



MEMORANDUM

DATE: November 26, 2005
TO: Bruce Campbell, Ken Kozlik
FIRM: IESO
FROM: Andrew Hartshorn
RE: Response to CRA International letter to Bruce Boland

Introduction

At the request of IESO staff I have prepared a response to the November 22nd, 2005 letter to Bruce Boland, Senior Vice President – Corporate Affairs at OPG, from Seabron Adamson and Scott Englander of CRA International, Inc (CRA) on the subject of the proposed Day-Ahead Commitment Process (DACP).

I am a Principal with LECG, LLC (LECG) based out of Cambridge, Massachusetts. I have worked with the IESO (formerly the IMO) and the market participant representatives of the day-ahead market working groups on various day-ahead market design proposals since May 2003. I have attended all of the DACP working group sessions, have worked closely with IESO staff and market participants to refine the design, and have a complete understanding of the proposed model. I have also been actively involved in market design issues in the North American markets for the last ten years, particularly New York, New England and the Mid-West ISO.

This memo is presented in four main portions: this introduction; the executive summary, which presents my assessment of the DACP as well as a summary of the detailed response to the CRA letter; specific discussion of the CRA letter; and a brief conclusion.

The views expressed in this letter are my own personal views and should not be attributed to the IESO, LECG or to any individuals that work in either organization. Any errors or omissions are solely the responsibility of the author.

Executive Summary

One thing that I believe the IESO, CRA and I all agree on is that the DACP design is not a first-best design. It is clear, given the history of the day-ahead market development process over the last two and a half years, that the IESO agrees that a comprehensive day-ahead market model with unit commitment and a two-settlement system is a better solution. Indeed, had the day-ahead market design and market rules that were prepared at the end of 2004 been acted on instead of tabled, this debate regarding the DACP would be entirely academic as the comprehensive unit commitment model with a two settlement system would likely be nearing the end of its implementation schedule.

The question that must be addressed is not whether the DACP is the first-best design. The question is whether it is the best design that can be implemented in time to address the reliability concerns associated with Summer 2006 operation. Given the schedule and tool limitations necessary to address the reliability concerns in time for Summer 2006 I believe the DACP design as currently proposed is the best design that can reasonably be implemented.

MEMORANDUM

The fact that the neighboring North-American day-ahead markets all incorporate a reliability commitment of some kind within their day-ahead market process is a clear indication of the value of a reliability commitment function in the day-ahead timeframe. These reliability commitment processes function everyday and in the case of the New England and PJM markets any such reliability commitments required are made after the day-ahead market has cleared suggesting a level of resource commitment in excess of that organically created by the day-ahead market clearing mechanism itself. This intervention within the constructs of those markets is viewed as a necessary requirement for reliability by the market operators charged with ensuring the reliability of their control area and the broader Eastern Interconnection. Although the reliability commitment processes in the neighboring markets are run every day they only commit additional resources when the resources already committed are not sufficient to reliably meet forecast load and operating reserve requirements for the next day.

Importantly, the imports scheduled as a part of these day-ahead markets are “secured” by the binding financial position and the associated second settlement buyout risk if they fail to flow in real-time. This allows the imports scheduled day-ahead in these markets to be a part of the resources counted towards meeting the reliability requirements.

The DACP attempts to achieve both of these objectives. Firstly, to allow the IESO to conduct a reliability assessment in the day-ahead time frame, and, secondly, to increase the ability of economic competitive imports to flow in real-time by offering the imports a day-ahead intertie offer guarantee (DAIOG) that allows them to navigate the intertie trading seams issues well in advance of real-time. IESO staff have repeatedly mentioned in the DACP working group meetings that real-time import failures are an important cause of real-time reliability concerns, not just predictably on the hottest days of summer, but unpredictably on other days as well.

The application of a sunset provision in the market rules and a stated desire to quickly return to meetings with stakeholders regarding a more complete day-ahead market design are clear indications that like CRA and myself the IESO is motivated to make the DACP an interim measure.

CRA’s letter addresses a number of specific concerns that can be broadly classified into three main areas:

First, CRA believe the DACP will distort real-time prices. This belief seems to stem in large part from a mistaken belief that the minimum generation blocks of internal resources receiving day-ahead generator cost guarantees (DAGCG) are ineligible to the real-time clearing price. Within the market schedule (unconstrained sequence) that produces real-time prices resources receiving DAGCGs are not constrained on. They are eligible to set the price across their whole operating range and if they are more expensive than other available dispatchable resources they can and will be dispatched down to zero. CRA was also concerned about the impact of day-ahead scheduled imports. It is true that the proposed day-ahead transaction failure charge will create an incentive for day-ahead scheduled imports to be price takers in real time. However, it is also true that in order for the day-ahead import to receive a schedule from the DACP it must first have competed against and beaten internal generation offers. If all that is happening in real-time is that the economically cleared day-ahead imports are price takers in real-time then there should not be any price distortion as the imports are not eligible to set price under the IESO’s real-time pricing rules today.¹

¹ As described in the detailed discussion on Page 5 of this memo there is an issue with respect to the uncertainty of demand forecasts and self-schedule submissions that can lead to over scheduling of day-ahead imports.

MEMORANDUM

Second, CRA believes that the day-ahead commitment and single settlement real-time market construct has significant gaming and incentive issues. CRA is correct in this respect. The IESO has recognized that effective surveillance is an important component of the DACP.

Third, transparency, reporting and review of the reliability commitment actions taken the IESO are very important. The IESO is very attuned to this need and has already committed to transparent reporting and review procedures for all reliability commitment actions. The IESO appears committed to minimizing the impact of the DACP whilst attaining the reliability benefits it seeks.

Specific Discussion of the CRA Letter

The CRA letter is broken into four basic discussions: an introductory statement; “Concerns with the IESO Proposal”; “Experience in a Neighboring Market”; and “Minimizing the Negative Impacts of the IESO Proposals”. For simplicity I will comment on their letter according to the same basic ordering.

Introductory Statement

I agree with CRA that “... economics and reliability do in fact go hand in hand.”² However, at the bottom of the first page of the letter CRA mis-characterizes an important aspect of the DACP when they suggest that “Imports and generators ... will be committed to run out-of-merit in real-time (RT) and will not be eligible to set RT prices”. This is not correct for either imports or internal generation. Internal generation resources that receive day-ahead Generator Cost Guarantees (DAGCG) are constrained on at minimum generation levels for their minimum runtime in the constrained sequence of the real-time market. Within the market schedule (unconstrained sequence) that produces real-time prices those resources are not constrained on. If they are more expensive than other available dispatchable resources they will be dispatched down to zero and not set the price. For imports, while it is true that within the IESO real-time market imports are not allowed to set the price³, the pre-dispatch model that actually schedules imports and exports in real-time in the hour-ahead timeframe evaluates all imports based on their real-time offers. Those imports scheduled day-ahead are not “out-of-merit” in any sense in the pre-dispatch model. Should those imports realize a better opportunity in a neighboring market in real-time they are free to remove their hour-ahead import offer and pay the day-ahead transaction failure charge or if they do not want to face the risk associated with the transaction failure charge they can schedule counterflow exports to achieve a net zero flow in real-time. The specific provisions of the DACP that CRA references that they later assert might create “...significant price distortions...”⁴, in actuality, appear to have very little impact on the real-time price.

I agree with CRA that “price signals ...are the only viable long-term method of protecting reliability”.⁵ Elements of the IESO’s current RT pricing issues that I have a problem with in this regard such as a lack of locational price signals and the use of twelve times ramp rate in the market schedule have significant impacts on the real-time price. Relative to these issues, the impact of the DACP on the creation of meaningful real-time price signals seems very small.

² Page 1, paragraph 3.

³ This treatment of import scheduling and RT price setting is consistent with current NYISO, ISO-NE, MISO and PJM market design.

⁴ Page 2, Paragraph 3

⁵ Page 1, Paragraph 3

MEMORANDUM

In the first paragraph on the top of page two CRA suggests that declining the DAGCG for a given day "... will not limit the IESO's unilateral authority to commit and constrain the generator to operate" as if this is a concept that has not been applied in other markets. This is the same authority that the North-American system operators run every day, and enact as required, through their reliability commitment processes.⁶ The IESO has been very careful to indicate that they only plan to intervene in the market for reliability purposes or to address elements of the DACP solutions that cannot be addressed by market participants individually⁷ and have committed to transparent reporting and review of all such actions taken during the DACP.

Concerns with the IESO Proposal

The first paragraph of CRA's discussion under this heading has two main points. The first is the impact on real-time prices, which I have previously addressed as an apparent misunderstanding about how DACP commitments to imports and generators impact real-time price. The second suggests that two settlement systems with comprehensive day-ahead unit commitment processes work better than single settlement systems with day-ahead commitment processes. I agree. Unfortunately, we do not have time to implement a comprehensive day-ahead unit commitment and associated two-settlement system. As to the perverse incentives that are created by a set of unit commitments made on resource offers that are not binding in any way, this can only be managed through careful surveillance. This surveillance need is already a requirement in the IESO real-time market where real-time SGOL guarantee payments are paid not on the basis of the offers submitted into the real-time market but on the basis of cost data that is submitted after the fact that may or may not have any relationship to the offers that got them committed in the first place. Based on discussion I have had, it is well understood by the IESO that surveillance is an important part of the DACP. Penalties to control perverse behaviors have not been needed to control the real-time SGOL settlement construct and no penalties have been proposed within the initial design construct of the DACP for internal resources.

The third paragraph of this section of the letter (the last paragraph on Page 2) suggests that "Unspecified manual commitment procedures give too much leeway to overcommit generation". Once again CRA leans on their erroneous understanding that the minimum generation portion of the resource is not eligible to set price when in fact it is eligible to set the price and to be dispatched down to zero in the market schedule if necessary. The additional commitments can affect the price in a downward direction in situations where the additional ramp capability of the resource affects the volatility of price.

In terms of the implied "trust" issue associated with the desire for the IESO to overcommit, the IESO through the DACP working group meetings and through promised future deliverables has been very forthcoming in terms of outlining the types of commitment actions that will be taken and committing to a transparent reporting and review construct. Additionally, the commitments that are made through the DACP are not set in stone. Should it turn out that the IESO misses the load forecast or a cold front comes in six hour earlier than anticipated then the marginal resource from the perspective of the reliability commitment, or some other marginal resource, will see that result

⁶ NYISO, PJM and NE all have this capability.

⁷ Due to the sequential nature of the existing pre-dispatch tool that will be utilized to run the DACP, there are some minimum run-time, minimum down time and two-cycling requirements that cannot be effectively managed by the market participant offers or by the pre-dispatch solution engine. In these limited cases the IESO operators may need to constrain resources to honor inter-temporal operating characteristics

MEMORANDUM

coming and will request a decommitment. There are no penalties associated with a resource not fulfilling its DACP “schedule” and if there is no reliability concern then the resource can be decommitted without threatening reliability. Export transactions will also be scheduled in anticipation of the lower than expected price. While the exports cannot arbitrage away the entire price differential they can directionally help move the price in the right direction.

The last paragraph of this section⁸ suggests that the DACP “has the potential to further undermine the fundamental economics of the auction and with it the integrity of the market by creating large quantities of price taking imports and non-price setting internal generation.” I have addressed the erroneous nature of the internal generation argument several times. In terms of the imports, it is true that the proposed day-ahead transaction failure charge will create an incentive for day-ahead scheduled imports to be price takers in real time. However, it is also true that in order for the day-ahead import to receive a schedule from the DACP it must first have competed against and beaten internal generation offers. If all that is happening in real-time is that the economically cleared day-ahead imports are price takers in real-time then there should not be any price distortion as it is already the case that imports are not eligible to set price under the IESO’s current real-time pricing rules.⁹

The one potential area of concern that is not specifically raised by CRA, relates to uncertainty in the area of load forecasting and the ability of self-schedulers and intermittent generators to estimate their schedules a day in advance. In these circumstances there is a potential for the DACP to schedule more imports day-ahead than are truly economic to meet the resulting real-time load. My understanding is that the IESO is committing to performance standards on its load forecasting tools in the day-ahead timeframe. It will also be performing surveillance on the quality of the self-schedules provided by market participants. Ultimately, the IESO, like its counterparts in the other North-American jurisdictions, wants to be able to perform a reliability commitment in the day-ahead timeframe and the uncertainty associated with taking that position day-ahead will impose some cost on the market.

Experience in a Neighboring Market

CRA’s description of the New England experience centers on the real-time pricing impacts and the gaming that created significant uplift impacts. The real-time pricing issue has been discussed thoroughly throughout this response. As to the gaming and incentive issues the IESO is not shying away from the surveillance requirements of this DACP proposal. As CRA discusses the importance of price distortions in this section it is difficult to understand why twelve times ramp rate and the entire concept of the unconstrained market schedule attract no comment.

Minimizing the Negative Impacts of the IESO Proposal

CRA suggests five potential mitigating actions in the last section of its letter. I have paraphrased each suggestion in italics and then responded.

First, limiting the application of import guarantees only to Ontario system scarcity situations.

⁸ Page 3, paragraph 3

⁹ Imports and exports are not eligible to set the real-time clearing price at internal pricing locations in the NYISO, PJM, the MISO or ISO-NE. This is a function of the fact that the imports and exports are not dispatchable on a 5-minute basis and therefore any real-time price premised on the dispatch of internal resources to meet the marginal MW of load on the system cannot and should not include import offers or export bids in the price setting mechanism.



MEMORANDUM

The IESO has repeatedly stated its position that the failure of real-time imports to be able to be delivered in real-time is a constant reliability concern that is not limited to the very peak days, nor is it predictable.

In addition, it is my view that it will be very difficult to establish a real pattern of participation from importers in the DACP if it is not run every day, with guarantees provided every day. This should not matter a great deal as the import must offer at a lower price than the internal generation in order to receive the DAIOG protection. If the import is the cheapest way to meet the forecast load then that is an efficient outcome.

Second, defining criteria for DA reliability commitment, to limit operator flexibility to a reasonable level

The IESO has already made significant progress towards outlining these circumstances as well as committing to transparent reporting and review procedures for these reliability commitment actions.

Third, design rules that allow IESO to make reliability commitments but limit the price impacts by broadening the set of units able to set price ameliorating the price impact

Internal resources receiving the DAGCG are already eligible to set price across their entire operating range.

This leaves only the imports and exports as additional pricing alternatives. To the best of my knowledge imports and exports are not eligible to set the real-time clearing price at internal pricing locations in the NYISO, PJM, the MISO or ISO-NE. This is a function of the fact that the imports and exports are not dispatchable on a 5-minute basis and therefore any real-time price premised on the dispatch of internal resources to meet the marginal MW of load on the system cannot and should not include import offers or export bids in the price setting mechanism.

Fourth, provide written criteria for IESO to de-commit Ontario generating resources not needed in real-time

As described in the Working Group meetings decommitment can be requested by the resource at any time but must first be approved by the IESO. So long as there is not a reliability concern then the decommitment will be allowed.

Fifth, require that the IESO track out-of-merit generation, DA commitment of operating reserve and import guarantees so that periodic audits can be performed

The IESO has already committed to transparent reporting and review procedures for all reliability commitment actions.

Conclusion

I believe the DACP design as currently proposed is the best design that can reasonably be implemented in time for a summer 2006 implementation. The IESO is committed to a day-ahead process that incorporates a reliability commitment whilst minimizing the impacts on the Ontario marketplace until such time as a more complete day-ahead market solution can be implemented. The IESO is addressing the surveillance requirements associated with the interaction of the DACP with a single settlement system as well as transparent reporting and review procedures for all reliability commitments actions.

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