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March 31, 2003

TO: Market Surveillance Panel, IMO

From: Hydro One Networks Inc.

**MSP Report on Congestion Management Settlement Credits:
Comments On Issues Related To Constrained Off Payments and Transmission Investments**

Hydro One Networks (Networks) commends the Market Surveillance Panel (MSP) for its comprehensive discussion paper “Congestion Management Settlements Credits in the IMO-Administered Electricity Market” issued in February 2003. The CMSC report provides an excellent summary of the causes of constrained-off and constrained-on payments in the IMO-Administered Market and it also includes pertinent data and discussion that will assist in the evolution of the electricity market structure in Ontario.

As requested in the CMSC paper, Networks is pleased to provide the following comments on Constrained Off Payments and Transmission Investments.

1.0 CONSTRAINED OFF PAYMENTS

Networks agrees with the MSP that there are reasons to be concerned about “constrained off” payments. However, Networks believes there is a need for continuing with some form of “constrained off” payments during the “Uniform Energy Pricing” paradigm, before Locational Marginal Pricing (LMP) is introduced. In the absence of LMP or alternative market mechanisms, Networks agrees with the MSP that doing away with such payments may impact negatively on the cost of electricity in the market place and on the reliability of the IMO-controlled grid. In any event, Networks believes that the calculation of constrained off payments and the provision of this data by transmission interface can provide useful information to support transmission investments, which would benefit the market, in the absence of LMP.

Networks proposes that the Constrained Off payments should be made only when generation is constrained off due to power system limitations and these should not be made for any other causes of generator deviation between the pre-dispatch unconstrained schedule and the dispatch constrained or real time schedule. Networks also proposes that Constrained Off payments should be based on calculations that reflect, as much as possible, the economic value of constrained-off generation. In this vein, Networks believes that while the IMO is not in a position to establish an economic cost for generation, it would be appropriate to establish a floor offer price of \$0 per MWhr in calculating constrained off payments, rather than using any negative offers.

It is also proposed that the issue of Constrained Off payments should be reviewed again in the medium term after additional data is obtained on the basis of changes proposed in this document. In any case, there should not be a need for constrained-off payments if and when Locational Marginal Pricing is introduced into the Ontario electricity market.

Further discussion about these issues is provided below.

Impact of Constrained Off Prices on Ontario Consumers

The CMSC Report indicates that Constrained Off payments to generators and imports, as a result of transmission constraints, amounted to about \$ 63 million. The report also provides an estimate that, as a result of these Constrained Off payments, the Market Clearing Price (MCP) may have been lower by between \$ 1.32 and \$ 6.73 per MWhr, on average, between May and December 2002 (refer to page 31 of the CMSC Report).

Assuming annual energy consumption of 140 TWh in the province, Networks estimates that Ontario consumers experienced a reduction in average energy cost of between \$ 125 and \$ 630 million as a result of the reduction in MCP due Constrained Off payments made between May and December 2002. Thus, based on the data in the CMSC report, Ontario consumers had an overall net benefit of between \$ 62 million and \$ 567 million as a result of Constrained Off payments being made due to transmission congestion. The net benefit to the Ontario consumers may have been even higher if the Constrained Off payments were based on the economic value of constrained-off generation, as discussed below, and not on the market value of constrained-off generation as is the case currently.

As noted in the CMSC report, Constrained Off payments also enhance the reliability of electricity supply in Ontario by retaining generation on the system, even though such plant may be needed only in certain periods.

Therefore, it is recommended that the provision of Constrained Off payments for transmission limitations should be retained in the Market Rules at least until a future review of the issue, based on additional experience, or until Locational Marginal Pricing is introduced in Ontario.

Networks does not favour “must-run contracts” as an alternative to Constrained Off payments except in situations where the must-run contracts are required to maintain reliability of the sub-system that could be deficient as a result of transmission constraints. Networks preference is based on two major considerations. First, there is the concern that must-run contracts are a form of administrative pricing not subject to market discipline. Secondly, there are likely to be administrative complexities in identifying particular generators with whom the must-run contracts should to be entered into and to determine the fair value of compensation for the must-run contracts in all possible situations.

Constrained Off Payments Based on Economic Value of Constrained-off Generation

Networks believes that the justification for Constrained Off payments in the IMO-Administered Markets was based on the rationale that the supplier of energy should be compensated for lost opportunity costs due to transmission constraints, particularly whilst operating under a uniform energy pricing paradigm. The illustrations that were generally used to justify Constrained Off payments identified the lost opportunity costs as difference between the MCP and the relatively lower marginal cost of production for generation that is constrained off, i.e. the economic value of constrained-off generation. To the extent that this difference also represents a measure of inefficient use of resources due to transmission constraints, society, as well as the owner of the constrained generation, experiences the loss of opportunity that is measured by the economic value of constrained-off generation.

However, as the CMSC report indicates, some generators and importers submit offer prices in the IMO-Administered market that are lower than their production costs. As noted in the report (page 5), some of these offers are negative and they range to as low as -2000 \$ / MWhr that is the minimum offer allowed by the market rules.

Calculating Constrained Off payments based on offers that are lower than production cost of generation, results in additional compensation for generators to the detriment of society as a whole. As the MSP notes, even if there appears to have been little actual gaming of this situation, the “constrained off payments should be revised to provide a more accurate reflection of losses actually incurred when a generator or import is constrained off”.

Networks believes that the Constrained Off payments should be calculated on the basis of economic value of constrained-off generation, to the extent possible, since these payments more

accurately reflect the profits that the generator would have made if there were no congestion. Networks also believes that the current method of calculating constrained off payments should be changed since it can lead to excess profits and potential for gaming which is not beneficial for the market and for the electricity consumers in Ontario.

Networks recognizes that it is difficult, if not impossible, to obtain appropriate and verifiable marginal costs of production for generation and import resource units in the restructured electricity markets. As a result, Networks proposes an interim solution whereby the minimum offer price to be used for calculating the Constrained Off payments would be set at \$ 0 per MWhr. Networks believes that this method of calculating Constrained Off payments is relatively more justifiable from the perspective of sound economics and public interest compared to the current method that is based on the market value of constrained-off generation. It is Networks' view that this method of calculating Constrained Off payments can be implemented in IMO's settlement systems with relative ease and within the short term.

Networks proposes that this issue should be reviewed again within a suitable time period on the basis of additional experience and data obtained during the period when the revised method of calculating the Constrained Off payments is in effect. Other methods of calculating Constrained Off payments may be considered in the future if the review indicates that the amount of Constrained Off payments remain significantly higher than would be warranted by economic considerations, even after the implementation of the short-term measure proposed above.

Constrained Off Payments due to Non-Transmission Related Deviations

Networks believes that Constrained Off payments should not be made in situations where generation deviation from the unconstrained dispatch schedule occurs for reasons that are related to capability of the generating plants or for reasons that are under the control of plant owners.

(i) CMSC Induced by Dispatch Deviations

As indicated in the CMSC report, dispatch deviations start with a participant not following dispatch instructions in a period when the facility should be ramping up or down. The dispatch deviations are caused by the participant itself and not by the IMO or by constraints in the IMO-Controlled Grid. As a result, it is inappropriate to compensate a supplier for dispatch deviation by making CMSC payments to the participant. This is tantamount to rewarding the participant for poor performance. Networks therefore supports the MSP in this regard.

(ii) Filtered Dispatch Messages

The filtering of dispatch messages is initiated by the IMO in order to avoid the participant receiving and having to respond to small deviations in dispatches. The CMSC report notes that the IMO has initiated efforts to modify its tools to provide a larger measure of control for managing the filtering of dispatch messages and for the participant to have the discretion as to whether or not to follow minor dispatch instructions. Since the filtering of dispatch messages is primarily for the benefit of the participants and since the participants will soon have options to deal with minor dispatch instructions, CMSC payments need not be made for deviations resulting from filtered dispatch messages. Networks supports the MSP in this regard

(iii) Multiple Ramp Rates and Plant Limitations

The generator deviations associated with the ramp rates and plant limitations are caused by the limitations associated with the generators and/or station limitations. These deviations are not caused as a result of IMO's requirement or as a result of constraints associated with the IMO-Controlled grid. Therefore, it is inappropriate to compensate generators for deviations resulting from the use of ramp rates.

In summary, Networks submits that, under the situations described above, the generators are adequately and fairly compensated as long as they are paid for generated energy on the basis of MCP. Any additional payment under the umbrella of CMSC is neither warranted nor fair to other market participants.

It appears that the key cause of the non-transmission related Constrained Off and Constrained On payments is the limitation of the IMO's algorithm that is currently used to calculate the CMSC payments. Indeed, Networks believes that non-transmission constraint payments were likely not envisaged during the formulation of, or amendment to, the market rules. Networks proposes that efforts should be made to revise the existing algorithm, or to make manual changes to the results of the algorithm, so that constraint payments are not made to generators simply because their actual output differs from the output that is determined by the unconstrained dispatch schedule.

2.0 TRANSMISSION INVESTMENTS

Networks concurs with the view expressed by the MSP, in its CMSC report and in its earlier October 2002 report, that there is an acute lack of coordination and incentives for transmission planning under the current market design. Networks also concurs with the MSP that this is an issue that needs urgent attention. Indeed, lack of transmission network investments has been touted as a major concern in most jurisdictions in North America, and Federal Energy Regulatory Agency (FERC) in the United States has recently announced¹ several new initiatives to promote new transmission investments in order to alleviate these concerns.

Networks believes that, while processes and rules around new investments in transmission connections can be being addressed satisfactorily through the Transmission System Code, there remains a serious gap in that the processes and rules for network enhancements remain unclear. Networks views on network enhancements are summarized below.

Framework for Transmission Investments

Networks believes that transmission enhancements can serve a valuable role in reducing the cost of congestion and losses to customers and that the market rules and information should facilitate investment in such beneficial facilities. To the extent possible, the market should provide a source of funds consistent with the cost of such congestion, which could be directed (at least in part) to support transmission investments which would reduce these costs. Where mechanisms to provide such funds are not put in place, information which signals the value of such investments should at least be provided to support charging beneficiaries or inclusion of such investments in the rate base (or a combination of beneficiary and rate base funding). It is also important that whatever mechanism is adopted has the support of both the IMO and the OEB in order to be useful in determining what investments are appropriate.

In this regard, until LMP or some alternative mechanism is in place and relied upon by the market, Networks believes that the information provided by the calculation of constrained off payments can be useful in supporting beneficial transmission investment. However, Networks does recognize that actually making such payments can inhibit interest in transmission enhancements, which would have a net benefit. Given the issues around such payments, Networks advocates development of a more effective approach to establishing the economic value of new transmission facilities as a priority for market evolution.

On the broader question of co-ordination and incentives for transmission planning, Networks would like to take this opportunity to draw the Panel's attention to Networks proposal for guidelines around new transmission investments detailed in a June 2002 document "Conceptual Framework for New Transmission Investments in Ontario", which Executive Summary was submitted to the July 4, 2002 IMO Board meeting. The document was prepared to address the concerns similar to those identified in the CMSC report, namely the lack of transmission investments in restructured electricity markets. The framework report includes principles around the treatment of rate base and market based transmission investments, and Networks believes it would be helpful in alleviating concerns about the lack of coordination and incentives for transmission investment. (Networks would be pleased to provide the MSP with a copy of this discussion paper if required).

Networks continues to develop its thinking in this area given the current market conditions and regulatory regime in Ontario, and expects to come forward with further thoughts on this important question.

Operational Enhancements to Assist in Identifying Need for Transmission Investments

Networks concurs with the MSP that there are important deficiencies in the operation of the system that is based on the current Dispatch Scheduling and Optimization (DSO) function used by the IMO. Networks welcomes MSP's request for views about the extent of efforts that should be made to provide capability to identify valuable information, based on CMSC payments and other market data, for use by all market participants.

The following summarize Networks proposal with respect to operational enhancements that could assist in properly identifying the need for new transmission investments:

- The market data published by the IMO should identify the CMSC payments associated with transmission constraints separately, if there are other forms of CMSC payments also being made. The CMSC data related to the transmission constraints should identify the Constrained On and Constrained Off payments on the basis of specific transmission interfaces. (Since shadow Locational Marginal Prices are already being provided by the IMO, as noted below, Networks believes that there should not be any incremental concerns about confidentiality as a result of IMO providing the interface-specific data).
- If Constrained Off and Constrained On payments continue to be made on the current basis, then a separate set of data based on approximate economic value of constrained-off

¹ FERC Docket No. PL03-1-000: "Proposed Policy for Efficient Operation and Expansion of Transmission Grid".

generation, or equivalent, should also be provided. (That is, the IMO should publish data based on substituting a \$0 per MWhr offer for any negative price offers).

- The format of the shadow Locational Marginal Prices (LMP) current published by the IMO is not user friendly. The LMP are currently provided on a “resource unit” basis; there is one LMP file for each day; and the daily file is nominally available only for one month. Networks believes that the LMP file should show prices on each node of the transmission system, as is the practice in the neighbouring jurisdictions where LMP has been adopted. Also, each data file for historical LMP should preferably contain data for at least one month and these files should be available for at least one year if not more.
- The data currently published for shadow LMP excludes transmission losses, which in some instances may be quite significant. Since transmission investment decisions are also based on reducing losses, it would be useful if the LMP data were also to include the impact of transmission losses on the nodal prices. Alternatively, data pertaining to impact of transmission losses on nodal prices may be provided in some other convenient format depending on the software and settlement processes used by the IMO.

In summary, Networks extends its appreciation to the MSP for the publication of the CMSC report and for seeking input from the market participants in the matter of Constrained Off payments and transmission investments. The resolution of the matters identified in the CMSC report is critical for the efficiency and evolution of the electricity market.

Networks is available to discuss in detail its comments and proposals identified above. Networks will also continue to interact with the IMO and other market participants to develop options for required transmission investments and to seek required approvals for, and build, new transmission that is cost-effective and commercially justifiable.

Please let me know if you require clarification or additional details about any of the matters covered above.

Submitted on behalf of Hydro One Networks by Andy Poray