Market Metrics and Data Transparency

Joint AESO / MSA Stakeholder Session
March 19, 2012
Agenda

• AESO: Update on market metrics changes
  – Consultation to date
  – Recent changes made
  – Upcoming changes
  – Basic principles for data provisioning

• MSA: Review of market data transparency
  – Consultation to date
  – Main findings of CRA report
  – Observations from the market
  – Next steps
Market Metrics

Matthew Davis – Supervisor, Market Analytics
Market Metrics Consultation

• Stakeholder Session – July 5, 2011
  – Asked for some feedback on some reports
    • Almost 80% of respondents indicated that the historic trading report was valuable for making business decisions
    • Respondents also indicated that how reports are provided could be improved

• Discussion Paper – Aug. 3, 2011
  – Focused on identifying reports that were not used or needed improvement
  – Focused on how the AESO can provide equitable access to market information and reports
  – Did not look at impact data transparency has on competition
  – Indicated some upcoming changes to reports

• Update Letter & Comment Responses – Jan. 30, 2012
  – Updated participants on the status of reports
  – Responded to feedback received by participants
Changes to Date

• Operating Reserves Market Transparency
  – New OR Active and Standby Price Reports – Dec. 12, 2011

• Wind Power Forecasting – Dec. 1, 2011
  – Graphical and Numerical Data Provided
  – Both Near-Term (12 hours ahead) & Longer-Term (6 day ahead) are available

• Retirement of: Weekly Wind Reports, Import/Export Graph, DDS monthly graph
Upcoming Changes

• Generator Outage Report Changes
  – Retirement of old report format, three new reports (7-day availability, daily outages, monthly outages) available in both numeric and graphical formats

• Continued Clean-Up ofExisting Reports on ETS
  – Ex. Improvements to the asset list

• Publication of a Quarterly Market Statistics Report
  – Summary Metrics with and Accompanying Data File

• The AESO has initiated work on improving how market information is provided to the market, this is part of the AESO’s commitment to improve our market systems
Key Principles the AESO Follows for Developing Reports

- Information should be presented in a timely and non-discriminatory manner
- All market participants should have equal access to public information
- Sufficient information will be presented to allow existing and potential market participants to make well-informed decisions based on their own analysis
- The presentation of information and metrics should, to the extent possible, be aligned to constant standards across reports
- Market Transparency is important to allow a level playing field
• The AESO is interested in feedback on this joint consultation

• AESO always welcomes feedback on any of our reports
  – For feedback, or any other report related questions please email: market.analysis@aeso.ca
Market Data Transparency

Matt Ayres
Chief Economist
Market Data Transparency: Timeline

- **August 2011**: MSA issues RFP
- **September 2011**: MSA selects consultant (Charles River Associates)
- **October 2011**: stakeholder comments received on costs/benefits of particular reports.
- **November 2011**: MSA stakeholder session and release of consultants report
Stakeholder comments received overwhelming support for the idea that market data transparency enhanced competition.

Consultants report established a theoretical case that transparency of certain information could potentially lead to interdependent behaviour.

Stakeholders asked what had the MSA observed that led to the commissioning of the consultants' report.
Main findings of the Consultants Report

- Public disclosure of market data (market data transparency) generally improves market outcomes;

- Detailed disclosure of output and offer data may also increase the likelihood of coordinated behaviour;

- Market data transparency does not by itself increase the risk of coordinated behaviour. Other factors need to be present;

- Only a small subset of data routinely disclosed by the ISO was identified as potentially allowing inferences to be drawn about others’ offer behaviour. (Historical Trading Report, Current Supply Demand Report and the System Marginal Price Report); and

- Suggests a cost/benefit approach be applied to data disclosure policies. (How to maintain benefits while reducing risks)

Full report available on the MSA’s website
MSA’s regularly monitors market outcomes to assess whether they consistent with competition. The MSA has found instances where multiple market participants engaged in economic withholding in that pattern sometimes remained stable over a number of hours or was repeated on subsequent days.

The MSA has been assessing whether market participants were prevented from competing (e.g by market rules) or whether they choose not to do so.

The MSAs assessment does not allege anticompetitive behaviour by market participants. Rather we find some instances where the availability of market data appears to influence market outcomes.

Three reports identified as potentially problematic
MSA’s Hypothesis

- FEOC regulation establishes, with some exceptions, that sharing of price and quantity offer records is inconsistent with a fair, efficient and openly competitive market.

- Information on others offers can be discerned from:
  - **Historical Trading Report** – published shortly after each settlement interval. No explicit identification of assets but information is sufficiently rich to allow many assets to be identified.
  - **Combination of Current Supply and Demand report with system marginal price** – observation of changes in generation combined with movements in system marginal price may allow the offer curve to be revealed.
  - **System marginal price report** – includes the price and size of the offer block setting price.
Observation of offer strategies could:

- Give information that a competitor is engaging in economic withholding. Having observed this, the generator’s optimal strategy may change. For example, a generator interested in high prices may move to shadow the offer of a competitor.

- Allow competitors to signal one another about their intentions to engage in economic withholding in future hours. The MSA has not seen evidence of this in its review to date.

- Allow market participants to monitor the competitive response of others, e.g. did a competitor offer lower in response to economic withholding by another participant. The MSA is concerned that this provides a mechanism to maintain a coordinated outcome or punish competitors deviating from such an outcome. The MSA has not seen evidence of this in its review to date.
The merit order is observable via the Historical Trading Report (HTR) to be very steep below a price of $X.

Supply cushion is not expected to be large, such that a few hundred MW of capacity offered above $X would be sufficient to set price at $X.

One or more market participants restate offers to a price level close to $X for hours outside T-2.

Price is set at or close to $X. A number of market participants that have un-dispatched MW at this price level do not restate offers below this level in subsequent hours or do so weakly (move only a few MW).
September 6, 2011: Hour ending 6 to 10

HE6 Historical Trading Report shows steep merit order below $955.65

HE10 Merit order shows 542MW of offers move into a band from $920.56 to $995.01, setting prices for part of the hour.

<table>
<thead>
<tr>
<th></th>
<th>Min SMP</th>
<th>Pool Price</th>
<th>Max SMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE6</td>
<td>15.65</td>
<td>21.35</td>
<td>23.74</td>
</tr>
<tr>
<td>HE7</td>
<td>24.64</td>
<td>37.01</td>
<td>40.96</td>
</tr>
<tr>
<td>HE8</td>
<td>31.66</td>
<td>40.26</td>
<td>43</td>
</tr>
<tr>
<td>HE9</td>
<td>43</td>
<td>46.01</td>
<td>50</td>
</tr>
<tr>
<td>HE10</td>
<td>451.97</td>
<td>848.8</td>
<td>936.74</td>
</tr>
</tbody>
</table>
Historical Trading Report Timeline

At approximately 10 minutes after the Settlement interval ends the Historical Trading Report is posted showing offers for HE6 and prior.

During HE7 (Hour T) market participants can revise offers using a price restatement for HE10 (Hour T+3) and later.
September 6, 2011:
Hour ending 10 to 14

HE10 Historical Trading Report shows steep merit order below $950. SMP at $950 at the end of HE10 and start of HE11.

HE14, 332 MW move in a narrow band under $850 with SMP set at $850 for most of HE14 and HE15.

<table>
<thead>
<tr>
<th>HE10</th>
<th>HE11</th>
<th>HE12</th>
<th>HE13</th>
<th>HE14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>451.97</td>
<td>848.8</td>
<td>936.74</td>
<td>850</td>
</tr>
<tr>
<td>SMP</td>
<td>860</td>
<td>895.38</td>
<td>925</td>
<td>856.67</td>
</tr>
<tr>
<td>Pool Price</td>
<td>924.38</td>
<td>926.57</td>
<td>927</td>
<td>890</td>
</tr>
<tr>
<td>Max SMP</td>
<td>921.65</td>
<td>923.24</td>
<td>927</td>
<td>890</td>
</tr>
</tbody>
</table>
September 6 2011: Hour ending 19 to 23

HE19 Historical Trading Report shows steep merit order below $685. SMP at $650 at the start of HE20.

HE23, 378 MW offered in a narrow band under $685 but fail to set price during the hour.
## Other Examples

<table>
<thead>
<tr>
<th>Date</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 4, 2011</td>
<td>See MSA Quarterly Report: July-September 2011 (Q3/2011), Section 2.3.2.</td>
</tr>
<tr>
<td>August 8, 2011</td>
<td>The Historical Trading Report for HE 6 showed a steep merit order below $750, with a significant number of MW offered above this level. Pool price for HE6 was $22.31. By HE10 one market participant offered 330 MW in a narrow band below $750, with SMP setting at $740.24 for part of the hour. Additional MW from other market participants offered between $700 and $750 in the following hour (HE11).</td>
</tr>
<tr>
<td>August 17, 2011</td>
<td>Some evidence that offer behaviour on this day was influenced by observation of offers on the previous day. On August 17, one participant offered just below $840, where the merit order was observed to be steep on the previous day. The MSA believes the example demonstrates the market participants look not only at the Historical Trading Report for the current day, but also previous days, when deciding upon offer strategy.</td>
</tr>
<tr>
<td>August 22, 2011</td>
<td>Early in the morning of August 22, 2010 the Historical Trading Report showed a large offer block at $889.01. By HE10 there are 300 MW between $875 and $888.98. Pool price with this hour reaches $335.07 with a high SMP of $840. Offers continue to cluster around this range, by HE15 there are approximately 560 MW offering between $790 and $900.</td>
</tr>
<tr>
<td>August 25, 2011</td>
<td>Offers at $860.05 and a steep merit order below is evident from the Historical Trading Report after HE08. In HE11, 267 MW are moved to within a narrow band from $848.63 and $850.54, briefly setting SMP. Some movement in offers is evident in later hours.</td>
</tr>
<tr>
<td>August 26, 2011</td>
<td>Multiple market participants are offering high in the merit order as the on-peak period begins. Prices reach $785.91 in HE12. The number of MW offered above this price remains stable for much of the afternoon. On this day there appears to be weaker evidence that offer prices are driven by the Historical Trading Report, rather they appear to be influenced by the outcomes observed on the previous day. The Historical Trading Report (and others) may however have contributed to the stability in offers observed during the afternoon.</td>
</tr>
<tr>
<td>September 22, 2011</td>
<td>In HE8, 100 MW is offered in a narrow band below $725. In HE13 nearly 500 MW is offered between $720.33 and $706.06. (The MW previously offered below $725 by this time have been re-offered.) Pool price reaches $138.46 in HE13 (with a maximum SMP of $708.15) and $134.50 in HE17</td>
</tr>
</tbody>
</table>
Next Steps

- Presentation will be posted on AESO / MSA website with details of the consultation
- Joint MSA / AESO Consultation
- Will follow normal MSA consultation process ("Strawdog": Consultants report and presentation)
Specific feedback requested on:

- **More data transparency** – would publication of other / more data enhance competition? What and why?

- **Less offer data transparency** – would changes in aggregation / timing keep benefits and reduce costs? For example, modify HTR to show only aggregate information above $200.
Comments

Request that comments sent to:

stakeholderconsultation@albertamsa.ca
market.analysis@aeso.ca

Presentation and notice about the consultation to be posted on MSA / AESO websites.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Results</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Post RFP on MSA website</td>
<td>August 30, 2011</td>
</tr>
<tr>
<td>FILTER</td>
<td>Request stakeholder comments</td>
<td>October 6, 2011</td>
</tr>
<tr>
<td></td>
<td>Publish stakeholder comments on website</td>
<td>October 27, 2011</td>
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<tr>
<td></td>
<td>Publish notice of stakeholder meeting</td>
<td>November 7, 2011</td>
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<tr>
<td>INITIATE</td>
<td>Stakeholder meeting</td>
<td>November 21, 2011</td>
</tr>
<tr>
<td></td>
<td>Publish Charles River Associates report</td>
<td>November 23, 2011</td>
</tr>
<tr>
<td></td>
<td>Presentation of observations</td>
<td>Today</td>
</tr>
<tr>
<td>DEVELOP</td>
<td>Receive stakeholder comments on Strawdog</td>
<td>April 9, 2012</td>
</tr>
<tr>
<td>DRAFT</td>
<td>Provide Draft recommendations</td>
<td>2012</td>
</tr>
<tr>
<td>DEBATE</td>
<td>Receive stakeholder comments on the Draft</td>
<td>2012</td>
</tr>
<tr>
<td>DECIDE</td>
<td>Finalize recommendations, as applicable</td>
<td>2012</td>
</tr>
</tbody>
</table>
Other MSA initiatives

- Some work already underway:
  - Load survey
  - Impediments to generation investment
  - Supply cushion methodology (Technical working group)
  - Market shares and market power
  - Long run marginal cost