

Memorandum

To: Market Pricing Working Group
From: Darren Matsugu
Date: February 19, 2009
Re: Relevant issues to be examined under More Efficient Uniform Price Study

Introduction

The IESO is preparing for the review of the More Efficient Uniform Price initiative. Over the next few months, the IESO will be drafting and publishing a discussion paper to define the problem statement – what are the undesirable outcomes caused from having a two-schedule system. The review will also attempt to provide some sense of the materiality of the problem. This memorandum has been prepared in response to a request from the Market Pricing Working Group for the IESO to identify a list of the relevant issues to be studied. The IESO is seeking feedback from MPWG members to a series of questions listed at the end of this document.

Background

The Market Design Committee recognized that the combination of a uniform pricing system and constrained payments would inherently create inefficient short-run and long-run incentives, as well as opportunities for gaming¹. These were expected to require a number of administrative fixes, however this was deemed to be acceptable as the uniform pricing system was a temporary measure before moving to locational pricing².

Uniform prices would “not reflect the marginal cost or value of energy at many locations”³ and this was expected to create “inefficient short-run incentives that adversely affect operational decisions.”⁴ Furthermore, the MDC recognized that “uniform pricing creates perverse long-run incentives that can distort investment decisions.”⁵ Finally, restrictions on the availability of side payments or arbitrage opportunities were deemed to be necessary to limit transactions that

¹ “the combination of a uniform market price and IMO constraint payment that are different in different locations creates a dual-price system that inherently encourages inefficient arbitrage and gaming”, *First Interim Report of the Market Design Committee*

² “It was known at the outset based on experiences elsewhere that uniform pricing would result in inefficiencies and distortions in the market that would require a number of administrative fixes”, *Market Surveillance Panel Report (Nov 05-Apr 06)*

³ Chapter 3 – Wholesale Market Design, *Second Interim Report, Market Design Committee*

⁴ *Ibid*

⁵ *Ibid*

“inefficiently increase total costs and unfairly shift these costs to and between Ontario consumers.”⁶

Since market opening, the Market Surveillance Panel has identified several issues relating to the appropriateness of CMSC payments or the inefficient incentives caused by the two schedule system; the physical scheduling of resources (the constrained algorithm) and the market schedule used as the basis for establishing financial compensation (the unconstrained algorithm).

More recently, discussions with stakeholders regarding day-ahead market design issues deepened everyone's appreciation of the difficulties of evolving the market under the current two schedule system. As a result, the IESO with the broad support of stakeholders, committed to work with participants and Stakeholder Advisory Committee members to review the current real-time uniform pricing model.

Scope of the Review

At this stage, the IESO is defining the problem as three-fold. First, **differences between the constrained and unconstrained schedules result in two payment streams for market participants, creating pay-as-bid incentives.** Under the two-schedule system, participants can receive payments other than the uniform market clearing price, based instead upon their offers or bids when resolving congestion. This creates incentives for participants to make strategic offers or bids that do not accurately reflect incremental costs or value and contribute to the following types of undesirable outcomes:⁷

- a. out-of-merit dispatch (allocative or productive inefficiencies)
- b. inappropriate side payments
- c. distortions in the price signal

Second, **the two-schedule system can undermine the incentives for investment for both supply and demand in the different parts of the province** (outcome d). For example, the two-schedule system may be a contributing factor to the lack of investment in areas where generation is regularly constrained-on. While the current market provides payments to constrained-on generators, when their offered costs are higher than the uniform price, these payments typically represent the variable operating cost and do not cover the fixed costs of operations. Similarly, the two-schedule system may be a contributing factor to the lack of investment by industry (consumption) in areas of the province with surplus generation.

⁶ *Ibid*

⁷ These undesirable outcomes parallel those anticipated by the MDC in their review of a dual-price system: “This will distort the merit order and increase constrained payments, increasing real costs and the size of the ‘uplift’ that all system users may pay to cover constrain costs”, *First Interim Report of the Market Design Committee*

Finally, **there are costs incurred by stakeholders and the IESO that can be attributed to having to monitor, analyze and administer a two-schedule system.** Resources and time are consumed in addressing the complexities of the two schedules; this was readily apparent in discussions pertaining to the development of a day-ahead market. Market evolution discussions can become protracted and “band-aid” solutions still require resources to prepare, review and implement. Furthermore, IT and settlement processes are especially sensitive to the difficulties created by the two payment streams. Some of these costs may be viewed as “sunk”, while other costs are on-going. Clearly any solution which involves change from the current system would incur transitional expenditures which should be evaluated against efficiency gains and avoided costs.

Out of Scope

It is important to note that these types of outcomes can also be caused by other factors, not necessarily related to differences between the constrained and unconstrained schedules. For instance, generators under fixed price contracts have incentives to submit negative offers to ensure dispatch, likely displacing cheaper available generation (an out-of-merit outcome). While inefficient, this is not an inherent by-product of a uniform price regime. Similarly, the inability to dispatch intertie transactions in real-time based on economic merit may result in price signal distortions. However, this is not a consequence of the two-schedule system.

Both of these instances would be deemed to be outside of the scope for the More Efficient Uniform Price study, as they do not arise from differences between the physical and market schedules. It is important to focus on the relevant issues, as defined by the scope of the review, in order to underline the shortcomings of the current market design. By narrowly defining the problem, we will be better able to make progress in pursuing an effective and timely resolution.

Relevant Examples

The following is a list of previously identified examples of inefficiency which exist as a consequence of, or are perpetuated by, the use of a two schedule uniform price system. These issues have been raised by the Market Surveillance Panel or through the Market Pricing Working Group. In some cases, subsequent market rule changes have been implemented that partially address the issue, however these may not be sufficient to completely eliminate the inefficiency. Each example can be associated with a type of undesirable outcome (ie: a - out-merit-dispatch, b – inappropriate side payments, c – distortions in price signal, d – investment disincentives); in some cases, multiple undesirable outcomes may apply.

- 1. Inefficient Exports (a,b,c):** Energy is exported from Ontario to New York when the incremental cost of producing the energy in Ontario is more than the New York delivered price. The exporter from Ontario pays the lower HOEP, as opposed to the higher relevant (Beck Ebus) shadow price, resulting in a cross-subsidy to New York loads.

2. **Simultaneous Import/Export CMSC (b):** Two directly opposite arbitrage opportunities at the same interface can occur simultaneously, if the zone involved is congested and the cost of production in this zone is significantly lower than HOEP. An import offer in the zone can be accepted in the unconstrained schedule and constrained-off, while at the same time an export bid in the same zone can be accepted in the constrained schedule and constrained-on.
3. **Constrained-Off Transactions in Watch Zones (a,b,c):** Import offered into a congested zone, between the pre-dispatch uniform price and the lower nodal price, with little expectation of actual delivery. This “fictional” import is selected in the market schedule, but is constrained-off because of the low nodal price. Alternately, a “fictional” export can bid high enough to be selected in the market schedule, but constrained-off due to a high nodal price.
4. **Constrained-Off Exports on Uncontested Interties (b):** Significant CMSC payments for constrained-off exports at a particular interface can be earned if competition for energy withdrawals at the intertie is limited or non-existent. By exercising local market power, a market participant can consistently bid high, establishing a high historical reference price and receive large constrained-off payments.
5. **Negative Offers in Surplus Zones (a,b,c):** Hydroelectric generators in a zone with surplus generation are incented to submit negative offers, below their marginal cost of production, in order to ensure being dispatched and avoid spilling water. This can result in an artificially low shadow price in the zone, and lead to constrained-on exports would have been otherwise uneconomic.
6. **Locational Investment (c,d):** CMSC payments do not provide sufficient signals to the market about the desired location of new investment. Information contained in constrained-on and constrained off payments due to specific transmission constraints cannot be accurately observed by market participants.
7. **Uplifts (c):** While the hourly uplift charges reflect the costs of line losses, the complexity of the components does not provide an effective price signal. The differential treatment of losses contributes to an observed difference between the uniform price and published shadow prices. This process reduces overall price transparency and blunts efficient market signalling.
8. **Control Room Actions for Reliability (a,c):** Under some conditions, conservative estimates of transmission limits may lead an underestimation of operating reserve in areas. If this area becomes congested, this will produce higher associated constrained

payments. While the participant is made whole, overall this reduces the transparency of observable market prices and can result inefficient dispatch.

Requested Response

MPWG members are asked to **review this list** of examples and **provide any other additional examples of inefficiencies** that should be considered. These inefficiencies should exist as a consequence of differences between the constrained and unconstrained schedules. Members are also asked to **comment in response to the following series of questions**;

1. What is the relative priority of the identified inefficiencies?
2. What are the perceived magnitudes?
3. Given expected changes in the market (coal phase-out, increased renewables, etc.) is this expected to get worse or improve?
4. What kind of analysis would be required for proper evaluation?
5. Are there other IESO initiatives which complement the resolution of these inefficiencies?
6. Could this be resolved with minimal intrusion (ie: market rule amendment) or could this necessitate significant market design changes?
7. What are the possible unintended consequences of eliminating the inefficiency?

Written responses are asked to be submitted by Friday, March 6, 2009. Feedback will be incorporated into an IESO discussion paper summarizing the key issues to be addressed under the More Efficient Uniform Price study (SE-79). This paper will then be submitted to SAC and IESO Senior Management to assist in determining the appropriate stakeholder venue for analysis and the development of recommendations.

Yours truly,

Darren Matsugu