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MSA Report

Price Event Report
October 1 – 10, 2006

3 November, 2006

Market Surveillance Administrator

1 INTRODUCTION

On October 4 and 5, 2006, the Alberta market experienced record average daily pool prices of $533.87/MWh and $576.11/MWh, respectively. These two days were part of a longer sequence of high-price days starting just prior to October 1 and ending on October 10. Although pool prices have stayed reasonably robust since that time, the focus of this report is the market prices of October 1 – 10. This event follows close on the heels of a similar situation in late July, during which the AESO was forced to curtail firm load. Note that no firm load was shed in October although several times the merit order was exhausted and the appropriate emergency procedures were initiated by the AESO.

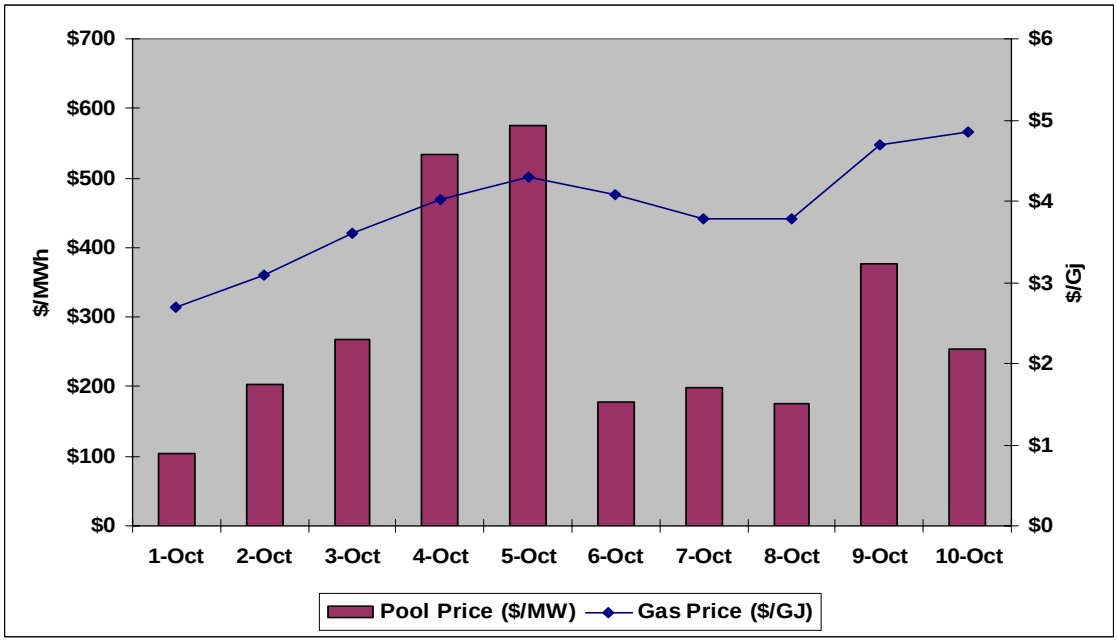
Hence, the October event is of interest to the MSA. This preliminary report describes the general background leading to the high prices of October 1 – 10, 2006 and identifies some items of behaviour that appear unusual based on the assessment work thus far.

2 POOL PRICES OVER OCTOBER 1 – 10, 2006

The average Pool price was $286.51/MWh over the period October 1 – 10, 2006 and included two new record high daily averages on the 4th and 5th as depicted on Figure 1. The magnitude of this price event exceeds the period in late July which yielded an average Pool price of $278.48/MWh over 9 days. Notwithstanding these two significant price events, the year-to-date Pool price stands at only $78/MWh as of late October.

The prices over this first part of October were outstanding and warrant an assessment as to whether they truly represent a scarcity situation or are being driven by some form of inappropriate behaviour. Further, a question arises as to the randomness of the forced outages.

Figure 1 - Pool Price and Natural Gas Price October 1 - 10, 2006



Those residential customers on the regulated rate option (RRO) or competitive fixed price contracts will not see the effects of these high October prices in their rates. In these cases, the energy is generally purchased by the sellers using a mix of long and short term hedges. Market traders had anticipated some upward movement in price levels in October relative to September and November. For example, on the NGX trading platform, the month-ahead strip contract for September (used in the calculation of the RRO rate) was $69/MWh. For October it bumped up to $82/MWh.

However, one has to assume that all sellers will be cognizant of the upside potential that is foregone in a fixed price sale and will likely price that more aggressively in future sales. At the beginning of October, the November contract traded in the low $60s but trended up throughout October to the high $70s, with an overall index value of $68/MWh for the month. The elevated Pool Price in October at least partially contributed to the price rise of the November contract.

Previous experience based on observation and analysis of the Alberta market shows that some of the key factors that can influence Pool prices are:

- Natural gas prices;
- Load;
- Outages of baseload units – particularly coal units;
- Intertie availability and usage; and,

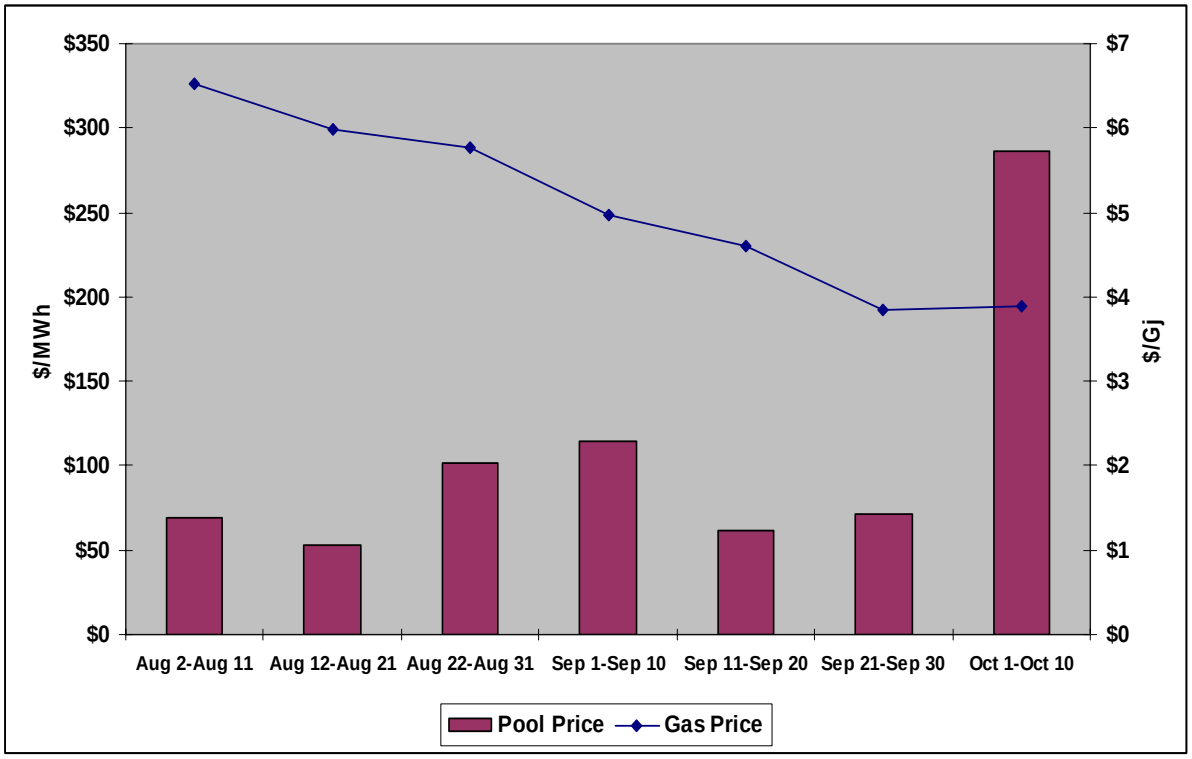
- Participant behaviour in terms of complying with rules and the manner in which energy is offered to the market.

2.1 NATURAL GAS PRICES

Natural gas prices were quite volatile over the October 1 - 10 period (Figure 1), but never exceeded $5/GJ. Compared with the balance of the year, this is a low price and would not contribute to higher prices. In fact, for those gas units that offer in at short-run marginal cost, their offers would be lower. The marginal price-setting unit in Alberta frequently uses natural gas and thus gas prices tend to drive Pool prices, except under situations of extreme scarcity. Figure 2 shows 10-day average Pool price and gas price over the past two months and indicates that the two generally move in a synchronous manner – with the notable exception of the October 1 – 10 period.

Interestingly, the high Alberta electricity prices over the period October 1 – 10 convert to a market heat rate of about 60 GJ/MWh partly due to the lower price of natural gas. This extreme value for a market heat rate has not been observed for at least 5 years and indicates scarcity pricing. However, since the price of natural gas itself is lower in this period, it cannot be considered to be a driver for the high prices of this event.

Figure 2 - 10 Day Average Pool Price and Natural Gas Price



2.2 LOAD

Early October is part of the 'shoulder' season in Alberta noted for moderate loads. For the 10-day period of interest, the average load was 7723 MW, with a peak

hourly value of 8672 MW. The average is very close to the average year-to-date value of 7759 MW, and with peak values that are not excessive, it is concluded that the load is not a driver for this event.

2.3 GENERATION OUTAGES

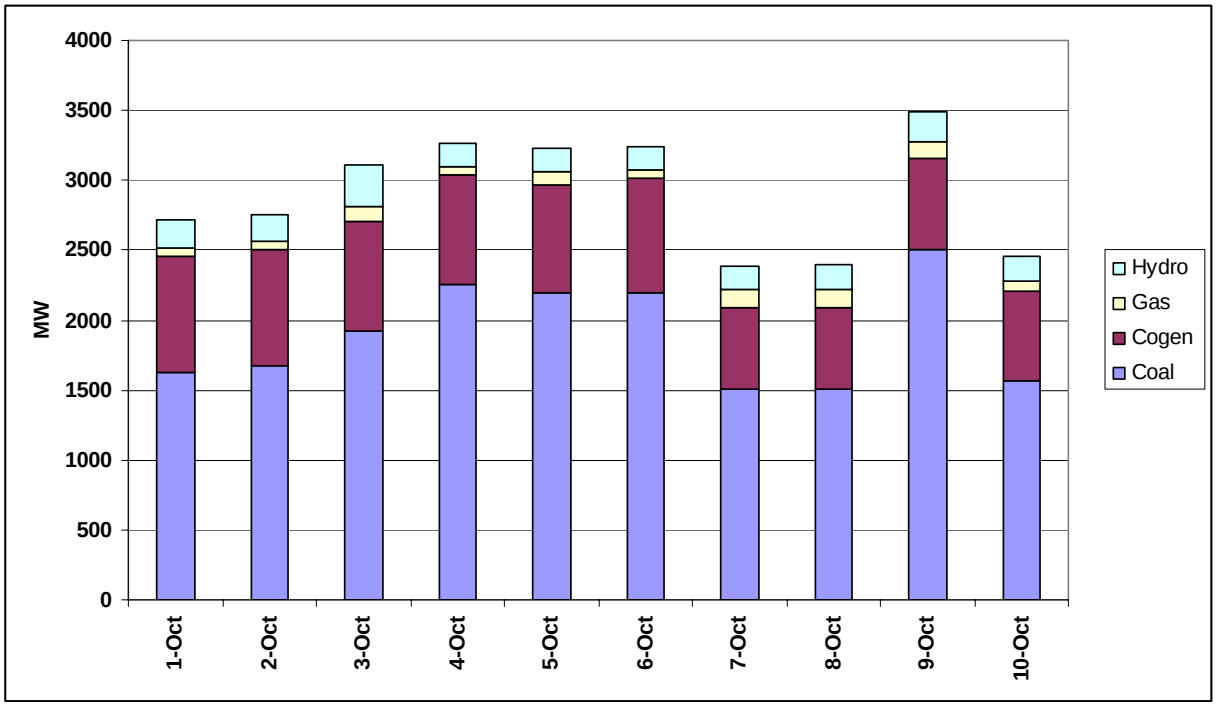
The surplus supply in real time has a significant effect on Pool price. This in turn is driven primarily by outages of generating units. Over October 1 – 10, the system experienced a significant amount of outage – much of it unplanned.

Based on discussions with the AESO, some key events in the critical period are:

- A large number of forced outages occurred, layered on top of a number of planned outages in the system;
- This was further compounded by constraints on the Saskatchewan, BC and US-BC interties;
- The system went into emergency procedures (OPP801) several times in the period; and,
- When the system was very tight, several generators exhibited good behaviours in modifying the timing of outages to help system reliability.

Figure 3 shows the total amount of outage in the period.

Figure 3 - Total Average Daily Outages October 1 - 10, 2006

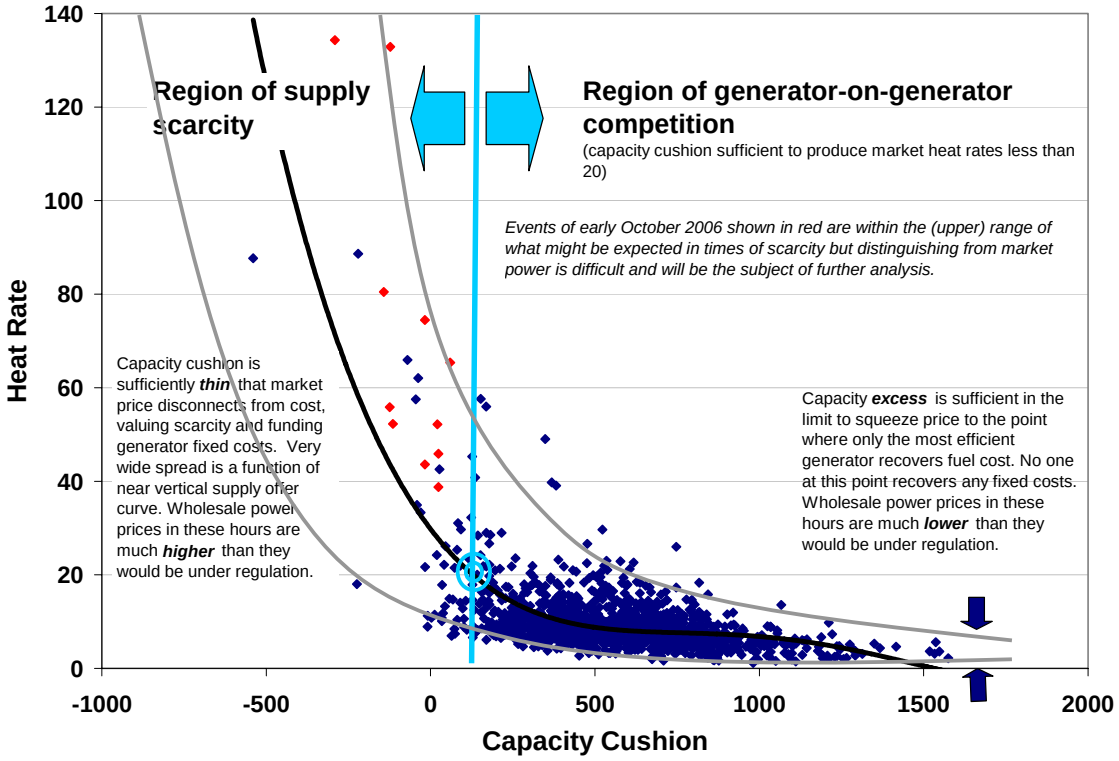


A natural question arises as to how unusual is this level of forced outage for the system? A brief preliminary assessment was undertaken assuming randomness of the outages and estimated forced outage rates. The results of the Monte Carlo simulation suggest that this level of total forced outage of the coal fleet will occur

every year for at least a few days. Thus it is rare event but not unreasonable. This is a weak test and does not guarantee the absence of clustering of the outages. More work will be done in this area.

Simply put – a tight situation existed over this period. Figure 4 shows the relationship between market heat rate and supply surplus and where the recent events lie in the spectrum of results. The data spans several years and shows some interesting features. When the supply surplus is high, there is plenty of competition and sellers are forced to their lowest prices – in many cases no more than fuel plus variable maintenance cost. In this zone, prices expressed in terms of heat rate occur in a tighter group. At very low levels of supply cushion (supply surplus) price setters are no longer pricing off gas price and scarcity pricing is occurring. Here the relationship of market heat rate with supply surplus breaks down and the values are more dispersed.

Figure 4 - Market Heat Rate and Supply Surplus



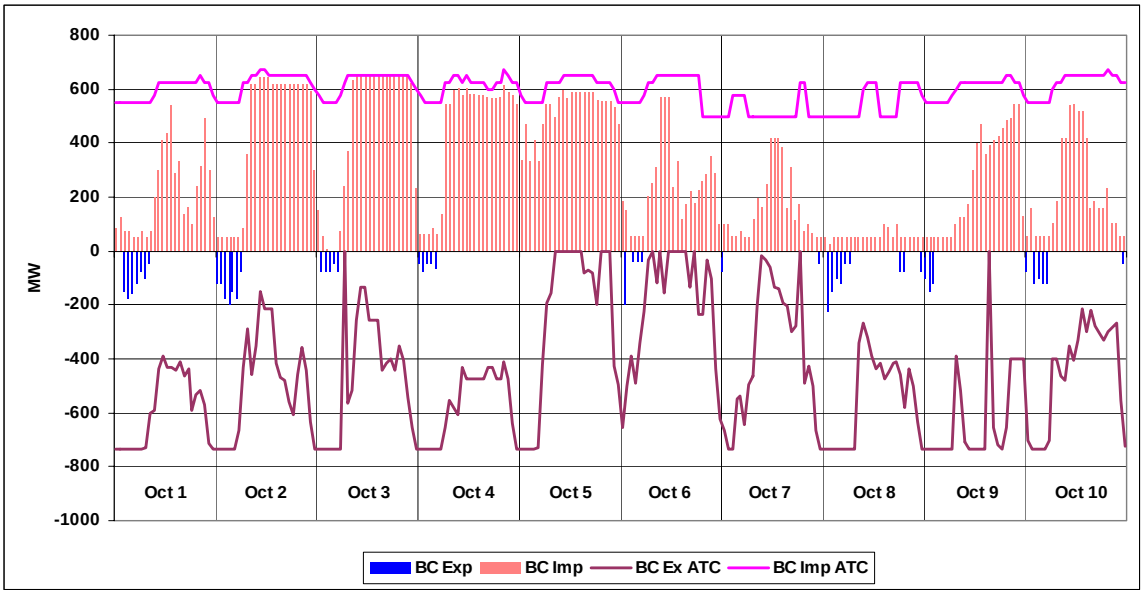
Severity of tightness in the market this year more directly affects the System Controllers as the amount of time the merit order is exhausted and emergency procedures of OPP801 are being followed. Discussions with the AESO on this matter indicate that in 2006 more time has been spent in OPP801 than in previous years, and, on occasion, the System Controllers have had to go deeper into the procedures. In this October period, no firm load was shed as occurred briefly on July 24, 2006.

At this point, it is not possible to say whether the amount of outage is really just an outlier or whether this is a trend that will continue – we will continue to monitor the situation. What is known is that, over the next few years, the robust

Alberta economy is driving up load and likely at a faster rate than the addition of new capacity.

2.4 INTERTIE CONSTRAINTS

Figure 5 - BC and Saskatchewan ATC and Flows



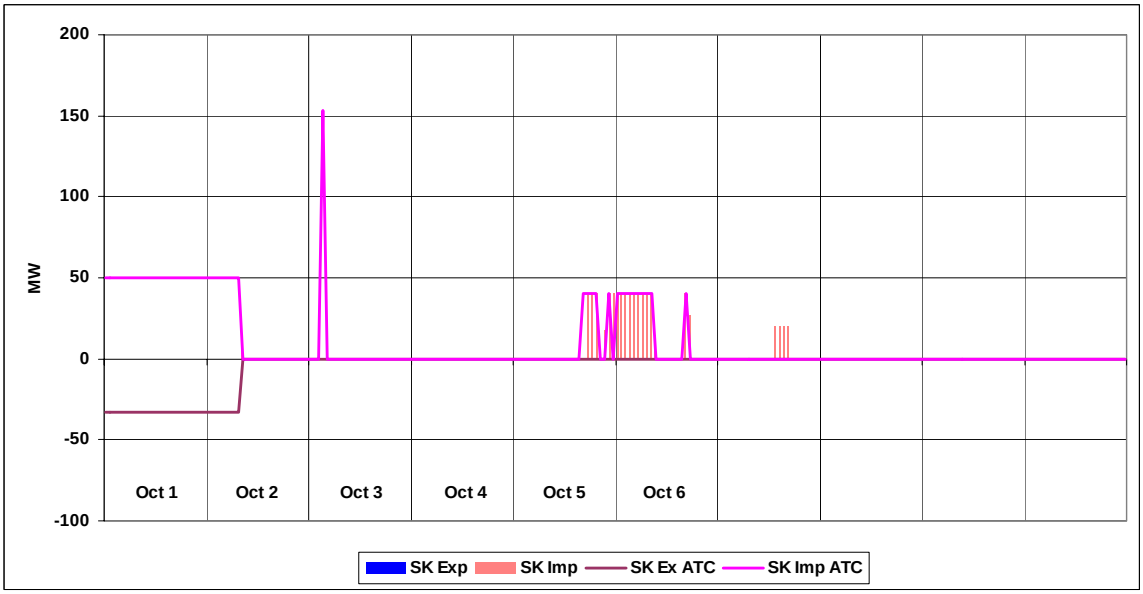


Figure 5 shows the availability of intertie capacity and its utilization over the 10-day period. The following is a summary of the key points:

- The intertie with Saskatchewan was essentially out of service over this period due to a forced outage and thus very little energy flowed;
- The intertie with BC was available and generally flowed energy to Alberta (when supported by economics);

- Over the October 6 – 10 period, the intertie from the US to BC was heavily congested (not shown in Figure 5) making it difficult for Alberta firms to import from the US. Consequently, much less energy flowed into Alberta and the BC intertie was not as full as during the October 1 – 5 period. Pool prices were higher over October 1 – 5 compared with October 6 – 10 which would also contribute to the lowering of import volumes;
- Efficiency on the intertie is limited due to the high volatility of Alberta's Pool prices. This Pool price risk on the part of sellers will manifest itself as an increased risk premium that tends to increase the residual arbitrage in prices between MidC and Alberta; and,
- Transmission line maintenance in BC that would have limited intertie flow was scheduled for the first week of October. After the AESO made the request, BCTC agreed to defer the work (The scarcity situation would have been much worse with the BC intertie constrained)

2.5 BEHAVIOUR

Assessment of generator offer behaviour is an ongoing activity for the MSA. Distinguishing between genuine scarcity prices and the exercise (and possibly abuse) of market power in an hourly market is a difficult task. Genuine scarcity prices are the mechanism through which investors in generation receive an important portion of their returns. It is also the mechanism which sends the build signal for new generation. The evidence suggest that we are entering a phase of the market cycle in which high price events will occur more frequently as the gap between load and supply shrinks. The market price is more vulnerable to manipulation in tight conditions than when supply surplus is plentiful.

Our assessment work to date suggests that there have been some offer behaviours in the October 1-10 period that require further follow-up by the MSA and this is taking place. However, these identified behaviours are not major contributors to the overall price levels in this period.

3 SUMMARY

Pool prices were exceptionally high over the period October 1 – 10 and, given the high prices observed in late July, the event warrants an assessment to be assured, to the extent possible, that they are indeed the result of scarcity conditions.

Key results of the preliminary work are:

- Common drivers of high Pool prices that **were not** a factor in this event are the price of natural gas and load
- The level of total outage of generation plant in Alberta, particularly units on forced outage, **was** an important factor
- The amount of planned outage **was not** unusual for the time of year
- Although the level forced outage of the coal fleet **was high**, it was not so high as to be out of bounds from a statistical perspective

- Constraints on intertie energy **were** important drivers of Pool price in this period
- Assessment of generator bidding strategies has indicated **some limited amount** of behaviour that is being given closer scrutiny. The identified behaviour is not thought to have impacted the overall level of Pool prices over the period in a material way.

Looking forward:

- The apparent clustering of forced outages of coal units that may, or may not, be occurring is of interest to the MSA. We will be taking a closer look at the forced outages and possible reasons for clustering, including any effects driven by the PPA Owner-Buyer relationship;
- The volatility of Pool prices is much greater than those in MidC and the MSA is interested in understanding all the implications of this phenomenon. Further, to the extent that transmission constraints further outside Alberta can impact the Alberta market, appropriate monitoring may be needed;
- The energy-only market design in Alberta depends on price to send the appropriate signal to investors and appropriate high prices need to be allowed to happen;
- It appears that for the next few years tighter market conditions are going to be an increasingly more common occurrence and will continue until the next significant block of generation is built;
- The market tightness that leads to the high prices is also a situation that can make the market vulnerable to 'poor' behaviour – and also more vulnerable to strategies based on size. Portfolio bidding by bigger players has the potential to drive the market price, particularly in tight situations; and,
- All of the above may be of interest to those involved in the discussions concerning the development of principles to clarify the intent of section 6. A first step in moving forward with consultation, development and implementation of an approach to mitigate potential market power abuse in the Alberta electricity market.