

Sale by Mutual Agreement by the Minister Examples

Québec cap-and-trade system for greenhouse gas emission allowances

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TABLE OF CONTENTS

I.	BACKGROUND	1
II.	DETERMINING AN ENTITY'S BID GUARANTEE	2
III.	ENTITY BID EVALUATION PROCEDURES FOR PURCHASE LIMITS, HOLDING LIMITS AND EMISSION UNITS REQUIRED	3
A.	Purchase Limits	3
B.	Holding Limits.....	3
	Example 1: Determining the Maximum Number of Allowances an Entity Can Hold and Purchase to Comply with its Holding Limit	4
C.	Limit related to a bidder's quantity of emission units required to meet its coverage obligations.....	5
IV.	APPLICATION OF THE BID EVALUATION CRITERIA.....	5
A.	Bid Fulfillment.....	6
	Example 2: Bid Fulfillment with a Tiebreaker	6
B.	Applying the Holding Limit, the limit related to the quantity of emission units required and the Bid Guarantee	8
	Example 3: Holding Limit Applied With Respect to Bids Detailed in Table 1 and Data in Table 3	8
C.	Bid Fulfillment for Categories A, B and C.....	11

LIST OF TABLES

Table 1: Bid submission in a Sale by Mutual Agreement 2

Table 2: Emission Units Fulfillment with a Tiebreaker..... 7

Table 3: Limited Exemption and Maximum Units that Can Be Purchased..... 9

Table 4: Category A with the Holding Limit Applied 9

Table 5: Limit Corresponding to the Required Quantity of Emission Units Applied 10

Table 6: Category A units with the Holding Limit and Quantity of Emission Units Required
Applied 10

Table 7: Category A with all Limits Applied 10

I. BACKGROUND

The Sale by Mutual Agreement by the Minister Examples document provides information and examples of how to determine the amount of a bid guarantee, explains bid evaluation procedures for holding limits, required emission units and bid guarantees, and shows bid fulfillment examples. This attachment also clarifies how submitted bids that contain unit quantities in excess of the bidder's holding limit, and/or overage of the bidder's quantity of emission units required to meet its coverage obligations and/or that have a maximum value greater than the bid guarantee will be handled. The currency used in sales by mutual agreement is the Canadian dollar.

Only emitters registered in the CITSS system in accordance with the Québec regulation and whose general account does not contain emission units that can be used to cover GHG emissions for the current compliance period, are eligible for a Sale by Mutual Agreement by the Minister (Sale by Mutual Agreement).

This document is for guidance purposes only and does not supersede the Québec Cap-and-Trade Regulation (Québec Regulation). In circumstances of uncertainty, the Québec Regulation takes precedence.

When bidding in a Sale by Mutual Agreement during the open bidding window, an emitter cannot submit more than one bid indicating the number of units requested and the category corresponding to the maximum price per unit it is willing to pay for the units.. The bid fulfillment and purchase determinations at a Sale by Mutual Agreement are determined after the bidding window has closed, based on the following steps:

1. The bids from all of the entities are grouped and evaluated together for Category A.
2. Each entity's submitted bid is evaluated to ensure that the bid and/or value does not exceed the entity's holding limits or its bid guarantee, nor exceeds the bidder's quantity of emission units required to meet its coverage obligations.
 - A qualified bid is determined as the bid quantity that remains after the submitted bid has been evaluated and reduced to meet all limits.
3. When the bid submitted by a purchaser exceeds one of the purchaser's limits, the excess emission units will be removed from the purchaser's bid, until the most restrictive limit is met.
4. Bids are filled in each category until the entire supply of emission units in the category is exhausted or all qualified bids have been filled.

- If there are not enough emission units to fulfil all of the bids in Category A, a tie-breaker is used and each qualified bidder will receive the quantity of units that corresponds to its proportion of the total demand for units.
5. Steps 1 to 4 are repeated for Category B, considering only bids from the entities that submitted a bid for Category B or Category C units. Moreover, only the unfilled portion of the submitted bid is considered.
 6. Steps 1 to 4 are repeated for Category C, considering only bids from the entities that submitted a bid for Category C units. Moreover, only the unfilled portion of the submitted bid is considered.

The discussion in the remainder of the document follows the steps listed above, in order, to discuss the various elements of the bid fulfillment and purchase determination process.

II. DETERMINING AN ENTITY’S BID GUARANTEE

Table 1 presents hypothetical bid submissions for a Sale by Mutual Agreement by the Minister in which there are five participating entities. Each row in Table 1 provides the bid value at each category price. The maximum bid value is obtained by multiplying the number of emission units by the category price. .

Table 1: Bid submission in a Sale by Mutual Agreement

Entity	Category	Price	Number of Emission Units	Maximum Bid Value
Entity 1	A	\$41.40	100,000	\$4,140,000
Entity 2	B	\$53.20	300,000	\$15,960,000
Entity 3	C	\$65.00	500,000	\$32,500,000
Entity 4	A	\$41.40	300,000	\$12,420,000
Entity 5	C	\$53.20	500,000	\$26,600,000

To determine the minimum value of the bid guarantee that must be submitted to avoid bid rejection, the number of requested emission units is multiplied by the price of the selected category. In Table 1, the maximum bid value represents the minimum value of the bid guarantee that each entity must provide.

The minimum bid guarantee that entities 1, 2, 3, 4 and 5 should submit to avoid having their bid(s) rejected would be as follows:

Entity 1 – \$4,140,000;

Entity 2 – \$15,960,000;

Entity 3 – \$32,500,000;
Entity 4 – \$12,420,000;
Entity 5 – \$26,600,000.

III. ENTITY BID EVALUATION PROCEDURES FOR PURCHASE LIMITS, HOLDING LIMITS AND EMISSION UNITS REQUIRED

A. Purchase Limits

There is no purchase limit applied to the purchase of emission units offered in a Sale by Mutual Agreement.

B. Holding Limits

The holding limit is the maximum number of emission units and early reduction credits that an emitter or participant can hold in its general account and, where applicable, in its compliance account. If the entity is part of a corporate association group (CAG), the holding limit is the maximum number of emission units and early reduction credits that the group can hold across all the accounts of its members.

The holding limit is calculated using the following formula¹:

$$\text{Holding Limit} = 2,500,000 + 0.025 \times (\text{Annual emission units Budget} - 25,000,000)$$

Where:

- “Annual Emission Units Budget” is the number of Emission Units issued for the current budget year².

For 2021, the combined annual budget in California and Québec is 376,060,000 emission units.

$$\text{Holding Limit} = 2,500,000 + 0.025 * (376,060,000 - 25,000,000)$$

$$\text{2021 Holding Limit} = 11,276,500$$

¹ Pursuant to section 32 of the Québec regulation, the formula is: $\text{Holding Limit} = 0.1 \times \text{Base} + 0.025 \times (\text{Annual Emission Units Budget} - \text{Base})$, where “Base” equals 25 million metric tons of CO₂e. This has the same mathematical result as the formula as listed above.

² The annual emission unit budget in a linked program includes emission units issued by participating jurisdictions.

Limited Exemption

As emitters are required to accumulate allowances to cover their GHG emissions, an exemption from the holding limit set out in section 32 of the Québec regulation is granted to them. The annual value of an emitter's limited exemption is determined on the basis of the estimated GHG emissions from all of its establishments for the year in question. It is for this reason that the exemption is updated annually per the emitter's last declared and verified GHG emissions.

During a Sale by Mutual Agreement, the holding limit reflects the number of emission units an entity holds in its account(s) plus its limited exemption, if applicable. The holding limit for the current year applies to the sum of the current vintage units or previous vintages. The total holding limit, the available holding limit—(holding limit minus account balance(s))—and the limited exemption for each emitter, if applicable, can be viewed in the CITSS account of the entity, under the “Holding Limit” tab on the “Account Details” page.

Example 1: Determining the Maximum Number of Allowances an Entity Can Hold and Purchase to Comply with its Holding Limit

The maximum number of allowances an entity can hold equals its holding limit plus its limited exemption. For allowances to be counted towards an entity's limited exemption, they must be held in the entity's compliance account. Assuming an entity takes full advantage of the limited exemption and has no emission units in its general account, the 2021 maximum number of current vintage allowances that may be held is calculated as:

$$2021 \text{ Maximum Number of Current Vintage Allowances} = 11,276,500 + \text{the Limited Exemption}$$

When submitting bids at a Sale by Mutual Agreement, an entity may not exceed its applicable holding limit, which is the current vintage holding limit. Supposing that an entity's limited exemption is equal to 4,000,000 allowances and that it holds 1,000,000 allowances in its compliance account, the maximum number of allowances the entity can hold and remain below its holding limit is:

$$\text{Maximum Number of Current Vintage Allowances} = 11,276,500 + (4,000,000 - 1,000,000) = 14,276,500 \text{ allowances.}$$

Entities can hold more allowances in their compliance account than are allowed under the limited exemption, but any allowances that exceed the limited exemption will count towards the holding limit. If the compliance account balance of the entity in the previous example held 4,500,000 allowances, the following represents the allowances that may be purchased without exceeding the holding limit:

Maximum Number of Current Vintage Allowances = 11,276,500 + (4,000,000 – 4,500,000) = 10,776,500 allowances.

Pursuant to section 62 of the Québec regulation, the Minister will record emission units awarded after a Sale by Mutual Agreement in entities' compliance accounts.

C. Limit related to a bidder's quantity of emission units required to meet its coverage obligations

Under section 60.1 of the Québec regulation, when a bid submitted by an emitter has the effect of exceeding the number of emission units it needs to meet its coverage obligations as referred to in section 19, the Minister removes the quantity of excess emission units from the bid.

The emission units that are required to meet an emitter's coverage obligations as referred to in section 19 are determined by subtracting the quantity of emission units, early reduction credits and offset credits that can be used to cover the emissions of that emitter from the quantity of declared and verified emissions that have not yet been covered, per section 19.

For example, an emitter that has already purchased emission units and would need 10,000 units to cover all of its emissions for the compliance period, will not be able to request more than 10,000 emission units at the Sale by Mutual Agreement.

IV. APPLICATION OF THE BID EVALUATION CRITERIA

When the size of a submitted bid is such that it contains bid quantities in excess of the bidder's holding limit, and/or that the bidder's quantity of emission units required to meet its coverage obligations is exceeded, or has a maximum value in excess of the bid guarantee, it will be rejected, until all bid limitations are met. Only that portion of the bid quantity that exceeds one or more limits will be rejected, and not the entire bid quantity. "Qualified bids" are bids that remain after the submitted bids have been evaluated and reduced to meet all limits. Only qualified bids are used in the Sale by Mutual Agreement settlement process.

For example, if the bid guarantee limit is satisfied by the purchase of no more than 10,000 emission units, the holding limit is met by the purchase of no more than 25,000 emission units and the limit related to the bidder's quantity of emission units required to meet its coverage obligation is satisfied by the purchase of no more than 10,000 emission units, the qualified bid is less than or equal to 10,000 emission units. Determination of qualified bids occurs after the bidding window has been closed and

before the final bid fulfillment and purchase determinations are made.

A. Bid Fulfillment

Starting with emission units in the lowest-priced category (Category A), bids will be evaluated for entities that submit bid to that category. Given that each category contains a fixed number of emission units, there are two potential outcomes for the sale of emission units within each category:

- The number of qualified bid emission units is equal to or lower than the quantity of emission units that are available in a given category. Emission units are divided among bidders in accordance with qualified bids. If the quantity of qualified bids is equal to the number of bids submitted, all bids are filled and no emission units remain in the category.
- The quantity of qualified bids exceeds the quantity of emission units in a given category. This will result in the tiebreaker process, under which emission units are sold based on each bidder's proportion of the qualified bid total:
 - The Auction Administrator will allocate emission units to entities based on their share of qualified bids submitted to that category by dividing the quantity of each entity's bid by the total number of qualified bids submitted for that category;
 - Each entity is awarded emission units based on its share multiplied by the number of emission units available for sale in the category, rounded down to the nearest whole emission units;
 - If emission units remain as a result of rounding down, those units are awarded to entities by assigning a random number to each one. The remaining emission units are awarded starting with the lowest assigned random number and proceeding to the next higher random number, and so forth and so on until all remaining emission units have been awarded.

Example 2: Bid Fulfillment with a Tiebreaker

This example uses the data of Entities 1, 2, 3, 4 and 5 in **Table 1**. In this example, the supply of emission units offered for sale in each category is 1,000,000. Example 2 shows the settlement of a Sale by Mutual Agreement when there is excess demand for emission units in a category. It shows a tiebreaker in Category A, but the tiebreaker methodology can be applied to any category.

Table 2 shows the cumulative bids of the five entities for all categories. Since the choice of category represents the highest price an entity is willing to pay for an emission unit,

the evaluation of Category A includes all of the bids made in all categories, since it is the cheapest category. **These are qualified bids and do not violate the holding limit, the bid guarantee or the limit related to the quantity of emission units required to meet the coverage obligations of each of the entities.** Each entity has submitted a bid guarantee amount that is sufficient to cover all bids.

Table 2: Emission Units Fulfillment with a Tiebreaker

Entity Name	Category Price	Bid Emission Units	Proportion	Emission Units Sold
1	\$41.40	100,000	0.058823529	58,824
2	\$41.40	300,000	0.176470588	176,471
3	\$41.40	500,000	0.294117647	294,118
4	\$41.40	300,000	0.176470588	176,470
5	\$41.40	500,000	0.294117647	294,117
Total		1,700,000	1.00	1,000,000

Since the quantity of qualified bids is 1,700,000 emission units and only 1,000,000 units are available for sale in Category A, a tiebreaker procedure is required. Each entity is sold emission units in proportion to its qualified bid compared to the total quantity of qualified bids submitted for the oversubscribed category. For example, Entity 4's qualified bid is 300,000 emission units and its proportion of the total quantity of qualified bids is $300,000/1,700,000 = 0.176470588$. The proportion is then multiplied by the number of available emission units and rounded down to the nearest whole unit, in this case, $0.176470588 \times 1,000,000 = 176,470$ emission units.

Rounding down the emission units results in 999,997 total emission units sold in this category. To sell the residual emission units, each entity is assigned a random number and the emission units are first awarded to the entities with the lowest random number. In this example, Entities 1, 2 and 3 are each assigned the lowest random numbers and each receive one residual emission unit.

The total number of emission units sold in Category A and the resulting bid cost for each entity is as follows:

- Entity 1 – 58,824 emission units at a total cost of \$2,435,313.60;
- Entity 2 – 176,471 emission units at a total cost of \$7,305,899.40;
- Entity 3 – 294,118 emission units at a total cost of \$12,176,485.20;
- Entity 4 – 176,470 emission units at a total cost of \$7,305,858.00;
- Entity 5 – 294,117 emission units at a total cost of \$12,176,443.80³.

³ For the rest of this document, the total cost of emission units will be truncated and shown as whole dollars.

As already mentioned, this example shows a tiebreaker in Category A, but the tiebreaker methodology can be applied to any category.

After completing the sale in the lowest-price category, the Auction Administrator will proceed to Category B and finally to Category C. Emission units purchased in Category A reduce the number of units a participant may acquire in Category B before exceeding its holding limit. The total cost of emission units purchased in Category C is deducted from the entity's bid guarantee, reducing the remaining bid guarantee value that can be applied to subsequent category sales. As such, the evaluation of submitted bids in Categories B and A is based on the remaining bid guarantee value and the emission units that may be acquired before the holding limit is exceeded.

Similar to the Category A analysis, Category B analysis proceeds by considering all bids submitted for Category B and Category C. However, all units previously awarded in a previous category reduce the requested quantity. An entity cannot receive more units than it requested in its bid.

B. Applying the Holding Limit, the limit related to the quantity of emission units required and the Bid Guarantee

Example 3: Holding Limit Applied With Respect to Bids Detailed in Table 1 and Data in Table 3

The maximum number of emission units that can be held by any entity is a function of its holding limit and limited exemption. In this example, the available space within an entity's holding limit is defined as the maximum number of emission units that it can purchase at the sale by mutual agreement by the Minister while remaining in compliance with its holding limit. These emission units, shown as the "Holding Limit Cap" in Table 3, indicate how many emission units a participant may acquire before exceeding its holding limit.

The cap for each entity can be determined based on its holding limit, limited exemption and current emission unit holdings in its general and compliance accounts.

Table 3 outlines the holding limit cap calculation for the five entities (1, 2, 3, 4 and 5) given that each entity has a limited exemption of 4,000,000 emission units, and shows the number of emission units that can be purchased at the Sale by Mutual Agreement by each entity. Emission units purchased are placed directly into the compliance account of the purchasing entity and are subject to its current vintage holding limit.

Since only emitters whose general account does not contain any emission units that can be used to cover GHG emissions for the current compliance period are eligible for a Sale by Mutual Agreement, all the emission units of Entities 1, 2, 3, 4 and 5 were moved to their compliance account.

Table 3: Limited Exemption and Maximum Units that Can Be Purchased

Entity Name	Current Vintage Holding Limit	Limited Exemption	Compliance Account	General Account	Holding Limit Cap
1	11,276,500	4,000,000	14,276,500	0	1,000,000
2	11,276,500	4,000,000	14,276,500	0	1,000,000
3	11,276,500	4,000,000	14,576,500	0	700,000
4	11,276,500	4,000,000	14,776,500	0	500,000
5	11,276,500	4,000,000	14,776,500	0	500,000

Using the bid schedule in **Table 1**, this example shows the outcome of the Sale by Mutual Agreement after imposing holding limit caps on all three entities. It is evident that the results of the Category A sale are unchanged as no entity exceeded its holding limit. For example, Entity 2 has space for 1,000,000 emission units under its holding limit cap but its Category A bid is only 300,000 units. Entity 5 is at its limit as its bid is for 500,000 emission units, which is precisely its holding limit cap.

Table 4: Category A with the Holding Limit Applied

In this example, the holding limit is lowered to 200,000 units.

Entity Name	Category A Price	Qualified Emission Units	Emission Units Sold
1	\$41.40	100,000	100,000
2	\$41.40	200,000	200,000
3	\$41.40	200,000	200,000
4	\$41.40	200,000	200,000
5	\$41.40	200,000	200,000
Total		900,000	900,000

Table 4 shows that Entity 1's scheduled Category A bid of 200,000 emission units does not breach its holding limit. If a bid that contain emission units in excess of the holding limit is submitted, only the portion of the bid that is in violation will be rejected, but not the entire bid. Thus, all entities can receive units up to their individual holding limit. With this in mind, Entity 1 receives 100,000 emission units and all others, 200,000. As the distributed total is 900,000 units, which is less than the million units available in Category A, the use of a tie-breaker is not necessary.

Table 5 adds the limit corresponding to the quantity of emission units required for the already mentioned holding limit.

Table 5: Limit Corresponding to the Required Quantity of Emission Units Applied

Entity Name	Current Vintage Holding Limit	Limited Exemption	Compliance Account	General Account	Holding Limit Cap	Required Emission Units
1	11,276,500	4,000,000	15,076,500	0	200,000	200,000
2	11,276,500	4,000,000	15,076,500	0	200,000	200,000
3	11,276,500	4,000,000	15,076,500	0	200,000	200,000
4	11,276,500	4,000,000	15,076,500	0	200,000	185,346
5	11,276,500	4,000,000	15,076,500	0	200,000	45,323

By adding the limit, the bids of the entities in category A are again reduced, as shown in Table 6.

Table 6: Category A units with the Holding Limit and Quantity of Emission Units Required Applied

Entity Name	Category A Price	Bid Emission Units	Allowable Emission Units per Holding Limit	Qualified Emission Units
1	\$41.40	100,000	100,000	100,000
2	\$41.40	300,000	200,000	200,000
3	\$41.40	500,000	200,000	200,000
4	\$41.40	300,000	200,000	185,346
5	\$41.40	500,000	200,000	45,323
Total			900,000	730,669

In the next example, all limits will be considered: the bid guarantee, the holding limit and the limit corresponding to the needs in issuance units.

The financial guarantee is determined by multiplying the total number of units requested by the price of the category.

Table 7: Category A with all Limits Applied

Entity Name	Category A Price	Bid Emission Units	Bid Value	Allowable Emission Units per Holding Limit	Qualified Emission Units
1	\$41.40	100,000	4,140,000 \$	100,000	100,000
2	\$41.40	300,000	15,960,000 \$	200,000	200,000
3	\$41.40	500,000	32,500,000 \$	200,000	200,000
4	\$41.40	300,000	12,420,000 \$	200,000	185,346
5	\$41.40	500,000	26,600,000 \$	200,000	45,323
Total				900,000	730,669

Assume that Entity 1's bid guarantee was \$1,000,000. In this case, although all other limits allow the entity to purchase all units on which it bid, Entity 1 cannot acquire more than 24,154 emission units due to the Bid Guarantee.

C. Bid Fulfillment for Categories A, B and C

So far, the application of the limits has only been demonstrated for category A. The application of the limits is identical for categories B and C. In order to clearly illustrate how the bids are evaluated in the three categories, we will take a simpler example, in which no limit changes the submitted bids. The bids considered here are those shown in Table 1.

Table 2 already showed the result of the evaluation of the offers in category A. Once the evaluation is completed for category A, the evaluation is repeated for category B, using the bids that were submitted for categories B and C. Table 8 shows the rest of the fulfillment process.

Table 1: Combined Evaluation for Categories A and B

Entity Name	Bid Category	Bid Emission Units	Category A units awarded	Emission Units evaluated for Category B	Category B units awarded
1	A	100,000	58,824	Not applicable	0
2	B	300,000	176,471	123,529	123,529
3	C	500,000	294,118	205,882	205,882
4	A	300,000	176,470	Not applicable	0
5	C	500,000	294,117	205,883	205,883
Total			1,000,000		535,294

Since Entities 1 and 4 declared the maximum price they are willing to pay for an emission unit in Category A, the residual portion of their bid is not evaluated in Category B. Entities 2, 3 and 5 could benefit from the fact that there are 1,000,000 Category B emission units and as such could acquire the units they bid on. Since all of the bids were fulfilled following the evaluation of Category B, no Category C emission units will be allocated, even if Entities 3 and 5 submitted an offer in this category.

Table 9 shows the final allocation of the emission units, and Table 10 shows the price that each of the entities will have to pay.

Table 2: Total Number of Emission Units Sold to the Entities

Entity Name	Number of Emission Units per Category		
	A	B	C
1	58,824	0	0
2	176,471	123,529	0
3	294,118	205,882	0
4	176,470	0	0
5	294,117	205,883	0
Total	1,000,000	535,294	0

Table 3: Total Number of Emission Units Sold to the Entities and Total Cost

Entity Name	Cost of Emission Units per Category			Total Cost per Entity
	A	B	C	
1	\$2,435,313.60	-	-	\$2,435,313.60
2	\$7,305,899.40	\$6,571,742.80	-	\$13,877,642.20
3	\$12,176,485.20	\$10,952,922.40	-	\$23,129,407.60
4	\$7,305,858.00	-	-	\$7,305,858.00
5	\$12,176,443.80	\$10,952,975.60	-	\$23,129,419.40
Total	\$41,400,000.00	\$28,477,640.80	-	