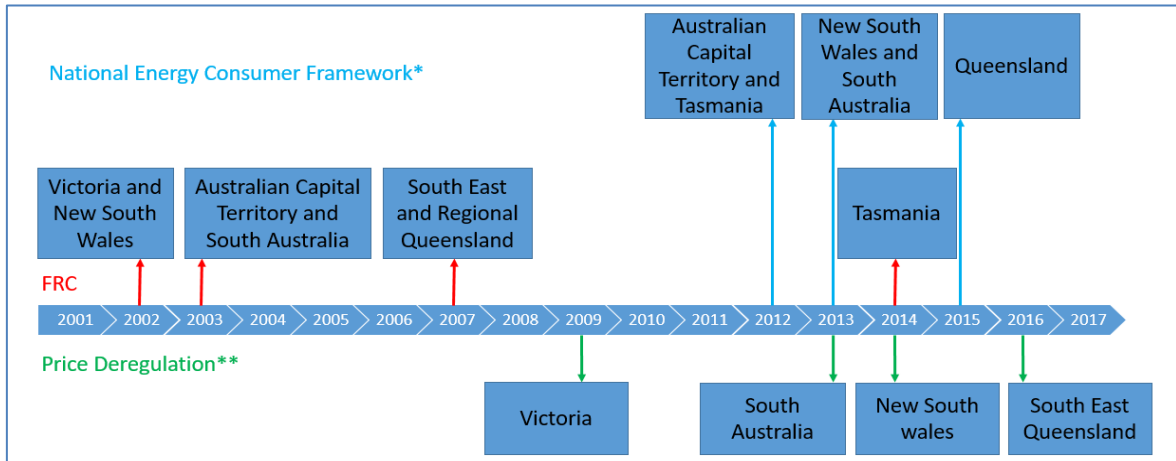
In a competitive market, new retailers are free to enter, while incumbent retailers can exit or expand within the market. This places competitive pressures on existing retailers to charge prices proportionate to efficient costs and to improve their offerings. Retailers compete to attract or retain customers, helping to drive discounting and product innovation. Retailers may be able to improve their cost effectiveness by reducing their energy supply costs, with any efficiency gains passed through to customers, providing a competitive advantage to the retailer.

In a competitive market, consumers are aware of and can act upon choices that are available to them. They actively shop around for lower prices and better services, placing downward pressure on prices and driving retailers to provide the desired quality of service. Consumers are generally satisfied with the available range of products and their choices, such that switching rates may be low and customers make fewer complaints.

In its 2017 review of retail competition in the NEM, the AEMC found that the different jurisdictions are at different stages of evolution and have different characteristics that influence whether, how and at what pace competition develops. Figure 23 presents a timeline showing the implementation years for FRC, price deregulation and the National Energy Consumer Framework (NECF) in the NEM jurisdictions. Under the NECF, all electricity retailers are required to offer a standard contract with regulated terms and conditions. They can also offer market contracts that include minimum terms and conditions prescribed by law.²¹

²¹ As noted in the AEMC's report, the NECF was developed by State, Territory and Commonwealth energy ministers to promote national consistency in retail energy markets. It establishes consumer protections and obligations regarding the sale and supply of electricity and natural gas to customers (particularly residential and small customers). Each jurisdiction must pass its own legislation to implement the NECF and generally specify parts of the NECF that do not apply in its jurisdiction. It can also maintain other jurisdictional regulations that support or supplement aspects of the NECF. See Australian Energy market Commission, Guide to Application of the NECF, Sydney, 2016. <http://www.aemc.gov.au/Energy-Rules/Retail-energy-rules/Guide-to-application-of-the-NECF>.

Figure 23 - Year of implementation of FRC, Price Deregulation and the NECF in NEM jurisdictions



*Note: Victoria has not adopted the NECF. South Australia implemented the NECF subject to some variations. The Essential Services Commission of South Australia monitors and reports annually on energy retail prices.

**Note: Retail price regulation remains in place in the Australian Capital Territory, Regional Queensland and Tasmania.

Table 2 provides a summary of the main characteristics of each jurisdiction in 2017.

Table 2 - Summary of main characteristics of each NEM jurisdiction in 2017.

Characteristic	Victoria	New South Wales	South Australia	South East Queensland	Australian Capital Territory	Tasmania	Regional Queensland
Number of small customers	2.78 million	3.47 million	858,000	1.4 million	180,000	279,000	723,000
Number of retailers	22	22	16	13	5	2 ²²	3
Concentration Index*	1,596	2,714	2,842	3,697	8,315	9,955	N/A
Concentration Rating	Moderately concentrated	Highly concentrated	Highly concentrated	Highly concentrated	Highly concentrated	Highly concentrated	N/A
Market share of second tier retailers ²³	39 per cent	11 per cent	22 per cent	11 per cent	0 per cent	N/A	N/A
Percentage saved on bills by shopping around**	38 per cent	21 per cent	25 per cent	12 per cent	11.5 per cent	N/A	N/A

²² Aurora Energy is the only retailer for residential customers. ERM Power offers an alternative for small business customers.

²³ Second tier retailers are standalone businesses that are not attached to a distribution business in the relevant state, and who enter into competitive retail contracts with small customers.

Characteristic	Victoria	New South Wales	South Australia	South East Queensland	Australian Capital Territory	Tasmania	Regional Queensland
AEMC Competition Rating	Effective	Effective	Effective	Effective	Effective competition yet to emerge	Effective competition yet to emerge	Effective competition yet to emerge

*Note: Measured using the Herfindahl Hirschman Index.

**Note: When moving from the median standing offer to the cheapest market offer.

The AEMC considers that competition is effective in the Victorian, New South Wales, South Australian and South East Queensland markets. Victoria is the second largest market in the NEM and was amongst the first to introduce FRC and the first to introduce price deregulation. Retailers consider entry into this market easiest compared with other jurisdictions. However, they identify policy and regulatory risks due to an increasing divergence between the Victorian regulatory arrangements and the rest of the NEM as a barrier to entry and expansion. The Victorian Energy Retail Code governs Victoria's retail energy markets rather than the NECF.

The Victorian market has the lowest Herfindahl Hirschman Index in the NEM (1,596) and consistent with this, it has the highest market share of second tier retailers. Customers who shopped around in the Victorian market could save more than 30 per cent on bills in 2016 and more than 38 per cent on bills in 2017, which is higher than the possible savings in any other market.

New South Wales is the largest market in the NEM. Along with Victoria, New South Wales was among the first to introduce FRC. However, New South Wales did not implement price deregulation until 2013-14. Retailers rated the New South Wales market as the second easiest behind Victoria for entry and expansion, and several retailers indicated that removal of retail price regulation had lowered barriers to entry.

The AEMC supported this view noting that following deregulation, there was evidence of new retailer entry, declines in market concentration and an expanded range of offers and other service provider product and service offerings. However, the AEMC considered that the full impact of deregulating prices on competition was likely to become more evident over the long term, as it would take time for retailers and customers to respond to new opportunities.

The main barrier to entry and expansion in the New South Wales market identified by retailers was access to hedging products. Additionally, in 2017, one retailer noted that the contract market was tightening, with higher wholesale prices.

South Australia introduced FRC in 2003 but did not introduce price deregulation until ten years later. In 2016, the most frequently mentioned barriers to entry and expansion in the South Australian market were wholesale market conditions, and limited access to competitively priced hedging products. More recently, most retailers commented that the lack of liquidity in the South Australian market was a barrier to entry and expansion, and the limited access to competitively priced risk management products was seen as inadequate to supporting a competitive market.²⁴

²⁴ The AEMC noted that South Australia's recently announced energy plan contains a few schemes and incentives geared towards greater local control, competition and energy security. The South Australian

The South East Queensland market²⁵ implemented FRC in 2007 but price deregulation did not occur until 2016. Prior to deregulation, several retailers indicated that they were waiting for price deregulation to take effect before committing to entry or expansion within the market. Some retailers suggested that undesirable wholesale market conditions caused by the concentration of generation ownership, strategic late rebidding by generators and interconnector constraints had affected the ease of entry and expansion within the market. One retailer characterised the volatility of wholesale spot prices in the market as extraordinary.

The AEMC considered that retail price deregulation was likely to promote further competition, innovation, a greater range of offers and competitive prices in the South East Queensland market. However, in 2017, the AEMC found that volatile wholesale prices and the cost of hedging products meant that some retailers were not actively pursuing customers, given the limited margins available.

The AEMC considered that effective competition is yet to emerge in the Australian Capital Territory, Tasmania or Regional Queensland. Whilst FRC has been introduced in these markets, price regulation remains in place, with all three markets dominated by one main retail supplier. Consequently, concentration levels are very high, and customer satisfaction with the level of choice in these markets is lower than in other markets.

The Australian Capital Territory is the smallest market in the NEM (with 180,000 customers). FRC was introduced in the Australian Capital Territory in 2003 but ActewAGL dominates the market with greater than 90 per cent share.²⁶ Retailers consider entry and expansion in the Australian Capital Territory market difficult and harder than in most jurisdictions. The most frequently mentioned impediments to entry include retail price regulation, policy and regulatory risk, the limited size of the market and the dominance of the incumbent retailer.

Tasmania's electricity market is the second smallest in the NEM. FRC was not introduced in this market until 2013-14. Aurora is the only supplier for residential electricity customers and consequently, there is no price-based competition. Like the Australian Capital Territory, the main impediments identified by retailers to entry and expansion are the structure and the size of the wholesale market and price regulation.

The Regional Queensland market covers more than one million square kilometres. FRC was introduced in 2007 and Ergon Energy Retail supplies almost all of the market. Prices in the Regional Queensland market are subsidised by the Uniform Tariff Policy. Ergon Energy Retail receives a subsidy so that prices paid by residential and small business customers in Regional Queensland are based on prices paid by the same class of customers in South East Queensland. Other retailers do not have access to this subsidy, making it difficult to enter at a competitive price.

Consistent with the observations made by retailers in the Victorian, New South Wales, South Australian and South East Queensland markets, the AEMC, in its 2017 Retail

Government will enact measures to prevent a system black, and promote greater competition in generation to assist in lower energy prices for South Australian businesses and households.

²⁵ This market covers a much smaller geographical area than Regional Queensland and has a much larger and denser customer base.

²⁶ The Independent Competition and Regulatory Tribunal regulate standing offer electricity prices for ActewAGL.

Competition Review noted that wholesale costs in the NEM are increasing, which is contributing to the decline in the availability of wholesale hedging contracts.²⁷

According to the AEMC, increases in wholesale energy market costs for retailers arise from:

- a lack of investment due to uncertainty created by a lack of integration between current energy and emissions reduction policy mechanisms;²⁸
- the retirement of Hazelwood Power Station in March 2017, which supplied capacity of 1600 MW equivalent to around 20 per cent of Victoria's electricity consumption. This came on top of the retirement of the Northern Power Station in South Australia in May 2016, which supplied 546 MW of capacity; and
- increases in gas prices, partially due to high demand for gas for export and the moratoria on gas exploration and development.

The design of the Large-scale Renewable Energy Target (LRET) has resulted in an increasing penetration of renewable energy generators in the wholesale market that do not have the same incentives to enter into firm capacity hedge contracts as a means of financing their investment. Instead, they can finance investment through revenue derived from generating certificates. Consequently, new generation adds to the physical capacity in the system, but results in no corresponding increase in the supply of firm-capacity hedge contracts. New renewable generation, in turn, contributes to the retirement of older plants that were supplying the firm-capacity hedge contracts. With a diminished supply of firm capacity contracts, the cost of contracts increases.

For example, following the retirements of the Northern and Hazelwood Power Stations, there were large increases in forward contract prices across the NEM. This was due to the expectation that the electricity supplied would be replaced by more expensive black coal and mid-merit gas generation. For instance, using average quarterly baseload forward contract prices, if a contract was purchased to fix the wholesale price for the 2017-18 year at the start of October 2016, it would cost just over \$60/MWh in New South Wales, Victoria, and Queensland, and around \$100/MWh in South Australia. However, by the start of May 2017 (following the coal plant retirements), the same contract cost over \$100/MWh in New South Wales, Victoria, Queensland and just under \$150/MWh in South Australia.

The increases in wholesale energy market costs, and hence retail energy prices, are driven by factors that are unrelated to the state of competition within the retail energy sector itself. Nevertheless, a lack of available hedge contracts or sustained high prices for hedge contracts, can have a detrimental impact on retail competition. In particular, a decrease in the supply, and increase in the cost of contracts is likely to negatively affect the competitive

²⁷ Refer to the AEMC's Figure 3.2, page 13, which shows that the wholesale component's share of the residential price has almost doubled since 2014. See Australian Energy Market Commission, 2017 AEMC Retail Energy Competition Review, Final Report, 25 July 2017, Sydney. <http://www.aemc.gov.au/Markets-Reviews-Advice/2017-Retail-Energy-Competition-Review>

²⁸ The AEMC notes that the LRET has resulted in an increasing penetration of renewable energy generation that does not have the same incentives to enter into firm-capacity hedge contracts as they can finance their investment via revenue derived from generating certificates. Firm-capacity hedge contracts enable retailers to better hedge their loads and hedge their wholesale market risks. Consequently, the new generation adds to the physical capacity in the system, but results in no corresponding increase in the supply of firm-capacity hedge contracts. It also contributes to the retirement of the older generation plants that were supplying firm-capacity hedge contracts, diminishing the supply of contracts, increasing their cost and affecting retail competition (page 14).

position of new standalone retail businesses, which are more reliant than gentailers on hedging contracts to manage their risk exposure.²⁹

Some retailers may exit the market because they are unable to remain competitive or they do not want to bear the risk of not being fully hedged. Alternatively, some retailers may seek to manage the risk of sustained higher prices by vertically integrating, which will create higher levels of market concentration over time, resulting in less effective competition, higher retail prices and less choice for consumers.

Factors such as retail competition thresholds, the level of price deregulation, equal access to subsidies, low regulatory risk and a large market size are important to ensuring effective retail competition and hence lower prices for consumers. However, high retail prices may persist in markets rated by the AEMC as being effectively competitive because of undesirable wholesale market conditions such as high wholesale costs, high wholesale market price volatility and a lack of competitively priced hedge contracts.

Table 3 provides a detailed overview of the main findings from recent reviews of retail competition in each NEM jurisdiction.

²⁹ The AEMO considers that these are the businesses currently partnering with the new energy service providers and driving the value-added product and service competition that enable consumers to better manage energy use and bills.

Table 3 - Summary of Recent AEMC Retail Competition Reviews of Electricity Retail Outcomes in the NEM.

Jurisdiction	Key Market Indicator	AEMC Assessment
Australian Capital Territory (ACT)	Market	This is the smallest market in the NEM with approximately 180,000 customers in 2016 and 183,000 customers in 2017. In 2017, there were five electricity retail businesses and brands (up from four in 2016).
	Customer Activity	<p>In 2016, the proportion of customers investigating energy offers increased over the previous two years, from 10 per cent to 23 per cent. The switching rate among small customers also increased from 1.5 per cent to 4.3 per cent, but remained much lower than in other jurisdictions.</p> <p>In 2017, 20 per cent of residential and eight per cent of small business customers said they had actively investigated options in the last 12 months. Seventy seven per cent of residential consumers and 83 per cent of small business consumers actively chose their plan. Forty per cent of residential consumers did not know whether they were on a market or standing offer contract. Only nine per cent of residential customers and eight per cent of small business customers were aware of the AER's Energy Made Easy service. The switching rate among small electricity customers over the past 12 months, based on AEMC data, remained steady compared to the previous year's five per cent.</p> <p>Over the previous five years, 22 per cent of residential customers and eight per cent of small business customers changed their electricity retailer or plan. This was a decrease from 32 per cent for residential consumers and from 16 per cent for small business consumers in 2016. Residential customers' main reasons for switching were price related (40 per cent wanted a cheaper price or a larger discount).</p>
	Customer Outcomes	<p>Satisfaction with retailers and the retail market improved from 2015 to 2016. In 2016, 47 per cent of residential customers were satisfied with the level of choice (an increase from 34 per cent in 2015). Seventy three per cent were satisfied with their current retailer and 11 per cent were dissatisfied.</p> <p>In 2017, only 39 per cent of residential customers said they were satisfied with the level of market choice, and 67 per cent of residential customers said they were satisfied with their current retailer (both down from 2016). Residential customers who rated the level of customer service and value for money from their electricity company as good to excellent remained stable at around 68 per cent and 56 per cent, respectively. The proportion of small business customers who rated the level of customer service provided by their electricity retailer as good to excellent increased in 2017 to 84 per cent from 64 per cent last year. Increases were also observed for the proportion of small business customers who rated value for money provided by their electricity retailer.</p>

Jurisdiction	Key Market Indicator	AEMC Assessment
	Barriers to Entry, Expansion or Exit	<p>No new retailers entered retail market in 2015. In 2016, retailers considered entry and expansion in the ACT market difficult and harder than in most jurisdictions. The most frequently mentioned impediments to entry included retail price regulation, policy and regulatory risk, and the dominance of the incumbent retailer, ActewAGL. Two retailers were considering entry in the next one to two years, and two were considering expansion.</p> <p>In 2017, consistent with the findings in other years, retailers considered retail price regulation in the ACT electricity market as a barrier to entry. The limited size of the market also reduced the attractiveness of the market for new retailer entry.</p>
	Independent rivalry	<p>In 2016, the AEMC noted that while ActewAGL still dominates the market with around 93 per cent share, other retailers increased their market share in 2015 and the market concentration (HHI score), fell somewhat (to 8,702 from 9,165). Retailers rated the level of price and non-price rivalry as moderate and lower than in many other jurisdictions.</p> <p>In 2017, there was an increase in the market share of other retailers and the share of the incumbent retailer ActewAGL had decreased. This meant that the level of market concentration, as measured by the HHI, also decreased (to 8,315).</p>
	Competitive Retail prices	<p>The Independent Competition and Regulatory Tribunal (ICRC) regulate standing offer electricity prices for ActewAGL Retail. In March 2016, there were 12 flat rate market offers and six standing offers available. Seventy six per cent of ACT customers were on a standing offer with a regulated price. For a representative customer, standing offers resulted in an average annual bill of \$1415, while market offers could yield a saving of 8 per cent (the level of possible savings will differ with energy consumption, discount eligibility and type of contract). In 2017, there were 21 flat rate market offers and seven standing offers available. Seventy seven per cent of ACT customers were on a standing offer with a regulated price. Consumers who shopped around could save around 11.5 per cent or \$170 per annum on their electricity bills when moving from the median standing offer to the cheapest market offer.</p>
	State of competition	<p>In both 2016 and 2017, there were signs that competition may be increasing, although the AEMC considered that effective competition was yet to emerge.</p>

Jurisdiction	Key Market Indicator	AEMC Assessment
New South Wales (NSW)	Market	In 2016, 22 retailers supplied 3.42 million small customers, and in 2017 they supplied 3.47 million customers.
	Customer Activity	<p>In 2016, many customers were shopping around for electricity or gas deals. Thirty two per cent of residential and 28 per cent of small business customers had actively investigated options in the previous 12 months. The switching rate increased from 15 per cent to 17 per cent.</p> <p>In 2017, 34 per cent of both residential and small business customers said they had actively investigated options in the last 12 months. Eighty two per cent of residential consumers and 84 per cent of small business consumers actively chose their plan. Thirty six per cent of residential consumers did not know whether they were on a market or standing offer contract. Only 13 per cent of residential customers and 11 per cent of small business customers were aware of the AER's Energy Made Easy³⁰ service.</p> <p>In the past five years, 56 per cent of residential customers and 53 per cent of small business customers changed their electricity retailer or plan (an increase from 48 per cent for residential consumers). Residential customers' main reasons for switching were price related (64 per cent wanted a cheaper price or a larger discount).</p>
	Customer Outcomes	<p>In 2016, most customers were satisfied with market outcomes. Sixty two per cent of residential customers were satisfied with the level of choice (and increase from 48 per cent in 2013-14). Seventy three per cent were satisfied with their current retailer (similar to the 74 per cent satisfied in 2015). Seven per cent were dissatisfied. Complaints to the Ombudsman fell slightly (0.9 per cent of small customers made complaints in 2014-15).</p> <p>In 2017, 74 per cent said they were satisfied with their current retailer. Sixty seven per cent of residential customers rated the customer service they received as good to excellent, while around 62 per cent of residential customers rated overall value for money provided by their retailer as good to excellent. Small business ratings of value for money and customer service decreased in 2017, with 49 per cent of customers rating overall value for money provided by their retailer as good to excellent compared to around 59 per cent in 2016.</p>

³⁰ Energy Made Easy is an Australian Government price comparison website developed and operated by the Australian Energy Regulator under the National Energy Retail Law, which came into effect on 1 July 2012. See <https://www.energymadeeasy.gov.au/about-us>

Jurisdiction	Key Market Indicator	AEMC Assessment
	Barriers to Entry, Expansion or Exit	<p>Six new retailers entered in 2015. In 2016, on average, retailers considered entry and expansion in NSW easier than in all other jurisdictions except Victoria. Access to hedging products was the most frequently mentioned impediment to entry. Several retailers said removal of retail price regulation had lowered barriers to entry. One retailer was considering entry in the next one to two years, and five were considering expansion. A number noted that NSW is increasingly attractive for new retailer entry.</p> <p>In 2017, retailers generally did not identify significant barriers to market entry or expansion. One retailer mentioned that the contract market was tightening, with higher wholesale prices. The AEMC considered that these were competitive challenges that may limit retailers' ability to expand, but as yet had not impacted the market.</p>
	Independent rivalry	<p>In 2016, there were signs of independent rivalry between retailers. The big three retailers (Ausgrid, Endeavour Energy and Essential Energy) held 91 per cent of the retail share (a decrease from 93 per cent in 2015 and 99 per cent in 2010). Second tier retailers increased their market share to 9 per cent from 7 per cent in 2015. The market concentration (HHI score) fell to 2,854 from 2,988. Retailers rated the level of price and non-price rivalry as high. New offers became available and the overall number of flat rate market offers increased.</p> <p>In 2017, the big three retailers share dropped to 89 per cent, second tier retailer share increased to 11 per cent, and market concentration reduced to 2,714.</p>
	Competitive Retail prices	<p>In this market, the prices of standard and market contracts are determined by retailers and monitored by the Independent Pricing and Regulatory Tribunal (IPART). In 2016, customers who shopped around could save up to 20 per cent on bills. For a representative customer in the Ausgrid supply area, standing offers yielded a median annual bill of \$1,308, while market offers could provide annual savings up to \$256 (the level of possible savings will differ with energy consumption, discount eligibility and type of contract).</p> <p>In 2017, consumers who shopped around could save up to 21 per cent or \$309 per annum on their electricity bills when moving from a median standing offer to the cheapest market offer. The level of discount was higher than in 2016 (19.6 per cent). The difference between the most expensive market offer and the cheapest market offer was \$682 per annum (which was greater than the spread of bills under market or standing offers).</p>
	State of competition	<p>In 2016, the AEMC found that competition continued to be effective and was increasing. Following deregulation, there was evidence of new retailer entry (six new retail brands entered the market in 2015), declines in market concentration and an expanded range of offers. The AEMC considered that the full impact of deregulating prices on competition was likely to become more evident over the long term, as it would take time for retailers and customers to respond to new opportunities. In 2017, competition continued to be effective and was increasing, evidenced by the new retailer offers and other service provider product and service offerings available.</p>

Jurisdiction	Key Market Indicator	AEMC Assessment
Regional Queensland	Market	This market covers more than one million square kilometres. One retailer, Ergon Energy Retail, supplies almost all of the 723,000 small customers (down from 733,000 in 2016). In 2017, two other electricity retailer companies and brands are present in the region. Prices are subsidised through the Uniform Tariff Policy.
	Customer Activity	In 2016, customers wanted a choice of retailers and energy plans. Fifty nine per cent of residential customers and 72 per cent of small business customers rated the ability to choose retailer as highly important.
	Customer Outcomes	In 2016, customer satisfaction with choice was lower than in all other markets except Tasmania. Forty two per cent of residential customers were dissatisfied and only 24 per cent were satisfied. Satisfaction with retailers was higher, with 57 per cent of residential customers satisfied and 16 per cent dissatisfied with their current retailer. In 2017, 19 per cent of residential customers said they were satisfied with the level of market choice (a decrease from 2016). Satisfaction with electricity companies was lower than in 2016, with 47 per cent of residential customers saying they were either very or somewhat satisfied. In contrast, small business satisfaction was higher with 58 per cent saying that they were very or somewhat satisfied.
	Barriers to Entry, Expansion or Exit	Ergon Energy Retail receives a subsidy so prices paid by residential and small business customers in regional Qld are based on prices paid by same class of customers in South East Qld. Other retailers do not have access to this subsidy, making it difficult to enter at a competitive price. In 2016, on average, retailers rated ease of entry and expansion in regional Qld as the most difficult of all jurisdictions, along with Tasmania. Four retailers indicated they may enter in the next one to two years, though it was only likely if policy settings change. One retailer was considering exit. In 2017, the AEMC considered that the uniform tariff remained a barrier to entry.
	Independent rivalry	In 2016 there was no rivalry for residential customers.
	Competitive Retail prices	In 2016 there was no price-based competition.
	State of competition	In 2016, the AEMC considered that competition was not effective. The means by which the Uniform Tariff Policy (subsidy) is implemented is a significant barrier to entry. The Commission recommended review of the policy, based on the advice of the Queensland Productivity Commission.

Jurisdiction	Key Market Indicator	AEMC Assessment
South Australia (SA)	Market	In 2016 there were 15 retailers supplying 850,000 small customers. In 2017, 16 retailers (19 electricity brands) supplied 858,000 small customers. The AEMC notes that South Australia's recently announced energy plan contains a few schemes and incentives geared towards greater local control, competition and energy security in that region. Notably, the South Australian Government will enact measures aimed at preventing a system black, and promoting greater competition in generation to assist in lower energy prices for South Australian businesses and households (page 311).
	Customer Activity	<p>In 2016, there were many customers shopping around for electricity and gas deals. Twenty six per cent of residential and 36 per cent of small business customers had actively investigated options in the previous 12 months. The switching rate was 15 per cent (a decrease from 16 per cent in 2015).</p> <p>In 2017, 30 per cent of residential and 47 per cent of small business customers said they had actively investigated options in the last 12 months. Seventy nine per cent of residential consumers and 73 per cent of small business consumers actively chose their plan. Thirty nine per cent of residential consumers did not know whether they were on a market or standing offer contract, and 11 per cent of residential and 10 per cent of small business customers were aware of the AER's Energy Made Easy service. Based on AEMO data, the switching rate remained steady compared to 2016.</p> <p>Over the past five years, 53 per cent of residential customers and 43 per cent of small business customers changed their electricity retailer or plan. Residential customers' main reasons for switching were price related (70 per cent wanted a cheaper price or a larger discount).</p>
	Customer Outcomes	<p>In 2016, 65 per cent of residential customers were satisfied with their level of choice (an increase from 56 per cent in 2013-14). Three-quarters were satisfied with current retailers (increase from 66 per cent in 2013-14), and 7 per cent were dissatisfied. Complaints to Ombudsman fell (0.7 per cent small customers complained in 2013-14).</p> <p>In 2017, 55 per cent of residential customers said they were very or somewhat satisfied with the level of market choice. Around 70 per cent of residential consumers said they were satisfied with their current retailer. The proportion of residential customers who rated the quality of customer service from their electricity company as good to excellent was stable at 71 per cent (cf. 73 per cent in 2016). There was a small decrease of six per cent in the proportion of small business customers who considered the quality of customer service was good to excellent, from 66 per cent in 2016. There was a decrease in the proportion of small business customers who rated overall value for money from their electricity company as good to excellent, from 61 per cent in 2016 to 59 per cent in 2017.</p>

Jurisdiction	Key Market Indicator	AEMC Assessment
	Barriers to Entry, Expansion or Exit	<p>Two new retailers entered market in 2015. In 2016, on average, retailers considered ease of entry and expansion to be moderate, though less easy than in NSW and Victoria. The most frequently mentioned impediments to entry and expansion were wholesale market conditions, accompanied by limited access to competitively priced hedging products. Four retailers were considering expansion in the next one to two years and one was considering exit.</p> <p>In 2017, there was consistent comment from a majority of retailers that the lack of liquidity in the South Australian market was a barrier to entry and expansion. The limited access to competitively priced risk management products was seen as inadequate to supporting a competitive market.</p>
	Independent rivalry	<p>In 2016, there were signs of independent rivalry between retailers. While the big three retailers held 79 per cent of retail share in December 2015, share decreased from 86 per cent in 2010, and the share of second tier retailers had grown to 21 per cent from 22 per cent in 2015. The market concentration (HHI score) had fallen to 3,015 from 3,121 in 2015, and was the third lowest in the NEM behind Vic. and NSW. Retailers rated the level of price and non-price rivalry as high. Solar penetration in SA reached around 25 per cent of households, representing a significant segment of the market for retailers to tailor offers.</p> <p>In 2017, the big three retailers held 78 per cent of retail share, market concentration fell to 2,842, and the share of second tier retailers grew to 22 per cent.</p>
	Competitive Retail prices	<p>The Essential Services Commission of South Australia (ESCOSA) monitors and reports annually on energy retail prices.</p> <p>In 2016, customers who shopped around could save up to 18 per cent on bills. For a representative customer, standing offers had a median annual bill of \$1712, while market offers could yield a saving of up to \$312 (the level of possible savings will differ with energy consumption, discount eligibility and type of contract). Fifteen per cent of customers in SA still remained on a standing offer.</p> <p>In 2017, consumers who shopped around could save approximately 25 per cent or \$481 per annum on their electricity bills when moving from the median standing offer to the cheapest market offer. The increase in annual bills partly reflects upward pressure on retail electricity prices as a consequence of price rises occurring in the wholesale market.</p>
	State of competition	In 2016 and 2017, the AEMC considered that competition continued to be effective.

Jurisdiction	Key Market Indicator	AEMC Assessment
South East Queensland (Qld.)	Market	<p>South East Qld. covers a much smaller geographical area than Regional Qld (25,000 square kilometres). It also has a much larger, denser customer base. In 2016, AEMC reported that 11 retailers supplied 1.4 million small customers.</p> <p>In 2017, thirteen retailers (15 electricity brands) supplied 1.4 million small customers and two gas retail businesses (Origin Energy and AGL).</p>
	Customer Activity	<p>In 2016, many customers were shopping around for electricity or gas deals. Twenty six per cent of residential and 30 per cent of small business customers had actively investigated options in the previous 12 months. The switching rate was steady at 16 per cent.</p> <p>In 2017, around 17 per cent of residential customers switched retailer (based on AEMO/AER data), whilst the customer survey found that about 24 per cent of residential customers had switched their retailer or plan during the same period. Over the past five years, 49 per cent of residential customers and 40 per cent of small business customers changed their electricity retailer or plan (an increase from 42 per cent for residential customers). Residential customers' main reasons for switching were price related, with 64 per cent wanting a cheaper price or a larger discount.</p> <p>Based on the 2017 customer survey, around 74 per cent of residential customers and 73 per cent of small business customers actively chose their plan. When prompted, 34 per cent of residential customers did not know whether they were on a market or standing offer contract. Around 33 per cent of residential customers said they had actively investigated options in the last 12 months. Investigation rates among small business customers remained relatively steady at around 36 per cent. When prompted, only 13 per cent of residential customers and small business customers were aware of the AER's Energy Made Easy service.</p>
	Customer Outcomes	<p>In 2016, most customers were satisfied with the market outcomes. Sixty per cent of residential customers were satisfied with the level of market choice (an increase from 48 per cent in 2015). Seventy per cent were satisfied with their current retailer (an increase from 63 per cent in 2015) and seven per cent were dissatisfied. There were 21 complaints to the Ombudsman (down slightly i.e. 0.5 per cent made complaints in 2014-15).</p> <p>In 2017, 57 per cent of residential customers said they were satisfied with the level of market choice, a slight decrease from 60 per cent in 2016. Seventy-three per cent said they were satisfied with their current retailer, a slight increase from 70 per cent in the 2016.</p>

Jurisdiction	Key Market Indicator	AEMC Assessment
	Barriers to Entry, Expansion or Exit	<p>Prior to deregulation in 2016, retailers rated ease of entry and expansion as moderate, though more difficult than in NSW and Vic. Several retailers indicated they were waiting for price deregulation to take effect before committing to entry or expansion. Some continued to assert that undesirable wholesale market conditions caused by concentration of generation ownership, alleged strategic late rebidding by generators and interconnector constraints had negatively affected the ease of entry and expansion, with one characterising wholesale spot price volatility as extraordinary. One new retailer entered the market, and one entered a new retail brand, whilst two retailers indicated they had wound back operations in the last 12 months. Four retailers said they were considering entry in the next one to two years, five said they were considering expansion, and one said they were considering exiting.</p> <p>In 2017, the AEMC found that volatile wholesale prices and the cost of hedging products meant that some retailers were not actively pursuing customers, given the limited margins available.</p>
	Independent rivalry	<p>In 2016 and 2017, the AEMC found that there were signs of independent rivalry. In 2016, the market share of the 'Big 3' was 92 per cent (as it was in 2015). The market concentration (HHI score) fell slightly from 3,895 in 2015, to 3,807. In 2017, the market share of the Big 3 was down slightly to 89 per cent, the market concentration fell again to 3,697, and second tier retailers increased their market share to 11 per cent (from 8 per cent in 2016).</p> <p>In 2016, retailers had rated the level of rivalry as moderate and below Victoria, NSW and SA. While new offers became available, overall the number of flat rate market offers fell. Solar penetration in Qld had reached around 25 per cent of households, representing a significant segment of the market for retailers to tailor offers to.</p>
	Competitive Retail prices	<p>In 2016, customers who shopped around could save more than 10 per cent on electricity bills. The range of prices available for flat rate market offers was smaller than in other competitive markets. Standard offers with a regulated price yielded median annual bills of \$1434 for a representative customer. Market offers can yield savings of up to \$140 (the level of possible savings will differ with energy consumption, discount eligibility and type of contract).</p> <p>In 2017, consumers who shopped around could save around 12 per cent or \$175 on their electricity bills when moving from a median standing offer (\$1,489) to the cheapest market offer (\$1,313). The level of discount was higher than in 2016 (10 per cent).</p>
	State of competition	<p>In 2016, the AEMC noted that retail price deregulation is likely to promote further competition, innovation, a greater range of offers and competitive prices. In 2017, the AEMC considered that competition continued to be effective.</p>

Jurisdiction	Key Market Indicator	AEMC Assessment
Tasmania	Market	Tasmania's electricity market is the second smallest in the NEM. Aurora Energy is the only supplier for residential electricity customers, while ERM Power offers a second option for small business customers. In 2016, there were approximately 276,000 small customers. This increased to approximately 279,000 small customers in 2017.
	Customer Activity	In 2016, 79 per cent of residential customers were aware they cannot choose their retailer. Only 24 per cent of small businesses were aware that they can choose their retailer. Customers wanted a choice of companies, with 59 per cent of residential customers and 55 per cent of small business customers rating this as highly important. In 2017, 86 per cent of residential and 90 per cent of small business consumers said there was not enough choice in terms of electricity companies and plans. Eighteen per cent of residential and small business consumers were interested or currently looking into switching.
	Customer Outcomes	In 2016, only 23 per cent of residential customers were satisfied with the level of choice. Sixty five per cent were satisfied with their current retailer (an increase from 60 per cent in 2015). Twelve per cent were dissatisfied. Complaints to the Ombudsman decreased (0.1 per cent of small customers complained in 2014-15). In 2017, 18 per cent of residential customers said they were satisfied with the level of market choice and 57 per cent said they were satisfied with their current retailer.
	Barriers to Entry, Expansion or Exit	In 2016, on average, retailers considered entry and expansion in Tasmania to be the most difficult of all jurisdictions, except regional QLD. Significant impediments included the structure and size of the wholesale market and price regulation. One retailer was considering entry to the market in the next one to two years. In 2017, the barriers to entry and expansion were considered to be the same as those identified in 2016.
	Independent rivalry	In 2016, there was no rivalry for residential customers and very limited rivalry for small business customers. ERM Power had gained a small share of small business market, reducing Aurora's market share to 99.96 per cent in 2016 and 99.95 per cent in 2017. Tasmania is highly concentrated. The market concentration was 9,991 in 2015, 9,972 in 2016 and 9,955 in 2017.
	Competitive Retail prices	In 2016 and 2017, there was no price-based competition for residential customers.
	State of competition	In 2016 and 2017, the AEMC concluded that effective competition was yet to emerge.

Jurisdiction	Key Market Indicator	AEMC Assessment
Victoria (Vic.)	Market	In 2016, 22 retailers supplied 2.74 million small customers and in 2017, they supplied approximately 2.78 million small customers.
	Customer Activity	<p>In 2016 there were many customers shopping around for electricity or gas deals. Thirty two per cent of residential and 39 per cent of small business customers had actively investigated options in the previous 12 months. The proportion of residential customers investigating offers decreased from 39 per cent in 2013-14. The switching rate among small electricity customers decreased from 27 per cent to 25 per cent between 2015 and 2016.</p> <p>In 2017, 32 per cent of residential and 37 per cent of small business customers said they had actively investigated options in the prior 12 months. Eighty one per cent of residential consumers and 76 per cent of small business consumers actively chose their plan. Around 25 per cent of residential consumers did not know whether they were on a market or standing offer contract. Twenty three per cent of residential customers and 25 per cent of small business customers were aware of the Victorian Government's Victorian Energy Compare service.³¹ Based on AEMO data, the switching rate among small electricity customers remained steady at 25 per cent.</p> <p>Over the past five years, 53 per cent of residential customers and 44 per cent of small business customers changed their electricity retailer or plan. Residential customers' main reasons for switching were price related (66 per cent wanted a cheaper price or a larger discount).</p>
	Customer Outcomes	<p>In 2016, satisfaction with outcomes remained high. Sixty nine per cent of residential customers were satisfied with the level of choice in the market, and 73 per cent were satisfied with their current retailer (increases of 57 per cent and 64 per cent from 2013-14, respectively). Seven per cent of residential customers were dissatisfied with their retailer. Complaints to the Ombudsman fell (1.6 per cent of small customers made a complaint in 2014-15).</p> <p>In 2017, 68 per cent of residential customers said they were satisfied with the level of market choice and 75 per cent said they were satisfied with their current retailer. Residential customers who rated the level of customer service as good to excellent increased to 76 per cent (compared to 70 per cent in 2016). The proportion of residential customers who rated value for money from their electricity company as good to excellent was 62 per cent, and the proportion of small business customers who provided the same rating for the level of customer service was 58 per cent. There was a significant decrease in the proportion of small business customers who rated value for money provided by their electricity retailer as good to excellent (44 per cent compared to 62 per cent in 2016).</p>
	Barriers to Entry, Expansion or Exit	<p>Five retailers entered in 2015. In 2016, on average, retailers considered entry and expansion in Victoria easier than other jurisdictions. Policy and regulatory risks were the most frequently mentioned impediments to entry or expansion. One retailer was considering entry in next one to two years, and five were considering expansion.</p> <p>In 2017, consistent with previous years, retailers commented on the differences between the Victorian regulatory arrangements and the rest of the NEM. The difference in 2017 was that the comments from retailers indicated concerns about an increasing divergence in those arrangements.</p>

Jurisdiction	Key Market Indicator	AEMC Assessment
	Independent rivalry	<p>In 2016, there were strong signs of independent rivalry between retailers. Combined market share of second tier retailers³² increased to 37 per cent and market concentration decreased, with Herfindahl–Hirschman Index (HHI) score falling to 1679. Retailers rated level of price and non-price rivalry as very high. New offers became available and overall number of flat rate market offers increased.</p> <p>In 2017, market concentration, as measured by the HHI, fell slightly to 1,596, and second tier retailers increased their market share to 39 per cent. Victoria has the lowest level of market concentration and the highest market share of second tier retailers in the NEM.</p>
	Competitive Retail prices	<p>In this market, the prices of standing contracts are determined by retailers and monitored by the Essential Services Commission of Victoria. All retailers are required to offer standing contracts with regulated terms and conditions. Retailers are also able to offer market contracts where they set the terms and conditions. The Essential Services Commission of Victoria monitors compliance with minimum terms and conditions of standard market contracts.</p> <p>In 2016, customers who shopped around could save more than 30 per cent on bills. For a representative customer in the Citipower supply area, standing offers yielded an annual median bill of \$1240, while market offers could yield discounts of up to \$383 (the level of possible savings differ with energy consumption, discount eligibility and type of contract). Only 10 per cent of customers remained on standing offers.</p> <p>In 2017, consumers who shopped around could save approximately 38 per cent (or \$507) per annum on their electricity bills when moving from the median standing offer to the cheapest market offer. Savings in Victoria are the highest savings for those NEM states where consumers have an active choice of retailer. As in 2016, only 10 per cent of customers remained on standing offers.</p>
	State of competition	In both 2016 and 2017, the AEMC concluded that competition continues to be effective.

³¹ See <https://compare.switchon.vic.gov.au/>

³² First tier retailers are attached to distributors who have a monopoly geographic franchise and they can sell to all customers in the state under prices controlled by the electricity industry regulator. Second Tier Retailers are standalone businesses not attached to a distribution business in the relevant state, who enter into competitive retail contracts with small customers.

Competition in the WA Gas Retail Market

The gas retail market in WA became contestable for customers consuming one or more Tera joules (TJ) per year on 31 December 2001. The Interim Market Rules opened the market to competition on 30 June 2002. However, practical retail contestability for small use customers (those who consume less than 1 TJ per year) only became possible with the start of the gas retail market scheme, which provided a mechanism for churning small use customers from 31 May 2004.

A gas market moratorium exists in the WA market, with Synergy only able to supply gas to customers who consume 0.18 TJ or more of gas per year.³³ The moratorium prevents Synergy from fully accessing the gas market while other electricity retailers are denied full access to the electricity market.³⁴

Alinta was the only supplier in the small customer market until 2012-13, when Kleenheat also began supplying small use customers. In June 2016, there were four gas retailers licensed to supply small use customers in the south west of the State: Alinta Energy, Kleenheat, Perth Energy and Synergy.³⁵

Alinta Energy and Kleenheat dominate the small use customer market. In 2015-16, Alinta Energy had the largest share of small use residential gas customers (87.5 per cent) and business customers (84.3 per cent) by customer number. As shown in Table 4, Kleenheat has progressively increased its share over time to 12.5 per cent of residential and 15.7 per cent of business customers in 2015-16.

Table 4 - Number of Small Use Gas Residential and Business Customers by Retailer 2012-13 to 2015-16.

	Residential				Business			
	2012-13	2013-14	2014-15	2015-16	2012-13	2013-14	2014-15	2015-16
Alinta Energy	624,314	635,893	628,171	611,142	8,355	8,282	8,127	8,319
Kleenheat	8,212	21,697	47,353	87,648	20	232	871	1,554
Total	632,526	657,590	675,524	698,790	8,375	8,514	8,998	9,873
Kleenheat Share %	1.30	3.30	7.01	12.54	0.24	2.72	9.68	15.74

In 2017, AGL and Origin had small customer retailer licences approved. AGL and Origin already retail gas on the east coast of Australia and came to the market with the experience and technology systems in place necessary to compete effectively. The prospect of more competition in the gas retail market has reportedly led to offers by competitors in the retail markets to provide long-term discounts on gas bills (in the order of 20 to 30 per cent) and incentives such as no lock in contracts and no exit fees.³⁶ There has been a marked

³³ Equating to an annual residential gas bill of approximately \$6,270.

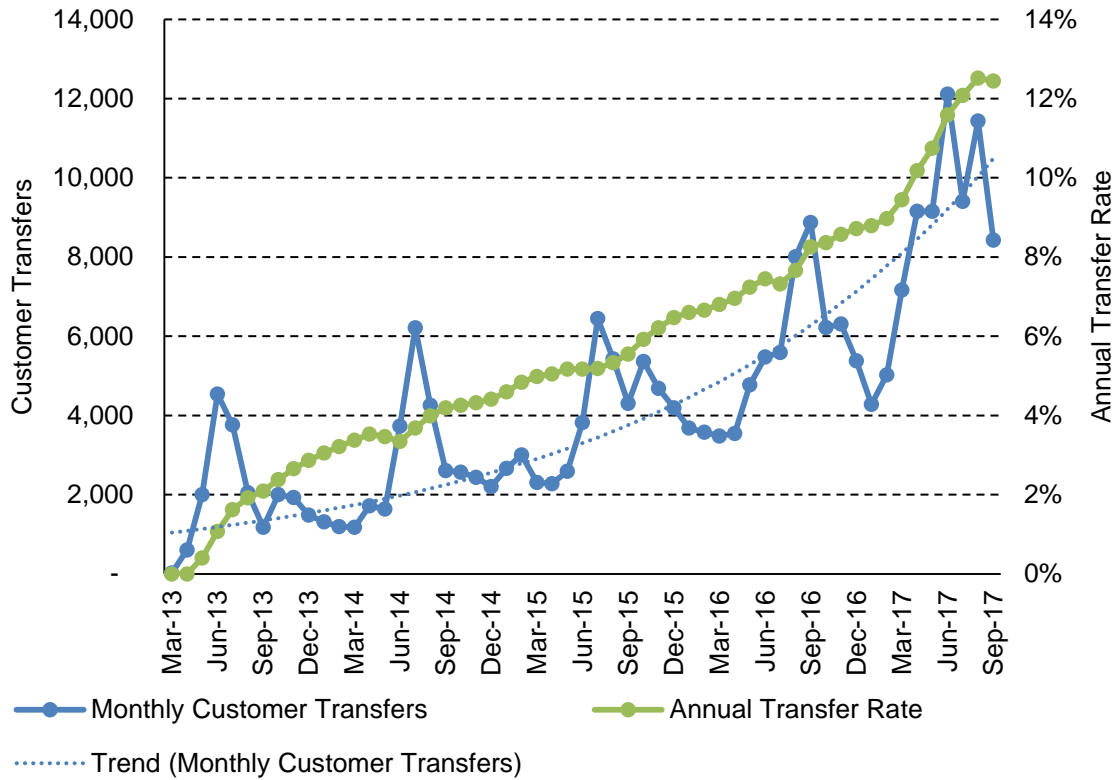
³⁴ Synergy is currently the only retailer able to supply small use electricity (i.e. non-contestable) customers, i.e. residences and small businesses consuming less than 50 MWh per year. Non-contestable customers pay electricity prices regulated by the Western Australian Government under electricity by-laws.

³⁵ Only gas retailers who supply small use customers are required to hold a licence.

³⁶ This was supported by Perth Energy, who noted that gas customers in Western Australia are currently benefitting from substantially lower prices as a result of effective market choice, with domestic customers seeing a reduction of 20 per cent in their gas costs combined with imaginative supply initiatives.

increase in monthly customer transfers in WA from the beginning of 2017, as shown in Figure 24.

Figure 24 - Monthly customer transfers on the ATCO Distribution System, since March 2013



Appendix 4: Market operations

Market resolution

The efficient operation of the electricity system requires the use of the lowest cost generators available to meet the demand for electricity. The cost of electricity supply changes over time and by location. An increase in the consumption of electricity can lead to drastically different supply costs, depending on the time and location of added demand.

The least cost dispatch of electricity can be achieved through different market designs. For example, in a simple low-resolution market, the system operator collects data on a few of the underlying physical properties of the electricity system and then optimises the dispatch of electricity. The primary drawback of a low-resolution market design is that the system operator cannot efficiently manage network congestion. This is managed outside the formation of a market price. As more variable generation is included in the system, inefficiencies in the dispatch process are expected to increase. Not accounting for the physical constraints of the system makes operating the system more difficult, raising concerns about the security of supply.

In contrast, a high resolution market design captures the temporal and spatial properties of the electricity system and utilises this information in forming electricity prices. High resolution design provides an accurate representation of the operation of the system. Based on the high resolution data collected, the system operator calculates the least-cost security-constrained dispatch of generation sources. This leads to different real-time electricity prices for different price nodes.³⁷ A high-resolution market design is, however, more demanding and complex.

Table 5 provides a comparison of market operation resolution in selected electricity market around the world.

Table 5 - Market operation resolution in selected jurisdictions

	High resolution	Low resolution	Medium resolution (high temporal with low spatial resolution)	The WEM
Market	PJM*	Germany	NEM	WEM
Market platform	System operator	Power exchange	Power exchange	System operator
Bidding information	Unit/plant, complex bids	Portfolio, aggregated bid	Unit/plant	Portfolio bid for largest supplier, unit bid for rest of the market
Geographic resolution	Nodal	Single national price	Zonal	Single price
Primary market	Real-time	Day-ahead	Real-time	Real-time
Real-time balancing prices	Single marginal price	Asymmetric prices	Single marginal price	Single marginal price
Dispatch interval	5 minutes	15 minutes or longer	5 minutes	30 minutes

³⁷ In the PJM market, for example, more than 10,000 price nodes are grouped to 12 bidding hubs every 5 minutes. For a brief explanation of locational marginal pricing in the PJM refer to: <http://www.pjm.com/~media/about-pjm/newsroom/fact-sheets/locational-marginal-pricing-fact-sheet.ashx>

	High resolution	Low resolution	Medium resolution (high temporal with low spatial resolution)	The WEM
Operating reserves	Co-optimised with energy	Separate markets	Separate markets	Separate markets

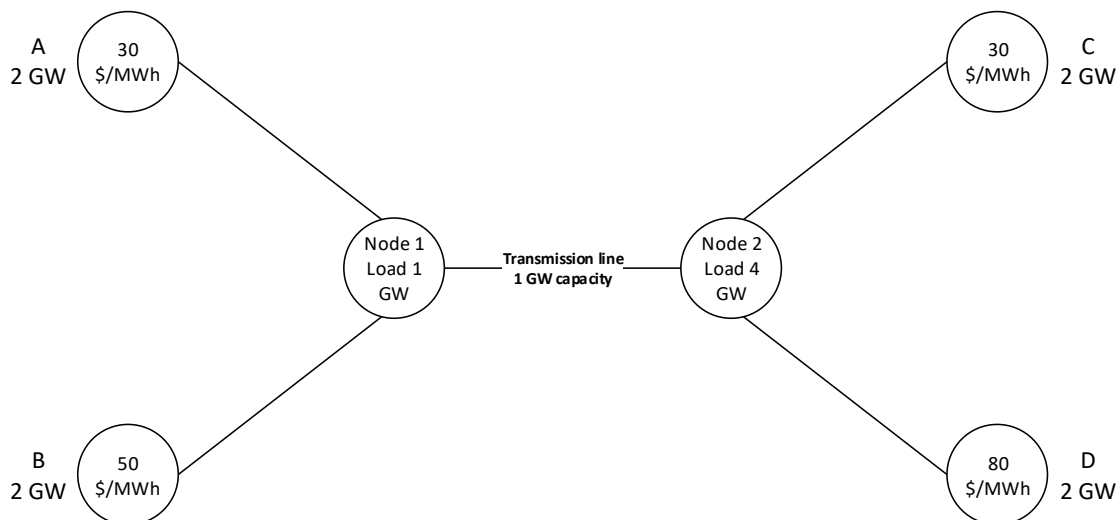
*The Pennsylvania, New Jersey, Maryland market located in Northern America.

In comparison with high and medium resolution market designs, the WEM has adopted low spatial and temporal resolutions.

Locational pricing example

As shown in Figure 25, consider four generators A, B, C, and D each with a capacity of 2 GW, with short-run marginal prices of 30, 50, 30, and 80 \$/MWh, respectively.³⁸ Demand for node 1 is 1 GW, and for node 2 it is 4 GW. A transmission line with a capacity of 1 GW connects nodes 1 and 2. If the load in the system is 5 GW, with a single market price, such as is used in the WEM, the market clears at \$50/MWh. The total load will be met at least cost by generators A, C and B, in order of marginal costs. This market outcome disregards the transmission capacity in the system.

Figure 25 - A single market price versus locational pricing.



In a market design similar to the WEM, AEMO would have cleared the market at \$50/MWh. System Management would re-dispatch the generators out-of-merit by reducing generation from B to zero GW. Generator B would then receive a constrained-off payment equal to \$50/MWh, even though it does not supply any electricity to the system. Generators C and D would receive different prices, despite being in the same location. System Management would request generator D to generate at its price of \$80/MWh (constrained-on payment).

If locational pricing were implemented, the marginal cost of the system in node 1 would be \$30/MWh. In node 2, the market clearing price would be \$80/MWh. If network constraints were accounted for, generator A would receive \$30/MWh and generator B would not receive any payment as generator A's capacity is sufficient to meet the load in node 1.

³⁸ This example is adopted from IEA, 2016. Re-powering markets, p.90.

When a single price design is adopted, consumers in node 1 and 2 are not exposed to the true costs of supply. They consume excessively in node 2 and leave ample capacity in node 1.