



# **AESO Recommendation Paper**

## **Operating Reserves Market Redesign**

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January, 2009

## **1.0 Executive Summary**

This AESO Recommendation Paper initiates the next formal stage of stakeholder consultation. This paper considers discussions the AESO has had with an operating reserve (OR) working group over the course of the last year, as well as written comments from stakeholders on the AESO's Discussion Paper from December 2007 and Consultation Summary from July 2008.

This Recommendation Paper contemplates Phase I of the redesign initiative which considers incremental changes to the existing design and which has been the focus of the consultation to date. The AESO will consult with industry over the coming years on the need for Phase II and consideration for more substantial changes such as a possible alignment of the OR market with the T-2 energy market. The AESO's recommendations are consistent with providing an efficient operating reserve market structure that better facilitates participation in a transparent manner and without undue AESO influence.

The AESO recommends concentrating the procurement of OR on a single platform, NGX, removing AESO discretion and influence from the process and having procurement take place day ahead of real time dispatch (D-1).

To use NGX exclusively as the single procurement platform, new NGX products are required, and to remove unnecessary AESO influence, the AESO will cease submitting bids and the pricing mechanism for OR products will need to change accordingly.

The AESO recommends a clearing price mechanism for OR products that are homogenous and pay as offered for non-homogenous products. The AESO recommends indexing OR products to pool price whenever possible and continuing to procure OR using on and off peak instruments. As a replacement to the AESO submitting bids, an OR price cap is necessary and the AESO recommends making this the same as the energy market price cap.

The dispatching of OR providers will remain unchanged, while AESO Operating Policies and Procedures (OPPs) will continue to outline the AESO's OR requirements and forecasting methodologies.

The AESO will undertake two initiatives in an attempt to better facilitate an OR market design with multiple buyers and sellers and a more liquid financial market. These are reviewing changes to AESO IT systems to facilitate third party asset substitution and consulting with participants on the AESO's tariff, deferral account riders and reconciliation process.

Consideration has been given to out of market actions, as they may be necessary after the AESO has exhausted in-market solutions. An equitable process is required for using generators during any out of market action.

Consistent with paragraph 20(1)(d) of the EU Act, the AESO recommends including rules for OR in the ISO Rules and mimicking the energy market when it comes to establishing standards around appropriate and inappropriate behaviour and a mechanism for dealing with inappropriate behaviour. This would likely require an Alberta Utilities Commission rule to be similar in structure to Rule 019. Amendments to the NGX Agreement will be necessary to be consistent with ISO Rules.

## **2.0 Introduction and Background**

In October, 2007 the AESO issued a Discussion Paper entitled Operating Reserve Market Improvements. This paper outlined the existing OR market design and listed issues with the existing design that stakeholders had identified over several years. These included the impact of the equilibrium pricing methodology, perverse contract terms, the AESO influence on process, market liquidity on competing platforms, transparency of Over the Counter (OTC) procurement, influence of the Hydro PPA on the market, and complexity of the market relative to its size.

Subsequently, the AESO has been consulting with industry and considering stakeholder responses on OR market issues with the objective of designing an improved market structure. In July 2008 the AESO issued a Consultation Summary that provided an update on the redesign and solicited written feedback prior to creating a comprehensive market redesign recommendation. A response matrix to stakeholder feedback from the Consultation Summary can be found in Appendix A. Based on the written feedback and consultation to date, the AESO has developed this Recommendation Paper and intends to continue to solicit further formal feedback from stakeholders.

This Recommendation Paper summarizes the AESO's view on how to proceed with the redesign, provides an overall framework for a revised OR market while continuing to utilize NGX (Phase I) and provides details on each of the design components.

This Recommendation Paper contemplates Phase I of the redesign initiative which considers incremental changes to the existing design and which has been the focus of the consultation to date. The AESO will consult with industry going forward on the need for a Phase II, including consideration of more substantial changes such as a possible alignment of the OR market with the T-2 energy market, as noted in Section 5.2 below.

### **2.1 Stakeholder Consultation and Process**

Since October, 2007 the AESO has engaged Stakeholders in a consultation process and all relevant documentation can be found at the following links: <http://www.aeso.ca/market/14138.html> and <http://www.aeso.ca/market/14648.html>, including:

- AESO Discussion Paper: Operating Reserve Market Improvements – October 2007
- AESO Discussion Paper: Operating Reserve Market Redesign Concepts – November 2007
- Stakeholder Responses to Operating Reserve Market Redesign Concepts – December 2007
- AESO Comment Matrix and Responses to Stakeholder Responses – December 2007
- Operating Reserve Working Group Terms of Reference – January 2008
- Working Group Participant (AESO and Stakeholder) Presentations – January through July 2008
- AESO Consultation Summary on Operating Reserve Market Redesign Concepts – July 2008
- Stakeholder responses to AESO Consultation Summary on Operating Reserve Market Redesign Concepts – August 2008

This Recommendation Paper initiates the next formal stage of consultation around an AESO recommendation. In 2008 the AESO invited Stakeholders to an industry working group to consult on design elements of the OR market. It is the AESO's view that this Recommendation Paper fairly reflects the extensive consultations with the industry working group and the AESO is now seeking feedback from industry and will continue to consider stakeholder responses with the objective of designing an improved market structure. The AESO has not restated the market issues identified in previous papers, but instead focuses on the market design recommendation itself.

### **3.0 Recommendation Framework – Phase I**

The following recommendations are consistent with providing an efficient OR market structure that better facilitates participation in a transparent manner, without undue AESO influence. The recommendations consider stakeholder feedback to date and are consistent with a phased approach to change. Phase I contemplates incremental changes to the existing design while concentrating activity on a single platform.

Because the Recommendation Paper is intended to be comprehensive, the details are provided in the following sections:

- 3.1 Market Framework
- 3.2 Market Products and Pricing
- 3.3 Procurement Process and Timing
- 3.4 Market Participation and Obligations
- 3.5 Dispatching and Technical Items
- 3.6 Multiple Buyers
- 3.7 Out of Market Actions
- 3.8 Compliance and Market Integrity
- 3.9 OR Market in ISO Rules and Contractual Terms

The AESO recognizes that there are many design element tradeoffs that are reflected in this comprehensive recommendation paper. The AESO welcomes feedback on the framework as a whole or on any specific design elements, recognizing that some individual items cannot necessarily be viewed in isolation or may be inappropriate if other specific items are removed or new ones introduced.

### **3.1 Market Framework**

The AESO recommends concentrating the procurement of OR on a single platform, NGX, removing AESO discretion and influence from the process and having procurement take place day ahead of real time dispatch (D-1). OTC transactions will no longer be required and changes to NGX will be necessary.

#### **3.1.1 Create a single trading platform to concentrate liquidity and establish more meaningful OR price indices**

The AESO recommends that there be one procurement platform, NGX, so sellers' volumes are focused on a single platform that is both transparent and administratively efficient. The original OR design facilitated both the OTC and NGX procurement platforms which created issues related to transparency and the price signal. With all volumes transacted at one location, OR indices that are reflective of all of the AESO's procured volumes can be calculated. A single procurement platform avoids an unnecessary bifurcation of a seller's available volume, and NGX is capable of offering the necessary IT and settlement solutions. Throughout the AESO's consultation process there have been objections to using NGX exclusively; in fact a number of stakeholders specifically support this change and see benefits. Stakeholders recommend that an overarching objective of this redesign initiative is to encourage and facilitate OR participation, while ensuring appropriate compensation and price signals. The recommended changes help ensure these outcomes.

#### **3.1.2 Minimize AESO influence - submit bid volume requirements in auction format**

The AESO recommends creating an auction format whereby the AESO posts its un-priced volume requirement and sellers submit their offer volumes and prices. Offers would be prioritized and selected using methodology described in section 3.3 and prices would be set using the pricing mechanism described in section 3.2. The prices for any particular product would be capped by the energy market price cap (currently \$999.99/MWh). This process allows the AESO to avoid using discretion in establishing bid prices that effectively cap the market. The AESO and stakeholders recognize that there is unnecessary influence and the potential for price distortion exerted by the AESO on the current OR market.

### **3.1.3 Minimize AESO influence - D-1 auctions**

The AESO recommends that the auctions only be conducted on a day ahead basis (or the last business day prior to weekends and statutory holidays) versus the multi-day procurement that takes place today. Currently, the AESO exercises discretion in establishing a procurement strategy over the course of days/weeks/months to procure its forecasted volume requirements for any given delivery day, with the objective of managing costs and/or not getting “squeezed”. The AESO and stakeholders recognize this results in unnecessary influence by the AESO on the OR market. Auctions taking place at D-1 mitigate AESO influence on the procurement process and the resulting clearing prices.

The AESO has been asked to consider allowing multi day procurement of OR by pre-establishing OR volumes that will be procured over a number of days/weeks/months. This has been considered by the AESO and was part of the original design in 2001. The current OR market was designed to ensure the AESO would not get “squeezed” and would be able to secure the necessary volumes at competitive prices. In the AESO’s view, the OR market has sufficiently matured and there are sufficient OR providers in the market such that creating multi day procurement is unnecessary to avoid the AESO getting “squeezed”. Further, the day ahead model versus the multi day model is more consistent with the energy market approach. The AESO believes that the OR market is now sufficiently competitive that a well designed procurement process will encourage participation and result in competitive outcomes. If procurement over a number of days/weeks/months were continued, this would increase the number of products and commitment a potential OR provider would have to make to the process and may reduce instead of promote liquidity. To the extent a stakeholder wishes to enter into multi day contracts in advance of D-1, this will be permitted (and encouraged) by way of a financial transaction. (see below)

## **3.2 Market Products and Pricing**

To use NGX exclusively as the single procurement platform, new NGX products are required. In order to remove unnecessary AESO influence from the process, the AESO will cease submitting bids and the pricing mechanism for OR products will need to change accordingly. The AESO recommends a clearing price mechanism for OR products that are homogenous and pay as offered for non-homogenous products. The AESO recommends indexing OR products to pool price whenever possible and continuing to procure OR using on and off peak instruments. As a replacement to the AESO submitting bids, an OR price cap is necessary and the AESO recommends making this the same as the energy market price cap.

### **3.2.1 Add to the suite of D-1 OR products**

The AESO recommends retaining the existing NGX products that are routinely traded at D-1 and supplementing them with two new products so that all OR volumes can be transacted on NGX. The AESO will use reasonable efforts to exhaust the procurement process for securing forecasted volume requirements. The two new products are:

- Profile Active OR. Introducing this product will enable the AESO to contract for the different hourly requirements in excess of the base load on and off peak requirements on NGX instead of OTC; and
- Shaped Standby OR. Introducing this product will better ensure the AESO is able to secure its standby requirements using the existing product, as well as non-standard or shaped offers. These are offers that cannot supply in every hour. The AESO expects that it will be able to procure its standby requirements by way of the existing product and will rarely have to rely on non-standard or shaped standby offers.

Stakeholders have commented that to the extent sufficient volumes are available, attempts should be made to contract prior to conscripting OR providers. The AESO is recommending the introduction of shaped standby OR to allow for an in-market solution for these requirements.

### **3.2.2 Continue to use On/Off peak products instead of hourly products**

In the AESO's November 2007 Concept Paper, a T-2 hourly OR market is considered as a longer term Phase II solution to the existing design. The AESO believes a T-2 hourly OR market would provide greater opportunity for convergence between the energy and OR market. The AESO has yet to comprehensively consult on this concept, as the focus to date has been on more immediate and incremental change, while continuing to procure OR on a day ahead basis. Nonetheless, some concepts including block versus hourly products need to be addressed as part of the Phase I design. The AESO and stakeholders have reviewed the tradeoffs between maintaining the current block products (on and off peak) versus moving to an hourly product.

The advantages of a day ahead hourly product are:

- allowing a seller to price each hour differently and submit different volumes in each hour;
- doing away with the six profile products; and
- mitigating some operational challenges faced with real time transitioning from on peak to off peak providers (and vice versa).

The disadvantages of a day ahead hourly product are:

- introducing 144 products on a regular trading day (a product for each of the six OR types multiplied by the number of hours in a day), and multiples of that when more than one day is procured at a time (such as a Friday);

- increasing complexity and logistical challenges for sellers which could also contribute to the number of errors;
- creating a potential barrier to entry for smaller participants; and
- creating more operational uncertainty for suppliers hour to hour.

Some stakeholders preferred the hourly market over the on and off peak market that is in place today, while others raised concerns. The AESO suggests that the benefits an hourly market would create are more than offset by the added complexity, but recognizes that if linked to an hourly market at T-2, these tradeoffs may tip the balance in favour of the hourly product.

The benefits of an hourly OR market with a seller sending a different OR price signal in each hour is better realized at T-2 versus D-1. An OR seller has a better ability to forecast what pool price will be at T-2 versus on a day head basis, and accordingly sends an appropriate hourly price signal to the OR market. The ability for an OR seller to forecast pool price (and price their OR offers accordingly) for each hour on a day ahead basis is more difficult.

The AESO has consulted on both approaches and recommends that all products (active, standby, regulating, spinning and supplemental) continue to be defined as on and off peak for the time being. It is also consistent with a more incremental approach to change reflected in Phase I.

In the AESO December 2007 Operating Reserve Market Redesign Concepts Paper an hourly T-2 OR market was proposed. This will be considered as part of any Phase II initiative.

### **3.2.3 OR indexed to pool price, marginal pricing for homogenous products and pay as offered for non-homogenous products**

The AESO recommends that active and standby OR generally be indexed to pool price to reflect the synergies between OR and the energy market. Further, marginal pricing is proposed to be used for homogenous products in order to ensure economically efficient results and to mimic the marginal pricing philosophy in the energy market. For non-homogenous products, the AESO recommends paying suppliers their offer price, to allow distinct products to be priced accordingly.

#### **3.2.3.1 Active Baseload On and Off Peak**

For base load on and off peak active OR requirements, the marginal provider selected in the clearing auction will determine the price for all of the volume traded. Each base load active provider will be providing MW's in every hour of the contracted period (either on peak or off peak) and all of the contracted active volumes will be dispatched. Therefore, the products will be homogenous and the AESO recommends that the pricing reflect a clearing market.

#### 3.2.3.2 Active Profile On and Off Peak

For active profile on and off peak requirements, each provider will potentially and likely be providing different volume amounts in different hours. Therefore, the contractual and operational obligations will be different amongst the suppliers justifying different payments. The products are not homogenous. For this reason, the AESO proposes that active profile requirements be paid as offered.

#### 3.2.3.3 Standby Baseload On and Off Peak

For (standard) standby base load on and off peak requirements there will be a premium and activation payment, as in today's market. The AESO recommends that the activation price be equal to the base load active price and that sellers compete to become standby providers by offering a premium. The AESO proposes to establish a merit order for standby providers, with the lowest premium providers at the bottom of the merit order. To the extent the AESO then requires a standby provider to become an active provider it will dispatch the necessary volume. The provider at the bottom of the standby merit order will have a higher probability of being dispatched. When a standby provider is dispatched they will be entitled to incremental revenues (the activation price) and will potentially be exposed to incremental costs. The products in this case are not homogenous as the probability of being dispatched, collecting incremental revenues and incurring incremental costs is different amongst the providers, and therefore pay as offered is appropriate and recommended.

#### 3.2.3.4 Non-standard Standby On and Off Peak

Non-standard standby on and off peak OR requirements will be considered and treated the same as standby baseload on and off peak (as above), except the non-standard standby merit order would be utilized after the (standard) standby merit order has been fully utilized.

Some stakeholders support the AESO's recommendation of using a clearing price in situations where the products are the same and using pay as offered in other circumstances. However, some stakeholders believe that benefits of a clearing market are applicable and should be used in all circumstances. The AESO recognizes the economic benefits of the clearing price philosophy and its adoption in the energy market in Alberta, but also believes that consideration should be given to the commonality of a product before deciding whether a clearing price or pay as offered is appropriate.

Using pay as offered pricing for non-homogenous products is consistent with making payments to generators on the margin in the energy market. Generators on the margin are paid their offer price and not the clearing price to reflect the differences in the products that are being provided. Marginal generators in the energy market that provide energy for a portion of the hour are paid something other pool price (their offer price at a minimum).

### 3.2.4 OR market price cap equal to energy market price cap

The AESO recommends that OR prices should be capped using the energy market price cap. An OR seller will be permitted to offer at a positive index to pool price, but will not be permitted to be paid more than the energy market price cap, which is currently \$999.99/MWh. This cap creates an incentive for participants to provide OR during times when the alternative for a generator is to sell energy and incur marginal costs. For the price cap of an ancillary service (OR) to be higher than the price cap of the primary service (energy) would be inappropriate, particularly in light of OR providers (spinning and supplemental) being directed to provide energy during an energy supply shortfall. Energy (versus contingency reserves) is exhausted as the final step prior to curtailing load and therefore it would be inappropriate to cap the price of an ancillary service (AS) at a higher amount.

As an added incentive, the AESO also recommends that an OR provider be paid pool price any time they generate MWs while providing regulating reserves or are directed to generate MWs while providing spinning or supplemental reserves. This design feature is somewhat unique as in many jurisdictions when a generator is directed to generate MWs (while providing contingency reserves) they are not paid for capacity. By including this design feature, generators are further incented to provide OR versus energy.

Below are examples of compensation/incentives an OR provider may receive illustrating the presence of appropriate price signals.

Example 1: Pool price = \$150/MWh. An OR seller will be permitted to sell Spinning or Supplemental OR at a positive index to pool price and could be paid up to \$999.99/MWh for OR while avoiding all fuel costs.

Occasionally a Spinning or Supplemental provider is directed to generate the contracted MWs for reliability purposes. In this circumstance, the AESO recommends that the provider continue to be paid for OR and be paid pool price (\$150/MWh) for MWs generated. In this circumstance the total compensation an OR provider is paid will likely be in excess of what an energy market participant is paid.

Example 2: Pool price = \$500/MWh. An OR seller will be permitted to sell regulating reserves at a positive index to pool price and could be paid up to \$999.99/MWh for the full regulating range while avoiding *some* fuel costs.

A Regulating reserve provider generates MW's within the regulating range when providing the service and will be paid pool price (\$500/MWh) for the MW's generated.

These examples illustrate that when a generator is faced with a choice of participating in the energy market versus the OR market, there is the potential to earn incremental revenues in the OR market and avoid (some) marginal costs, while the price cap for OR does not exceed the energy market price cap.

### 3.3 Procurement Process and Timing

The AESO recommends utilizing transparent and logical criteria for prioritizing offers when an OR product has a different volume requirement in each hour. An efficient and manageable procurement schedule is required that provides sufficient– but not excessive - time for sellers to participate. OR price discovery will take place throughout the procurement process providing necessary pricing information to participants.

#### 3.3.1 **Apply selling logic for profile and non-standard offers**

The AESO recommends that the two new products will be traded using the existing on and off peak definitions, while the volume requirements in each hour within these definitions could be different. The AESO recommends adopting logic to prioritize offers, as OR offers will quite likely take different shapes with different prices and therefore a mechanism is required to sequence the offers. This mechanism, or logic, will better ensure that the AESO is able to secure its volume requirements as sellers will be discouraged from picking one hour over another.

##### 3.3.1.1 Profile Active Logic

For profile active requirements the AESO will continue to use the logic that is currently used in the OTC market – a seller must offer a minimum of 5MW in each hour that volume is required and a seller is not allowed to “cherry pick”. An offer must consist of the same MW volume in each hour unless the AESO requires a lesser volume in a particular hour. And in those hours where the AESO requires less, the OR offer must match the AESO’s requirement.

By removing the opportunity for “cherry picking” the AESO will better ensure that it is able to secure the volume requirements and sellers will be discouraged from picking preferential hours and avoiding others. Below are some examples of conforming (or standard) and non-conforming (or non-standard) offers in order to better illustrate this.

- Example forecast: HE1 = 5MW, HE2 = 10MW, HE5 = 15MW, HE24 = 20MW
- Conforming offer 1 = HE1, 5MW; HE2, 10MW; HE5 10MW; HE24, 10MW
- Non-conforming offer 2 = HE1, 5MW; HE2, 10MW; HE5 10MW; HE24, **15MW**
- Non-conforming offer 3 = HE1, 5MW; HE2, 10MW; HE5 10MW; HE24, **0MW**
- Non-conforming offer 4 = HE1, 5MW; HE2, 10MW; HE5 10MW; HE24, **5MW**

Offer 1 is conforming as the seller has offered a minimum of 5MW in each hour that volume is required and has not “cherry picked”.

Offer 2 is non-conforming as the seller demonstrated a willingness (or ability) to only sell 10MW in HE5 (when 15MW was required), which on its own is acceptable, but to then offer more than 10MW in HE24 would make the offer unacceptable.

Offer 3 is non-conforming as the seller did not offer volume in HE24.

Offer 4 is non-conforming as the seller offered to sell 10MW in HE2 and HE5, which on its own is acceptable, but to then offer only 5MW in HE24 would make the offer unacceptable.

Conforming offers will be selected prior to non-conforming offers, regardless of price.

The AESO recommends selling logic for non-conforming offers to select offers that are able to offer in the most number of hours first. This is to encourage sellers to offer in as many hours as possible, to better ensure the AESO is able to contract for as much of its requirements as possible.

### 3.3.1.2 Non-standard Standby Logic

If the AESO is unable to secure its Standby volume requirements using standard standby offers (sellers offer the same amount of MW's in all of the on or off peak hours), the AESO will consider non-standard standby offers in the Standby Shaped markets. The selling logic the AESO will use here to prioritize offers will be slightly different than above to reflect the difference in the AESO requirements which will be the same MW requirement in each hour. The selling logic will select offers that are able to offer in the most number of hours first. Below are some examples of offers that will be acceptable and unacceptable in order to better illustrate this.

- Example 1: Forecast requirement is HE8 through HE23 = 15MW.
- Sequence of acceptable offers
  - First: HE9 through HE23 = 5MW @ \$100/MWh
  - Second: HE10 through HE23 = 10MW @ \$20/MWh
  - Third: HE8 through HE10 = 20MW @ \$5/MWh (partially accepted)
- Example 2: Forecast requirement is HE8 through HE23 = 15MW.
- Sequence of acceptable offers
  - First: HE9 through HE23 = 5MW @ \$50/MWh
  - Second: HE8 through HE22 = 10MW @ \$80/MWh
  - Third: HE8 through HE18 = 5MW @ \$5/MWh (partially accepted)

In the first example, the AESO requires 15MW in all of the on peak hours and the first offer was able to sell in all of the hours, except the first. Therefore this offer would be selected first, regardless of price, as more hours were offered. The second offer would be selected next because of the number of hours offered. The third offer would be

selected last as the least number of hours were offered. The third offer would be selected last and only for 15MW in HE8 and 10MW in HE9.

In the second example the first and second offers were for the same number of hours, 15, and therefore price was considered in the prioritization process and the cheapest offer is selected first. The third offer is selected last as fewest hours were offered, regardless of price. The third offer would be selected for only 5MW in HE8.

Both logics would be automated and would prioritize and select offers quickly once a market closes.

### **3.3.2 A reasonable procurement schedule**

The AESO recognizes the importance of an efficient, transparent and logistically manageable procurement schedule. There are a variety of views on an appropriate schedule and seller considerations include levels of staffing and logistics around operations and scheduling (co-generation and hydro facilities seem to require more time).

The AESO recommends a daily procurement process that ensures there is sufficient time between the close of each process, so that a seller is able to reconcile transacted volumes and prices with remaining capacity. At the same time, making the process too long will be inefficient. Given the number of openings and closings the AESO is concerned that changing the schedule on days like Fridays (where more than one day is procured) may create confusion and cause sellers to miss some market closings. Allowance has been made for this in the proposal below.

The AESO recommends the following schedule, allowing twenty minutes between markets. This is intended to strike a balance between sufficient and too much time. Given the operating history of the OR market the AESO rarely expects to have to rely on the Standby Shaped products and therefore believes that the procurement process will end at 11.40am on most days.

- All markets open – AESO posts volume requirements
- 9.00 Close Active Reg
- 9.20 Close Active Spin
- 9.40 Close Active Sup
- 10.00 Close Profile Active Reg
- 10.20 Close Profile Active Spin
- 10.40 Close Profile Active Sup
- 11.00 Close Standby Reg
- 11.20 Close Standby Spin
- 11.40 Close Standby Sup
- 12.00 Close Standby Reg Shaped (if required)
- 12.20 Close Standby Spin Shaped (if required)

- 12.40 Close Standby Sup Shaped (if required)

By following the above sequence of market closes, if active requirements are procured first and the AESO is unable to secure all of its forecasted requirements, standby OR providers would have full transparency of this and be in a position to offer standby products accordingly, pricing into their standby premiums the increased risk of activation. If standby closes prior to active and the AESO uses standby providers as a replacement for "missed" active volumes, this could be viewed as unfair and could lead to inefficiently priced standby products.

### **3.3.3 Fix market closes and create price discovery**

Since the OR market was created in 2001, sellers have consistently submitted their offers right before the close of a market. This process ensured that another seller did not undercut their price by the slimmest of margins and displace them as an OR provider. During consultations, concerns were raised on the lack of price discovery this behaviour creates. Consideration was given to a random close which is a feature that is used effectively in the Regulated Rate Option (RRO) auctions to facilitate price discovery.

The AESO recommends a fixed close because with the OR procurement process, price discovery will be taking place on a daily and intra day basis. Daily price discovery will take place because the products will trade at D-1 every day.

Intra-day price discovery will take place because a minimum of 18 products in 18 markets (and up to 72 products in 72 markets on a Friday) will trade each day, and the participants from one market will be a subset of the participants in the next or following market: as well, pricing from one market (active base load) will be used in a following market (base load standby). Adding random closes to the trading schedule will add unnecessary complexity.

## **3.4 Market Participation and Obligations**

The AESO recommends introducing a number of new design elements while removing others. These changes are intended to encourage participation in the OR market while ensuring the AESO procures the necessary OR requirements and is able to utilize other AS that are necessary for the reliable operation of the system.

### **3.4.1 No must offer requirement**

The must offer requirement in the energy market creates benefits for the OR market. The must offer obligations in the energy market creates a merit order as a supplier must

submit offers for available capability in the energy market. This has two benefits. First, if a supplier is obligated to submit an offer in the energy market, they are quite likely to submit an offer in the OR market that indicates an indifference or even perhaps a preference for participating in the OR market. Second, to the extent the AESO has exhausted all of its contracted providers an energy market merit order identifies the available capability of generators and the AESO is correspondingly aware of which generators are capable of OR. Therefore the AESO does not recommend having a must offer requirement for the OR market.

Further, from a practical perspective OR providers must meet technical standards and imposing a must offer requirement on all market participants would result in many facility owners having to install incremental infrastructure as the requirements for OR are above and beyond those in the energy market. This would be inappropriate and unnecessary and would result in facilities having to incur additional expenses to enable them to provide a service that may be inappropriate from a market and/or operational perspective. The AESO believes that a well designed OR market will send the right price signals, which in turn will result in efficient decisions by facility owners.

The AESO gave consideration to a must offer requirement just for the OR providers that are approved to provide the service today, but this would not encourage new facilities becoming technically approved to provide OR, as this obligation would be imposed upon them with consequences for not complying.

### **3.4.2 Remove virtual units**

The AESO recommends removing the ability for an OR seller to utilize “virtual units” in the NGX D-1 market. Virtual units allow a supplier that has multiple facilities to sell OR using virtual units and then later decide to which units sold volumes will be allocated to. The need for virtual units is all but removed when OR volumes clear at D-1 versus over multiple days, as the seller should know which units are capable of providing OR for the following day. The AESO also hopes to minimize trades in error by removing this function, as it will ensure a seller specifically identifies which units within their fleet are capable of providing each OR type.

### **3.4.3 Standing offers facilitated by blind offers**

The AESO recommends that OR offers are blind until after a market closes. This facilitates participation, as it allows an OR seller to submit standing offers. The AESO considered whether “blind” offers do not facilitate price discovery, but has concluded that the price discovery described in section 3.3.3 will still take place.

#### **3.4.4 5MW minimum blocks**

The AESO recommends that it continue with the established practice of ensuring a seller is not permitted to offer less than 5MW of any given product as operationally little to no OR value could be derived from such a service. OR is a service that requires the provider to be dispatched by the AESO. This 5MW recommendation is consistent with the threshold in the ISO Rules for submitting offers in the energy market for purposes of dispatching.

If, once an OR market closes and the marginal OR provider has been selected for less than 5MW, transactions for three and four MW's will be rounded up to 5MW, while transactions for one or two MW's will be cancelled, with no consequences to the buyer or seller. The cancellation of a one or two MW transaction will be immediate and automated.

#### **3.4.5 No limitations around price/quantity pairs**

The AESO does not recommend limiting the number of price quantity pairs a seller can submit, but requiring a minimum 5MW sale with 1MW increments. In the energy market there is a maximum of seven price quantity pairs per facility for purposes of managing the real time operational logistics. In the OR market this is less of a consideration as all active OR providers are dispatched and the AESO does not have to decide how much of the contracted active volume needs to be dispatched. Currently there are no limitations in the OR market and this has not caused a problem for the AESO when dispatching standby.

#### **3.4.6 Allow for flexible and inflexible offers in most cases**

The AESO recommends that during the procurement process, baseload OR offers be allowed to make a distinction as to whether they are flexible or inflexible. This means that if the marginal OR offer is only partially required, and the seller has designated it as inflexible, the offer will be skipped. The AESO expects that this design feature will facilitate participation in the OR market as a number of sellers have expressed that the reason they do not offer particular units is because of the possibility they will be only partially filled.

Once the procurement process is concluded and volumes are contracted, the flexible and inflexible designations will not be considered for purposes of dispatching. For active OR providers all volumes will be dispatched and it is therefore not applicable. For standby OR providers, because a provider will be paid the premium, they will be expected to comply with dispatches that could be for less than the contracted amount.

The AESO recommends for the profile and shaped products that all offers be flexible, because of the complexity associated with applying the selling logics described in section 3.3.1 together with a consideration for flexible or inflexible will be inefficient.

### **3.4.7 Inter-ties participation unaffected**

It is not anticipated that the recommended OR market design concept would change the way in which inter-ties can participate in the market.

### **3.4.8 Dealing with conflicting ancillary service obligations**

The appropriate treatment of OR providers when called upon to provide multiple AS at the same time is an issue that has been raised with the AESO subsequent to consulting with the OR Working Group. Accordingly, the AESO solicits feedback on this issue at this time. The AESO's preliminary comments and recommendations on this are as follows:

The AESO contracts with generators for transmission must run (TMR) service. Under these contracts the TMR provider is not prohibited from selling OR. A TMR contract enables the AESO to dispatch a generator for TMR under agreed terms and conditions should the need arise. If a contracted TMR provider sells OR and then subsequently receives a TMR dispatch, the TMR dispatch will take precedence. TMR should take precedence because the contract for providing TMR would have been entered into first and TMR is location specific. The OR provider will be permitted to substitute the OR obligations outside of T-2, but to the extent it is unable to find an alternative facility to provide the service, the OR provider will be in non-compliance and faces compliance charges/penalties for non-delivery of OR. If the OR provider is unable to provide the service the AESO will dispatch a standby provider.

The AESO believes that if a TMR provider chooses to engage in a practice where they make more than one commitment that could be competing, there should be consequences to the supplier for non-delivery. The AESO does not propose prohibiting a contracted TMR provider from selling OR, as the unit may only be relied on for TMR for only a few hours per year. The AESO does not necessarily have better information than a TMR service provider as to when the facility will be required for TMR service. Factors include a generator's offer price in the energy market, transmission and generation planned and forced outages, area load and system constraints. The AESO believes it is appropriate to leave the decision on OR participation with TMR providers and make the risks (and rewards) of doing so transparent.

Occasionally, the AESO conscripts TMR. In this circumstance, which is unforeseeable, if the TMR provider happens to have sold OR and is non-compliant, the AESO recommends that there be no OR compliance charges/penalties. The TMR provider was not contracted to provide TMR and had not made a prior commitment to the AESO.

The event is unforeseen and it would be unreasonable for the TMR provider to have anticipated the event.

The AESO also has AS contracts with load customers for under frequency load shedding service (LSS). Under these contracts, the customer is prohibited from selling OR. OR and LSS both serve as a mechanism to arrest system frequency and the AESO would be double counting available MWs if it permitted the customer to sell both services. Under LSS contracts, the customer is assumed to be “dispatched” at all times when consuming MWs and can be shed within less than one second. Therefore, the supplier should not have the ability to contract for another service (OR) with the same MWs for a service that could be required for the same system event.

Should this interaction arise between OR and other AS, the AESO proposes to treat them on a case by case basis, and use logic that is consistent with the considerations above.

### **3.5 Dispatching and Technical Items**

The dispatching of OR providers will remain unchanged, while AESO Operating Policies and Procedures (OPPs) will continue to outline the AESO’s OR requirements and forecasting methodologies.

#### **3.5.1 All active OR providers dispatched. Standby providers dispatched as needed**

All contracted active OR providers will be dispatched as they are today. Standby providers will be dispatched on an as needed basis, which could be due to forecasting error, a contracted active provider failing to supply or the AESO failing to procure sufficient active volumes due to a lack of offers.

A merit order will be created for standby providers, with the lowest priced premium providers at the bottom of the merit order. If a standby provider is then dispatched and complies with the dispatch, they will receive the activation price.

#### **3.5.2 Technical Standards process unchanged**

AESO OPPs will continue to outline OR requirements and methodologies for establishing forecasts.

In 2009 the AESO will review and provide transparency around how the OR standby volumes are determined. Standby OR volumes reduce the AESO’s reliance on out of market actions. The AESO has relied on out of market actions for OR approximately once every three or four years.

### **3.5.3 Testing**

The AESO recommends consulting with market participants to update obligations that currently reside in the OTC Agreement regarding testing of OR facilities. The AESO also recommends including these obligations in ISO Rules. The existing language in the OTC Agreement only contemplates testing of non-PPA facilities and the AESO paying direct incremental costs associated with such testing.

## **3.6 Multiple Buyers**

The AESO commits to undertake two initiatives in an attempt to better facilitate an OR design with multiple buyers and sellers and a more liquid financial market. These two initiatives are outlined below.

### **3.6.1 Facilitate Self Supply by financial arrangements**

The AESO is reviewing potential tariff changes that may result in better cost information for loads that are considering financial arrangements for self-supply of operating reserves.

In 2009 the AESO will be consulting with stakeholders on the AESO's tariff, including the DTS rate. Currently, OR costs are primarily recovered through a single-parameter charge in the DTS rate. It may be possible to add parameters to the charge such that it more closely reflects OR costs as they are incurred, which would improve the price signal to load. The AESO will consult on whether a multi-parameter charge would be an improvement, and would better encourage and facilitate financial arrangements for OR products.

Also in 2009 the AESO will be consulting with stakeholders on the AESO's deferral account riders and reconciliation process, including options to minimize their variability. Currently, OR costs are subject to retrospective deferral account reconciliation. Through consultation, the AESO will consider changes that will better encourage and facilitate financial arrangements for OR products.

### **3.6.2 AESO facilitate third party asset substitution**

The AESO is reviewing the IT capability of third party asset substitution. This would improve the OR market design by potentially creating multiple buyers. If party A successfully contracts to sell product A on a day ahead basis, via NGX and before T-2, then decides that it would like to attempt to buy out of the entire position or for a portion of the hours with another party, this would be a favourable design consideration. Also, during the interval between D-1 and T-2, a supplier could encounter a force majeure or forced outage, and while there would be no obligation for a seller to find an alternative

provider, if the option was there suppliers could utilize this feature to avoid a forced majeure or forced outage. In this circumstance, the AESO would rely on standby providers less frequently.

Once an OR market is closed the procured volumes and corresponding providers are stored and recorded in AESO IT systems. Asset substitution would take place using AESO IT systems and would likely require an enabling agreement that participants would have to execute with the AESO to use.

The AESO is investigating the IT feasibility of this being part of the Phase 1 implementation.

### **3.7 Out of Market Actions**

The AESO's recommended OR market design is expected to operate in a manner that is fair, efficient and openly competitive (FEOC). However, consideration has been given to out of market actions, as they may be necessary after the AESO has exhausted in-market solutions. An equitable process is required for using generators during any out of market action.

#### **3.7.1 Exhaust market solutions prior to conscripting OR providers**

To the extent the market does not function properly, consideration must be given to out of market actions in order to ensure reliability. The AESO and stakeholders recommend that in-market solutions should be solicited prior to relying on out of market solutions. The AESO proposes to exhaust all of the contracted active and standby providers prior to conscription and is further recommending the introduction of the shaped standby product. The AESO rarely expects to have to conscript providers as the OR market is expected to function as needed. The AESO supports many industry comments on conscription – the rules should be examined if conscription is being used, the AESO should not be managing price by refusing to pay (subject to market price caps) and if conscription is used the MSA should be notified. The AESO recommends further developing these points in the upcoming ISO Rules consultation process.

#### **3.7.2 Process required for conscripting OR providers**

The AESO has relied on out of market actions for OR approximately once every three or four years. On the rare occasion after the competitive process has been exhausted and insufficient volumes have been procured or due to contingencies, conscription can take place. In these circumstances, the AESO recommends that every generator approved and capable of providing OR should take a turn providing the conscripted service and there should not be a bias to using one generator over another. The AESO believes that this will encourage generators that are approved and capable of providing OR to

submit offers and participate in the OR market. Should a generator be conscripted to provide OR, Article 11.3 of the Terms and Conditions of the AESO tariff outlines compensation. The AESO recommends further developing these points in the upcoming ISO Rules consultation process.

### **3.7.3 Consult on market suspension process and rule**

Under Rule 6.9 of the ISO Rules consideration is given to suspending the energy market under extraordinary circumstances. The AESO plans to consult on any issues stakeholders may have with the existing Rule 6.9 and possible changes and improvements. The AESO proposes that this consultation process include the necessary rules and conditions for the suspension of the OR market.

## **3.8 Compliance and Market Integrity**

The AESO recommends making the following changes to better facilitate a FEOC OR market: remove any perverse incentives; establish a compliance mechanism that is appropriate for the OR market while similar in structure to the energy market; and improve overall transparency of the OR market.

### **3.8.1 Remove perverse incentives, provide clarity around acceptable/unacceptable behaviour and potential consequences**

Stakeholders have mentioned that the existing terms and conditions around compliance can be improved. Currently, the liquidated damages a supplier must pay the AESO for failure to supply OR can incite perverse behaviour or price arbitrage, and are insufficient to discourage inappropriate behaviour. Simply increasing these liquidated damages just changes a supplier's threshold around entering into a price arbitrage opportunity. This is unsatisfactory. There is also a lack of clarity around what is permissible versus non-permissible behaviour. The AESO recommends mimicking the energy market for establishing acceptable versus unacceptable practices and mechanisms for discouraging and dealing with inappropriate actions.

The AESO appreciates and recognizes that while the existing liquidated damages create perverse incentives and are insufficient, the AESO should be clear on what behaviour it is intending to mitigate. The AESO also recognizes if the consequences are excessively severe given the circumstances, this will be detrimental to the market, particularly the OR market where sellers can choose not to participate.

The AESO's recommendation on how these terms and conditions (or rules) should be developed and where they should reside is found in section 3.9, below.

### **3.8.2 Continue to use force majeure definition in NGX Agreement**

There are differences in the current force majeure definitions in the OTC and NGX Agreements. The AESO is not aware of any issues that this has created, or a circumstance where the treatment of a service provider would have been different had the "other" definition been used. The OTC definition provides special consideration for units subject to a PPA. This was to encourage and better facilitate participation in the OR market at a time when the PPAs had very little operating history. The NGX definition of force majeure treats all units on an equal basis and the AESO recommends applying the NGX definition to all trades. This also seems appropriate given the operating history we now have and the fact that there is no evidence leading us to believe this will be an issue.

### **3.8.3 Improve transparency of OR providers**

The AESO recommends that it make available to all market participants real time information showing which facilities are providing OR products (product and volume). The AESO envisions that reporting on such would be similar to the Current Supply Demand ("CSD") report that is available on the AESO website ([http://ets.aeso.ca/ets\\_web/ip/Market/Reports/CSDReportServlet](http://ets.aeso.ca/ets_web/ip/Market/Reports/CSDReportServlet)). The AESO recommends that a similar OR screen be developed that would have all the same "units" that appear on the CSD report with columns for active and standby regulating, spinning and supplemental. This would provide greater transparency to the OR market. Confidentiality provisions in the NGX Agreement would likely have to be amended prior to the information being posted on the AESO website.

This recommendation is consistent with the direction being taken by the Department of Energy in the recent Draft FEOC Regulation which is proposing to increase the transparency of the energy and OR market. The draft regulation contemplates the sharing of OR prices and quantities offered between market participants after 60 days. To the extent items like this pertaining to greater transparency, whether in the energy or OR market, are enunciated in regulation, the AESO recommends adopting them in the OR market.

## **3.9 OR Market in ISO Rules and Contractual Items**

Consistent with paragraph 20(1)(d) of the *Electric Utilities Act* (Act), the AESO recommends including rules for OR in the ISO Rules and mimicking the energy market when it comes to establishing standards around appropriate and inappropriate behaviour and a mechanism for dealing with inappropriate behaviour. Amendments to the NGX Agreement will be necessary to be consistent with ISO Rules.

### **3.9.1 Documentation of OR Rules**

Consistent with paragraph 20(1)(d) of the Act, the AESO recommends that ISO Rules more comprehensively include OR rules. Currently, most of the OR terms and conditions appear in the OTC and NGX Agreement. This structure is due to the AESO's predecessor, the Transmission Administrator, having been responsible for the procurement of OR. Now that this has evolved into an AESO responsibility, rules related to the OR market should be incorporated into the ISO Rules. The rigor associated with the creation of ISO Rules should be adopted in the creation of OR Market Rules.

OR and energy are both procured and settled via a market mechanism. Under the Act, considerations for the OR market are aligned with the energy market. Therefore, developing rules for the OR market that are aligned with the rules for the energy market will provide clarity to all market participants, not just current OT providers. This should add clarity around a market that is sometimes viewed as being complex particularly by new participants.

The AESO envisions that the OR Market Rules will include detailed rules regarding items such as:

- Guidelines for becoming a participant;
- Requirements of OR participant;
- Identifying the OR products that are eligible to be sold to the AESO;
- Pricing mechanism for OR products;
- Offer selection protocol;
- Inspection and testing of equipment;
- Procedures around declarations and restatements;
- OR price cap;
- OR participant behaviour guidelines;
- Compliance measures and procedures; and
- Dispatching and conscription protocol.

To facilitate the incorporation of OR Market Rules into ISO Rules the AESO will consult with market participants using the established ISO Rules Consultation Process. During this process, the necessary details around the OR market will have to be established, consulted on and submitted to the AUC for approval. This recommendation would likely require an Alberta Utilities Commission rule similar in structure to Rule 019 to address non-compliance to be created.

### **3.9.2 Amendments to the NGX and Over the Counter (OTC) Agreement**

The NGX and OTC Agreement will need to be amended to be consistent with OR Market Rules and to reflect changes that come about by way of this consultation process. The AESO recommends that the NGX and OTC Agreement include the

necessary terms and conditions around items such as the procurement process and settlement.

### **3.9.3 OTC Agreement**

To the extent the OR market does not function as intended due to events such as IT failures, the AESO recommends using the OTC Agreement if necessary. The AESO does not recommend using the OTC Agreement as an alternative when the OR market and NGX are operating as anticipated. Therefore, at this time, the AESO recommends keeping the OTC Agreements in place.

## **4.0 Policy Coherence**

The AESO has consulted and continues to engage stakeholders in a consultation process around OR Market Redesign, and recommends a redesigned OR market that is consistent with the Department of Energy Market Policy Framework (Policy) and recommendation from June 2005.

The Policy identified a number of issues inherent in the current OR market and identified some design options. These included:

- 1) the impact of the Hydro PPA and Notional Reserve Quantities Agreement between the Balancing Pool and TransAlta Utilities;
- 2) complexity of the current structure relative to the size of the market and transparency issues that may create forecast errors and allocation inefficiencies between products and markets;
- 3) the single buyer design; and
- 4) examination of opportunities for self procurement.

The Policy went on to make the following recommendation regarding the OR market:

*“Based on mixed stakeholder comments and in keeping with the approach taken with respect to the energy market (i.e. incremental refinements to current market design), the Department recommends taking a similar approach to changes in the operating reserve market design. While the Department supports in principle the concept of a design with multiple buyers and sellers, by allowing the self-procurement of operating reserve by loads, the Department recommends that the ISO continue to work with stakeholders to determine the desirability of this option.”*

The AESO’s OR redesign recommendations are consistent with the policy, with a FEOC market and are in the public interest as they:

- simplify the OR market;
- remove unnecessary AESO discretion and influence from the process;
- establish more meaningful OR price indices;
- focus on incremental changes to the existing design;

- are consistent with principles adopted in the energy market;
- provide greater transparency of the OR procurement process and providers;
- propose the AESO use reasonable efforts to facilitate a secondary OR market creating multiple buyers and sellers;
- identify upcoming AESO consultation processes (tariff design and the deferral account process) that could better facilitate financial OR transactions creating multiple buyers and sellers; and
- allow for and contemplates a Phase II.

The AESO's recommendation of incorporating OR rules into the ISO Rules is consistent with paragraph 20(1)(d) of the Act which enables the AESO to "... *make rules respecting the provision of ancillary services.*"

The AESO's recommendation to remove unnecessary AESO influence on the OR market is consistent with subsection 5(c) of the Act which states that:

*"The purpose(s) of this Act are...to provide for rules so that an efficient market for electricity based on fair and open competition can develop in which neither the market nor the structure of the Alberta electric industry is distorted by unfair advantages of government-owned participants or any other participant."*

The AESO's recommendations are technically sound as they allow the AESO to secure the necessary OR requirements for operating the electric system in a reliable manner, while at the same time ensuring that a better price signal is sent to the market and reducing complexity and any barriers to entry, all in the longer term interest of encouraging participation from existing and new suppliers.

## **5.0 Consultation and Implementation Process**

The scope of this initiative to redesign the OR market makes establishing a timeline for implementation difficult. The following outlines the necessary steps the AESO will take to move this initiative forward. The timing of these steps is in part dependent on the type and amount of feedback the AESO receives from stakeholders at each stage of the consultation process and whether, once a formal OR Market Rules is developed, there are any objections filed with the AUC.

The AESO will be holding a stakeholder session in the afternoon of February 4<sup>th</sup>, 2009 to engage stakeholders in further discussion. The AESO is also seeking comments on this Recommendation Paper from stakeholders populating and submitting the attached comments matrix (Appendix B) by February 20<sup>th</sup>, 2009. Following this, the AESO will engage stakeholders in further discussion and provide written responses to their comments. The AESO estimates this process to be complete in late Q1 or early Q2 2009. Following this the AESO will commence the ISO Rules Consultation process in Q2 2009. ISO Rules Consultation will be followed by the AESO filing OR Market Rules with the AUC in the second half of 2009.

Once final OR Market Rules are in place, any necessary changes to AESO and NGX IT systems will commence. To do otherwise would be premature. The extent and timing of these changes will be contingent upon the final OR Market Rules. The AESO is targeting implementation of a redesigned OR market by the end of 2009, or shortly thereafter.

## **5.1 Implementation of Administrative Improvements to NGX**

The AESO recommends making administrative improvements to NGX to facilitate efficient participation and minimize the possibility of trading errors. These improvements include developing a monitoring tool that tracks sellers' available and sold volumes and a mechanism that ensures a seller is unable to sell more than a unit's capability. The AESO encourages sellers to approach the AESO and NGX with other suggestions during the consultation process. The AESO will encourage NGX to consult with participants on recommended changes, particularly if there will be an associated cost charged to OR participants.

## **6.0 Post Implementation Process**

Following the implementation process outlined above which includes filing final OR Market Rules with the AUC for confirmation and making the necessary changes to IT systems, the AESO proposes to take the following steps post implementation of the redesigned OR market (Phase I).

### **6.1 Post implementation review**

The AESO proposes to conduct a review of Phase I changes to the OR market with categories for consideration to include: the market framework; market products and pricing; procurement process; dispatching of OR; any out of market actions; effectiveness of compliance and increased transparency; level of participation; amount of liquidity and market prices.

### **6.2 Phase II**

In the AESO's November 2007 Concept Paper, a T-2 hourly OR market is considered as a longer term Phase II solution to the existing design. A T-2 hourly OR market would provide greater opportunity for convergence between the energy and OR market.

Considerations regarding the potential scope, timing and need for consultation to take place around the Phase II review include: post implementation review of Phase I changes, progress made on the challenges associated with the integration of intermittent generation, introduction of frequency response reserves (FRR), and

ongoing comments/feedback received from industry on the inclusion of self supply, the OR market design as a whole and its components.

The AESO wishes to thank participants of the OR working group for their continued efforts over the course of the past year. The AESO looks forward to working with all market participants in the next steps of consultation and implementation as well as receiving comments by February 20th, 2009 in the form of the attached comments matrix, Appendix B.