

# Improved Day-Ahead Mechanisms

Presentation to Stakeholder Advisory Committee  
December 5, 2007



- High-Level Review
- Moving Forward:
  - Options Not Being Pursued
  - Options 1 & 3 Discussion
- Issues Requiring Study and Resolution
- Cost-Benefit Analysis Status
- Timeline

- Earlier versions of the stakeholder plan indicated the IESO would make a recommendation on which, if any, of the options should go forward to detailed design
- Extension of the original timeline was required to address:
  - IESO and Stakeholders need for more design detail than the IESO was originally intending for the initial December high-level decision
  - Quantification of the cost-benefit analysis (CBA), which has been more challenging than originally anticipated.

- Previous SAC discussions confirmed need for a step-by-step approach to market evolution
- Consistent with this direction and after gathering input from stakeholders, the IESO focussed its attention on Unconstrained Day-Ahead Market (UDAM)
- The basic design of UDAM has been developed and discussed with stakeholders over recent months
- A wide range of feedback has been received from stakeholders

# Some Stakeholder Comments We Have Received

- Ontario already has adequate protection from the volatility of real-time (RT) prices so I don't see why a DAM is needed. I will wait for the CBA to see what the other benefits might be.
- Ontario needs a DAM – forge onward
- Don't know enough about UDAM yet to decide if it is worth the effort
- Not sure if a DAM without physically-achievable financial commitments is worthwhile.

# Some Stakeholder Comments We Have Received (2)

- Need to know where the industry in Ontario is going before we can decide on DAM
  - Issues such as load serving entities, resource adequacy and environmental attributes
- The IESO has not convinced me that DAM won't cause some generators to become less flexible in real time, which would be inefficient and not good for other generators.
- UDAM is starting to look complex and most of this complexity is due to unconstrained pricing. Can we entertain a hourly Ontario energy price (HOEP) based on nodal prices?

- While UDAM is intended to align with step-by-step evolution, it requires significant effort on the part of the IESO and stakeholders to develop and evaluate
- The IESO believes that it is still appropriate to continue with the analysis of UDAM
- Do SAC members agree?

# Moving Forward



- Work is continuing on several fronts
- Providing more detail on options to stakeholders, who indicate that they need this before they can give their final opinion
- Working towards a CBA that provides a solid basis for evaluating the worth of various components of the day-ahead designs
- Identified Options 2, 4, & 5 will not be pursued at this time

# Other Options Not Being Pursued

## Option 2 – Financial Day Ahead

- In today's environment, may be thinly traded
  - Engaged participants already have the ability to trade day-ahead via third-party exchanges and the over-the counter market, but these mechanisms are thinly traded
- No association with the physical world
  - No improvements in efficiency of unit commitment
- Could be viable if the participation problem was to be addressed
  - By advances on Load Serving Entities (LSE) discussions, or
  - Through mechanisms similar to Option 3, but in this combination Option 2 would cost close to Option 3 and not deliver as complete a set of benefits.

- Seen as too expensive and complex by many stakeholders
- The IESO has concerns about the complexity of day ahead and real-time congestion management settlement credit (CMSC) interactions based upon our experience with the day-ahead commitment process (DACP)
  - But some of this complexity is surfacing in the Production Cost Guarantee (PCG) design of UDAM

The IESO and some market participants feel that in principle locational marginal pricing (LMP) based markets provide the best price signals and the most efficient outcomes, but:

- Cost of this option and the associated changes to the real-time systems would be significant and time-consuming
- Move to LMP at this time does not have widespread support
- Is inconsistent with a step-by-step approach
- Advancements being discussed in the constrained sequence of UDAM are consistent with work that would be required in a LMP DAM

- IESO has not identified any technical issues to prevent implementation of Option 1 or 3 (UDAM), but both require further study
- UDAM attempts to balance cost and complexity against the benefit realized from physical and financial market convergence
- Option 1 may provide some immediate/interim benefits

- IESO received stakeholder feedback that an accurate HOEP forecast would be beneficial
- IESO has done initial work on a forecast based upon:
  - NY and Michigan DAM prices
  - Ontario supply cushion and demand
  - DACP prices
  - Calendar variables
- Initial results are promising with the forecast predicting real-time prices at least as well as the NY DAM price predicts NY real-time prices

## Day-Ahead Forecast of HOEP Issues

- There is a significant difference between the potential benefits of a price forecast vs. a DAM
  - Real-time settlement continues with the consumers still exposed to market fluctuations that adversely affect real-time price
  - A price forecast would not improve the efficiency of unit commitment processes
- The IESO has received some feedback that it is not appropriate for the market operator to perform forecasts of this type
  - This will be the subject of discussions with stakeholders in Q1 2008

## Unconstrained Day Ahead Market

### High-level description review:

- Use unconstrained algorithm to produce DAM financial positions (prices & quantities)
- The vast majority of consumption will be billed the DAM price
  - Move all retail load into day-ahead with IESO entering forecast of default demand until LSEs materialize; optional DAM for non-default demand (active consumers, imports, and exports)
  - Real-time market assumes a balancing role
- No Day Ahead CMSC
- Allow imports, exports and virtual participation
- Includes efficient unit commitment to maintain reliability (replaces DACP)

## **Consumers – General Theme**

- Unsure that benefits will be realized under current market structure
- In parallel with exploring UDAM, many consumers want us to pursue Option 1

## **Dispatchable Consumers**

- Continued participation in operating reserve market questionable due to day-ahead uncertainties

## **Embedded Consumers and Retailers**

- Option 1 would be a step forward for demand response and conservation targets
- Welcome a better transparent day-ahead price

## **Generators under contract or regulation:**

- Do not want any DAM to change risks/rewards of existing contracts
  - Either the contracts and regulations would have to address any risks that UDAM would introduce, or the UDAM design must ensure that they are held harmless for UDAM participation
- Question whether UDAM is the right priority for now
  - Real-time pricing should still be the dominant issue
  - Dispatch issues are critical to significant portion of generation in Ontario

## **Other generators:**

- See potential efficiencies through improved fuel management
- Welcome alignment of system and procedure with neighbouring jurisdictions
- Believe day-ahead financial binding settlement will potentially reduce costs to the system

## **Intertie Traders**

- Unanimous support of DAM initiative and continued evolution

## **Benefits summarized:**

- Produces the day-ahead settlement price for the vast majority of production and consumption
- Provides flexibility to transact in real-time if preferred
- Will result in lower overall cost of supply by making more efficient commitment decisions
- Possibly more price-responsive demand from greater day-ahead price transparency

## **Agree with Stakeholders - Some significant work remains to be done:**

- Several design issues and the CBA require further study

# Issues Requiring Further Study



- Participation - optional or mandatory
- Adapting/restructuring of existing contractual and regulatory structure
- Determining demand forecast methodology
- Exploring alternatives and determining the degree of alignment required between algorithms
- Establishing information transfer requirements from DAM to real-time

- Defining treatment of different generation sources in 24 hour optimization
- Necessary changes to accommodate virtual participation
- Developing of appropriate PCG's design; design underway but significant study remains
- Understanding required real-time changes
  - CMSC for Non-Quick Starts
  - Adapted to three part bidding

# CBA Status Update



- IESO still working to quantify costs and benefits of a DAM
- Initial focus - potential efficiency improvements and IESO implementation costs
  - Progress in 3 areas of potential efficiency gain
    - (i) enhanced unit commitment efficiency,
    - (ii) improved opportunities for demand response, and
    - (iii) reduced transaction costs through improved coordination of natural gas/electricity operations
  - Preliminary estimate of IESO implementation cost
- Based on available information, reasonable to expect net benefits for Ontario –hence further study warranted

- (i) Enhanced unit commitment efficiency
  - Preliminary estimate of potential efficiency gains in excess of \$5 million annually
  - Implications of imports/exports and future fleet characteristics
- (ii) Improved opportunities for demand response
  - Deal and Mountain report evidence that demand is more responsive in markets with DAM
  - Provide plausible elasticity estimates for different customer classes post DAM to be used in simulations to estimate efficiency
- (iii) Reduced transaction costs through improved coordination of natural gas/electricity operations
  - Baden Energy Consulting Ltd identify potential efficiencies in the form of reduced commodity costs and risks, reduced storage costs and injection/withdrawal costs
  - Proposed methodology to quantify efficiencies
  - Expect material efficiencies

# Additional Concerns Identified During the Stakeholder Process

- Some stakeholders raised concerns of potential inefficiencies
  - (i) a DAM with financial commitments might reduce the incentives for load following in real-time
  - (ii) a DAM with an early closing time (for example earlier than 3:00 pm) and financial commitments could lead to inefficiencies in the use of hydro-electric resources
- IESO will address these issues in future analysis

# Additional Concerns Identified During the Stakeholder Process

- Some consumers object to the use of the Kaldor-Hicks CBA criterion
  - CBA is one consideration in making the decision
  - The effect on consumers' bills is another important consideration
  - The IESO will provide analysis of potential bill impacts

- Based on a review of cost estimates of 2004 DAM IESO projects that the \$16 million currently allowed for in Business Plan over 2008 and 2009 likely on the low end of the range of costs required for implementation of the UDAM
- IESO will seek vendor estimates once more detailed design is achieved

# Timeline for Next Steps



- December: Day-Ahead recommendation to IESO Board
- January: Stakeholder Engagement plan established for Option 1 (day-ahead forecast of real-time prices)
- March: IESO publishes Option 1 recommendation
- May: IESO publishes report recommending the path forward for Day-Ahead arrangements
- June 4: SAC discussion of the Day-Ahead recommendation
- Mid-June: Recommendation to IESO Board