



## **Quarterly Report: October - December 2011 (Q4/11)**

February 2, 2012

The Market Surveillance Administrator is an independent enforcement agency that protects and promotes the fair, efficient and openly competitive operation of Alberta's wholesale electricity markets and its retail electricity and natural gas markets. The MSA also works to ensure that market participants comply with the Alberta Reliability Standards and the Independent System Operator's rules.

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# Executive Summary

## *General Market Outcomes*

The average pool price for Q4/11 was \$76.09/MWh, about 20% less than Q3/11 (\$94.69/MWh) but 65% up year over year. Natural Gas prices were very stable and low through the quarter and thus not a major factor in driving Alberta electricity prices (Figure A.2). Note that the market heat rates have remained at historic high levels, well above 20 GJ/MWh for the quarter.

The volatility of pool prices, whether measured by standard deviation or coefficient of variation, continued to be high in Q4/11. The pool price duration curve for Q4/11 shows that 10% of pool prices were above \$100/MWh. In Q4/11, 61% of the value of pool prices was in the top 10% of hours. This is down from Q3/11 (66%) but still higher than in prior years.

Alberta prices were well above those of our neighbours and attracted imports over the quarter. The imports totaled some 700,000 MWh, equivalent to an average of 320 MWh. The import volumes in the previous two quarters were somewhat higher, nearly 400 MWh on average.

Forward trading volumes were moderate and the market shares of the various types of participants were relatively stable.

## *Monitoring Indicia*

The supply cushion – pool price relationship was again used to screen hourly market outcomes for the quarter. A total of 82 high outliers were identified for Q4/11, many more than would be expected based on the historical data used to establish the baseline parameters. This is a continuation of a pattern that has persisted for all 2011, with the frequency of outliers increasing over time.

## *Settlement Agreement Filed with the AUC*

On November 4 the MSA and TransAlta filed a settlement agreement with the AUC where it is currently under consideration as Application No. 1607868. The settlement alleges that TransAlta breached section 6 of the Alberta Electric Utilities Act during 31 separate hours during 8 days in November, 2010. The current details may be found at the Commission's web site at [www.auc.ab.ca](http://www.auc.ab.ca) and search for application 1607868.

On January 19 & 20, 2012 the AUC held an oral hearing on certain procedural aspects relevant to the proposed settlement and, as of January 31, we await the Commission's ruling. The proceeding is currently scheduled for March, 2012.

## *Market Data Transparency*

In late November, Charles River Associates made a presentation to stakeholders on their work for the MSA examining the efficiency and competition aspects associated with the high level of market information, at or near real time, which is made available to market participants in Alberta. Following that meeting the MSA is presently working on a paper which will show examples of different types of offer behaviour that may be linked to the available information. Readers are directed to the MSA's web site for more details. [www.albertamsa.ca](http://www.albertamsa.ca).

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*State of the Market Assessment*

The MSA has begun work on a state of the market assessment that would marry the data and analysis of past quarterly reports with new analysis. The purpose of the report is to comment on the state of competition in the Alberta market from a longer term perspective based on established market metrics and benchmarks. The starting point will be to seek advice from stakeholders on the scope of the work and framework of analysis.

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# 1 General Comments on Market Outcomes

The average pool price for Q4/11 was \$76.09/MWh (Table A.1). This is about 20% less than Q3/11 (\$94.69/MWh) but about 65% up year over year (Q4/10, \$45.94/MWh). Natural Gas prices were very stable and low through the quarter and thus not a major factor in driving Alberta electricity prices (Figure A.2). Note that the market heat rates have remained at historic high levels, well above 20 GJ/MWh for the quarter.

The volatility of pool prices, whether measured by standard deviation or coefficient of variation, continued to be high in Q4/11. The pool price duration curve for Q4/11 shows that 10% of pool prices were above \$100/MWh (see Figure A.1). In Q4/11, 61% of the value of pool prices was in the top 10% of hours. This is down from Q3/11 (66%) but still higher than in prior years.

Figure D.2 shows that on-peak prices in Alberta were well above those of our neighbours. This price differential encouraged imports to flow to Alberta and over the quarter we imported some 700,000 MWh, equivalent to an average of 320 MWh (Figure D.4). The import volumes in the previous two quarters were somewhat higher, nearly 400 MWh on average.

There was little change to system capacity (Maximum Capability) in Q4/11. Plant actual availability in Q4/11 (8953 MW) was a touch higher than Q3/11 (8824 MW) but substantially lower than the same quarter last year (Q4/10: 9409 MW). Total fleet generation including wind was 16,076 GWh, very similar to the amount for Q3/11 (16,131 GWh) and less than for Q4/10 (17,150 GWh).

Appendix C shows the prices of active and standby operating reserves for Q4/11. Of note, starting in mid December, the AESO is now procuring two new regulating reserve products through Watt-Ex: the AM and PM Superpeak. The AM Superpeak includes HE6-8 whilst the PM Superpeak includes HE17-24 for November through January and HE18-24 for all other months. The data is included in Figure C.1 although it is too early to make any comments. The implementation of these products completes the migration of all regular operating reserves purchases to Watt-Ex and OTC is only used in unusual circumstances where normal market operations on Watt-Ex have not yielded sufficient volumes.

Forward trading in Alberta continued with moderate volumes through Q4/11 as indicated in Figure E.1. December trading was noticeably low, likely in response to the Christmas break and the end of the calendar year when some traders have closed their books. On December 20, 2011 the AESO posted a notice concerning data issues related to the monthly and short-term outage graphs.<sup>1</sup> The notice mentioned that the matter was brought to the AESO's attention by the MSA. In fact, it came to our attention following a concern by a market participant. The market participant had made a trade and shortly thereafter had observed a change in the monthly outage graph and the participant was concerned that the counterparty to the trade may have known about the outage. This would be offside Section 4 of the *Fair, Efficient and Open Competition Regulation* and potentially a serious matter. Upon investigating changes to the outage graph we were unable to ascertain any plant availability data changes that led to the observed change in the graph. Hence, the MSA requested the AESO to look into the matter. The AESO's notice explained that the source of the error was an intermittent one that occurred sporadically over a long period. The AESO notes that the problem is now fixed and reaffirmed its commitment to the quality of the data associated with the graphs. These two graphs are of significant importance to Alberta traders, particularly those with few or no physical assets in the province. They provide information to help

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<sup>1</sup> [http://www.aeso.ca/downloads/Outage\\_graph\\_issue\\_December\\_22\\_2011.pdf](http://www.aeso.ca/downloads/Outage_graph_issue_December_22_2011.pdf)

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traders form a price view when making trade strategies and, obviously, data errors, as opposed to the data disguise which is deliberate, are not helpful to them.

In Q4/11 AESO began the use of Load Shedding Services for Imports (LSSi) as a means of increasing import capability on the BC interconnection toward its rated capacity. The AESO ran a competitive procurement process in 2011 and contracted with several providers including one aggregator. The contracts provide for a three part payment plan. The availability payment is set at \$5/MW for capacity that is made available for the service. In the event that the capacity needs arming, to allow for enhanced import capability, there is an arming payment that varies among the providers. In the event that the intertie trips whilst armed and load is shed there is a trip payment set at \$1000/MW.

In Q4/11, total payment to providers was \$880,000 exclusively formed of availability payments. Internal system transmission constraints can limit import ATC and make the arming of LSSi ineffective. It is understood that such a constraint was occurring in the latter part of Q4/11. It is not yet possible to comment on the performance of LSSi as a mechanism to restore import capacity.

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## 2 Monitoring Indices

Monitoring indices are data summaries the MSA uses to flag apparent anomalous market outcomes or report on the competitive health of the market for further assessment now, or in the future.

The detailed derivation of the supply cushion for each hour was described in the MSA's Q3/10 report. Data for the period February 1, 2008 through June 30, 2010 was used to establish a statistical baseline for the relationship between the supply cushion and pool price. For a given hour, the supply cushion is the volume of energy available to the system controller but not called upon to meet load. The supply cushion measures market tightness and would be expected to be strongly related to pool price. This relationship is a prime metric to enable the MSA to identify anomalous hours. It does not speak to the possible reasons for the anomaly, but it does flag the hour as being unusual.

In the Q1/11 report, we described a detailed methodology for analysis of the undispached MW in the merit order. This is termed an output gap analysis. In the cases where market prices are higher than the short-run costs of the generators, it is an analysis of economic withholding. To be clear, as explained in the MSA's *Offer Behaviour Enforcement Guidelines*, economic withholding by individual market participants is not proscribed under Alberta's market construct. However, identification and reporting of its occurrence contributes to stakeholders' understanding of market outcomes and also provides a record for the longer term assessment of the health of the market.

For this quarterly report we have not undertaken any detailed analysis of hours that were flagged as being statistically unusual. In part, this is due to the results of previous analysis which have shown that most of these events are caused by similar patterns of withholding by one or more market participants when supply cushion is less than about 1000 MW. The MSA is focusing its analytical efforts into a longer-term analysis of these patterns as part of its state of the market assessment which we plan to complete later this year.

### 2.1 SUPPLY CUSHION ANALYSIS – Q4/11

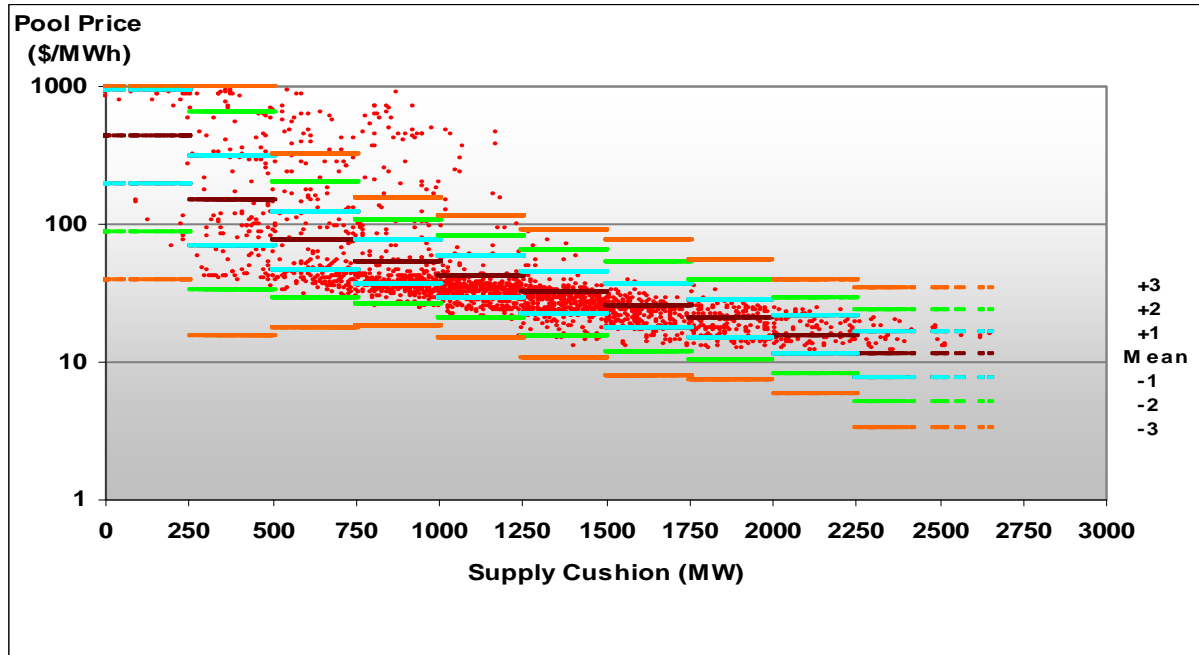
In Q4/11, a total of 82 hours were observed when the pool prices were higher than 3 standard deviations above the mean established using the historical data.<sup>2</sup> No hours were observed when the pool prices were lower than -3 standard deviations. Similar to the previous quarters, the prices above +3 standard deviations were concentrated in the hours when the supply cushion was in the range of 500 MW to 1000 MW. Of the 599 hours when the supply cushion was between 500 MW and 1000 MW, there were 69 hours in which the pool prices were above +3 standard deviations, counting for 12% of the total number of hours in the 500 MW to 1000 MW supply cushion range. If the historic data used to establish these bounds are from the normal distribution, less than 0.5% of the observations would be more than 3 standard deviations above the mean. The data observed in Q4/11 are largely in line with recent quarters.

Appendix F presents more details of the 82 hours identified above.

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<sup>2</sup> For details on how the mean and standard deviations were calculated with the historical data, refer to MSA Quarterly Report for Q3/10. The numerical values are reported in the Q3/11 Quarterly Report.

Figure 2.1: Q4/11 Supply Cushion v. Pool Price (Confidence Bands Based on Historic Data)



	$\leq 250$	$>250$ $\leq 500$	$>500$ $\leq 750$	$>750$ $\leq 1000$	$>1000$ $\leq 1250$	$>1250$ $\leq 1500$	$>1500$ $\leq 1750$	$>1750$ $\leq 2000$	$>2000$ $\leq 2250$	$>2250$	Total
$\geq +3$	0	0	27	42	13	0	0	0	0	0	82
$< +3$ & $\geq +2$	0	19	15	4	4	4	0	0	0	0	46
$< +2$ & $\geq +1$	13	20	19	21	6	6	2	4	15	12	118
$< +1$ & $\geq \text{mean}$	19	15	24	15	20	86	67	78	35	27	386
$< \text{mean}$ & $\geq -1$	1	39	39	124	262	274	178	92	39	0	1048
$< -1$ & $\geq -2$	5	41	102	161	107	41	27	22	0	0	506
$< -2$ & $\geq -3$	3	0	0	6	5	6	0	0	0	0	20
$< -3$	0	0	0	0	0	0	0	0	0	0	0
Total	41	134	226	373	417	417	274	196	89	39	2206

## 2.2 OUTPUT GAP ANALYSIS – Q4/11

The output gap analysis calculates the market supply cushion by market participant, identifying the proportion of the supply cushion that is attributable to each market participant in a given hour. The theory and its application in our work were fully described in the MSA’s Q1/11 report.

For Q4/11, with 82 hours to analyze, we have not done the manual adjustment of the assignment of control by market participants that was done in previous quarterly reports. Table 2.1 shows the results of the unadjusted analysis for the Q4/11 events.

Table 2.1: Output Gap Analysis – Q4/11

Month	Count of Events	Average Price	Average SC	Average Share of Supply Cushion by Participant						Average HHI
				A	B	C	D	E	Other	
Oct-11	55	\$452.04	882	35%	11%	34%	13%	1%	7%	2,902
Nov-11	21	\$468.19	660	1%	21%	44%	24%	8%	3%	3,320
Dec-11	6	\$371.93	767	5%	14%	42%	15%	9%	15%	3,009
Q4/11	82	\$450.31	817	24%	14%	37%	16%	3%	6%	3,017

The most significant feature of Table 2.1 is the distribution of outlier hours across the quarter. Clearly there were very few hours in December that were anomalously high in terms of pool price. The distribution of the market shares by participant for the events in each month are shown in Figures 2.2, 2.3 & 2.4.

Figure 2.2: Output Gap Analysis - October 2011

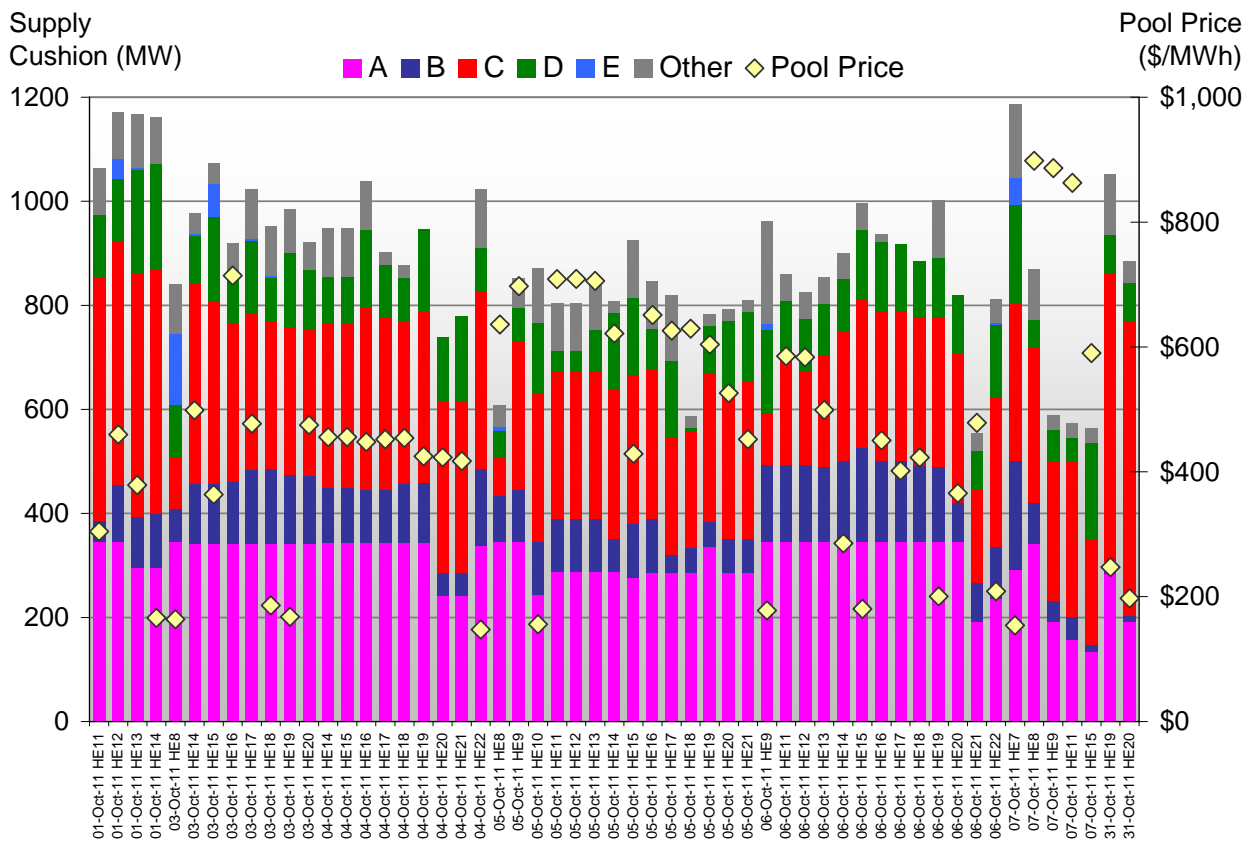


Figure 2.3: Output Gap Analysis - November 2011

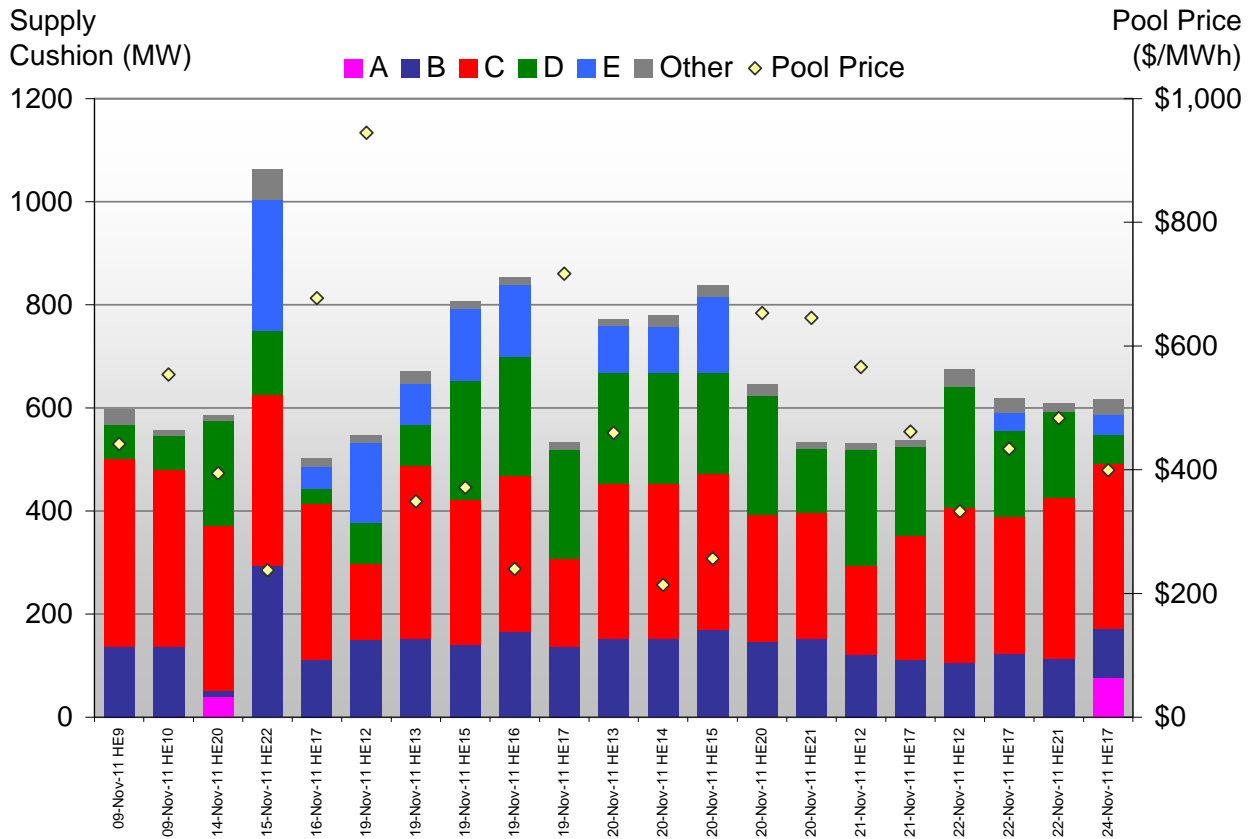


Figure 2.4: Output Gap Analysis - December 2011

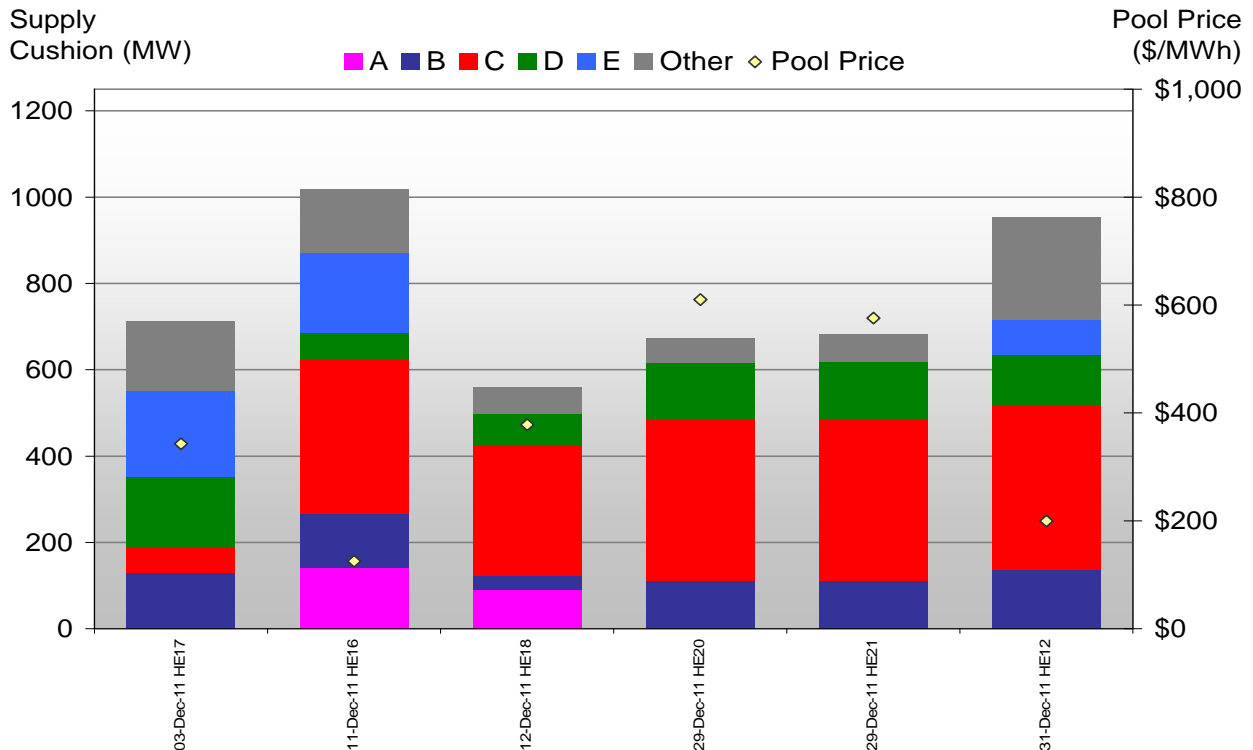


Figure 2.5: Supply Cushion Duration Curves for Q4/11

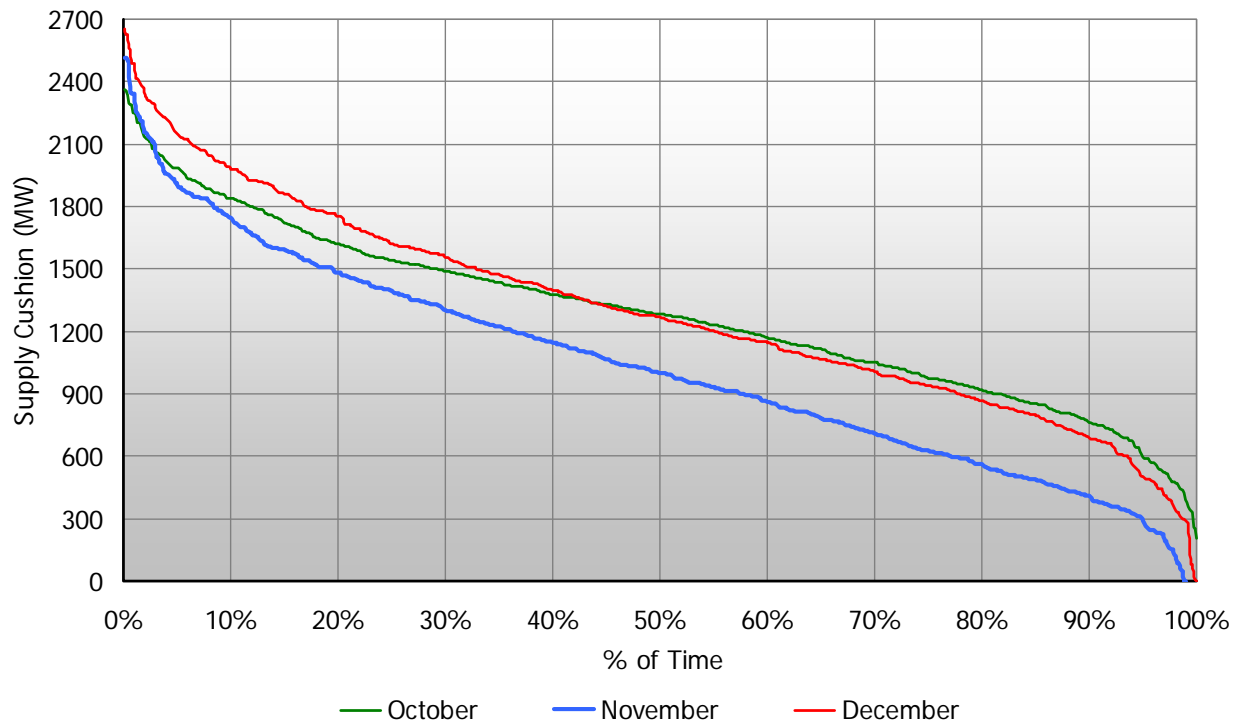


Figure 2.5 shows the supply cushion duration curves for all hours each month of Q4/11. Of most interest is the right hand end of the chart where supply cushion values are low. Observation has shown that supply cushion values less than about 1000 MW have the potential to yield high pool prices. The figure clearly shows that November had the most such hours, and it did indeed yield the highest monthly price in the quarter. Comparing October with December would suggest not much difference, although December was marginally tighter than October. However, the resulting prices in December were significantly lower than those in October. Given that primary fuel costs such as natural gas have not changed appreciably, the tentative conclusion is that the behaviour of the generators in December was different from October. It appears that some of the generators who economically withheld in October leading to higher prices elected not to do that to the same extent in December, possibly due to greater forward contracting on their part. When generators have sold forward significant amounts of energy, the incentive in real time is simply to run their assets and deliver the energy, assuming that pool price is lower than their short run costs.

### 2.3 OVERVIEW OF 2011 EVENTS

The understanding, explaining and, where appropriate, taking action to remove the cause of outlier events remains a priority for the MSA. Table 2.2 shows an analysis of the pool prices and supply cushions in 2011 and the contribution to average pool price. The frequency of high price outliers is higher than expected based on the baseline data. These high price outliers have a very significant impact on average pool price for the year. Consider those hours that were greater than two standard deviations above the mean. They constituted only 6.24% of the observed hours in the year but contributed 38.73% to average pool price.

**Table 2.2: Supply Cushion Outlier Events and Contribution to Average Annual Pool Price, 2011**

Events	Percentage of Events	Expected Percentage of Events <sup>3</sup>	Contribution to Average Pool Price
> +3 Std. Dev.	3.61%	0.15%	22.83%
> +2 & < +3 Std. Dev.	2.63%	2.15%	15.90%
> -2 & < +2 Std. Dev.	92.56%	95.4%	60.85%
< -2 & > -3 Std. Dev.	0.64%	2.15%	0.20%
< -3 Std. Dev.	0.56%	0.15%	0.21%
All	100%	100%	100%

Table 2.3 shows the average supply cushion in different pool price bands across the years. The most interesting feature of the table is that the average supply cushion in 2011 for prices in the range \$700 - \$999.99 is much higher than in the other years. In this price band range, prices are not related to fuel and O&M costs - this is the 'scarcity' price range, the hours where all generators running recoup some contribution to fixed costs and profits. It would appear that such pricing occurred in 2011 with a higher supply cushion than in prior years.

**Table 2.3: Average Supply Cushion for Pool Price Bands, 2008-11**

	\$0 - \$20/MWh	\$20 - \$40/MWh	\$40 - \$100/MWh	\$100 - \$700/MWh	\$700 - \$999.99/MWh
2008	1731	1363	870	447	151
2009	1967	1316	913	522	194
2010	2128	1413	946	622	142
2011	1976	1279	810	634	324

Another way of looking at the results is to look at average pool prices in different supply cushion bands. Table 2.4 shows the results and the most striking observation is that in 2011 the average pool prices for the smaller supply cushions (below 800 MW) are significantly higher than those in the other three years.

**Table 2.4: Average Pool Prices and Frequency for Different Supply Cushion Bands**

Year	Supply Cushion Band									
	> 1000 MW		800 - 1000 MW		600 - 800 MW		400 - 600 MW		0 - 400 MW	
	Avg. Price	Freq.	Avg. Price	Freq.	Avg. Price	Freq.	Avg. Price	Freq.	Avg. Price	Freq.
2008	\$29.97	27.3	\$58.07	30.7	\$81.89	18.1	\$131.72	14.7	\$328.56	9.3
2009	\$24.98	49.3	\$45.28	34.6	\$64.58	10.0	\$113.03	4.2	\$443.09	2.0
2010	\$27.75	57.0	\$48.95	28.6	\$69.02	8.1	\$123.18	3.9	\$457.57	2.3
2011	\$22.58	50.8	\$53.09	29.4	\$126.63	10.3	\$255.79	6.1	\$603.35	3.4

<sup>3</sup> Under the assumption that the data follow a normal distribution

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## 3 MSA Activities

### 3.1 SETTLEMENT AGREEMENT

On November 4, 2011 the MSA and TransAlta filed a settlement agreement with the AUC where it is currently under consideration as Application No. 1607868. The settlement alleges that TransAlta breached section 6 of the Alberta *Electric Utilities Act* during 31 separate hours during 8 days in November, 2010. The current details may be found at the Commission's web site at [www.auc.ab.ca](http://www.auc.ab.ca) and search for application 1607868.

On January 19 & 20, 2012 the AUC held an oral hearing on certain procedural aspects relevant to the proposed settlement and, as of January 31, we await the Commission's ruling. The proceeding is currently scheduled for March 14-16, 2012.

### 3.2 DATA TRANSPARENCY

In late November, Charles River Associates made a presentation to stakeholders on their work for the MSA examining the efficiency and competition aspects associated with the high level of market information, at or near real time, which is made available to market participants in Alberta. Following that meeting the MSA is presently working on a paper which showing examples of different types of offer behaviour that may be linked to the available information.

### 3.3 MSA FEEDBACK

#### 3.3.1 Outage on Trading

In January, the MSA posted feedback relating to section 4 of the *Fair, Efficient and Open Competition Regulation*.<sup>4</sup> The feedback indicated that the use of outage information directly or indirectly would be considered by the MSA to be offside the regulation and therefore potentially prosecutable.

#### 3.3.2 Providing Information About Retailers

In late January, the MSA posted another feedback notice relating to an issue of customers in Rural Electrification Associations (REA) having difficulties finding out which retailers operate in their REA. The electricity *Code of Conduct Regulation Code* requires that wires owners direct customer enquiries to the Utilities Consumer Advocate (UCA). Currently the UCA does not have complete information on retailers operating inside the various REAs. For its part, the MSA indicated that the REA would not be considered to be offside the Code to indicate to the customer (without preference) all retailers currently operating in the REA.

### 3.4 COMPLIANCE

The MSA Compliance team is preparing its annual summary report for 2011 and the report is expected to be posted to the MSA's web site in the next few weeks.

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<sup>4</sup> <http://albertamsa.ca/uploads/pdf/Archive/2012/MSA%20Feedback%20-%20s4%20FEOC%20Reg%20-%20100112.pdf>

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### **3.5 STATE OF THE MARKET REPORT**

The MSA has begun work on a state of the market assessment that would marry the data and analysis of past quarterly reports with new analysis. The purpose of the report is to comment on the state of competition in the Alberta market from a longer term perspective based on established market metrics and benchmarks. The starting point will be to seek advice from stakeholders on the scope of the work and framework of analysis.

# Appendix A: Wholesale Energy Market Metrics

Table A.1: Pool Price Statistics

Month	Average Price <sup>1</sup>	On-Pk Price <sup>2</sup>	Off-Pk Price <sup>3</sup>	Std Dev <sup>4</sup>	Coeff. Variation <sup>5</sup>
Oct-11	69.75	105.22	24.77	141.62	203%
Nov-11	108.24	146.07	56.65	209.08	193%
Dec-11	51.26	66.10	30.72	103.33	202%
<b>Q4-11</b>	<b>76.09</b>	<b>105.29</b>	<b>37.02</b>	<b>158.61</b>	<b>208%</b>
Jul-11	61.21	91.37	22.96	156.35	255%
Aug-11	126.36	192.39	34.93	223.50	177%
Sep-11	96.57	149.35	24.35	200.08	207%
<b>Q3-11</b>	<b>94.69</b>	<b>144.98</b>	<b>27.36</b>	<b>196.99</b>	<b>208%</b>
Oct-10	30.92	35.68	24.89	15.73	51%
Nov-10	48.09	60.63	30.97	80.78	168%
Dec-10	58.89	80.14	29.45	99.30	169%
<b>Q4-10</b>	<b>45.94</b>	<b>59.09</b>	<b>28.36</b>	<b>75.25</b>	<b>164%</b>

- 1 - \$/MWh
- 2 - On-peak hours in Alberta include HE08 through HE23, Monday through Saturday
- 3 - Off-peak hours in Alberta include HE01 through HE07 and HE24 Monday through Saturday, and HE01 through HE24 on Sundays
- 4 - Standard Deviation of hourly pool prices for the period
- 5 - Coefficient of Variation for the period (standard deviation/mean)

Figure A.1: Pool Price Duration Curves

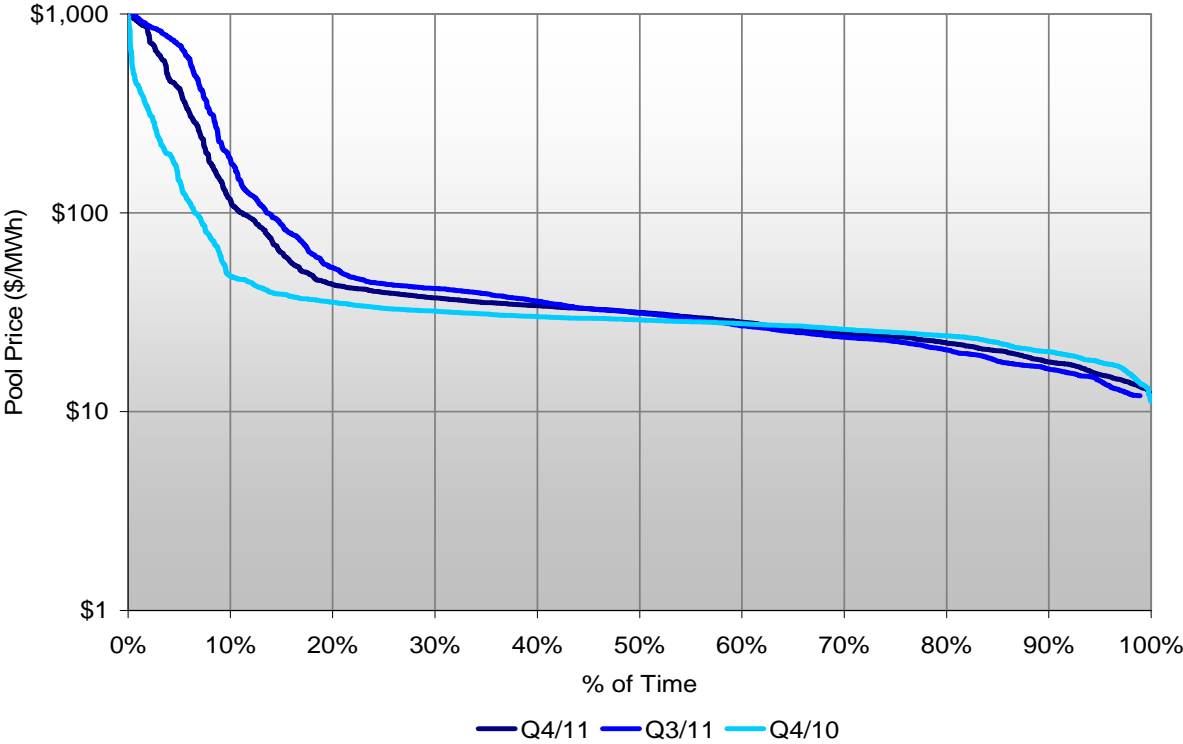
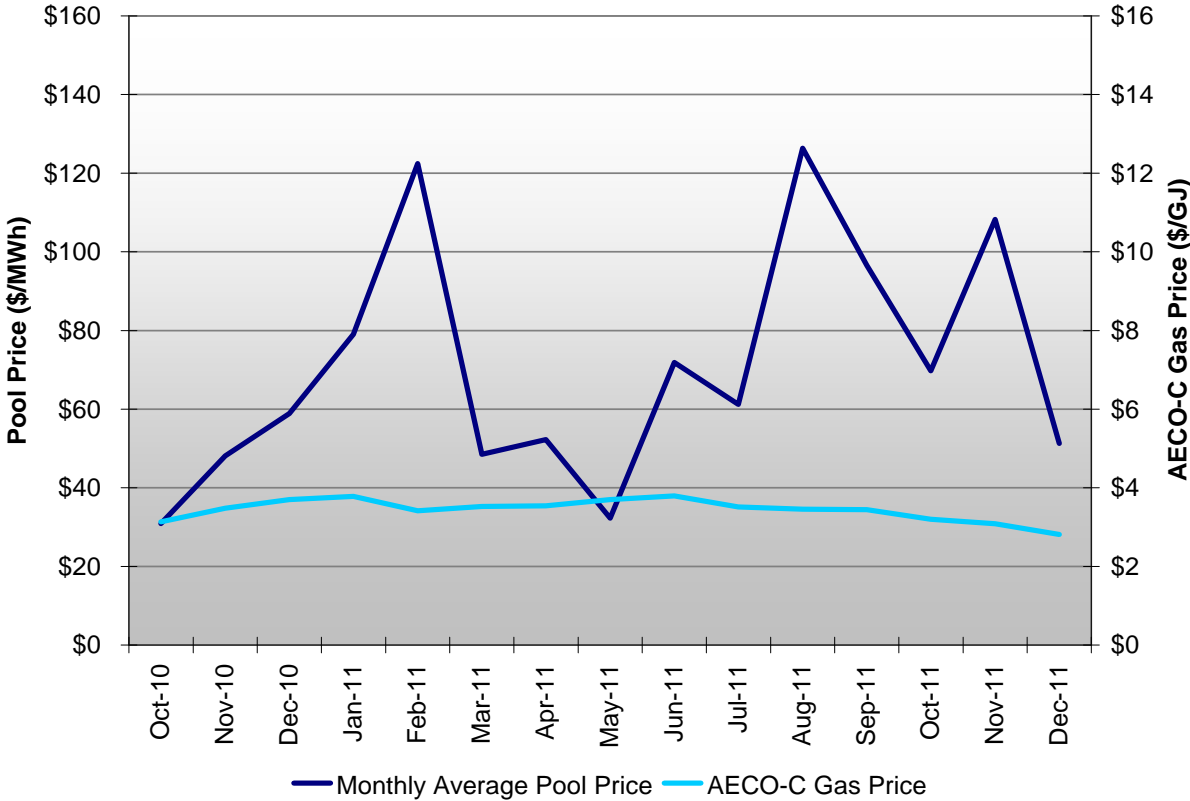


Figure A.2: Pool Price and AECO Gas Price

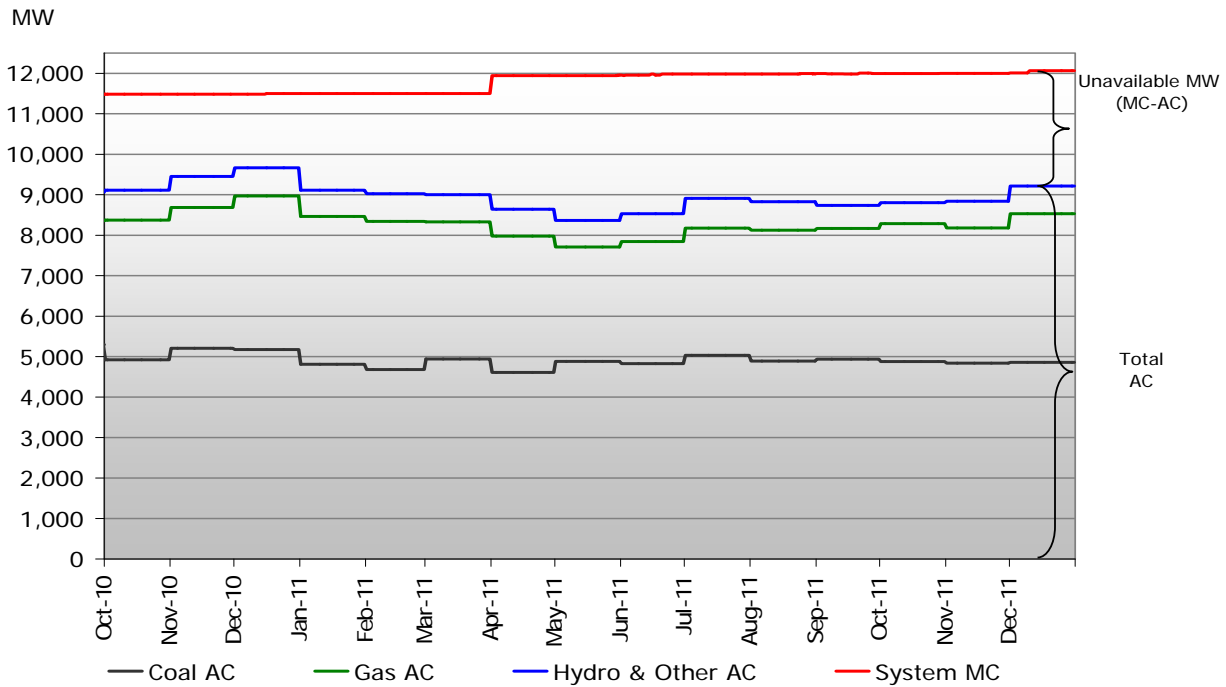


# Appendix B: Supply Availability Metrics

Table B.1: Availability and Capacity Factors

Fuel Type	Quarter	Average MC	Average AC	Availability Factor	Generation	Capacity Factor
		[A]	[B] MW	[C]=[B]/[A]	[D]	[E] = ([D]x1000)/([A]xhrs)
		(MW)	(MW)	(%)	(GWh)	(%)
<b>All Fuels</b> <i>(excl. Wind)</i>	Q4/11	12,014	8,953	75%	15,260	58%
	Q3/11	11,984	8,824	74%	15,704	59%
	Q4/10	11,487	9,409	82%	16,739	66%
<b>Coal</b>	Q4/11	6,237	4,858	78%	9,077	66%
	Q3/11	6,244	4,956	79%	10,082	73%
	Q4/10	5,782	5,102	88%	10,531	82%
<b>Natural Gas</b>	Q4/11	4,825	3,475	72%	5,709	54%
	Q3/11	4,798	3,200	67%	4,942	47%
	Q4/10	4,788	3,572	75%	5,718	54%
<b>Hydro &amp; Other</b>	Q4/11	952	619	65%	474	23%
	Q3/11	942	669	71%	679	33%
	Q4/10	917	734	80%	490	24%
<b>Wind</b>	Q4/11	844	n/a	n/a	816	44%
	Q3/11	777	n/a	n/a	427	25%
	Q4/10	671	n/a	n/a	411	28%

Figure B.1: Available Capacity (AC) vs Maximum Capacity (MC)



# Appendix C: Operating Reserves Market Metrics

Figure C.1: NGX Active Reserves Weighted Average Trade Index

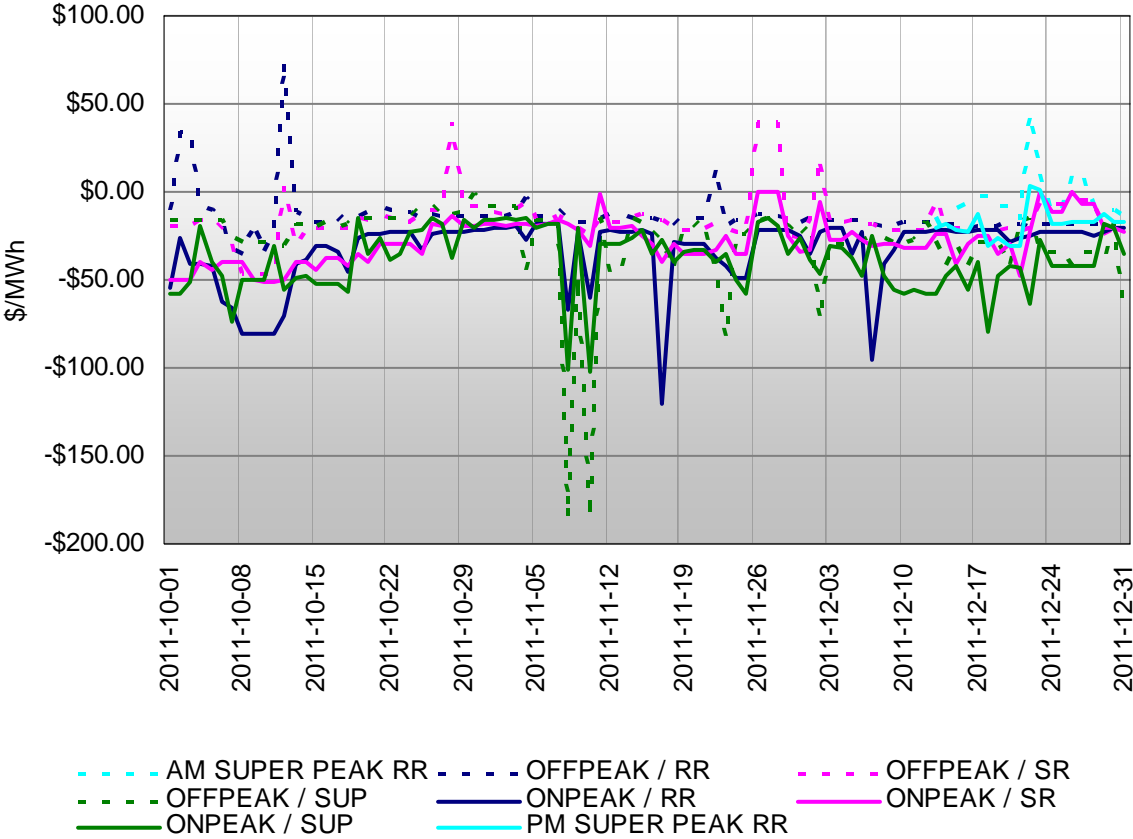
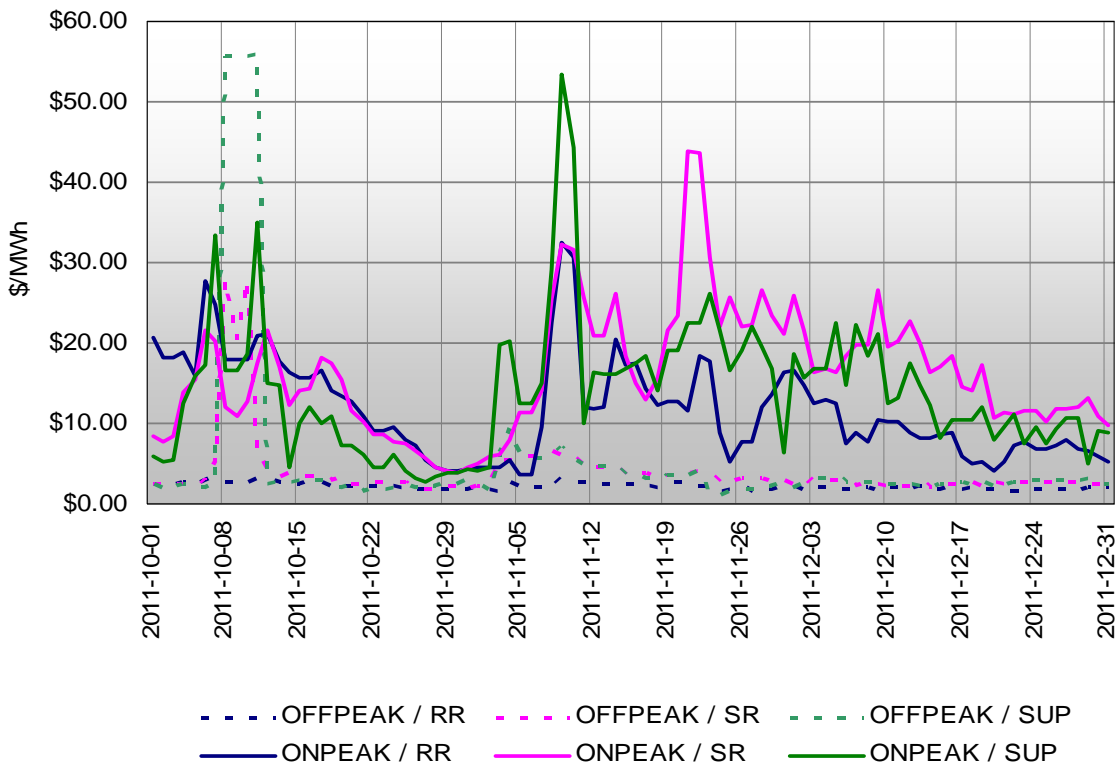
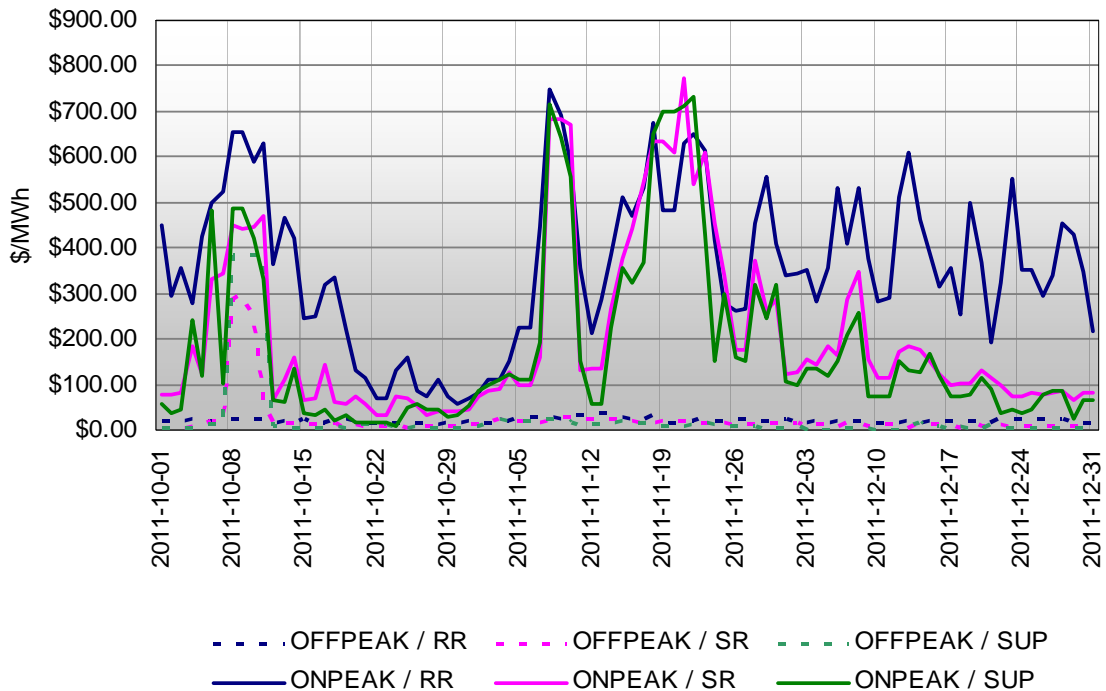


Figure C.2: Standby Reserve Prices

Standby Reserves Average Premium Price

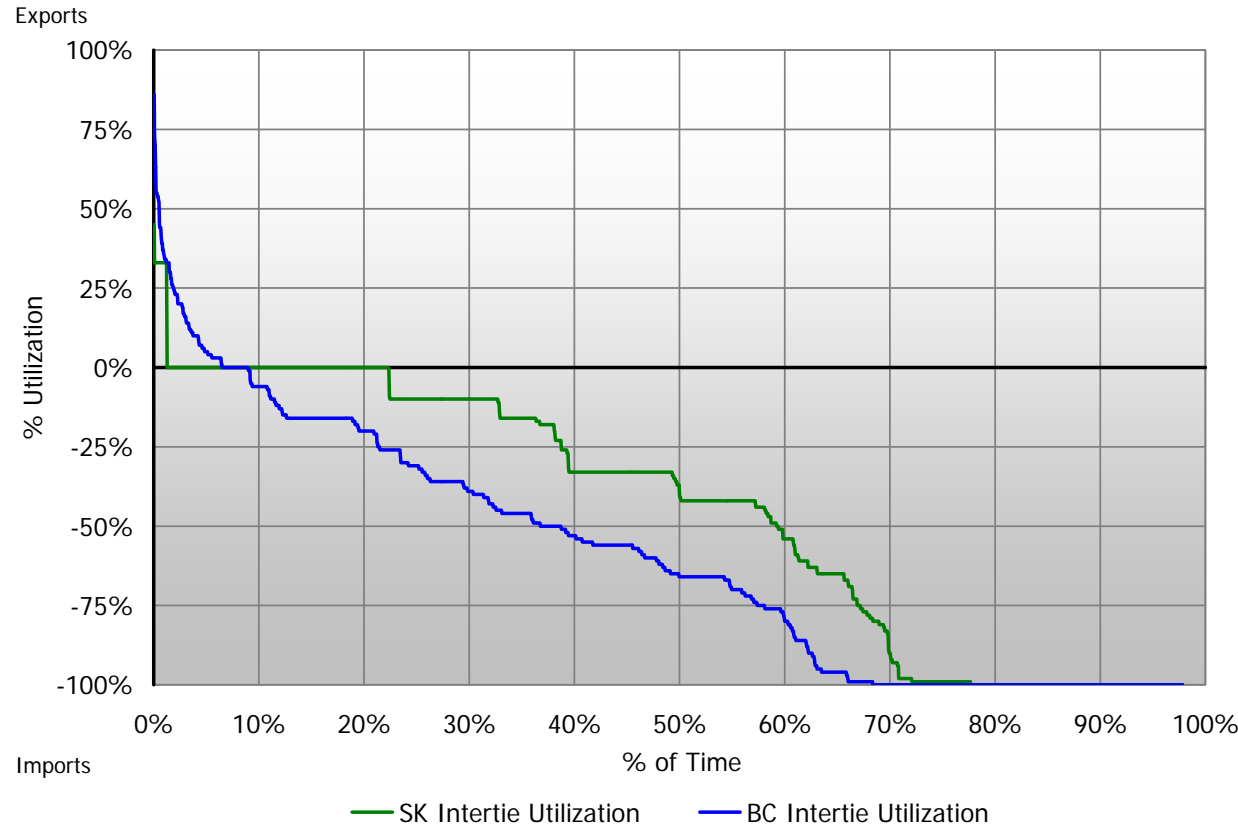


Standby Reserves Average Activation Price

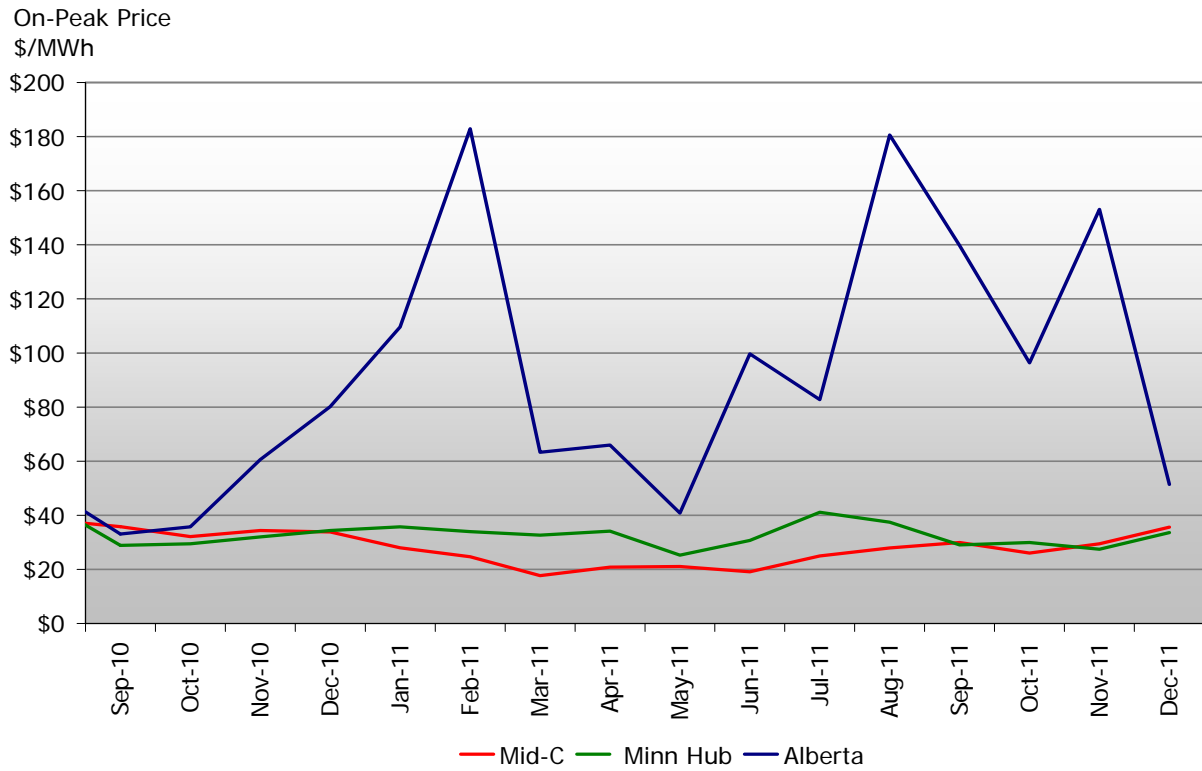


# Appendix D: Intertie Metrics

Figure D.1: Intertie Utilization – Q4/11



**Figure D.2: On-Peak Prices in Neighbouring Markets**



**Figure D.3: Off-Peak Prices in Neighbouring Markets**

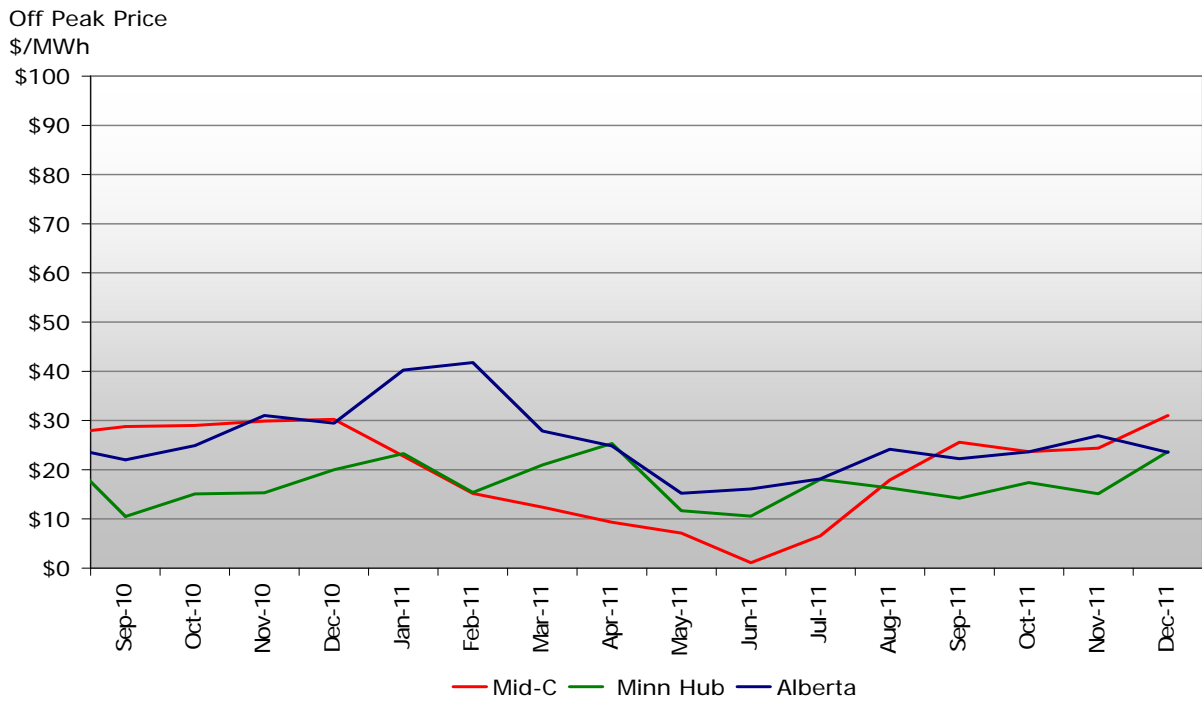
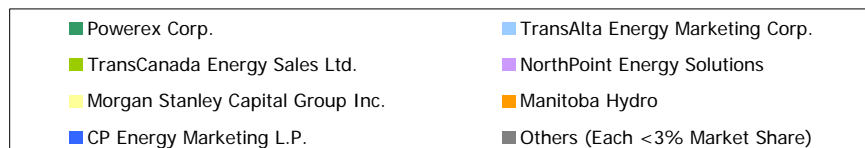
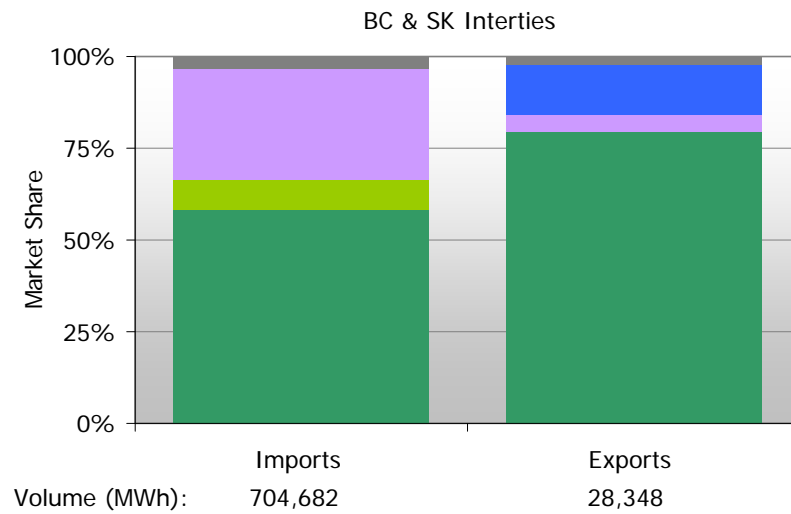
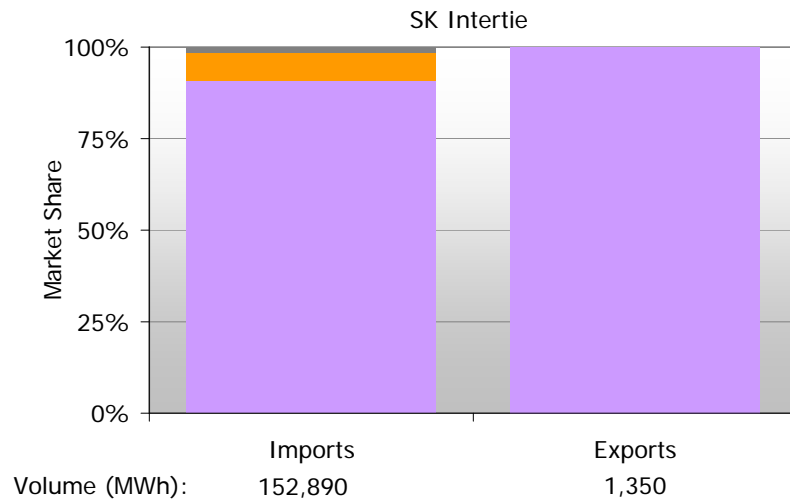
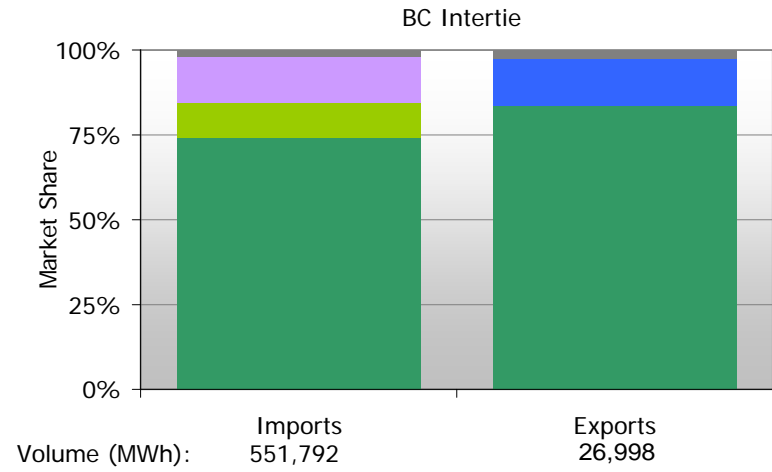


Figure D.4: Intertie Market Shares – Q4/11



# Appendix E: Forward Market Metrics

Figure E.1: Volume by Trading Month

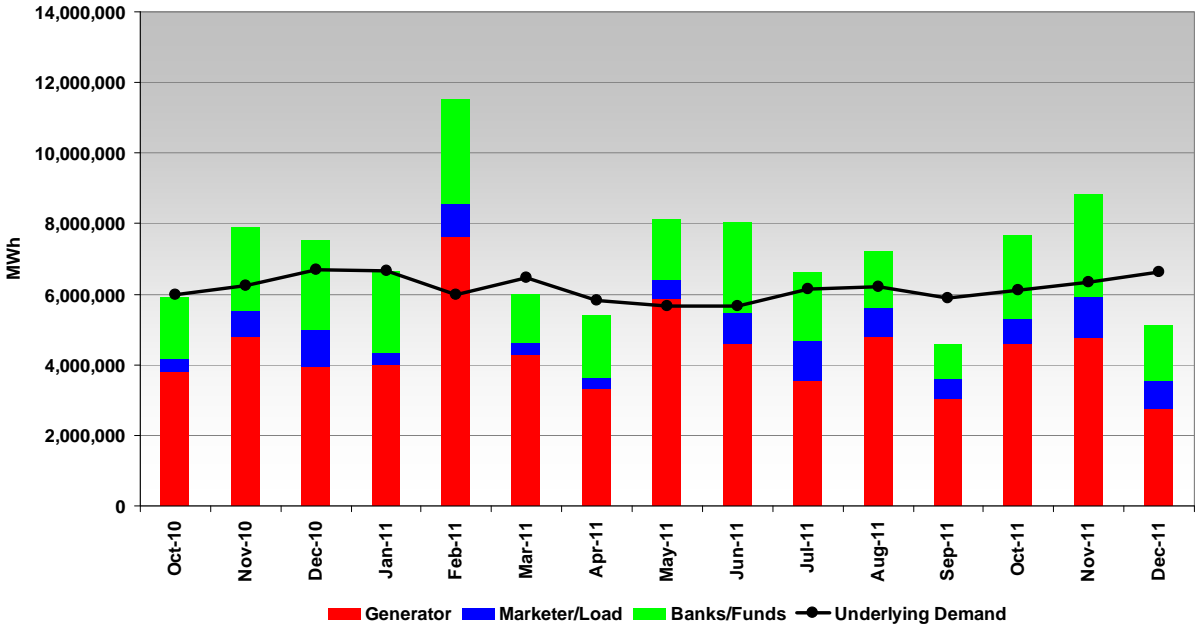


Figure E.2: Market Shares by Participant Type

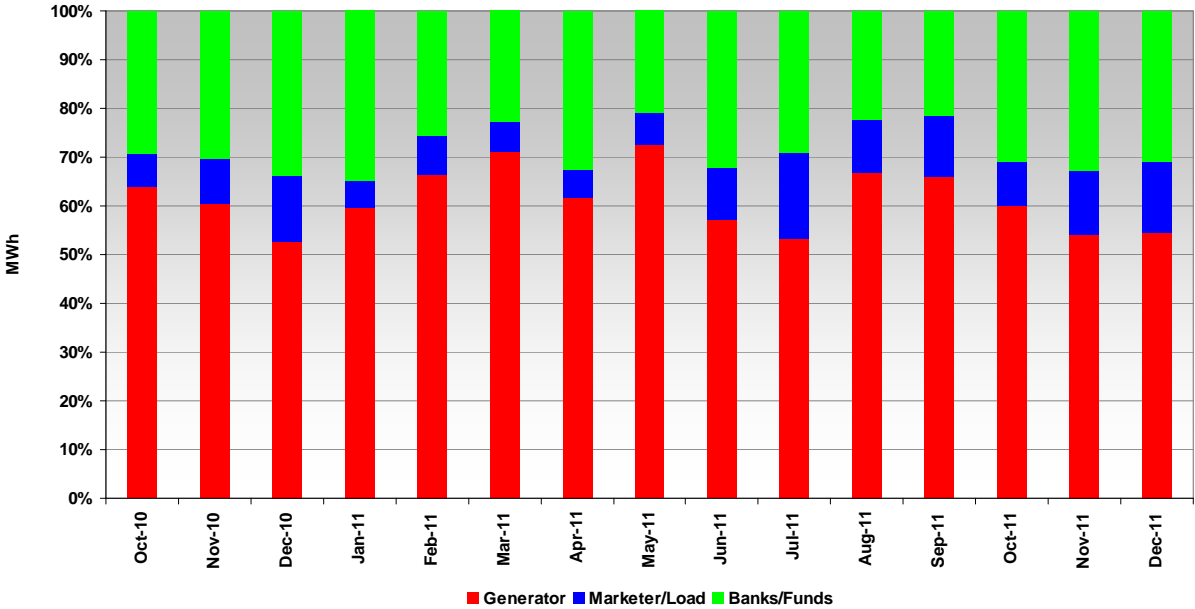
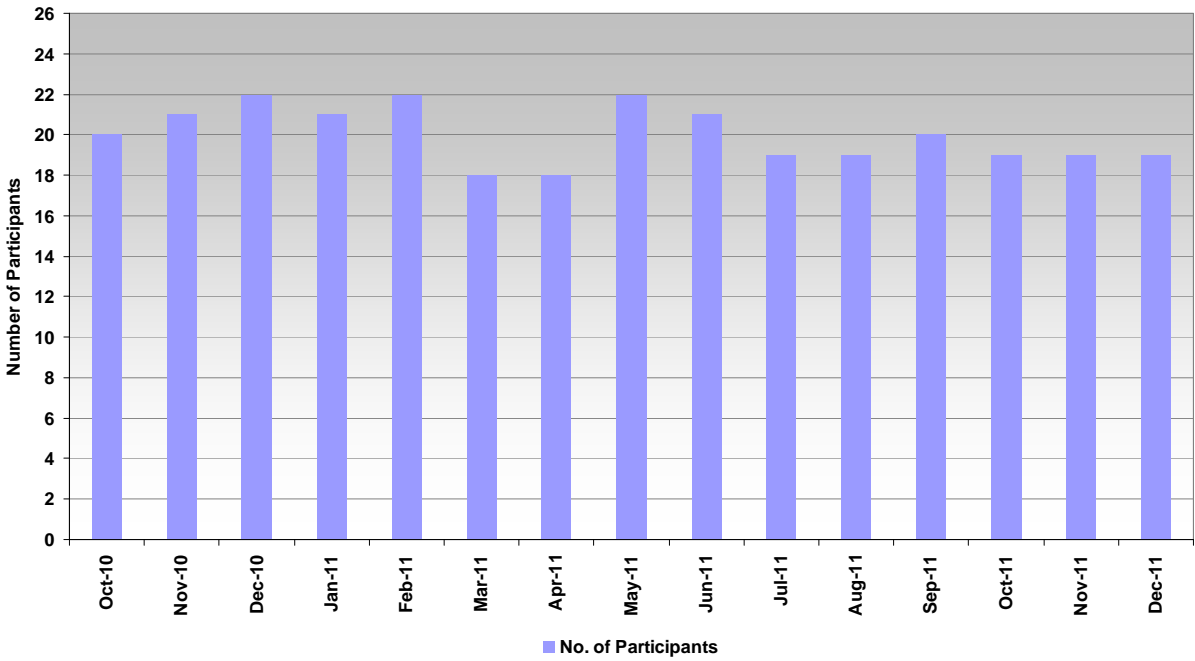


Figure E-3: Number of Active Market Participants



## Appendix F: Hours >3StD in Q4/11

Date	HE	Pool Price	Demand	MC	AC	Dispatched MW	Supply Cushion	BC Net Import	SK Net Import	Wind	% of Supply Cushion					
											A	B	C	D	E	Other
10/1/2011	11	\$304.60	8,193	11,995	8,801	7,460	1,100	0	151	156	32%	4%	44%	11%	0%	8%
10/1/2011	12	\$459.88	8,205	11,995	8,802	7,266	1,206	0	151	112	29%	9%	40%	10%	3%	8%
10/1/2011	13	\$378.67	8,181	11,995	8,838	7,396	1,203	0	152	64	25%	8%	40%	17%	0%	9%
10/1/2011	14	\$165.88	8,154	11,995	8,895	7,401	1,197	0	151	41	25%	9%	40%	18%	0%	8%
10/3/2011	8	\$163.84	8,552	11,995	8,966	7,995	880	200	100	1	41%	8%	12%	12%	16%	11%
10/3/2011	14	\$498.76	8,700	11,995	8,969	8,071	1,079	415	100	25	35%	12%	39%	9%	1%	4%
10/3/2011	15	\$363.79	8,672	11,995	8,859	8,018	1,175	415	100	38	32%	11%	33%	15%	6%	4%
10/3/2011	16	\$714.35	8,645	11,995	8,953	8,046	1,020	415	100	45	37%	13%	33%	9%	0%	8%
10/3/2011	17	\$477.21	8,812	11,995	9,063	8,131	1,124	415	100	85	33%	14%	30%	13%	0%	9%
10/3/2011	18	\$186.20	8,854	11,995	8,955	8,124	1,053	415	100	88	36%	15%	30%	9%	0%	10%
10/3/2011	19	\$167.65	8,759	11,995	8,962	8,040	1,085	415	100	62	35%	13%	29%	14%	0%	8%
10/3/2011	20	\$475.14	8,927	11,995	9,020	8,186	1,021	415	100	76	37%	14%	31%	12%	0%	6%
10/4/2011	14	\$455.45	8,796	11,995	8,721	7,861	1,008	420	100	206	36%	11%	33%	10%	0%	10%
10/4/2011	15	\$455.45	8,716	11,995	8,770	7,895	1,008	420	100	243	36%	11%	33%	10%	0%	10%
10/4/2011	16	\$448.02	8,744	11,995	8,771	7,851	1,098	420	100	350	33%	10%	34%	14%	0%	9%
10/4/2011	17	\$452.08	8,742	11,995	8,654	7,865	960	420	100	278	38%	11%	37%	11%	0%	3%
10/4/2011	18	\$454.36	8,727	11,995	8,627	7,821	937	420	100	231	39%	13%	36%	10%	0%	3%
10/4/2011	19	\$425.09	8,579	11,995	8,630	7,732	1,030	420	100	179	37%	12%	36%	17%	0%	-2%
10/4/2011	20	\$423.35	8,733	11,995	8,626	7,960	809	420	100	153	34%	6%	47%	18%	0%	-4%
10/4/2011	21	\$417.25	8,687	11,995	8,619	7,916	849	420	100	107	32%	6%	44%	22%	0%	-4%
10/4/2011	22	\$147.44	8,445	11,995	8,588	7,635	1,124	420	100	90	33%	15%	33%	8%	0%	11%
10/5/2011	8	\$635.95	8,541	11,995	8,601	8,034	667	420	100	20	57%	15%	12%	9%	1%	7%
10/5/2011	9	\$697.24	8,499	11,995	8,607	7,889	902	420	100	21	40%	12%	34%	7%	0%	7%
10/5/2011	10	\$155.90	8,524	11,995	8,618	7,878	922	420	100	27	28%	12%	33%	16%	0%	12%
10/5/2011	11	\$708.51	8,610	11,995	8,624	7,945	865	420	100	32	36%	13%	36%	5%	0%	11%
10/5/2011	12	\$708.88	8,605	11,995	8,627	7,948	865	420	100	22	36%	13%	36%	5%	0%	11%
10/5/2011	13	\$705.62	8,568	11,995	8,615	7,897	905	420	100	27	34%	12%	34%	9%	0%	11%
10/5/2011	14	\$621.62	8,569	11,995	8,607	7,929	868	420	100	21	36%	8%	35%	18%	0%	3%
10/5/2011	15	\$428.91	8,563	11,995	8,602	7,805	984	420	100	20	30%	11%	31%	16%	0%	12%
10/5/2011	16	\$651.02	8,606	11,995	8,585	7,880	906	420	100	23	34%	12%	34%	9%	0%	11%
10/5/2011	17	\$626.32	8,720	11,995	8,620	8,058	879	420	100	28	35%	4%	27%	18%	0%	16%
10/5/2011	18	\$629.25	8,771	11,995	8,625	8,127	586	420	100	33	49%	8%	38%	1%	0%	4%
10/5/2011	19	\$603.85	8,714	11,995	8,682	7,987	838	420	100	83	43%	6%	37%	12%	0%	3%
10/5/2011	20	\$526.25	8,831	11,995	8,681	7,975	838	420	100	120	36%	8%	36%	17%	0%	3%
10/5/2011	21	\$452.16	8,738	11,995	8,678	7,958	854	420	100	177	35%	8%	37%	17%	0%	3%
10/6/2011	9	\$177.95	8,766	11,995	8,546	7,719	1,008	439	100	365	36%	15%	10%	17%	1%	20%
10/6/2011	11	\$585.42	8,782	11,995	8,506	7,740	945	439	100	359	40%	17%	25%	12%	0%	6%
10/6/2011	12	\$583.67	8,697	11,995	8,486	7,757	910	439	100	306	42%	18%	22%	12%	0%	6%
10/6/2011	13	\$498.80	8,663	11,995	8,492	7,726	940	439	100	310	40%	17%	25%	12%	0%	6%
10/6/2011	14	\$285.37	8,640	11,995	8,551	7,670	986	439	100	336	38%	17%	28%	11%	0%	6%
10/6/2011	15	\$180.26	8,668	11,995	8,560	7,647	1,082	439	100	354	35%	18%	29%	13%	0%	5%

Date	HE	Pool Price	Demand	MC	AC	Dispatched MW	Supply Cushion	BC Net Import	SK Net Import	Wind	% of Supply Cushion					
											A	B	C	D	E	Other
10/6/2011	16	\$450.18	8,639	11,995	8,518	7,670	1,022	439	100	325	37%	17%	31%	14%	0%	2%
10/6/2011	17	\$401.58	8,686	11,995	8,559	7,750	983	439	100	322	38%	17%	32%	14%	0%	-2%
10/6/2011	18	\$423.00	8,718	11,995	8,565	7,739	950	439	100	371	40%	17%	33%	12%	0%	-2%
10/6/2011	19	\$200.41	8,688	11,995	8,577	7,666	1,087	439	100	335	34%	14%	29%	11%	0%	11%
10/6/2011	20	\$365.80	8,760	11,995	8,637	7,829	885	439	100	289	43%	9%	36%	14%	0%	-3%
10/6/2011	21	\$478.33	8,662	11,995	8,276	7,822	600	454	100	231	34%	14%	32%	14%	0%	6%
10/6/2011	22	\$208.61	8,437	11,995	8,262	7,541	857	439	100	208	29%	12%	35%	17%	0%	6%
10/7/2011	7	\$154.00	7,973	11,995	8,342	7,306	1,227	420	100	108	25%	18%	25%	16%	4%	12%
10/7/2011	8	\$898.28	8,274	11,995	8,380	7,548	914	420	100	84	39%	9%	35%	6%	0%	11%
10/7/2011	9	\$886.70	8,398	11,995	7,929	7,543	633	472	152	77	32%	7%	45%	11%	0%	5%
10/7/2011	11	\$862.88	8,600	11,995	7,936	7,767	612	462	153	172	28%	8%	52%	8%	0%	5%
10/7/2011	15	\$590.13	8,524	11,995	8,042	7,681	603	462	153	231	24%	2%	36%	33%	0%	5%
10/31/2011	19	\$247.53	9,060	12,000	8,943	7,862	1,118	420	0	447	27%	1%	54%	7%	0%	11%
10/31/2011	20	\$197.18	8,978	12,000	8,740	7,837	949	420	0	459	22%	1%	64%	8%	0%	5%
11/9/2011	9	\$441.55	8,980	12,000	8,591	8,204	655	420	151	108	0%	23%	61%	11%	0%	5%
11/9/2011	10	\$554.07	8,941	12,000	8,601	8,226	606	420	151	132	0%	24%	62%	12%	0%	2%
11/14/2011	20	\$394.41	9,506	12,000	8,928	8,441	691	420	152	263	7%	2%	55%	35%	0%	2%
11/15/2011	22	\$237.45	9,083	12,000	8,797	7,844	1,150	420	100	430	0%	28%	31%	12%	24%	6%
11/16/2011	17	\$677.31	9,448	12,000	8,845	8,395	593	420	153	172	0%	22%	60%	6%	8%	3%
11/19/2011	12	\$945.03	9,200	12,000	9,036	8,500	633	437	0	89	0%	28%	27%	14%	29%	3%
11/19/2011	13	\$348.71	9,082	12,000	9,031	8,352	757	437	0	80	0%	23%	50%	12%	12%	4%
11/19/2011	15	\$371.09	9,020	12,000	9,074	8,286	893	437	0	94	0%	17%	35%	29%	17%	2%
11/19/2011	16	\$239.85	9,064	12,000	9,118	8,299	939	437	0	90	0%	19%	35%	27%	17%	2%
11/19/2011	17	\$716.86	9,290	12,000	8,975	8,465	619	437	0	79	0%	26%	32%	40%	0%	3%
11/20/2011	13	\$459.54	8,825	12,000	8,703	7,965	842	437	0	216	0%	20%	39%	28%	12%	2%
11/20/2011	14	\$213.84	8,836	12,000	8,700	7,924	850	437	25	268	0%	19%	39%	28%	11%	3%
11/20/2011	15	\$256.43	8,891	12,000	8,680	7,847	907	437	25	290	0%	20%	36%	24%	17%	3%
11/20/2011	20	\$653.24	9,469	12,000	8,774	8,098	726	437	0	472	0%	23%	38%	36%	0%	3%
11/20/2011	21	\$645.56	9,348	12,000	8,764	8,211	613	437	25	404	0%	28%	46%	23%	0%	2%
11/21/2011	12	\$566.16	9,274	12,000	8,842	8,271	649	421	50	285	0%	23%	32%	43%	0%	2%
11/21/2011	17	\$461.55	9,603	12,000	8,652	8,157	643	421	150	634	0%	21%	45%	32%	0%	2%
11/22/2011	12	\$332.86	9,207	12,000	8,536	7,948	761	420	50	534	0%	16%	45%	35%	0%	5%
11/22/2011	17	\$433.94	9,590	12,000	8,711	8,188	704	420	151	613	0%	20%	43%	27%	6%	4%
11/22/2011	21	\$483.31	9,215	12,000	8,851	8,225	695	420	152	290	0%	19%	51%	27%	0%	3%
11/24/2011	17	\$399.25	9,368	12,000	8,829	8,356	714	415	75	278	12%	15%	52%	9%	6%	5%
12/3/2011	17	\$342.74	9,371	12,010	8,639	8,057	797	350	153	421	0%	18%	9%	23%	28%	23%
12/11/2011	16	\$125.35	9,142	12,062	9,556	8,423	1,088	150	50	19	14%	12%	35%	6%	18%	14%
12/12/2011	18	\$378.08	10,131	12,062	9,609	9,113	629	456	153	252	16%	6%	54%	13%	0%	11%
12/29/2011	20	\$609.95	9,295	12,062	8,664	8,017	719	420	100	389	0%	16%	56%	19%	0%	8%
12/29/2011	21	\$575.85	9,156	12,062	8,657	7,936	727	420	50	440	0%	16%	55%	19%	0%	10%
12/31/2011	12	\$199.63	8,737	12,062	8,565	7,535	1,012	420	50	295	0%	14%	40%	12%	8%	25%

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# References

## Market Surveillance Administrator

*Offer Behaviour Enforcement Guidelines*, 2011

<http://albertamsa.ca/uploads/pdf/Consultations/Market%20Participant%20Offer%20Behaviour/Decide%20-%20Step%205/Offer%20Behaviour%20Enforcement%20Guidelines%20011411.pdf>

Stakeholder Consultation on Market Data Transparency, 2011 (ongoing)

<http://albertamsa.ca/uploads/pdf/Archive/2011/Notice%20re%20Stakeholder%20Consulation%20Market%20Data%20Transparency%20100611.pdf>

MSA Quarterly Reports

<http://albertamsa.ca/index.php?page=quarterly-reports>

## Statutes and Regulations

## Independent System Operator

## Commission Decisions and Rules

Application No. 1607868 Settlement Agreement MSA TransAlta

[https://www.auc.ab.ca/eub/dds/iar\\_query/ApplicationAttachments.aspx?AppNumber=1607868](https://www.auc.ab.ca/eub/dds/iar_query/ApplicationAttachments.aspx?AppNumber=1607868)

## Other

Charles River Associates. Electricity Market Data Transparency. 2011. Report Prepared for MSA.

<http://albertamsa.ca/uploads/pdf/Archive/2011/Market%20Data%20Transparency/CRA%20Report%20for%20MSA%2011-22%202011.pdf>





The Market Surveillance Administrator is an independent enforcement agency that protects and promotes the fair, efficient and openly competitive operation of Alberta's wholesale electricity markets and its retail electricity and natural gas markets. The MSA also works to ensure that market participants comply with the Alberta Reliability Standards and the Independent System Operator's rules.