

Economics 415, Market Design
Auction Rules Exercise
Due Tuesday, 14 March 2006

You are to critique the auction rules that follow. These rules are for the forward energy auction conducted in Ontario on 28 February 2006. Your critique should be 1 or 3 pages typed. There is no need to be exhaustive in your coverage. It is better to pick out one or two problems and address it in greater depth. Your analysis can be at an intuitive level. In addition, to identifying any problems, you may want to propose solutions to the problems. Your critique should be your own work, although it is fine to talk to one or more classmates about the auction rules.

Auction Rules

1. Introduction

- 1.1 This Schedule provides Qualified Buyers with details regarding the rules and procedures for the Auction.
- 1.2 The Auction shall be administered by OPA and operated by **Natural Gas Exchange (NGX)** (the "**Auctioneer**"). Actions to be taken by OPA in respect of the Auction may be conducted by the Auctioneer.
- 1.3 The Auction will be conducted through use of the **Auction System** operated by NGX.
- 1.4 Unless the context otherwise requires, capitalized terms used but not defined herein shall have the meanings provided in the Participation Agreement to which this Exhibit is attached.

2. Auction Format

- 2.1 The format to be utilized for the Auction is a simultaneous ascending auction, where:
 - 2.1.1 bidding will occur in a sequence of rounds;

- 2.1.2 Energy Products available to be bid upon during a particular round will be available in lots, which, for any particular Energy Product, will not exceed the number of lots designated to be the "Maximum Lots" in *Exhibit "B"* to these Rules;
 - 2.1.3 all Energy Products identified in *Exhibit "B"* shall be opened for bidding at the times designated;
 - 2.1.4 bidding for Energy Products within a round will close in a sequential manner with results for each product displayed electronically;
 - 2.1.5 bidding may occur simultaneously by Qualified Buyers;
 - 2.1.6 all bids for each Energy Product during a round will be visible to all Qualified Buyers on the Auction System; and
 - 2.1.7 the results of each round will be announced to the Qualified Buyers before the start of the next round.
- 2.2 The auction format is designed to provide efficient price discovery and fair determination of market values.

3.

Bidding Rules

3.1 Energy Products

The Energy Products to be auctioned on a round by round basis are listed in *Exhibit "B"* attached to this Schedule.

3.2 Credit Limits

- 3.2.1 Each Qualified Buyer will be assigned a Credit Limit pursuant to the qualification process set out in the RFQ and communicated to the Qualified Buyer through the issuance of a Notice to Qualified Buyer, by the Seller, as Maximum Aggregate MWhs to be acquired during the Auction. Qualified Buyers acknowledge that the Credit Limit is approximate and may fluctuate between the time of qualification and the commencement of the Auction. The Seller may, in its sole discretion reasonably exercised, revise the Credit Limit of Qualified Buyers at any time prior to the commencement of the Auction and, following notice of such revision to the affected Qualified Buyers, may base their acceptance of bids on the revised Credit Limits.
- 3.2.2 The Credit Limit is utilized to determine the maximum aggregate volume in MWhs that a Qualified Buyer may bid on one or any combination of Energy Products pursuant to the Auction.
- 3.2.3 The Credit Limit will impact the number of active bids that a Qualified Buyer may have in any given round ("**Lot Eligibility**"). A Qualified Buyer's Lot Eligibility will be communicated to it on the Auction System at the end of each round of the Auction.

3.3 Eligibility Restrictions on Qualified Buyers

3.3.1 A Qualified Buyer is not permitted to:

- 3.3.1.1 have outstanding a number of bids on a number of lots which exceeds its Lot Eligibility at any point in time; and
- 3.3.1.2 bid on one or any combination of Energy Products which results in such Qualified Buyer's aggregate bid amounts applicable to such Qualified Buyer (as applied over the entirety of the Auction) exceeding its Credit Limit; and
- 3.3.1.3 during the Auction, be a successful bidder on any Type of Energy Product in excess of the Product Eligibility. A Qualified Buyer's Product Eligibility will be communicated to it on the Auction System in advance of each round of the Auction. For the purposes hereof:
 - (A) "**Product Eligibility**" means, in respect of each Type of Energy Product,; the lesser of (a) two (2) lots for Calendar Products or seven (7) lots for Multi-Year Products and (b) Lot Eligibility;
 - (B) "**Type of Energy Product**" means any homogeneous type of Energy Product having the same commencement and expiry date, as more particularly described in *Exhibit "B"*

3.3.2 As used in this *Section 3.3*, "Qualified Buyer" includes the affiliates of such Qualified Buyer. For the purposes hereof, "**affiliate**" means, in relation to any person, any other person or group of persons acting in concert, directly or indirectly, that controls, is controlled by, or is under common control with the first mentioned person, and for the purposes of this definition, "control" means the possession, directly or indirectly, by such person or group of persons acting in concert of the power to direct or cause the direction of the management and policies of the first mentioned person, whether through the ownership of voting securities or otherwise.

3.3.3 Qualified Buyers are not permitted to combine, conspire, agree or arrange with any other Qualified Buyer or any other person, to influence or affect the prices of bids for Energy Products in the Auction. The Seller reserves the right to withdraw any Qualified Buyer's eligibility to participate in the Auction if such Qualified Buyer is, in the Seller's sole and unfettered judgment, participating in any such combination, conspiracy, agreement or arrangement.

3.4 Definition of a Bid

3.4.1 A bid for an Energy Product is a commitment and binding offer from a Qualified Buyer to pay that price (which is a positive amount) if the bid is declared to be a winning bid for an Energy Product.

3.4.2 Each bid submitted by a Qualified Buyer will be in respect of a lot for an Energy Product. A Qualified Buyer cannot, at any particular time, bid on a number of lots which exceeds its Lot Eligibility.

3.4.3 A Qualified Buyer may (a) decide not to submit bids during a round, or (b) subject to the Qualified Buyer's eligibility, decide to submit a bid on each Energy Product it would like to bid on during the round.

3.4.4 Bid revisions and withdrawals are permitted in accordance with *Section 3.14*.

3.5 Form of a Bid

Each bid on an Energy Product shall be in an amount denominated in Dollars per MW.

3.6 Bid Entry Format

Qualified Buyers will enter their bid amounts manually on the Auction System, provided that:

3.6.1 each bid will be for one lot of the Energy Product;

3.6.2 at any particular time a Qualified Buyer may only bid on a maximum of lots that does not exceed its Lot Eligibility; and

3.6.3 each bid amount will be rounded to the nearest \$0.25/MWh.

3.7 Bidding by Rounds

3.7.1 The Auction will be organized into a series of rounds. There will be 4 rounds for the Auction, as set out in *Exhibit "B"*.

3.7.2 Bidding will take place during a round and all Energy Products specified in *Exhibit "B"* to be auctioned during that round will be opened for bidding as set out in the Exhibit.

3.7.3 Each round will have a starting time and an ending time. The starting time of a round will be the starting time for the first Energy Product available for bidding during that round. Each Energy Product during a round will have a different starting time, so that the starting time of each Energy Product available for bid during a round will be staggered. The ending time of a round will be the ending time of the last lot of Energy Product which was available for bidding during that round. The period of time during which bids can be made on a lot of a particular Energy Product will be from the starting time to the ending time for that Energy Product. The starting time and ending time for each round will be as set out in *Exhibit "B"*.

3.8 During Rounds

In each round:

- 3.8.1 a bidder may submit new bids and bid withdrawals subject to the eligibility and bid withdrawal rules of the Auction;
- 3.8.2 once a bidder validates and confirms a bid, such bid will be automatically time-stamped and recorded electronically;
- 3.8.3 the queue of all bids for each Energy Product during each round will be displayed on the Auction System;
- 3.8.4 a closing period will exist for each round and shall be, at the least, the last 20 minutes prior to the ending time of each Multi-Year BL Contracts and, at least, the last 10 minutes prior to the ending time for each Calendar Year BL Contracts;
- 3.8.5 bids must be entered prior to the start of the closing period, no bids may be withdrawn during the closing period and bids may be only increased during the closing period; and
- 3.8.6 each round and each Energy Product within a round, will have a maximum of a 5 minute **Final Interval** at the end of the closing period – wherein the actual close time will be determined at random within the Final Interval.
- 3.8.7 Participants will be notified electronically as to the start of the Final Interval and at the close, any bids entered after the close time within this interval will NOT be included in the determination of Successful Bids.

3.9 Following Rounds

After the end of each round:

- 3.9.1 the results of the round, as determined by these Auction Rules, will be broadcast on the Auction System as the total of all lots sold, the highest and lowest successful bid prices and the weighted average of all successful bids;
- 3.9.2 the Seller and each Qualified Buyer who is successful in that round will orally confirm all terms of the Transaction Agreement for the relevant Energy Product over a recorded line. Such oral agreement shall be legally binding and enforceable from the time of such oral agreement; and
- 3.9.3 The Seller will fax a copy of a completed Transaction Agreement (incorporating the terms orally agreed upon) to each Qualified Buyer who is successful in that round, and such Qualified Buyer shall execute and fax return such Transaction Agreement to the Seller within 24 hours of receipt.

Each Qualified Buyer consents to the electronic taping or recording by the Seller of all conversations, instructions or agreements, including Transaction Agreements hereunder, and each Qualified Buyer agrees that any such taping or recording will constitute documentary evidence as to such conversations, instructions or agreements in tangible form. Each Qualified Buyer agrees not to raise or claim any legal defence as to the validity or enforceability of any conversations, verbal instructions or agreements evidenced by any such taping or recording, including any assertion that such

conversations, instructions or agreements are not in writing or signed by a Qualified Buyer or the Seller or both. In the event that a Transaction Agreement is inconsistent with the terms agreed to orally pursuant to *Section 3.9.2* and evidenced by taped recordings, then, to the extent of such inconsistency, the terms agreed to orally shall take precedence.

3.10 Auction System

3.10.1 Qualified Buyers will submit and review bids and bid withdrawals in the Auction utilizing the Auction System and the Access Codes provided to such Qualified Buyers by NGX.

3.10.2 All bids for a round must be submitted and recorded prior to the close of the round in order for the bid to be valid.

3.10.3 Bidders will be able to view the queue of all bids and a designation of their bids within the queue.

3.11 Standing High Bids and Standing High Bidders

3.11.1 As of the most recently completed round, the standing high bids on each lot of an Energy Product are the highest bids submitted and confirmed for the Energy Product that do not violate the eligibility restrictions and that have not been subsequently and validly withdrawn.

3.11.2 Standing high bids and the corresponding standing high bidders are determined when a round is completed as bids for the maximum number of lots for that Energy Product for that Round as set out in *Exhibit "B"*.

3.11.3 At the end of a round, the successful bids (each, a "**Successful Bid**") will be determined. A Qualified Buyer's bid on an Energy Product in a round is a Successful Bid only if:

3.11.3.1 it is the standing high bid on a lot for an Energy Product;

3.11.3.2 the bid amount is at least as high as the **Reserve Price(s)** for that Energy Product; and

3.11.3.3 the Qualified Buyer's bid on the Energy Product, along with the Qualified Buyer's then other Successful Bids, are not in excess of the Credit Limit, the Lot Eligibility for that round or the maximum volume as set out in *Section 3.3.1.3*.

3.11.4 The Reserve Price for a lot of an Energy Product will be determined by the Seller in its sole and unfettered discretion and will not be communicated to any Qualified Buyer unless such a communication is determined by the Seller

3.11.5 The electronic determination of the Successful Bids shall be binding on both the Seller and the Qualified Buyer at the time of notification by the Auction System and shall in turn be subject to verbal and written confirmations..

3.12 Energy Products Without Sufficient Standing High Bids

If an Energy Product does not have sufficient standing high bids at the end of a round equal to the maximum volume for that round, then such Energy Product volume unsold may form part of the Auction in the next round for that Energy Product. Such a determination will be made by the Seller and communicated to all Participants before the start of the next round.

3.13 Tie-Breaker Rule

3.13.1 If there is more than one Successful Bid for an Energy Product in a round, the tie-breaker rule will be "first-in priority".

3.13.2 This procedure will designate the bidder with the earliest time-stamped bid at that price, as the standing high bidder.

3.14 Bid Revisions and Bid Withdrawals

Bids submitted during a round are binding bids to purchase. However, before a round closes, a Qualified Buyer can revise a bid or withdraw a bid in accordance with the following provisions:

3.14.1 All bids entered must be greater than a **Minimum Bid Level** to be set for each Energy Product and will be communicated to all Participants prior to each round of the Auction.

3.14.2 at any time during a round, bid amounts can be revised, provided that during the closing period of a round, any revisions to a bid amount may only result in an increase to the bid amount; and

3.14.3 bids may be withdrawn by a Qualified Buyer at any time during a round, except during the closing period when a bid may not be withdrawn.

Each such revision and withdrawal will be automatically time-stamped and recorded electronically.

3.15 Reporting Round Results

At the end of each round, the Auction System will display the results of the Auction through the round just completed. The information to be displayed at the end of each round will include the information specified in *Section 3.9*.

3.16 End of Auction

The Auction will close on the closure of the final round of bidding.

3.17 Rights of the Seller

The Seller or its designate may take the following actions, and shall not be liable for any such actions:

- 3.17.1 with or without notice, at any time prior to commencement of the Auction, negotiate or require alternative or additional Credit Support from a Qualified Buyer to support such Qualified Buyer's bidding activities and credit position; provided that if the Qualified Buyer is an Enabled Applicant, any such alternative or additional financial security shall only be required and provided in accordance with the terms of the pre-existing ISDA or other trading agreement between the Enabled Applicant and the Seller;
- 3.17.2 with or without notice, adjourn, postpone, suspend or terminate the Auction and reject all bids for any reason or no reason whatsoever; provided that in the event of any such adjournment, postponement or suspension, any and all bids which may have been submitted by a Qualified Buyer (and which prior to such adjournment, postponement or suspension did not result in the Qualified Buyer being determined as a Winning Bidder for a particular Energy Product) shall be deemed to be withdrawn; and/or
- 3.17.3 with or without notice, determine that a Qualified Buyer is no longer qualified to participate in the Auction Process, or that a Qualified Buyer has breached any of the Auction Rules or any of the restrictions, prohibitions or other provisions of the Participation Agreement; provided always that any such disqualification shall not affect the Participant's entitlement to any Energy Product for which it has been determined to be a Winning Bidder and for which it has already entered into a Transaction Agreement. If a Qualified Buyer is so disqualified, that Qualified Buyer shall not have the right to thereafter participate in the Auction Process or purchase any Energy Product.

Exhibit "A"

Energy Products

Energy Product – with Bruce Power as Seller	Capacity (in megawatts) per Calendar Year				
	2006 (from February 1 to December 31)	2007	2008	2009	2010
:					
25 MW Multi-Year BL Contract	13 lots	13 lots	13 lots	13 lots	13 lots
	325	325	325	325	325
5 MW Calendar-Year BL Contract	5 lots	5 lots	5 lots	5 lots	5 lots
	25	25	25	25	25
<i>Total:</i>	350	350	350	350	350

EXHIBIT "B"

Energy Products – Auction Rounds

Rounds	Energy Product	Maximum Lots	Open Time	Start of Close	Start of Final Interval	Final Interval Latest Close**
Round 1:	5 MW Calendar Year BL Contract - 2006	5	9:00AM	9:10AM	9:20AM	9:25AM
	5 MW Calendar Year BL Contract -2007	5	9:20AM	9:30AM	9:40AM	9:45AM
	5 MW Calendar Year BL Contract - 2008	5 (or the number of lots sold for the 2007 calendar year)	9:40AM	9:50AM	10:00AM	10:05AM
	5 MW Calendar Year BL Contract - , 2009	5 (or the number of lots sold for the 2008 calendar year)	10:00AM	10:10AM	10:20AM	10:25AM
	5 MW Calendar Year BL Contract - 2010	5 (or the number of lots sold for the 2009 calendar year)	10:20AM	10:30AM	10:40AM	10:45AM
Round 2	25 MW Multi Year BL Contract	3	11:45AM	11:55AM	12:15PM	12:20PM
Round 3	25 MW Multi Year BL Contract	5 (plus any unsold lots from Round 2, subject to Seller agreement)	1:30PM	1:40PM	2:00PM	2:05PM
Round 4	25 MW Multi Year BL Contract	5 (plus any unsold lots from Round 3, subject to Seller agreement)	3:00PM	3:10PM	3:30PM	3:35PM

**** - Note – the time shown is the latest possible end to the Final Interval it will end at random within the 5 minutes**