

I. Introduction and Background

This stakeholder engagement plan defines the process the IESO will use to obtain stakeholder input on the development of a day-ahead market (DAM) for Ontario. It provides a description of the key decisions which must be made to create a high level day-ahead market design that outlines the basic features with sufficient clarity that, if approved by the IESO Board, will permit detailed design and implementation to proceed with an in-service date prior to the end of 2008.

Developing a Day-Ahead Market in Ontario

The IESO operates a real-time market for energy and operating reserves in which electricity prices are determined every five minutes. With the energy price being calculated so frequently, it can be subject to great variability as the supply/demand conditions change from interval to interval. This variability makes it difficult for both consumers and producers to factor the price of electricity into their plans. Management of these risks is made all the more complex due to the fact no transparent forecast of real-time price currently exists. All market calculations prior to real time (i.e. pre-dispatch runs) are performed with an hourly granularity and therefore consider imports and exports when calculating price. In contrast, import and export bids and offers cannot be changed in the five-minute timeframe and are therefore ignored in the real-time price calculation – although their scheduled quantities do establish the demand to be met by the market.

Real-time markets are generally expected to be volatile in nature, reflecting the ups and downs of balancing supply and demand within the constraints of the transmission system. Ideally, consumers or producers should only be exposed to the real-time price if, a) events have unfolded in such a way as to cause the real-time market to adjust to their change in output or consumption, or b) they can voluntarily change their production or consumption with very short notice. Most consumers and producers are expected to protect themselves from the volatile prices by a combination of contracting forward, locking in prices in a day-ahead market, or planning their consumption or production for the next day based on day-ahead price signals.

In June, 2006, the IESO implemented a Day-Ahead Commitment Process (DACP). The DACP was designed to increase the reliability of imports and the availability of generators by offering guarantees for those scheduled a day in advance. While the DACP does provide reliability benefits, it does not serve the purposes of a day-ahead market. The DACP only offers financial guarantees to suppliers with the goal of improving reliability of the real-time market. While DACP has improved the quality of the pre-dispatch results somewhat, it does not produce a quality day-ahead price signal, and it does not provide any opportunity for consumers to lock into a price for the next day. DACP guarantees are not likely to be as effective at assuring supply in real time as is providing participants with a day-ahead financial position, which a day-ahead market would do. A day-ahead financial position which would expose producers to real-time buy-outs for under-delivery or real-time rewards for over-delivery, and

consumers to real-time rewards for under-consumption and real-time charges for excess consumption, would encourage real-time performance that is “correct” for the prevailing real-time market conditions. Finally, the lack of transparent day-ahead prices means that the DACP does little to improve the day-ahead signals needed for further demand response development or the operation of embedded, non-dispatchable generation.

A DAM would enable participants to lock into a price one day in advance of real-time energy delivery. This would provide more certainty to suppliers and consumers, allowing them to react to price by leveraging added flexibility they may have a day in advance that is just not possible to take advantage of in real time. The added certainty and flexibility will improve the overall efficiency of the market and should have a commensurate impact on price; but the benefits go beyond improved efficiency and include improved reliability. A more reliable day-ahead price signal enables consumers to decrease peak consumption by avoiding high-price hours, encourages embedded generation to be available to operate during those same high-priced hours, and enables dispatchable generators to better manage their operations.

Many possible designs exist for a DAM, and many features can be incorporated into a day-ahead market. In a comprehensive market design, the day-ahead market would produce physical schedules for supply of energy. In some day-ahead market designs, schedules are based on an optimization across the entire day, taking generator start-up costs and any energy limitations into account. Twenty-four hour optimization allows the system operator to ensure demand is met in the most efficient manner possible, which can provide both reliability and efficiency gains.

The DAM design that will be recommended to the IESO Board must address these issues and answer several key questions. These questions, and a description of their significance, are outlined in the attached addendum. One of the key questions is regarding the appropriate role of locational pricing in Ontario. More details on how this impacts a DAM can be found in the addendum under Question 1. The IESO is currently conducting a study on locational pricing, and the learning from that study will factor into this DAM stakeholder plan. For more details on the locational pricing study, see [Stakeholder engagement plan SE-25](#).

II. Stakeholder Engagement Plan Overview

The stakeholder engagement plan will consist of two separate phases to support both the design and implementation of the DAM initiative. The high-level design phase will involve soliciting stakeholder input on the development of the day-ahead market design. Upon finalization and approval of the design, stakeholder input will be solicited on a stakeholder plan for the implementation phase.

III. Design Phase: Day-Ahead Market Stakeholder Engagement Plan

Goal

1. To provide stakeholders with the opportunity to provide advice on the design of a day-ahead market, with a target June 2007 date for a high-level design recommendation to the IESO Board.

Objectives

1. To provide all potentially-affected stakeholders with the opportunity to review and provide input on the design of a day-ahead market.

2. To provide a representative group of directly-affected and interested stakeholders to work with the IESO in the development of the design of a day-ahead market.

Stakeholder Engagement Approach and Methods

The stakeholder engagement approach for the design phase will involve both public postings of information and proposals, as well as face-to-face dialogue. The implementation of the stakeholder engagement process will be in accordance with the IESO's approved stakeholder engagement principles.

The stakeholder engagement methods to be employed will be a combination of stakeholder sessions, the formation of a smaller stakeholder review team consisting of representatives from directly affected sectors, web-based postings providing all stakeholders the opportunity for comment, and the Stakeholder Advisory Committee.

Stakeholder Sessions

Stakeholder sessions will provide all interested stakeholders the opportunity to be kept up-to-date on the process and to review and provide input on the day-ahead market design.

The initial stakeholder session in October 2006, will provide education of what a DAM is, the history of past DAM work, previous alternatives considered, and significant decisions which must be made to create a strawman design. This meeting will provide the background stakeholders need to determine their level of involvement in the subsequent stakeholder engagement activities.

Stakeholder Review Team

The formation of a representative stakeholder review team will provide the opportunity for stakeholder representatives to provide more detailed input on the day-ahead market design in an efficient and timely manner. It is anticipated that the review team will consist of approximately two representatives from each sector who can each reasonably represent the issues relevant to their particular sector. Criteria to be used in establishing the membership of the Stakeholder Review Team will include overall knowledge of the market, ability to assess impacts of the initiative on their sector, and prior experience/involvement in market design initiatives. A "terms of reference" document for the Stakeholder Review Team will be prepared for review in advance of the first meeting to ensure mutual understanding of objectives and process. The Stakeholder Review Team meeting agendas and materials from the meetings will be made public through the IESO web site.

Web-Based Postings

Web-based postings provide all stakeholders with a lower-cost alternative to keep up-to-date with the process and to provide input as desired.

Stakeholder Advisory Committee to the Board and Executive

The Stakeholder Advisory Committee will be asked to review and consider the proposed day-ahead market design, providing all stakeholder sectors the opportunity to express their views and positions directly to the IESO Board of Directors in advance of any final approvals.

Decision Making Steps and Schedule of Activities

Stakeholder Engagement Schedule – Design Phase	
Activity	Target Date
1. Post and communicate day-ahead market stakeholder plan.	September
2. Input from Stakeholder Advisory Committee and other stakeholders on stakeholder engagement plan.	October 2
3. Stakeholder session(s) to educate on past DAM work, previous alternatives considered and significant issues to be addressed in the design of the day-ahead market.	Late October Possible additional date based on demand
4. Stakeholder review team established	October 30
5. Review team discussion on requirements for a high-level day-ahead market design.	Early November
6. Review team discussion on the implications of the Locational Pricing Study on the day-ahead market design (see SE-25 - Locational Pricing)	Late-November/ early-December
7. IESO publishes a high-level day-ahead market outline.	End of December
8. Review team discussion and input on the high-level day-ahead market outline (multi-day meeting).	January
9. IESO publishes draft high-level day-ahead market design.	February
10. Review team discussion and input on the draft high-level day-ahead market design (multi-day meeting).	March
11. Draft high-level day-ahead market design incorporating input from the Stakeholder Review Team posted on the web for stakeholder review.	March
12. Stakeholder session(s) to gather input on the high-level day-ahead market design (two day).	April
13. IESO publishes recommended high-level day-ahead market design	May 16

Stakeholder Engagement Schedule – Design Phase	
Activity	Target Date
14. Stakeholder Advisory Committee Meeting to gather input and advice for the IESO Board of Directors on the proposed high-level day-ahead market design. It is also anticipated that the SAC will be briefed regularly on the status of the DAM development.	June 13
15. IESO Board of Directors meeting seeking endorsement to proceed with implementation of the proposed high-level day-ahead market design.	June 28

Process Evaluation

Stakeholders will be provided the opportunity to provide feedback on the effectiveness of the process in achieving stated objectives following each key stakeholder engagement event (e.g., workshops, the working group process, etc.).

IV. Implementation Phase: Day-Ahead Market Stakeholder Engagement Plan

B: Scope for implementation phase:

During this phase the implementation of market rule changes, procedure changes and system requirements and implementation planning will be completed.

Goal

To provide all interested stakeholders with the opportunity to provide input on the implementation of 2006 Day-Ahead Processes in order to identify and minimize any adverse impacts on their operations and businesses and the IESO-administered market in general.

Objectives

1. To provide affected stakeholders with the opportunity to identify issues from both the stakeholder and IESO perspectives, with respect to the implementation of the approved high-level DAM design and work with the IESO to facilitate timely resolutions.
2. To provide stakeholders with the opportunity to review and provide input into schedules to support testing and activation.

Stakeholder Engagement Approach and Methods

The full details of the implementation stakeholder plan will be developed as the design phase is completed.

Addendum

Questions to be addressed during the Design

1. Will Ontario Continue with Unconstrained Pricing or Move to a Pricing Methodology that Better Reflects the Physical Constraints of the Power System?

The question of how real-time prices will be calculated is fundamental to the design of the DAM. Today's unconstrained pricing ignores the impact of transmission physical constraints within Ontario when setting price, whereas constrained pricing takes physical constraints into account when establishing prices. Significant complications arose in the comprehensive DAM design of 2004 by assuming unconstrained prices in both the day-ahead and real-time markets. System constraints anticipated a day in advance can differ from those that actually materialize in real-time, causing potentially significant differences in schedules for participants. To account for this, the previous design included congestion management settlement credits (CMSC) to be rationalized between day-ahead and real-time, leading to a complex settlement process which added significantly to costs, complexities, and would have further reduced the transparency of the market price signals. Based upon our previous DAM design experience and our subsequent experiences with the complexities of coordinating CMSC in the real-time market with the guarantees offered in the DACP, using unconstrained prices in a DAM with day-ahead physical scheduling going forward would present a major challenge. If unconstrained pricing is to continue in the long run in Ontario, then a simpler DAM design will have to be found, which will probably represent a lower level of assurances to dispatchable resources than was offered in the previous comprehensive DAM design.

Recently, the IESO started a study to examine the implications of various locational pricing scenarios for Ontario. This activity is being addressed under a separate stakeholder plan, SE-25 - Locational Pricing. The study results will be coordinated with the discussion on the design of the day-ahead market.

2. Should the DAM include Physical Schedules?

It is possible to create a purely financial DAM that does not produce physical schedules and unit commitment. In such a DAM design, it would be up to the resource owners to anticipate real-time conditions such as transmission availability and demand forecasts, and decide how those conditions would likely affect their real-time dispatch for their particular portfolio of resources. Armed with that information, they would then need to decide how best to participate in the financial DAM. They would then develop their real-time offers to result in real-time dispatch that factors in their DAM positions. With suppliers carrying this level of risk between day-ahead expectations and actual operation, such a model would likely result in lower participation, as suppliers would be unlikely to offer their entire capability into the day-ahead market.

A pure financial DAM alone is likely to be thinly traded, which might prove to be of relatively low value for either increasing efficiency or reliability. The pure financial market would likely bring only limited reliability benefits leaving the IESO with the same reliability concerns that existed prior to the development of the DACP. In such a scenario, there would likely be a continued need for some version of the existing DACP.

If physical schedules are to be incorporated into the design, then a 24-hour optimization algorithm similar to that used in neighbouring day-ahead markets may prove to be beneficial. While the day-ahead commitment process (DACP) provides some of the reliability improvements of a DAM, it does not use 24-hour optimization. Twenty-four hour optimization permits generators to provide more detailed offers, including start-up costs, minimum generation levels and minimum run-times. The IESO would then combine this extra information with the knowledge of the load forecast for the next day, and with participant information about the energy available from energy-limited resources to best ensure reliability and to also create the most efficient coordination of resources across the entire day. This would provide generators with greater certainty about their operation, including start-up and shut-down times, and a high likelihood of when the energy-limited generators would be operated. Both the reliability and the efficiency benefits of 24-hour optimization will be addressed.

3. How is the Consumer Represented in the DAM?

The majority of Ontario's electricity consumers are served by the retail sector. Of that, much of this retail load is covered under the regulated price plan and don't need to manage real-time price volatility through a DAM. Even of the 50,000+ retail consumers paying real-time energy prices, few are likely to participate in a DAM as they are generally unable to dedicate day-to-day attention to electricity purchasing. Entities are needed to purchase on behalf of these consumers in the day-ahead.

There are options for ensuring sufficient buyers. The option that is most commonly used in other jurisdictions is to create load serving entities, (LSEs) to represent retail consumers. LSEs typically act on behalf of customers in a dual role; that of managing forward price risks, and if necessary, that of contracting for sufficient supply going forward to ensure adequate future supply. LSEs in other jurisdictions have strong incentives to participate in the day-ahead market, thereby increasing the liquidity in that market.

The DAM design does not specifically hinge on how, or if LSE responsibilities are carried out, although the effectiveness of any design may. A DAM that has low participation relative to the total demand for electricity in the province will be less effective at emulating the physical operation, leading to operational drivers that will be weaker and less certain. Further, if only a small proportion of the consumers have interest in forward commitments, including DAM positions, then Ontario will continue to be reliant on the real-time price. If LSEs are slow to materialize, then until they do materialize, it is possible that an entity such as the IESO could be called upon to forecast and nominate default load into the day-ahead market. However, it must be remembered that whomever forecasts demand and/or purchases day-ahead would be taking a financial position relative to real-time. With this position there is associated risk. Any design that included a central role for representing consumers in the market would have to deal with the financial gains or losses associated with this risk.

4. How Should the Day-ahead Price and the Real-time Price Relate to Each Other?

Day-ahead markets in the electricity industry classically perform a similar function to that of bilateral agreements, in that at their conclusion, they represent both buyers and sellers holding a financial position relative to the actual real-time market prices. This day-ahead/real-time linkage has commonly

been referred to as a “two settlement system”. The first settlement is based on the day-ahead prices and volumes, and the second settlement is to adjust for differences in real-time.

This linkage to real time creates the financial drivers for participants’ real-time actions. The strength of the drivers is directly related to how closely the real-time conditions align with those expected in the day-ahead timeframe. When real-time conditions and day-ahead perspectives align, then the prices should be similar and the implications of changes in performance relative to day-ahead positions would be small. However, when the differences are large, then the prices can be substantially different, thereby providing strong drivers for participants to conform with their day-ahead commitments, and even to take additional actions that will allow them to take advantage of the real-time opportunities.

In this classical “two settlement system”, strong linkages between day-ahead pricing and real-time pricing emerge, even if there are systemic differences between how the two prices are calculated. This price convergence is often accomplished as a result of arbitrage of day-ahead to real-time energy price differences. The entities carrying out this role in the market are commonly referred to as virtual participants.

In Ontario’s electricity market, like those of the other Northeast American markets, we currently have a systemic difference between the processes for calculating real-time prices and those used to calculate pre-dispatch prices. The difference results from the way import and export transactions are treated in the two calculations. The real-time price is calculated every five minutes and uses only the offer/bid prices of suppliers/consumers that can change output/consumption in that timeframe. However, imports and exports are arranged prior to the hour of operation, and are arranged for a static quantity throughout the hour. In a five-minute timeframe, import and export bids and offers cannot be changed and are therefore ignored in the real-time price calculation – although their scheduled quantities establish the demand to be met by the market. In contrast to the real-time market, the DAM is expected to use an hourly resolution for establishing day-ahead prices, in which all hourly offers/bids would be considered in establishing the day-ahead hourly clearing prices. This systemic difference must be recognized and addressed in the day-ahead market design. It can be accepted as part of the design, relying on virtual participants to drive the convergence between the two markets, or it can be explicitly addressed through day-ahead or real-time price calculations. The issue of the role of intertie transactions in establishing the real-time prices is currently being discussed by the IESO and stakeholders. For more information, see Stakeholder Engagement Plan SE-18. This issue could significantly increase the scope of the DAM design, with corresponding impacts on timeline and costs.

Background on the Previous Day-ahead Market Activities

During 2003 and 2004, the IESO conducted an extensive consultation program with stakeholders to guide the development of a recommended approach to a day-ahead market. A day-ahead market working group was established and numerous stakeholder meetings and web-based initiatives ensued.

A number of alternative designs were studied and the group proceeded with a design that attempted to address all of the objectives initially developed with the DAM working group. The comprehensive DAM was designed to address a wide range of stakeholder needs and wants through a single integrated solution, which had a high degree of complexity. With the introduction of Bill 100 in 2004, market participants and other stakeholders began to question whether it was the right time to proceed with the

recommended DAM design. In December 2004, after review and discussion, the IMO Board directed the IESO to consider other potentially viable alternatives and identify the costs and benefits associated with each identified alternative. The background on the comprehensive DAM can be found at: http://www.ieso.ca/imoweb/consult/mep_dam.asp

In Spring 2005, the IESO began stakeholder consultation on day-ahead needs and priorities to develop alternative solutions and recommendations. In August, the IESO proposed three possible alternative models for a DAM. Any work on these very preliminary alternatives ceased shortly thereafter, as the operational events of the summer of 2005 underscored the immediate challenges in providing a reliable supply of electricity. The background on day-ahead needs and priorities can be found at: http://www.ieso.ca/imoweb/consult/consult_dam.asp. The tight demand/supply conditions during 2005 resulted in 12 days of public appeals, three separate occasions when the IESO implemented five percent voltage reductions, and numerous other occasions where emergency control actions were taken to preserve the reliability of the power system. Analysis of the events clearly identified import failures as a significant contributor to the problems, and cited the lack of day-ahead transaction scheduling as a major shortcoming. Given the significant impact of the summer events, the IESO moved forward with a stakeholder engagement plan to design a day-ahead commitment process (DACP). The plan was to identify, design, and implement measures to enhance the reliability of the power system in advance of the summer of 2006. The background on the day-ahead commitment process design can be found at: http://www.ieso.ca/imoweb/consult/consult_isr.asp. The DACP was implemented under a separate stakeholder initiative that can be found at: http://www.ieso.ca/imoweb/consult/consult_se16.asp. The DACP started operation, on schedule, prior to the summer, 2006.