Strategic partner in Canada's dairy industry

Understanding the Alberta Milk Quota Exchange

1. What is the Alberta Milk Quota Exchange?

Alberta Milk facilitates a Quota Exchange (QEX) each month pursuant to section 19.1 of the Alberta Milk Marketing Regulation, to provide Alberta's dairy producers with the opportunity to buy or sell Continuous Daily Quota (a.k.a. quota). The QEX is a single-round, two-way auction in which buyers place "bids" in competition with other buyers and sellers place "offers" in competition with other sellers.

The purpose of this document is to give producers enough information to understand how the QEX works.

2. Why does Alberta Milk facilitate a Quota Exchange?

Alberta Milk facilitates the QEX based on support provided by the organization's members. The purpose of facilitating the QEX is to give all producers throughout the province equal opportunity to bid on quota that is for sale and give equal opportunity to offer quota to buyers, minimize transaction costs, equalize pricing information, and allow producers to customize the size of their bids or offers.

3.1 Submitting bids and offers for the Quota Exchange

Producers who want to buy or sell quota on the QEX are required to submit their 'bids to buy' and 'offers to sell' quota for the exchange. A bid (or offer) contains information on the quantity of quota (in kg per day) being bid (or offered) on the QEX, the unit price (in dollar per kg per day), as well as the total price in dollars for the entire bid (or offer) quantity.

All QEX bids or offers are due by 4:30 p.m. at least 14 days prior to the first day of the following month. Refer to Alberta Milk's website for the exact monthly QEX deadlines. Submitting QEX bids or offers through the online Producer Portal is preferred since the online platform has validations programmed into it to ensure the submitted bids or offers are valid (i.e., bids or offers that respect all the rules of the QEX as outlined in section 3.2 below).

QEX bids and offers may also be submitted by mail, fax, or email. The appropriate forms are available on the Alberta Milk website, or by contacting the office at 780-453-5942. Forms may be faxed to 780-455-2196, emailed to quota@albertamilk.com, or mailed to Alberta Milk, 1303-91 Street SW, Edmonton AB T6X 1H1.

Regardless of the submission method, all bids or offers for the QEX must be received by Alberta Milk by 4:30 p.m. on the stipulated monthly QEX deadline. Please refer to Alberta Milk's website for the exact monthly QEX deadlines.

3.2 Rules for submitting bids/offers for the Quota Exchange

The following rules are applicable to submitting bids or offers on the Alberta Milk QEX:

Who can submit bids or offers for the QEX?

a. Only individuals who are licensed dairy producers operating in Alberta (or have a temporary license) are permitted to submit bids or offers for the QEX.
b. A producer is permitted to buy or sell quota on a given exchange, but a producer is not permitted to both buy AND sell quota on the same exchange. In other words, producers are not permitted to submit both 'bids to buy' and 'offers to sell' quota in the same month.

How much quota can be bought or sold in a month on the QEX?

c. Producers can submit any number of bids to buy quota or offers to sell quota up to a maximum of six bids or offers per exchange.
d. Producers can request to buy or sell quota to the hundredth decimal place with the following limitations:
   - The minimum size per bid is 0.10 kg/day and the maximum size per bid is 5.00 kg/day. As an example, a single bid or offer could be as precise as 2.79 kg/day. But a single bid/offer of 0.09 kg/day (or less) is below the minimum allowable bid/offer size and a single bid/offer of 5.01 kg/day exceeds the maximum allowable bid/offer size.
   - A maximum of six bids and a maximum of 5.00 kg/day per bid imply that the maximum total amount of quota a producer can buy in one month on the QEX is 30.00 kg/day (i.e., 6 x 5). A producer who wishes to buy more than 30.00 kg/day through the QEX will need to submit bids on more than one QEX.
   - A seller who is exiting the industry and wants to sell more than 30 kg/day of quota would be permitted to exceed the limit of 5.00 kg/day per offer provided they offer their entire quota holdings for sale. In this case, the seller must provide six offers with their entire quota holdings divided equally amongst the six offers.

Pricing Rules

Providing multiple bids or offers require participants to provide separate prices. If a producer chooses to submit more than one bid or offer, each bid or offer must be provided at a different price level to allow for the bids or offers to be prioritized on the QEX.

e. Producers are permitted to separate their bid or offer prices by any amount, but a minimum price separation of $10 per kg/day is required. For example, if a buyer wants to place two bids and sets the lower-priced bid at $44,000 per kg/day, the higher-priced bid would need to be at least $44,010 to satisfy the $10 minimum price separation.
f. The Alberta Milk QEX applies a Pay-According-to-Bid/Receive-According-to-Offer payment methodology. This means, once the exchange is run, buyers with successful bids will owe payment that is up to what they have indicated that they are willing to pay on the application form for those successful bids. Likewise, sellers with successful offers will receive payment that is at least what they indicated they were willing to receive for their successful offers. The difference between the money collected from buyers and the money paid to sellers will be paid back to all successful buyers and sellers as a "refund" per kg/day of bought or sold quota. This refund of surplus dollars will be applied prior to collecting from buyers and paying to sellers and will be included in the total that a buyer is obligated to pay and the total that a seller will receive.

Note: The refund amount is determined by the placement and volume of all the successful bids and offers. This means the refund cannot be known with certainty in advance of running the QEX and it means that the refund will vary from month to month.

Collusion

Collusion is prohibited on the QEX because it contradicts the purpose of the exchange, which is to give all producers equal access and opportunity to buy or sell quota. Collusion may also undermine the quality of the exchange's outcome.

g. To prevent collusion, the bid/offer process is a blind process, in the sense that, producers are not privy to information about other producers' submitted bids/offers on the QEX. Furthermore, producers are discouraged from colluding since such actions could harm their fellow producers on the QEX. To avoid collusion when placing bids or offers, simply place bids/offers independent of other producers' bids/offers on the exchange.

Declaration Signature

The declaration signature is the participant's declaration that they have read and understand the rules of the QEX and that they have not engaged in collusion.

h. For QEX participants who submit bids/offers online through the Producer Portal (i.e., the preferred option), clicking the 'Submit' button represents the producer's digital signature for their declaration and confirmation of their submitted bids/offers. A confirmation email will be sent to the Signing Authority on file to notify them to ensure only authorized bids/offers are accepted on the QEX.
i. QEX participants who choose to submit their bids or offers by mail, fax or email are required to sign the bid/offer form on the line provided at the bottom of the page.

4. How does the Alberta Milk Quota Exchange work?

After the deadline has passed, the submitted bids and offers to buy or sell quota will be processed. Bids to buy are arranged in descending order based on their unit price (i.e., high to low), whereas offers to sell are arranged in ascending order based on their unit price (i.e., low to high). The bids to buy are filled starting with the highest-priced bids and offers to sell are filled starting with the lowest-priced offers.

The total volume of quota demanded by buyers will accumulate as price decreases and the total successful volume by sellers will accumulate as price increases. The clearing point is discovered where the buyers' and sellers' cumulative volumes meet. The last unit of quota traded through the QEX in each month will be the last bid to buy that is still priced higher than the last offer to sell. This is the clearing point because the remaining unfilled bids to buy are priced at levels that are below the remaining unfilled offers to sell. Therefore, offers to sell quota at a price above the clearing point will not be successful. Likewise, bids to buy quota at a price below the clearing point will also not be successful.

All successful bids and offers will be filled 100 per cent except the last bid or last offer, which will be pro-rated to match total volumes. At the clearing point, if the cumulative volume offered for sale is greater than the cumulative volume from buyers, only the last successful offer to sell will be pro-rated to balance volumes. Likewise, if the cumulative volume from buyers exceeds the cumulative volume from sellers at the clearing point, only the last successful bid to buy will be pro-rated to balance volumes. Multiple bids with the same price cannot be prioritized, so if two buyers each provide a bid at the same price and it turns out that they represent the last successful bid needing to be pro-rated, both bids would be prorated proportionally. This is also the case on the seller's side.

Once the exchange is cleared, all participants will be notified whether their bids or offers were successful. Successful buyers and sellers will also be notified as to the amount owing or the amount they will be receiving.

The total dollars that will accumulate because of selling the lowest priced offers to the high bidders is known as the QEX Refund amount. This total refund amount is shared proportionally among all successful QEX participants based on the total quantity of quota they bought or sold on the QEX. Hence, successful participants at the end of it all receive (or pay) the price they offered to sell at (or bid to buy at) plus (or minus) their share of the total refund dollars. The actual transfer of quota does not take effect until the first day of the following month.

An Example of How the Alberta Milk Quota Exchange is Executed

The table below presents an example of how the QEX is executed. In the simplified example below:

- There are 15 bids to buy quota and 13 offers to sell quota on the QEX as shown by the Row ID#'s.
- The bids are ordered in descending order of bid price per kg while the offers are ordered in ascending order of offer price per kg.
- The Clearing Point is discovered on row 11, where there is a bid to buy 0.80 kg of quota for $48,000 per kg AND a corresponding offer to sell 0.80 kg for $47,800 per kg.
- Beyond the Clearing Point (row 11), the price for the next offers on rows 12 and 13 (i.e., $49,500 and $49,575 respectively) exceed their corresponding bid prices of $47,990 and $47,800 respectively. In other words, buyers below Row ID# 11 are not willing to pay as much as the sellers are willing to receive for their quota, so neither those buyers nor sellers are successful on the QEX.
- The Clearing Price is determined at the clearing point as the average between the price of the last successful bid and that of the last successful offer (i.e., average of $48,000 and $47,800 = $47,900).
- The highest bids are matched to the lowest offers so producers with higher bids are more likely to successfully buy quota. However, since the QEX operates as a Pay-According-to-Bid/Receive-According-to-Offer, the buyer is obligated to pay the price they bid, creating a discrepancy between bid price and offer price. This amount gets pooled among all successful QEX participants and divided according to volume of quota exchanged.
- In this example, the refund amount of $802.11 per kg is given by the Total Refund dollars ($23,742.50) divided by twice the quantity of quota successfully traded on the QEX (14.80 x 2). It is divided by twice the quantity of quota successfully traded on the QEX because each transaction has two parties eligible for the refund: a buyer and a seller.

Row ID#	Bid Quantity (kg)	Bid Price ($/kg)	Offer Quantity (kg)	Offer Price ($/kg)	Quantity Successful (kg)	Cumulative Bids (kg)	Cumulative offers (kg)	Total Bid Price ($)	Total Offer Price ($)	Refund = Total Bid Price - Total Offer Price ($)
1	2.00	$ 48,900.00	2.00	$ 45,500.00	2.00	2.00	2.00	$ 97,800.00	$ 91,000.00	$ 6,800.00
2	1.00	$ 48,800.00	1.00	$ 46,000.00	1.00	3.00	3.00	$ 48,800.00	$ 46,000.00	$ 2,800.00
3	3.00	$ 48,700.00	3.00	$ 46,500.00	3.00	6.00	6.00	$146,100.00	$ 139,500.00	$ 6,600.00
4	1.00	$ 48,600.00	1.00	$ 47,000.00	1.00	7.00	7.00	$ 48,600.00	$ 47,000.00	$ 1,600.00
5	2.50	$ 48,575.00	2.50	$ 47,220.00	2.50	9.50	9.50	$121,437.50	$ 118,050.00	$ 3,387.50
6	1.00	$ 48,275.00	1.00	$ 47,480.00	1.00	10.50	10.50	$ 48,275.00	$ 47,480.00	$ 795.00
7	0.50	$ 48,150.00	0.50	$ 47,490.00	0.50	11.00	11.00	$ 24,075.00	$ 23,745.00	$ 330.00
8	1.00	$ 48,010.00	1.00	$ 47,500.00	1.00	12.00	12.00	$ 48,010.00	$ 47,500.00	$ 510.00
9	1.00	$ 48,010.00	1.00	$ 47,500.00	1.00	13.00	13.00	$ 48,010.00	$ 47,500.00	$ 510.00
10	1.00	$ 48,000.00	1.00	$ 47,750.00	1.00	14.00	14.00	$ 48,000.00	$ 47,750.00	$ 250.00
11	0.80	$ 48,000.00	0.80	$ 47,800.00	0.80	14.80	14.80	$ 38,400.00	$ 38,240.00	$ 160.00
12	1.00	$ 47,990.00	1.00	$ 49,500.00		15.80				
13	4.00	$ 47,800.00	4.00	$ 49,575.00		19.80				
14	1.00	$ 47,600.00				20.80				
15	5.00	$ 47,600.00				25.80				
	25.80		**19.80**		**14.80**			**$717,507.50**	**$ 693,765.00**	**$ 23,742.50**

a	**Buyers pay a total of:**	$ 717,507.50
b	**ellers receive a total of:**	$ 693,765.00
c = a - b	**Total Refund:**	$ 23,742.50
d	**Kg Bought or Sold:**	14.80
e = c ÷ (d x 2)	**Refund ($/kg):**	$ 802.11

Volume offered:	19.80
Volume Bid For:	25.80
Successful Volume:	14.80
Clearing price:	$ 47,900.00
Refund ($/kg)	$ 802.11
11 successful bids between $48,000 and $48,900	
11 successful offers between $45,500 and $47,800	
4 unsuccessful bids between $47,600 and $47,990	
2 unsuccessful offers between $49,500 and $49,575	

5. How are bids or offers placed?

It is important to recognize that each participant's best strategy, whether they are a buyer or a seller, is to bid/offer at a price that is very close to what they're willing to pay/receive. That is, it is the best strategy for a buyer to place bids close to what they are willing to pay per kg/day of quota and for a seller to provide offers close to what they are willing to receive per kg/day of quota. These are the best bidding strategies because the exchange is a single-round auction - which means that participants only get one chance to provide their bids or offers before the auction closes. It is important to recognize that a buyer (who is competing with other buyers) will increase the risk of their bids being unsuccessful as they bid further and further below their willingness to pay. The same applies for a seller (who is competing with other sellers) as they will increase the risk of their offers being unsuccessful if their prices are significantly above what they are willing to receive.

Now, because of the Pay-according-to-bid/Receive-according-to-offer payment methodology, buyers should also be cautious to not bid significantly above what they are willing to pay because, if their over-priced bids are successful, they would be obligated to pay accordingly (which, in this case, would be more than what they were truly willing to pay). For the same reason, sellers should be cautious to not offer quota significantly below what they would be willing to receive. Again, a participant's best strategy is therefore to place their bids or offers very closely to what they are willing to pay/receive per unit quota.

It is also important to recognize the impact of refunding the surplus money from the exchange back to successful participants. As outlined in section (f) of the Pricing Rules above, a surplus of money is created due to the difference between what successful buyers are willing to pay and what successful sellers are willing to receive. This refund will be paid back to the successful buyers and sellers as an amount per kg/day bought or sold. As an example, if an exchange is run and $100,000 is left over after 100 kg/day are successfully transferred, each buyer would see $500 per kg/day (i.e., $100,000 ÷ (100x2) = $500 per kg/day) subtracted from the amount they bid to pay, and each seller would see $500 per kg/day added to the amount they offered to sell at. The total refund dollars must always be divided by twice the quantity of quota successfully transferred so that both parties to a successful transaction (i.e., the buyer(s) and seller(s)) will receive their respective share of the refund. Again, the refund can only be determined after running the QEX, so no one can know with certainty what the refund will be in advance and the refund will vary from month to month.

While this refund adds a small element of uncertainty, taking advantage of the multiple bidding option and spreading out bids or offers at different prices should be used to mitigate both the uncertainty of the clearing point and the refund.

6. Why is multiple bidding an option?

Multiple bidding has been incorporated into the QEX because it provides several benefits. First and foremost, it allows participants to manage the uncertainty of the clearing point. This is because multiple bidding effectively allows a participant to bid or offer different quantities of quota subject to participants' anticipation of the clearing point.

With multiple bids/offers, there is less pressure for producers to bid/offer above their willingness to pay/receive because of the opportunity to be partially successful with multiple bids/offers on the QEX. It is possible that a producer will be successful on some of their bids or offers and unsuccessful on others (i.e., partially successful). For most producers, being "partially" successful is preferable to being completely unsuccessful.

If a producer wishes to be completely successful (all-in) or completely unsuccessful (all-out), rather than being "partially" successful, it is advised that they provide their multiple bids or offers within a very small range of prices. Because of the $10 minimum price separation, it is possible that all six bids or offers can be within a $60 range and the probability of being all-in or all-out is much greater. If a producer prefers not to be "all-in" or "all-out", it is advised that they provide their multiple bids or offers within a wider range of prices.

Multiple bidding has also been incorporated into the QEX to overcome some of the challenges created in some months due to low monthly trading volume and few participants. With the current QEX methodology, if there are ten sellers in a month and they all provide six offers, the number of offers increases from ten to sixty. Breaking up larger bids/offers into several smaller bids/offers also reduces the impact that a single large participant can have on the clearing point, and the difference in accumulated buying volumes and accumulated selling volumes at the clearing point is also significantly reduced.