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APPRO
ASSOCIATION OF
POWER PRODUCERS
OF ONTARIO

January 10, 2007

Mr. Paul Murphy
President & CEO
Independent Electricity System Operator
655 Bay Street, Suite 410
Toronto, ON M5G 2K4

Dear Mr. Murphy,

Re: Proposed Market Rule Amendment -- MR-00331-R00: Specify the Facility Capability in the Market Schedule

The Association of Power Producers of Ontario (APPRO) is pleased to submit its written comments to the IESO Board on the above proposed amendment. APPRO supports the proposed rule change which is in the direction of improving market operations and market efficiency, as we outline below. We also include additional comments made during the course of discussion on this matter over the past year.

It should be noted that individual APPRO generator members may also submit views on their own behalf.

1. Throughout 2006 the Association of Power Producers of Ontario (APPRO) and a number of its major members have been very involved with the IESO and other stakeholders in the Ramp Rate discussion. APPRO has endeavoured to work in a spirit of cooperation and has invested significant effort in considering options to resolve the 12x ramp multiplier issue.
2. The 12x ramp multiplier was introduced prior to the start of the market as a temporary measure based on concerns of high volatility and prices seen during market trials. Moreover, it is inefficient because the ability of generators and other resources to respond to changing system conditions by ramping up or down is not reflected in the resulting prices. This presents serious problems for generators and does nothing to enhance system efficiency.
3. With regard to the 12x ramp multiplier issue itself, there were nine or ten Market Pricing Working Group meetings the last year alone, and two SAC meetings where this has been a major topic. The staff report which resulted in the IESO proposing this Market Rule Amendment was thoughtful both in its findings and recommendation, as APPRO noted at the IESO SAC on September 5th. As always, the IESO staff acted in a professional manner, and deserves to be

complimented on the way they have handled what has become a very contentious matter.

4. While the proposed 3x ramp multiplier rate solution is not our preferred choice (APPPrO is still of the view that the most appropriate solution is to move from 12x to 1x), we are of the opinion that there has been sufficient discussion around the ramp multiplier issue and the alternatives, and the proposed market rule amendment (MR-00331-R00) is one that APPPrO supports as an appropriate interim solution.
5. As APPPrO has noted in the past (see attached correspondence), a movement to a 3x ramp multiplier is a step in the right direction because:
 - a. It reduces one of the differences between the dispatch and pricing algorithms, therefore improving the quality of the price signal;
 - b. It provides some incentive to increase ramping capability which is an important system need;
 - c. It begins to address some of the Ontario market inefficiencies identified by the OEB's Market Surveillance Panel.
6. Therefore a change to 3x will result in a system that is more efficient and better reflects the physical capabilities of generators. In turn, generators will receive compensation that is closer to the value provided and will be provided better incentives to increase ramping capability which will increase their chances of being dispatched. With the increase in wind capacity on the system, ramping capacity will be needed more. Lack of appropriate ramping capacity in that case could increase costs for all consumers, though the cost increase would be hidden in side payments.
7. Furthermore, the IESO has made it clear that the proposed market rule amendment is part of package of changes which also includes a distribution of surplus funds that will be made from the Transmission Rights Clearing Auction.
8. In conclusion, APPPrO supports the proposed rule change which is in the direction of improving market operations and market efficiency.

Sincerely,

A handwritten signature in black ink, appearing to read 'David Butters', written over a large, faint oval shape.

David Butters
President

Cc: Sam Mantenuto; APPPrO Board of Directors

25 Adelaide St. E
Suite 1602
Toronto ON, M5C 3A1



APPrO
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September 20, 2006

Mr. Dave Goulding
President & CEO
Independent Electricity System Operator
655 Bay Street, Suite 410
Toronto, ON M5G 2K4

Dear Mr. Goulding,

I am writing in regard to the recent IESO Stakeholder Advisory Committee (SAC) meeting, and the 12x Ramp Rate issue.

As you know, over the past many months the Association of Power Producers of Ontario (APPrO) and a number of its members have been very involved with the IESO and other stakeholders in the Ramp Rate discussion. We have tried to work in a spirit of cooperation and have invested significant effort in considering options to resolve the 12x ramp rate issue.

While the proposed interim 3x ramp rate solution is not our preferred choice, we believe the staff recommendation is one that should now be supported by the IESO Board. The IESO has taken a considered and responsible approach over many months to get input from market participants before a decision is made, recognizing ultimately that decision making authority rests with the IESO. There have been nine or ten Market Pricing Working Group meetings this year alone, and two SAC meetings where this has been a major topic. It is now time to determine an outcome and to move on to other equally important and pressing matters concerning electricity pricing.

The staff report is thoughtful both in its findings and recommendation, as we noted on September 5th. As always, the IESO staff has acted in a professional manner, and they deserve to be complimented on the way they have handled what has become a very contentious matter.

We well understand that pricing issues can be complex and challenging at many levels.

Despite the demonstrated extremely small net impact of a 3x ramp rate on overall prices, consumers will argue that they will be paying generators more and getting nothing in exchange. What they get in exchange is a system that brings the returns to generators closer to the value provided and gives them some incentives to increase ramping capability which will increase their chances of being dispatched. With the increase in wind capacity on the system, ramping capacity will be needed more. Lack of appropriate ramping capacity in that case could increase costs for all consumers, though the cost increase would be hidden in the CMSC.

As we have suggested, a movement to a 3x ramp rate is step in the right direction for the reasons stated by the IESO including:

- It reduces one of the differences between the dispatch and pricing algorithms, therefore improving the quality of the price signal;
- It increases price volatility which has been artificially dampened by the 12x ramp rate since market opening;
- It brings the returns to generators closer to the value they provide;
- It provides some incentive to increase ramping capability which is an important system need;
- It begins to address some of the Ontario market inefficiencies identified by the OEB's Market Surveillance Panel.

We note that going forward a DAM should mitigate the ramping problem by scheduling generators to address the predictable elements of ramping. DAM is a major market restructuring effort, perhaps to be accompanied by another in the form of LMP. These market design efforts will take up the IESO's capacity, which is better placed in these areas than in making major changes to accommodate a ramping solution.

Therefore, we suggest that there has been sufficient discussion around the issue and the alternatives, and we are prepared to respect and to concede to the IESO's judgment in this matter as expressed in its paper, and to support this as an appropriate interim solution.

I would be remiss if I did not address recent and regrettable censure of the IESO stakeholder processes as not serving some consumer interests and reflecting a "systemic bias in favour of electricity suppliers".

This latter statement is simply so incorrect that it must be discarded out of hand. Indeed, there isn't a stakeholder around the table who has not at one point or another been negatively affected or disappointed by an IESO decision. Despite this, hitherto no one has attacked the process as inadequate or biased simply because they were disappointed by the outcome.

Even when we have been disappointed in decisions, APPrO members have made it a point to remain engaged, not only because it is in our interest as market participants but also because we believe it is in the collective interest of the sector at large, and the overall economy of which we are an important part.

No stakeholder process can be perfect, especially in this sector. When decisions are made with respect to electricity supply and consumer interests, it would be naïve to think that all interests will always be aligned, and certainly wrong to think that one side should automatically be subordinated to another.

In its supplementary decision last year related to the proposed stakeholding process forming part of the IESO's Fiscal 2005 Fees, the Ontario Energy Board noted that the primary role of the SAC is "to provide the IESO Board and Executive with policy level advice, while the primary role of other IESO stakeholder engagement mechanisms and processes is to seek advice from stakeholders on operational and implementation-related decisions at a more detailed working level."

The SAC and the IESO's other stakeholding processes were intended to respond to the removal of stakeholder representatives from the IESO Board of Directors, the requirement in the new section 13.2 of the Electricity Act, 1998 for the IESO to establish new processes, and to address concerns raised by stakeholders about IESO stakeholding. On the other hand, it is clear that stakeholder engagement is an aid to decision making and not a replacement for it. Decision making authority rests with the IESO under the Electricity Restructuring Act.

It is instructive that the Board took note that stakeholders were broadly favourable in their reaction to the IESO's 2005 proposals on stakeholder engagement, and that the process provided ample opportunity for stakeholder input.

It is certainly justifiable to urge continuous improvement of the process over time, and to seek improvements where appropriate – but of course this has to take into account consideration of diverse stakeholder needs, interests and priorities, fairness of process and outcomes, transparency and the need for shared understanding among all involved on the topics at hand.

Generators aren't interested, frankly, in a one-sided discussion in which their interests are subordinated to the notion that they exist solely to serve the economy and should be content to be compensated for less than they are legitimately entitled. Furthermore, this premise is inconsistent with government policy that ratepayers pay the true cost of the electricity they consume.

Generators may have differences of opinion on any number of issues with the IESO and other market participants, but we are prepared to play our part, and

continue to work cooperatively within the IESO's stakeholder engagement and decision-making processes which we believe are fundamentally sound.

Sincerely,

A handwritten signature in black ink, appearing to be 'David Butters', written over a large, faint oval shape.

David Butters
President

Cc: Sam Mantenuto; APPRO Board of Directors

25 Adelaide St. E
Suite 1602
Toronto ON, M5C 3A1



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November 11, 2005

Mr. Dave Goulding
President & CEO
Independent Electricity System Operator
655 Bay Street, Suite 410
Toronto, ON M5G 2K4

Dear Mr. Goulding,

Please find attached APPRO's position on the Day-Ahead Commitment Process and Global Adequacy provisions.

Sincerely,

A handwritten signature in black ink, appearing to read 'David Butters', written over a large, light-colored oval shape.

David Butters
President

cc: Mr. Bruce Campbell



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APPRO Position on the Day-Ahead Commitment Process and Global Adequacy provisions.

Situation

APPRO members have been active participants in the DACP stakeholder process with a view to reaching a workable solution to reliability issues within a market context they could support, bearing in mind the need to address this challenging issue within a very short time frame. Our hope has been that this could be done in a way that respects the IESO's responsibilities, continues to encourage a working marketplace, and is administratively simple, not institutional or burdensome.

However, the steps proposed to be adopted in the DACP and in parallel proposals in respect of real time global adequacy in the name of reliability do not in our view meet these tests. And, additional changes that will discourage real time intertie trading (without the opportunity for day-ahead export scheduling) further compound the problem for generators who have invested in Ontario.

In fact, not only do these steps work against those tests in principle, they expand the IESO's abilities to manually intervene in market operations rather than providing the right market signals to drive participant behaviour to deliver reliability. Further, they do not ensure that Ontario-based generation is treated on par with external resources. This is a fundamental inequity Ontario's generators cannot accept.

APPRO's specific concerns

Our concerns include the following:

- Under the proposed initiative, Importers will be offered a Day-Ahead Intertie Offer Guarantee that includes all cost and profits. On the other hand, Ontario generators are offered only a guarantee covering marginal fuel costs with no consideration for variable OM&A or profit.
 - It is our view that this initiative creates the conditions where the IESO has both the incentive and the opportunity to over-

- schedule imports and over-commit domestic resources during the day-ahead timeframe. Over scheduling of imports and the exclusion of exports from the DACP will result in reduced prices and/or reduced market share for Ontario-based generators, while protecting prices to importers through the day-ahead import offer guarantee. This may be politically appealing, but hardly encourages faith in a working marketplace in Ontario.
- The IESO seeks to gain the authority to constrain generating units on and off for purposes of Global Adequacy - effectively giving itself the option of taking temporary control of Ontario based generating facilities without notice or paying for that option in advance. This gives the IESO the responsibility for creating and exercising their own judgements regarding the value of these assets. This places the IESO in a position well beyond the role of neutral market operator.
 - This kind of discretionary power will make it harder to return to any market basis for new capacity investment. Again, this hardly encourages faith in a working marketplace in Ontario.
 - Changes proposed to the Market Guidelines outlining real time safe harbours for inertia trading will effectively discourage real time trading activities. Allowing only Day Ahead Importers to receive price guarantees and discouraging real time trading activities will result in reduced market share for Ontario generators and muted prices. Again this may have certain political appeal. Furthermore, while it will result in a reduction in revenue for Ontario-based generators, loads will be required to pay the increased uplift associated with these purchases. This is another market distortion.
 - The IESO has repeatedly advised market participants that the DACP is required *strictly to ensure short term reliability in Ontario*. However, this initiative is not utilized as a control action strictly when reliability is jeopardized. It is being utilized as a matter of course on a daily basis with a resulting transfer of wealth from Ontario generators to Importers. *This is wrongheaded if we believe in the efficacy of working markets, and is unsupportable by our members.*

The Bottom-line

APPrO and its member generators recognize the need for an expeditious solution. However, as it stands we cannot support this Day-ahead commitment initiative without substantial changes including all of the following:

1. Day-ahead and real time generator cost guarantees should allow for the recovery of all costs including incremental OM&A plus an allowance for profit.
2. As the DACP is an interim process, the associated market rules must have a sunset clause including an expiry date of November 1, 2006.

3. While it is proposed that the DACP should be undertaken on a daily basis, a day ahead IOG may not be appropriate or necessary on days where reliability is not in jeopardy.
4. The entire DACP must be subject to third party audit. The selection of the auditor should be subject to agreement by the IESO Stakeholder Advisory Committee. The Market Surveillance Panel, the IESO, and Market Participants should be the recipients of the auditors report.
5. With respect to the broader question of global adequacy now the subject of the IESO's proposed rule change, APPrO is of the view that the IESO should not have the authority to constrain units on for the purpose of global adequacy. If generators are not making their facilities available at times when required for reliability, then clearly the market signals are distorted and (as we pointed out in August) need to be corrected. The following actions are required for this correction:
 - a. The value of the right of the IESO to call on generator assets must be fully recognized by an up front payment to participating generators;
 - b. 12 times ramp rate should be replaced by 1 times ramp rate in the Dispatch System Optimizer. This will effectively remove an artificial and arbitrary distortion present in the IESO's market price, and
 - c. Intertie transactions should set clearing price. This will aid in ensuring the price of electricity reflects its true value and the underlying circumstance in the marketplace – such signals are fundamentally important in achieving real change in consumer behaviour as well, however painful that may be.

In conclusion, APPrO remains committed to working cooperatively with the IESO to arrive at the most effective solution to short term reliability issues in a way that balances the needs of the IESO, our members, and all market participants. We are convinced that an effective solution can also provide a firmer footing for progress toward a properly working marketplace and further market evolution.

However, the objective of the development of a comprehensive day-ahead market should not be forgotten. APPrO continues to generally support the development of a day-ahead market if it comes in the form of a cost effective mechanism for increasing liquidity and reducing dispatch and price volatility and we seek the IESO's assurance that the process of moving toward a comprehensive day-ahead market does not end with the currently proposed arrangements.



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Addressing Ramp Rate Issues in Ontario

Presentation to Market Pricing Working
Group

March 24, 2006



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Background

- Adoption of the 12x generator ramp rate assumption was seen as a temporary measure to open the market
- The measure was taken to dampen the potential for volatility in the energy market
 - Volatility had been identified as a potential problem in the market trials

Problems with 12 x Ramp Rate

- Arbitrariness: the 12x is an arbitrary amount with no relation to anything other than the desire to reduce feared volatility
- Inefficiency: ramping is a valuable service, and the current solution does not reward it
- Overuse of ramping: because the current solution does not impose any costs for ramping on the IESO, while ramping does impose maintenance and emissions costs on generators, the IESO overuses it



CMSC is not Adequate

- CMSC pays as bid
 - The premise of the real-time market is that bids reflect marginal cost
 - That is the basis of pricing according to the last unit dispatched; it represents the marginal unit and its cost is the system marginal cost
 - If bids reflect marginal costs, they do not properly reflect the costs that can be imposed by ramping nor do they reflect other costs of market participation
- Paying infra-marginal bidders the system marginal cost will pay them for their fixed and other costs
 - Only bidders who know they are only scheduled when marginal can optimally reflect fixed and other costs in their bids
 - CMSC does not properly compensate the constrained-on generators for the costs that the constraint can impose
 - CMSC therefore does not properly recognize or allocate costs



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MPWG Activity

- The MPWG has recognized the need for action with respect to the 12x ramp rate issue
- There is fairly general agreement that action is needed
 - The current system does not adequately compensate generators
 - The current system does not adequately incent the installation of generation with ramping capability
 - Having several generators with ramping capability is more important in a system like Ontario's, with high (and expected higher) proportions of nuclear capacity which cannot ramp
- The MPWG has discussed this issue since its inception



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Solutions Proposed to MPWG

- At its last meeting, the MPWG saw a presentation with four approaches:
 - The current 12x ramp rate
 - A lower ramp rate, down to 1x
 - A proposal from AMPCO that would pay the marginal cost only to those generators who ramp
 - The IESO's proposal to extend MIO to generation pricing, using an algorithm to be chosen from among several candidates



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IESO Choice Criteria

- IESO suggested choice criteria to the MPWG
 - Definitions here modified from IESO's
- Efficiency
 - Allocative efficiency: resources are put to their highest and best use; resources go to consumers and producers who value them most highly. Occurs when price = marginal cost.
 - Dynamic efficiency: optimal decisions over time; often refers to timely adoption of new technology
- Fairness: Market participants in the same circumstances receive the same treatment
- Reliability
 - Prices should provide incentives to participants to follow dispatch instructions
 - Total compensation should provide sufficient returns to ensure long term capacity adequacy
- Transparency: suitable and stable basis for forward contracting

APPRO Choice Criteria

- APPRO suggests adding some dimensions to the choice criteria and adding some criteria
- Efficiency
 - Productive efficiency: ensuring that the minimum resources required are used to achieve a given outcome
- Fairness: Market participants pay for the costs they impose on the system
- Implementation costs: Changes that have lower implementation costs are preferred
- Harmonization: Changes that improve trade between Ontario and neighboring jurisdictions are preferred

APPRO Options

- APPRO considered several options for addressing the ramping problem
- The preferred APPRO option remains the 1x ramp rate
- Failing that, APPRO considered several other options:
 - A load following ancillary service
 - Used in New Brunswick, suggested by market design experts
 - Payment for deviations from hour-ahead dispatch instructions from IESO
 - Requires that hour-ahead dispatch instructions carry some commitment from IESO
 - Payment for ramping: a payment to all generators who change their level of output in response to instructions from the IESO

APPRO Preferred Solution

- APPRO's position is that the most efficient long-term fix to 12x is to adopt the original 1x (myopic) design
 - From a market design perspective this is the correct thing to do and was the original design intent for this market
 - It is consistent with the principle of market design that price should be based on the system marginal cost
 - It signals consumers properly with the cost that they are imposing
 - It signals producers properly with the value of their contribution
 - It is the approach used in PJM, NYISO, New England and other successful markets
 - IESO has suggested that adopting 1x ramp rate would raise annual average HOEP by 10%
 - But this estimate assumes no change in either bidding strategies and generation availability in Ontario or in electricity trade
 - Also, in neighboring markets, prices do not appear to be consistently 10% above Ontario's

Apparent Price Impact of 1x?

Average Market Prices (Cdn\$)			
2005	MISO* (IESOZone)	ONT	NYISO (ZoneO)
January		47.26	53.82
February		40.02	44.52
March		49.28	52.09
April	41.46	50.20	53.06
May	31.47	42.23	47.49
June	49.48	53.17	56.17
July	57.82	62.28	65.00
August	62.59	73.17	74.75
September	60.24	79.56	87.35
October	53.23	64.44	86.08
November	44.83	49.34	60.91
December	64.91	81.02	80.58
2005 Average	51.78	57.66	63.49

APPRO Position on Approach

- APPRO recognizes that, given the information currently available, other stakeholders have strong reservations about the consequences of adopting 1x (myopic)
 - The IESO has said that it would produce a 10% increase in average price. APPRO notes that the increase may well be lower.
 - Price volatility will increase, though experience suggests that it is unlikely to increase as much as was first feared
 - Further, under current government policy, consumers are protected from high and volatile market prices through the high fraction of generation with prices set by regulation or contract
 - Despite these arguments, APPRO recognizes that the conditions to win acceptance of 1x (myopic) ramp rate may not be present
 - APPRO has therefore considered other possible approaches in a spirit of cooperation with other market participants
 - The approach presented and evaluated here would provide a payment for ramping to every generator which changes its output level in response to IESO instructions



Ramping Payment

- The mechanism would compensate every generator that provides ramping service to the IESO
 - Would compensate any directed change in output
 - Payment would be a fixed amount per MW of change instructed by the IESO regardless of its direction (up or down)
- The size of the payment would be set after quantitative analyses to determine an appropriate amount
 - The premium should be high enough to
 - Adequately compensate generation owners for additional maintenance costs on equipment which changes output levels
 - Adequately incent installation of generation equipment with ramping capability
 - Give the IESO incentives to use AGC and ramping together in a more effective manner



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Ramping Payment Impacts

- The ramping payment may affect market prices
 - It probably will not change generator offers, at least at first
 - But it might change dispatch as the IESO seeks to rationalize ramping and reduce payments
 - That could change prices, as could eventual reactions in generator availability
- Its cost should be carried in the hourly uplift, since it arises from the hourly operation of the electricity system
- Implementation costs will be minimal if this does not require a change in the IESO's dispatch algorithm

Ramping Payment Costs

- Cost of the measure can be set after cost analysis
- A rough analysis shows that the cost can be relatively small
 - For 2005, APPrO estimates the total of upward and downward movements in the level of demand in Ontario at ~4.3 million MW, measuring only hourly net increases
 - The IESO issues dispatch instructions for much more ramping than that
 - This total does not account for demand changes within an hour, which have to be met
 - By one APPrO estimate, ramping would be about 2.5x the total changes in demand
 - Using the ratio of 2.5 times, a price of \$10 per MW would produce revenues of \$108 million
 - This would not be large amount compared to the wholesale power market of over \$10 billion last year

Ramping Required

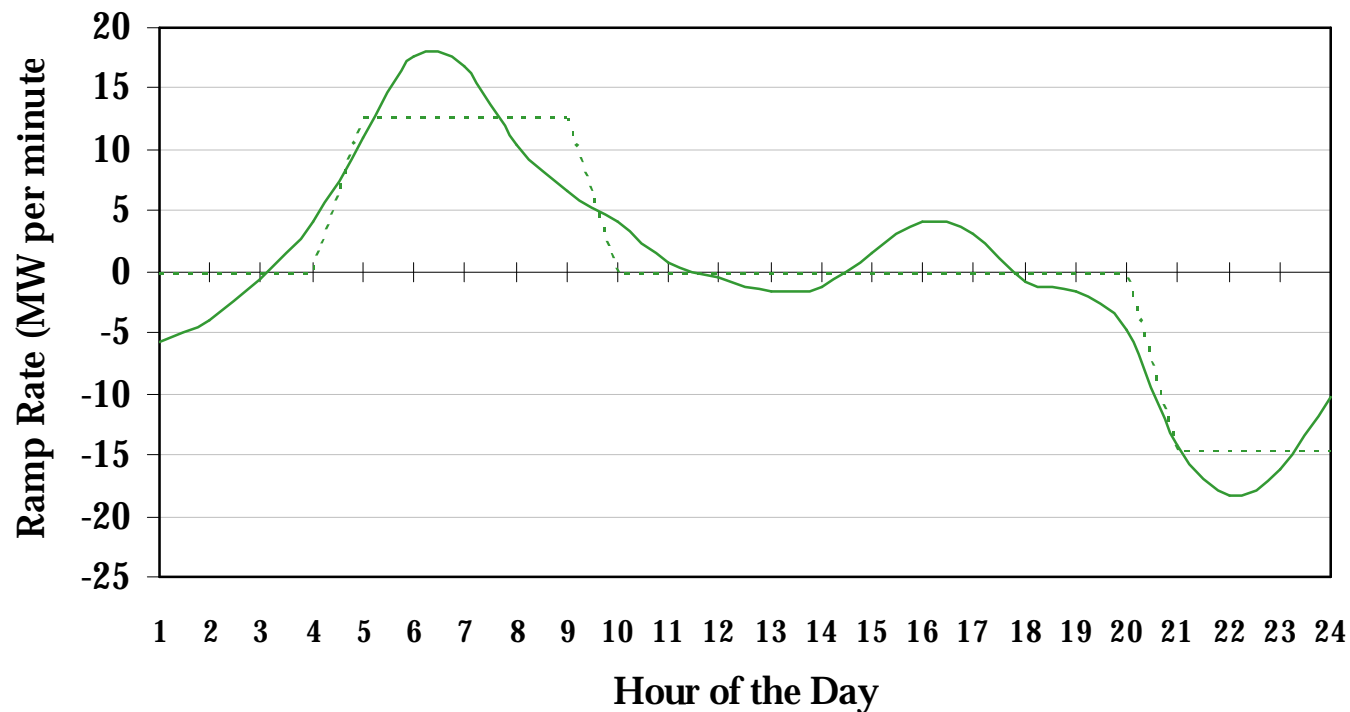
- The next three slides give some indication of the amount of ramping capacity that is needed in Ontario
- These charts only account for changes between hours; changes within hours are not included
- These are therefore undercalculations of the amount of ramping actually needed
- The charts show that the peak ramp rates in the summer are about 25 MW/min up and 25 MW/min down
 - These estimates are consistent with estimates from other jurisdictions, such as maximum thermal ramping used in PJM of 54 MW/min up and 61 MW/min down
 - This study showed that the thermal ramping capacity was over three times the maximum amount of thermal ramping used

Ramping Capacity Needed in Ontario: Average Day



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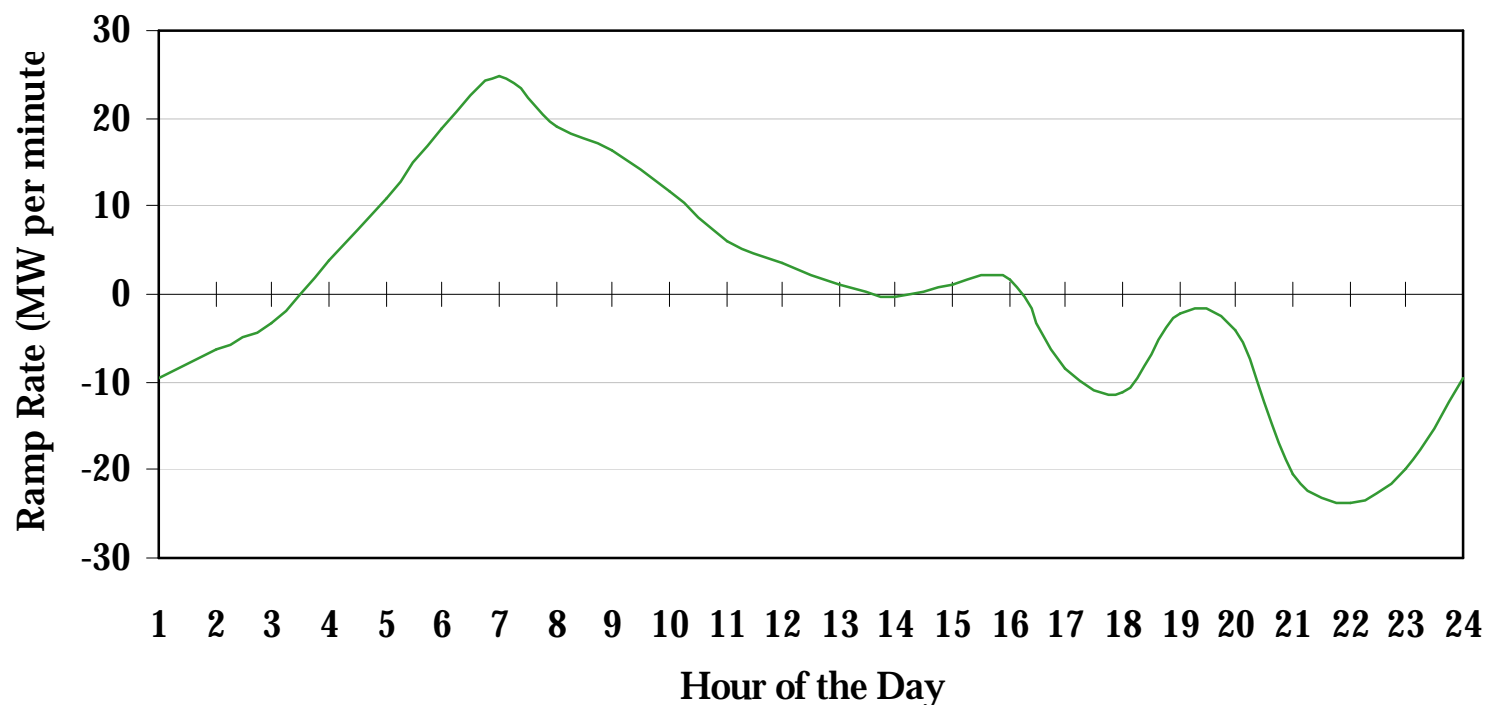
Hourly Ramp Rate – Average Day (based on average of all days since market opening)



Hourly ramps only; does not include changes within hours

Ramping Needed in Ontario: Average Summer Peak Day

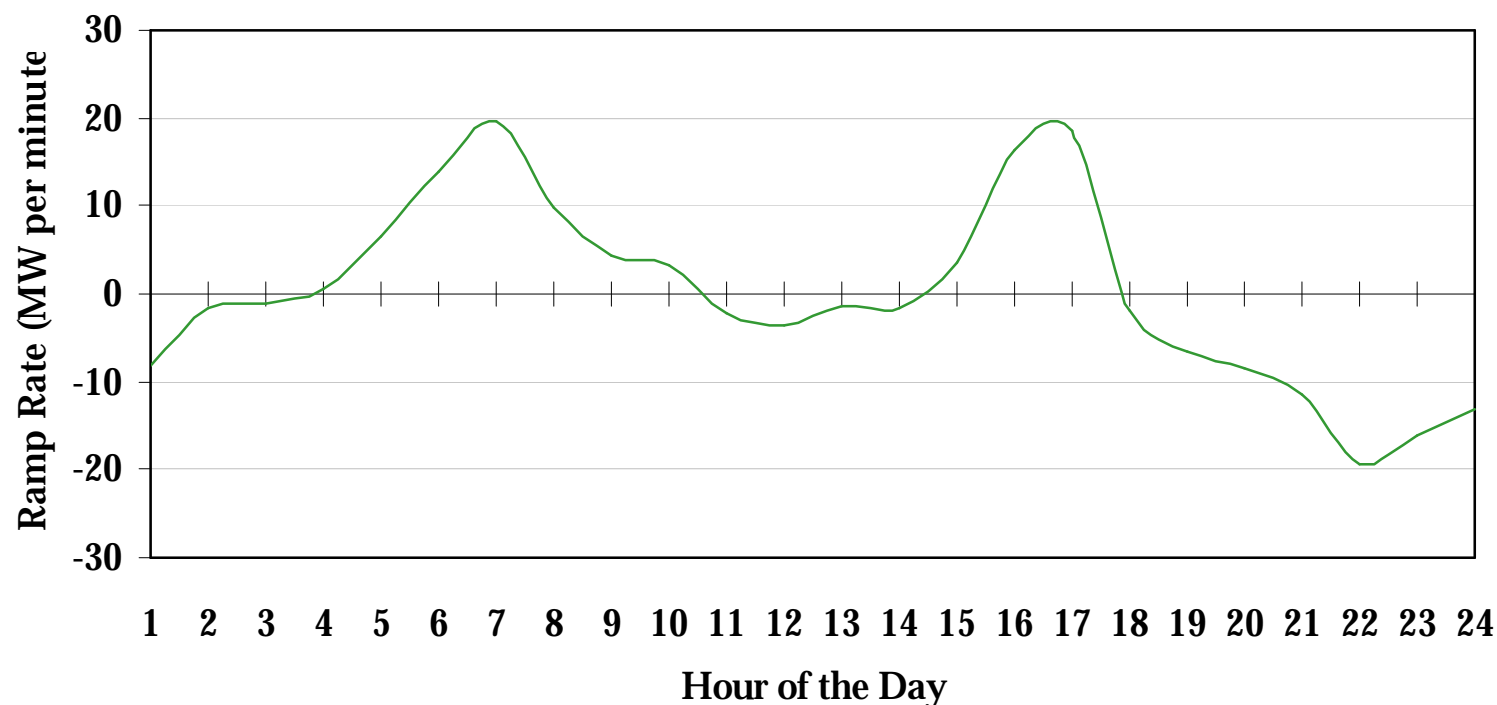
Hourly Ramp Rate – Average Day (during the peak week in the summer of 2002)



Hourly ramps only; does not include changes within hours

Ramping Needed in Ontario: Average Winter Peak Day

Hourly Ramp Rate – Average Day (during the peak week in the winter of 2002)



Hourly ramps only; does not include changes within hours



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APPrO Position on 12x Ramp Rate

Presentation to the IESO open
stakeholder session on price
calculation methods

April 26, 2006
Dave Butters, President



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OF ONTARIO

Background

- High price volatility observed during pre-market opening tests threatened market opening
 - To allow market opening, generators agreed to a temporary measure to make ramp rates appear twelve times greater than physical reality
 - This tends to eliminate the price volatility needed to make the market work properly
 - This solution was approved by the IESO Board until a more efficient long-term solution would be found
- è Since that time, there has been much talk of change but none has been made*

Background

- Since 2003, the Market Surveillance Panel has repeatedly commented on use of 12x RR multiplier
- In 2004 APPrO noted real-time pricing and dispatch issues must be effectively addressed either prior to or coincident with the development of a DAM
- In 2005 during the development of the IESO's DACP generators noted that reliability would be improved by addressing outstanding pricing issues
- Generators said they would support DACP at the first IESO SAC only if the IESO addressed pricing issues

Background

- Dec. 7 IESO Board resolution regarding Day Ahead Commitment Process included the following:

“...the Board recognizes the need to give focused attention to resuming and advancing work with stakeholders on the Day-Ahead Market, the appropriate ramp rate multiplier, if any, to be employed in the market schedule...to the extent feasible without jeopardizing the June 1 DACP in-service date, this work should proceed in parallel with the implementation of the DACP.”

The problem with 12x

- **Arbitrary**
 - the 12x was an arbitrary value with no relation to anything other than the desire to reduce feared volatility
- **Inefficient**
 - ramping is a valuable service, and the current solution does not reward it at all
- **Overuse**
 - because the current solution does not impose any costs for ramping on the IESO dispatch decisions, while ramping does impose maintenance and emissions costs on generators, the IESO dispatch tool overuses it

APPRO's Position on 12x

- The 'correct' solution to the 12x RR multiplier is to revert to the original 1x design
- It is consistent with the principle of market design that price should be based on the system marginal cost
 - It signals consumers properly with the cost that they are imposing on the system
 - It signals producers properly with the value of their contribution to the system
- It is consistent with the design of all neighbouring markets
- It is consistent with the government policy ("ratepayers pay the true cost of the electricity they consume")

APPRO's Position on 12x

- Some expressed concern that increases in volatility and prices would result from reversion to 1x
 - However, APPRO believes that much of this would be mitigated by the amount of generation with prices that are set by contract or regulation, not in the market
- Stakeholders recognize the need for some change to the 12x ramp rate
 - APPRO's position is that 12x be replaced by 1x ramp rate
 - AMPCO suggested changing the basis of the payment to the constrained-on generators so that all receive the bid price of the last ramping generator to be dispatched
 - The IESO proposed extending its Multi Interval Optimization (MIO) approach from scheduling to pricing

APPRO Position

- APPRO's position is that there are only two real options to resolve the issue
 - Change the ramp rate multiplier back to 1x myopic, or
 - Additional compensation for ramping units through supplemental ramping payment which would compensate every generator and dispatchable load that provided ramp to the IESO

Summing Up

- IESO through Market Pricing Working Group has been addressing issue
 - IESO recommendations recognize the need to resolve issue but to also move forward with other initiatives to ensure price more closely aligned with dispatch
 - IESO rejects 1x myopic solution; general recognition that 1x MIO is problematic from many perspectives
 - Doing nothing will ultimately affect reliability
- è APPrO is prepared to work with the IESO to develop a ramping supplement as a temporary measure to ensure development of other necessary market evolution initiatives*

APPrO is a non-profit organization representing more than 100 companies involved in the generation of electricity in Ontario, including generators and suppliers of services, equipment and consulting services. APPrO members produce power from co-generation, hydro-electric, gas, coal, nuclear, wind energy, waste wood and other sources. APPrO's members currently produce over 95% of the electricity made in Ontario.

www.appro.org

416 322-6549



Addressing Ramp Rate Issues in Ontario

APPRO

ASSOCIATION OF
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OF ONTARIO

Presentation to the IESO Stakeholder
Advisory Committee

March 22, 2006

Background

- High price volatility was observed during pre-market opening tests – this threatened market opening
- To allow market opening, generators agreed to a temporary measure to make generation unit ramp rates appear twelve times greater than physical reality
- This tends to eliminate the price volatility needed to make the market work properly
- This solution was approved by the IESO Board until a more efficient long-term solution would be found

è Since that time, there has been much talk of change but none has been made.

Background

- Since 2003, the Market Surveillance Panel has repeatedly commented on the use of a 12x ramp rate multiplier
- In 2004 APPrO noted that real-time pricing and dispatch issues must be effectively addressed either prior to or coincident with the development of a DAM
- In 2005 during the development of the IESO's Day Ahead Commitment Process, generators repeatedly noted that reliability would be improved by addressing the outstanding pricing issues
- Consequently, at the first Stakeholder Advisory Committee generators said they would support DACP only if the IESO addressed pricing issues

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“...the Board recognizes the need to give focussed attention to resuming and advancing work with stakeholders on the Day-Ahead Market, the appropriate ramp rate multiplier, if any, to be employed in the market schedule...to the extent feasible without jeopardizing the June 1 DACP inservice date, this work should proceed in parallel with the implementation of the DACP.”

The problem with 12x

- **Arbitrary**
 - the 12x was an arbitrary value with no relation to anything other than the desire to reduce feared volatility
- **Inefficient**
 - ramping is a valuable service, and the current solution does not reward it at all
- **Overuse**
 - because the current solution does not impose any costs for ramping on the IESO, while ramping does impose maintenance and emissions costs on generators, the IESO overuses it

APPRO's Position on 12x

- The 'correct' solution to the 12x ramp rate multiplier is to revert to the original 1x design
- It is consistent with the principle of market design that price should be based on the system marginal cost
 - It signals consumers properly with the cost that they are imposing on the system
 - It signals producers properly with the value of their contribution to the system
- It is consistent with the design of all neighbouring markets
- It is consistent with the government policy ("ratepayers pay the true cost of the electricity they consume")



APPRO's Position on 12x

- Concerns have been expressed that unacceptable increases in volatility and prices would result from reversion to 1x
 - APPRO believes that much of the increase would be mitigated by the amount of generation with prices that are set by contract or regulation, not in the market
- Most stakeholders recognize the need for some change to the 12x ramp rate
 - APPRO's position is that 12x be replaced by 1x ramp rate
 - AMPCO suggested changing the basis of the payment to the constrained-on generators so that all receive the bid price of the last ramping generator to be dispatched
 - The IESO proposed extending its Multi Interval Optimization (MIO) approach from scheduling to pricing
- If reversion to a 1x ramp rate is unachievable, APPRO proposes the introduction of a subsidiary payment for ramping
 - APPRO has retained Navigant Consulting, an internationally recognized expert in energy markets, to develop this proposal



Alternative to 1x ramp rate

- APPrO has considered a ramping payment mechanism
- The mechanism would compensate every generator and dispatchable load that provided ramp to the IESO
- The mechanism should be:
 - Simple, transparent and fair
 - Cost based
 - A fixed \$ amount per MW of output change, up or down
 - Paid on the amount of the output change instructed and then delivered
 - Recovered through an increase in uplift paid by all consumers



Ramping Payment

The payment should be set to:

- Fully compensate owners for the additional wear and tear of ramping their units
- Incentivise the retention of existing capability and the installation of new capacity as required
- Show the true cost to the market of ramping units and encourage further optimisation of the dispatch processes



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Ramping Payment

- It is anticipated that:
 - the scheme can be implemented cheaply and without any changes to the main IESO dispatch algorithm
 - the scheme is consistent with neighbouring markets, demand response programs and existing OPA contracts etc.
 - It will increase the total cost of the wholesale electricity market by no more than 0.6%

Conclusion

- Stakeholders recognize the need for change
- APPrO's position is that there are only two rational options for resolution of the issue
 - Change the ramp rate multiplier back to unity, i.e. 1x myopic
 - Additional compensation for Ramping Units, i.e. a subsidiary ramping payment mechanism as described earlier
- If it is decided to narrow the focus to deal with ramping as an ancillary service, this stresses the urgency of dealing with the issue of imports being able to set prices in the market schedule



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Addressing Ramp Rate Issues in Ontario

Presentation to the IESO Stakeholder
Advisory Committee

March 22, 2006

Background

- High price volatility was observed during pre-market opening tests – this threatened market opening
- To allow market opening, generators agreed to a temporary measure to make generation unit ramp rates appear twelve times greater than physical reality
- This tends to eliminate the price volatility needed to make the market work properly
- This solution was approved by the IESO Board until a more efficient long-term solution would be found

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APPrO Position on Addressing the Twelve Times Ramp Rate Multiplier Issue

Presentation to the IESO Stakeholder
Advisory Committee
September 5, 2006

By: Dave Butters, APPrO President

Background (1)

- The 12 x ramp rate was introduced as a temporary expedient
- There never was any theoretical justification for the 12 x ramp rate in the first place...there is even less justification to continue the 12 x now
- This issue has been under debate for some time – the current review was initiated in response to an IESO Board direction in December, 2005

Background (2)

- There is a system need for ramp. Absent an incentive for existing generators and new projects to provide ramp (intra-hour price moves) ramp shortage will become a barrier to wind additions and interchange transactions as it has in other jurisdictions
- Since last September APPrO has consistently urged the IESO to address the 12x ramp rate issue
- Our position has been that there are only two real options to resolve the issue:
 - Change the ramp rate multiplier back to 1x myopic, or
 - Additional compensation for ramping units through supplemental ramping payment which would compensate every generator and dispatchable load that provided ramp to the IESO



The Need for Change

- Over the past 9 months the IESO has had the opportunity to review the issues and the various proposals in some detail:
 - Extensive stakeholder initiative during 2006 through the Market Pricing Working Group
 - AMPCO suggested changing the basis of the payment to the constrained-on generators so that all receive the bid price of the last ramping generator to be dispatched
 - APPrO put forward a solution that might be acceptable based on AMPCO's suggestion
 - And amplified this as requested in the LECG study presented to the MWPG on July 7, 2006
- The IESO has now brought forward its own recommendation...

The Need for Change

- While we disagree with some aspects of the IESO's Paper on the 12x Ramp rate, we agree with two fundamental points it makes:
 1. "The combination of using the unconstrained methodology and the 12x ramp rate multiplier results in generators being under-compensated by the real-time energy price relative to what would be expected in any other real-time electricity market."(3)
 2. "The IESO accepts the basic finding of the APPrO/LECG report that there are nontrivial costs incurred by generators as they ramp their output up and down in response to dispatch instructions." (28)

IESO's Estimate of the Net Impact on Customers

- IESO simulations suggest:
 - Energy price increase of about \$1.50/MWh (\$225 million per year)
 - After Global Adjustment and OPG rebate this would be about \$56 million net
 - Behaviour changes and arbitrage would reduce this number further – perhaps significantly
 - Increased HOEP would lead to lower CMSC and IOG payments – estimated to be about \$16 million reduction per year
 - Such savings would lower the impact of the energy price increase to result in net increases in payment for electricity by consumers of about \$40 million net prior to arbitrage, and probably well below \$20 million after participant response.

IESO's Estimate of the Net Impact on Customers

- APPrO agrees with this analysis
 - MSP reported that some 75% of price changes are offset by these mechanisms
 - Others have made independent confirmations using public data:
 - These analyses indicate 74% total mitigation impact, with the % set to increase as new RES and other contracted projects are commissioned
 - The IESO's analysis that the impact is further reduced by import/export arbitrage is also valid, recognising that the 50% number is only a guesstimate based on some limited analysis
 - The IESO's estimates of IOG & CMSC offsets are part of their modeling -- it is reasonable to give them credence in this matter
 - An emphasis on the \$ 225 million is therefore alarmist and unhelpful

Conclusion: Proposed 3x Ramp Rate

- Not APPrO's preferred outcome but...
- A step in the right direction which helps market efficiency
 - Improves the quality of the price signal, pays suppliers more appropriately
 - Current pricing method (12x/unconstrained) leads to depressed, non volatile prices, reduced efficiency
- A temporary solution
 - With LMP study and DAM project on the horizon, a change to the unconstrained real-time price is a transitional step
- Ideal situation is to have price reflect cost of dispatch
- *But.....“He who waits to do a great deal of good at once, will never do anything” -- Johnson*

Summing Up...

- The 3 x ramp rate solution is not APPrO's first choice -- we invested significant effort into consideration of other options, including AMPCO's earlier ideas
- APPrO is however prepared to respect, and to concede to the IESO's judgment in this matter as expressed in its paper, and to support this as an appropriate interim solution
 - **APPRO would not be prepared to countenance dilution of this proposal**
- APPrO's position is that this is the time to act
- Our expectation is that the IESO will continue with efforts to improve real time pricing

APPrO is a non-profit organization representing more than 100 companies involved in the generation of electricity in Ontario, including generators and suppliers of services, equipment and consulting services. APPrO members produce power from co-generation, hydro-electric, gas, coal, nuclear, wind energy, waste wood and other sources. APPrO's members currently produce over 95% of the electricity made in Ontario.

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