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MSA REPORT

Update on Economic Use of the BC Interconnection

23 September, 2005

MARKET SURVEILLANCE
ADMINISTRATOR

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1. INTRODUCTION

This paper is a follow up to a report published by the MSA in January 2005 which addressed some concerns with the performance of the AB – BC interconnection

[<http://www.albertamsa.ca/files/ImportExportStudy121005.pdf>]. That paper provided guidance to market participants when contemplating using the tie. The main intent behind the guidance was to reduce or eliminate the frequency and duration of uneconomic imports and exports. In the opinion of the MSA, uneconomic flows on the tie line, that some might regard as a legitimate portfolio management strategy, create distortion in the market price which reduces fidelity of the market price signal, and therefore, has a negative effect on the fair, efficient, and openly competitive operation of the market.

The MSA has closely monitored the BC intertie and has been actively adjudicating tie line conduct through 2005. Further discussions were held with various parties using the tie line in order to send a clear message and to provide additional clarification on the MSA's expectations in terms of behaviour. In late July 2005, a notice to market participants was posted on the MSA's web site [<http://www.albertamsa.ca/files/NoticeIntertieConduct072805.pdf>] describing the additional guidance.

In summary, the notice indicated that “a market participant whose conduct has as its primary or material intent, the management of Pool price to suit their portfolio will, by that conduct, be in breach of Section 6 of the Act.”

During 2005, the MSA has continued to refine its approach to monitoring and analyzing conduct on the tie lines. In particular, our approach was modified to incorporate some specific differences for Powerex. In doing so, we are able to assess Powerex in a similar manner as the other users. Details of this refinement are contained in Appendix B. The analysis herein presents BC import metrics for 5 prominent users of the tie line including Powerex, as well as overall metrics which reflect all import volumes in the periods shown. It should be noted that none of the data on which this analysis is based is proprietary and could be acquired through public sources.

While the MSA continues to monitor all aspect of activity on the interconnections, this analysis focuses on the economics of imports to Alberta across the AB – BC interconnection which has been cause for particular concern. The MSA emphasizes that its notice on intertie conduct of July 28, 2005 applies equally to export practices on the BC intertie and to conduct on the SK – AB interconnection¹.

¹ Alberta is also linked with the Mid-Continent Area Power Pool (MAPP) via Saskatchewan by a 150 MW DC interconnection

2. ASSESSMENT OF IMPORTS TO ALBERTA FROM BC

An assessment of import profitability is time scale dependent. In assessing the tie line, the MSA's approach has been to look at performance on both a macro (overall performance) scale and a micro (hour over hour behaviour) scale. While performance on a macro level provides an overall context, it may mask undesirable behaviour at the micro level. It is this behaviour at a micro level that testifies to the effort or desire on behalf of the parties to adjust their strategies or pursue avenues other than importing when covering a short position, in order to avoid having an undue impact on Pool price.

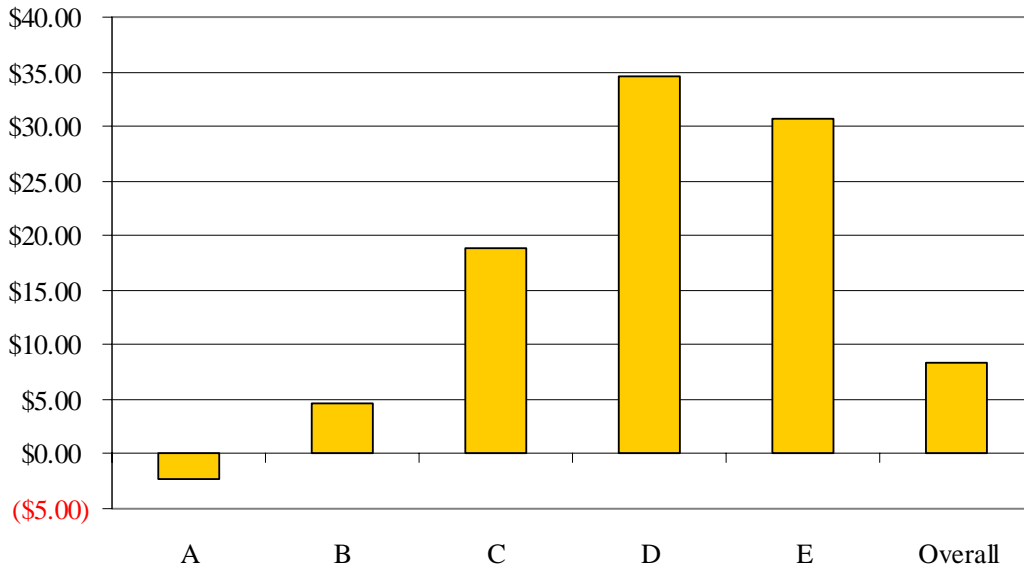
Recent Performance of the Tie Line

The MSA's assessments of tie line performance relate to two key assertions:

- 1) Generally, tie line activity should be driven to close arbitrage opportunities between Alberta and Mid C prices. If this is the case, tie line activity would be expected to be economic in a stand-alone context, over a reasonable time frame;
- 2) Bad guesses will occur but sequential hours of uneconomic activity would be expected to prompt a participant to alter its behaviour.

Figure 1 shows imputed economics for imports across the BC tie line for 2005 year to date overall, and for 5 significant users of the tie line.

Figure 1 - Imputed Economics of BC imports – 2005 year to date



On the basis of **Figure 1**, only Participant A would appear to be a consistently sub-economic importer. The balance of this analysis shows that a closer view of the data is necessary since three of the Participants shown in the figure did, in fact, at different times over 2005, fall offside with the MSA due to their import conduct on the BC tie line.

Overall imputed economics of BC imports has fluctuated thus far in 2005, as is shown in **Figure 2**. Q1/05 contained several weeks of imputed overall uneconomic import activity which was primarily attributed to two participants (A and B) who were the subject of scrutiny by the MSA in early 2005. As a result of ensuing discussions with the MSA, the conduct of those two parties improved markedly. BC import economics (imputed) hence was significantly better in Q2/05 relative to Q1/05 as was noted in the MSA Q2/05 Quarterly Report.

Figure 2 – Imputed BC Import Economics by Week (2005 YTD)

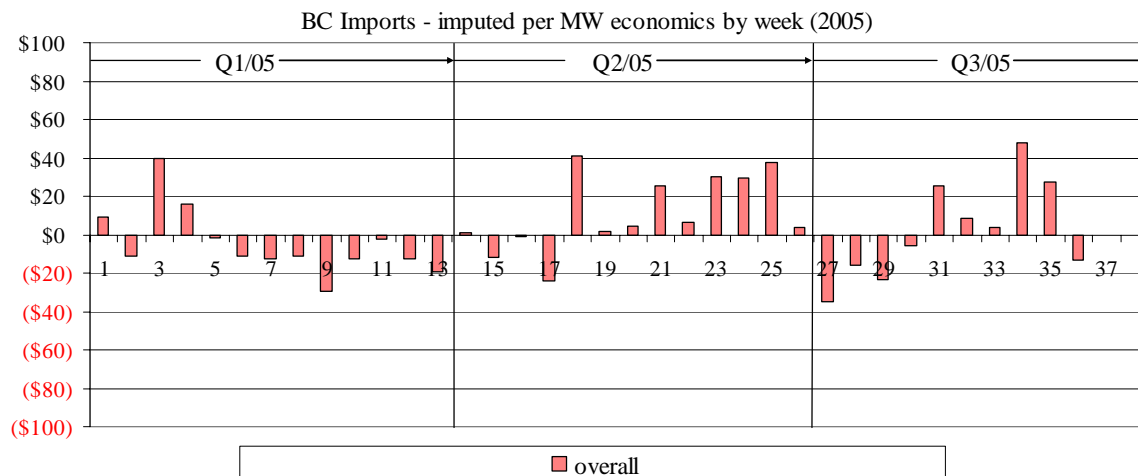


Figure 2 shows that imputed import economics again declined in early Q3/05 which was attributed to the conduct of a third prominent importer – participant C, who was subsequently contacted by the MSA to justify their behaviour and also to clarify the MSA’s position on acceptable intertie conduct. This party’s conduct has significantly improved in the subsequent weeks, however, we are limited with only a few weeks of meaningful data since discussions with this party. Somewhat hampering our near-term assessment was the curtailment on BC imports due to maintenance in the BC control area which affected most of week 34 (Aug 21 – 27)² and part of week 35 (Aug 28 – Sep 3) of our analysis, and also transmission maintenance on the Alberta side which resulted in the curtailment of on-peak imports through part of week 36 (Sep 4 – 10).

² While Alberta ATC was unaffected, imports into Alberta were effectively curtailed in this period

Figure 3 shows the frequency of uneconomic import sequences equal to, or greater than three hours in length, using a $-\$10.00/\text{MWh}$ economic threshold. As in the MSA's January 2005 paper, this value was selected as a proxy for what could clearly be considered a "bad hour". A three hour duration threshold was applied to provide some allowance for bad guesses and makes inadvertence a less plausible explanation for results. The frequency of such uneconomic sequences is one metric used by the MSA to discern intent regarding tie line conduct, and at minimum, to flag non-compliance with the MSA's tie line conduct guidelines. **Figure 3** indicates an overall more favorable trend in sustained uneconomic import sequences through 2005. Furthermore, the periods showing a resurgence in uneconomic sequences around weeks 13 – 17 and around weeks 25 – 32 can primarily be attributed to one party in each of the noted time frames. These two parties (A and C) were the subject of MSA inquiries as noted previously.

Figure 3 - Frequency of Uneconomic Import Sequences by Week (2005)

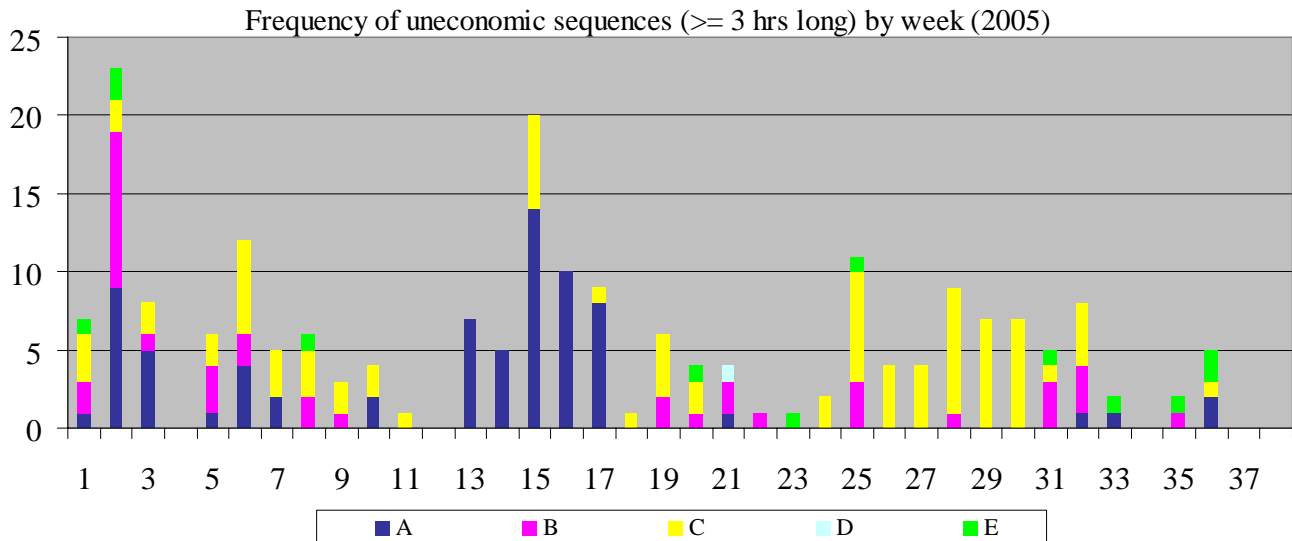
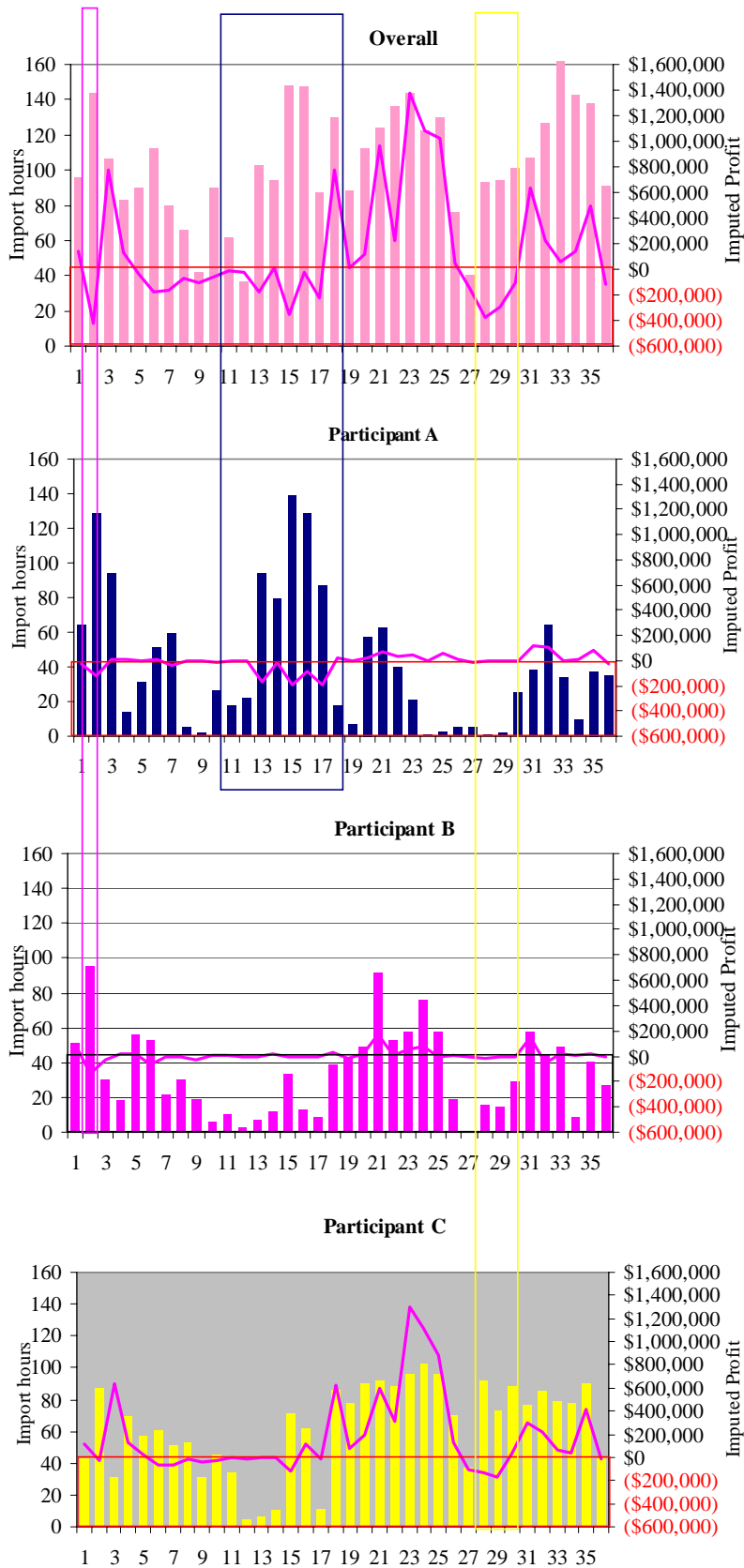


Figure 4 shows frequency of BC import hours (bars), together with the deemed import economics (line) of those volumes at an overall level (all BC import volumes) and separately for the activity of Participants A, B, and C. The shaded vertical bars represent the periods in which uneconomic imports overall appeared to be driven predominantly by the corresponding participant. It can also be seen that subsequent to MSA inquiries with the respective participants that import practices have altered.

Figure 4 – BC Import Behaviour (2005) Attribution



An additional metric that has been contemplated by the MSA as an indication of tie line performance is the frequency with which import volume increased hour to hour when Pool price decreased hour to hour – clearly a reasonable possibility given the decision to import without knowing the price effect ex-ante, however, not a desirable reoccurring outcome. Although not at an absolute level, this measure does provide some insight on a relative basis, of directional change. For 2005 year to date, these instances fell 10.6% relative to the same period in 2004.

3. CONCLUSION

2005 year to date has been a work in progress for the MSA to inculcate a clear market-wide expectation regarding acceptable conduct on the interconnections. Periods of undesirable conduct did continue into 2005 to the detriment of Pool price fidelity, and as a result, the MSA confronted three participants whose conduct in those periods, was clearly contrary to MSA guidance. Those actions in each case, have resulted in clear improvements in conduct by each of those participants. The sustainability of these behavioural improvements remains to be demonstrated, however, the MSA is encouraged by the positive changes in the conduct of participants since mid – Q2/05.

The MSA will continue to be assiduous in monitoring and adjudicating activity on the tie lines going forward. Participants must remain diligent and continue to take appropriate steps to ensure Pool price fidelity when active on the tie lines. An additional follow-up to the market with respect to tie line conduct is anticipated in the forthcoming MSA annual report.

4. LOOKING FORWARD

One of the main obstacles to success is the inability for importers to price into the Alberta market. Existing AESO rules mandate that imports be price takers – meaning that they offer in at \$0 and take Pool price. There are many occasions when the outlook for Pool price is bullish and subsequently an excess of imports occur having the collective effect of tanking Pool price through inadvertence. The ability to price into the market would help to reduce this effect. It also would help to demonstrate the intentions of those who might wish to intentionally cause this effect in the Alberta market and hide behind the AESO rules as an excuse. The MSA is hopeful that the market design adjustments currently being contemplated, will address this issue.

The BC interconnection, by virtue of its size, gives rise to the majority of concerns in terms of tie line impact on the Alberta market. The MSA however will be applying an equal level of scrutiny to the Saskatchewan tie line and accordingly, the conduct of participants on that interconnection.

Appendix A

Several of the graphs contained in the report are presented on a weekly time scale.
The corresponding dates are as follows:

2005	
Week	Period
1	Jan 2 – 8
2	Jan 9 – 15
3	Jan 16 – 22
4	Jan 23 – 29
5	Jan 30 – Feb 5
6	Feb 6 – 12
7	Feb 13 – 19
8	Feb 20 – 26
9	Feb 27 – Mar 5
10	Mar 6 – 12
11	Mar 13 – 19
12	Mar 20 – 26
13	Mar 27 – Apr 2
14	Apr 3 – 9
15	Apr 10 – 16
16	Apr 17 – 23
17	Apr 24 – 30
18	May 1 – 7
19	May 8 – 14
20	May 15 – 21
21	May 22 – 28
22	May 29 – Jun 4
23	Jun 5 – 11
24	Jun 12 – 18
25	Jun 19 – 25
26	Jun 26 – Jul 2
27	Jul 3 – 9
28	Jul 10 – 16
29	Jul 17 – 23
30	Jul 24 – 30
31	Jul 31 – Aug 6
32	Aug 7 – 13
33	Aug 14 – 20
34	Aug 21 – 27
35	Aug 28 – Sep 3
36	Sep 4 – 10

Appendix B – Assessment of Powerex on the BC Tie

In previous analyses concerning Powerex's participation on the tie line, it has proven difficult to find a way to assess their activities (partially due to their Hydro asset base) in a manner similar to other participants. However, for the purpose of assessing their participation on the BC tie line the following reasoning can be used:

For Alberta-based participants, the MSA's analysis assumes that energy is flowing from Mid C to Alberta through BC, or vice versa. That is, imports to Alberta are first bought in Mid C, then shipped through the various transmission systems before being delivered to Alberta. The transmission comprises BPA, BCTC and Alberta. Index prices at both Mid C and Alberta are available and serve to enable an assessment of the general performance of the tie line and of the individual companies participating on the tie.

The above reasoning needs to be modified when considering Powerex. It is not generally a safe assumption that Powerex is moving energy to and from Mid C to Alberta. In a given hour, in deciding whether to trade with Alberta, Powerex is seeking to optimize the value of its portfolio - exactly the same as the Alberta-based participants. It is choosing between the Mid C market and Alberta, with the added complexity of choosing to either store or release energy from its reservoirs (subject to the myriad of environmental and other operating constraints). At the present time, it is beyond the scope of our review to fully analyze the intricacies of the BC hydro system. What can be said for a given hour is that any particular Powerex trade with Alberta was preferred above the alternatives – including the comparable trade with Mid C.

For example, if Powerex imported 100 MWh to Alberta, the sale was preferred over selling the 100 MWh to Mid C or saving the energy for another future time. While it is not possible for the MSA to rate the profitability of that decision against the decision to store, it is easy to compare it with the decision to sell to Mid C. Thus the relative economics of the sale to Alberta can be assessed against the same volume sale to Mid C. This assumes that there was transmission access to Mid C and a market there for the product. Generally the tie line from BC to Mid C does not appear to be congested and so most of the time these assumptions seem reasonable. Similarly, there appears to be a fairly liquid hourly market in Mid C. Thus the decision to sell to Alberta can be compared with the foregone opportunity to sell the energy to Mid C.

The assessment of a Powerex export from Alberta is achieved in the same manner even though the energy is usually stored in BC. The point is that Powerex could have sourced the energy from Mid C (most of the time) and should always buy from the lowest cost source.

Putting the above into formulae, for an Alberta-based importer the imputed profit is:

$$PP - Mid C - TX(Mid C-BC) - TX(BC) - TX(BC-AB) \quad Eq. 1$$

Where:

PP = Pool price

Mid C = Mid C price

TX(.) = Transmission charges including losses

For Powerex, the imputed profit on an import to Alberta is:

$$PP - Mid C - TX(BC) - TX(BC-AB) + TX(BC) + TX(BC-Mid C)$$

Canceling the TX(BC) term leaves

$$PP - Mid C - TX(BC-AB) + TX(BC-Mid C) \quad Eq. 2$$

On exports, the imputed profit for an Alberta-based exporter is:

$$Mid C - PP - TX(AB-BC) - TX(BC) - TX(BC-Mid C) \quad Eq. 3$$

For Powerex, the equivalent relationship is:

$$Mid C - PP - TX(Mid C-BC) + TX(AB-BC) \quad Eq. 4$$

The four equations noted were used in the assessment of imputed economics of the various firms participating on the tie line.