

# Evaluation of Options

Presented to MPWG

March 3, 2006

S. Travers



## Evaluation of Options

- The IESO has prepared a draft evaluation of the options for comment.
- We are looking for input on this evaluation.
- We will discuss next steps in this process later in the meeting

# Evaluation of Options

- Each option is evaluated against the draft criteria
  - Efficiency (both allocative and dynamic)
  - Fairness
  - Reliability
  - Transparency
- As we worked with the criteria, we sometimes found it necessary to expand upon or explain the criteria

# Efficiency

- The right amount of energy in the lowest cost to those most willing to pay
  - i.e. comparing the cost of producing an extra MW with the benefit gained from consuming that MW. (within the hour)
  - i.e. efficient dispatch, appropriate price signals for non dispatchable participants.

# Efficiency

12X	AMPCO	1X Myopic	MIO
Can understate value, lead to less efficient outcome	Same as 12X	Can overstate value, lead to less efficient outcome	price most accurately reflects the cost of the incremental MW relative to dispatch.

## Efficiency

- Drive participants short term behaviour to benefit market efficiency
  - (i.e. induces participants to bid/offer at their true cost/value (this includes imports and exports) allowing algorithm to achieve the most efficient outcome.

# Efficiency

12X	AMPCO	1X Myopic	MIO
Price does not reflect dispatch – can induce inefficient behaviour	Similar to 12X. However, ramp payment may induce participants to make more ramp available	Price does not reflect dispatch – can induce inefficient behaviour	Price matches the physical dispatch, reflects system conditions and signals efficient behaviour. <sup>7</sup>

# Efficiency

- Compensation should provide incentives for efficient technology choice and timely and efficient capacity investment.

# Efficiency

12X	AMPCO	1X Myopic	MIO
Dampens ramp impacts, may not signal investment in ramp capability	Marginal improvement over status quo incentive for marginal units ramping capability	overstates the cost of ramp for known demand changes. Skewed towards fast ramp units	Most accurately reflects dispatch. Should provide most accurate signals

## Fairness

- Prices should result in transfers of wealth between stakeholders that are no more or no less than needed to induce the efficient outcomes.
- Identify cash flow changes relative to the status quo.

# Fairness

12X	AMPCO	1X Myopic	MIO
Option which leads to lowest price paid by loads	increase cost to loads of ~ 0.1% if MIO is used.  increases to ~ 0.3% if a 1x Myopic	Past simulation results show an average increase to MCP of about 10%.	Change to MCP will be 1.0% (incremental) 0% (modified incremental) and +1.0% (HSP).*

\* If unit minimums are not enforced, the above results are changed by +1%.

# Reliability

- Incentives to participants to follow dispatch instructions
  - i.e. is a participant able to generate more profit by operating at some other point?

# Reliability

12X	AMPCO	1X Myopic	MIO
CMSC provides incentive to follow dispatch instructions	Same as 12X	Desire to maximize revenue should lead to following dispatch	Depending on MIO price choice, requires a production cost guarantee

# Reliability

- Incentives to participants to address immediate reliability concerns
  - e.g. demand response, increased supply from sources such as self scheduling generators and imports

# Reliability

12X	AMPCO	1X Myopic	MIO
<p>Reduces signals for demand response and self scheduling generators to come to market.</p>	<p>Similar to 12X. Payment to ramping units may induce more ramp availability</p>	<p>Shortage pricing should call participants to the market and signal reduction in demand</p>	<p>Unforeseen changes in supply/dem and will produce scarcity pricing with the resulting incentives</p>

# Reliability

- Compensation should provide incentives to ensure long term capacity (gross capacity in MW from any generation or demand response).

# Reliability

12X	AMPCO	1X Myopic	MIO
Questionable that 12X will induce long term capacity adequacy	Similar to 12X Ramping revenue may help construction of incremental units	Shortage prices which result in higher average price may help induce capital investment	Average compensation is not significantly higher than the current 12X price

# Transparency

- Price methodology should be simple and clear.

# Transparency

12X	AMPCO	1X Myopic	MIO
Price calculation is most simple and transparent of options.	Price calculation as 12X - calculation of the ramping payment is not transparent	Slightly less simple than 12X pricing	MIO prices are generally more complicated than 12X or 1X prices

# Transparency

- Produce prices which are predictable.

# Transparency

12X	AMPCO	1X Myopic	MIO
<p>Removing impact of unexpected changes and ramp limitations may improve ability to forecast future prices.</p>	<p>Same as 12X.</p>	<p>Price becomes more volatile and is more influenced by unforeseen events</p>	<p>More difficult to predict price for a particular system condition at a particular time, however less price volatility.</p>

# Transparency

- Produce prices which reflect system conditions.

# Transparency

12X	AMPCO	1X Myopic	MIO
<p>12X will mask the impact of changes in supply and demand.</p>	<p>Same as 12X.</p>	<p>Reflects temporary shortages, however overstates predictable ramp induced shortage</p>	<p>Depending on the MIO price predicted changes in system conditions can lead to counter-intuitive prices such a price dip just prior to the change in the hour.</p>