

## Attachment B: Examples

### Notice of Sale by Mutual Agreement of GHG Emissions Units

#### Québec's Cap-and-Trade System for GHG Emission Units

This document (Attachment B) provides information and examples of how to determine the amount of a bid guarantee, how holding limits are applied, and examples of sale by mutual agreement bid fulfillment and purchase determinations. This attachment also clarifies how submitted bids that contain bid quantities in excess of the holding limit or that have a maximum value greater than the bid guarantee will be handled. The currency used in sales by mutual agreement is Canadian dollars.

**Only emitters registered in the CITSS system in accordance with the Québec regulation 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 of emission units by mutual agreement.**

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

#### 1. Determining an Entity's Bid Guarantee

**Table 1** presents hypothetical bid submissions for a sale by mutual agreement in which three entities (A, B, and C) are participating. Each row provides the bid value at each category price. The Auction Administrator<sup>1</sup> will accept bids for lots of emissions units; each bid lot represents 1,000 emissions units in a sale by mutual agreement.

**Table 1: Bid Submissions**

Name of Entity	Category Price (Canadian Dollars)	Bid Lots	Bid Number of Allowances	Bid Value
A	44.96	500	500,000	22,480,000
A	50.58	300	300,000	15,174,000
A	56.20	100	100,000	5,620,000
B	44.96	750	750,000	33,720,000
B	50.58	500	500,000	25,290,000
B	56.20	300	300,000	16,860,000
C	44.96	200	200,000	8,992,000
C	50.58	100	100,000	5,058,000
C	56.20	50	50,000	2,810,000

*Bid number of emissions units* = Bid lots × 1,000

*Bid Value* = Number of emissions units × bid price (A, B, or C)

<sup>1</sup> For simplicity, the Auction and Sales by Mutual Agreement Administrator is referred to as the Auction Administrator in all notices regarding auctions and sales by mutual agreement.

To determine the minimum bid guarantee that should be submitted to avoid having bids rejected in bid lots of 1,000 emissions units, when there are multiple bids at different categories, the following process would apply:

### **Example 1: Calculating a Bid Guarantee When Submitting Multiple Bids**

As shown in **Table 1**, Entity A has submitted one bid in each of the three categories. The sale may result in the complete fulfilment of the entity's bid schedule. Thus, the bid guarantee that Entity A should submit to avoid having bids rejected is the sum of the entity's bids.

- Category A: Entity A bid for 500,000 emissions units at a cost of \$22,480,000;
- Category B: Entity A bid for 300,000 emissions units at a cost of \$15,174,000;
- Category C: Entity A bid for 100,000 emissions units at a cost of \$5,620,000 \$.

Entity A's bid schedule shows that it is willing to purchase a total of 900,000 emissions units at a total bid value of \$43,274,000. **Entity A should submit a bid guarantee of at least \$43,274,000 if it wants to buy all the emissions units in its bid schedule.** Each entity's bid guarantee should be equal to or greater than the maximum total value for all bids. Entities should evaluate their bids for all categories against the bid guarantee they provided in the manner illustrated in this example.

Bidders submit a bid guarantee that is used first to satisfy purchases in the lowest-priced category (Category A). Any portion of the bid guarantee remaining after the lowest-priced category purchases are satisfied is subsequently applied to higher-priced categories in succession until either all emissions units are sold or all the qualified bids are filled. A "qualified bid" refers to a bid used in the sale by mutual agreement settlement process after the submitted bids have been evaluated against the holding limits and bid guarantee. The bids are evaluated after the sale by mutual agreement bidding window closes. The Québec Regulation requires bid guarantees to be greater than or equal to the maximum value of the bids to be submitted.

The minimum bid guarantee Entities A, B, and C should submit to avoid having their bid(s) rejected in bundles of 1,000 emissions units by the Auction Administrator would be as follows:

- Entity A – \$43,274,000;
- Entity B – \$75,870,000;
- Entity C – \$16,860,000.

## **2. Entity Bid Evaluation Procedures for Purchase Limits and Holding Limits**

### **2.1. Purchase Limits**

There are no purchase limits for sales by mutual agreement.

### **2.2. Holding Limits**

Holding limits are based on the following formula:

$$HL_i = 0.1 \times \text{Base} + 0.025 \times (P_i - \text{Base})$$

Where:

**HL<sub>i</sub>** = Holding limit for year *i*

**Base** = 25,000,000

**P<sub>i</sub>** = Sum of (1) the annual emissions unit (allowance) budget for year *i* determined by decree pursuant to article 46.7 of the Environment Quality Act and (2) the budget determined by a partner jurisdiction.<sup>2</sup>

**i** = Current budget year

For 2015, the annual budget in Québec and California is 459,800,000 emissions units (allowances):

$$\text{Holding Limit} = 0.1 \times 25,000,000 + 0.025 \times (459,800,000 - 25,000,000)$$

Current Vintage Holding Limit in 2015 = 13,370,000 emissions units (allowances)

During a sale by mutual agreement, the holding limit reflects the number of emissions units an entity holds in its account(s) plus its limited exemption, if applicable. In addition, the holding limit is subject to the current vintage holding limit calculated for the current budget year. The 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 entities' CITSS accounts under the "Holding Limit" tab on the "Account Details" page.

### **2.3. Maximum Number of Emissions Units an Entity Can Hold**

The holding limit is the maximum number of emissions units (current or prior vintage emissions units and emissions units purchased from the reserve account) and early reduction credits an entity may hold in its general account and, if applicable, in its compliance account. If the entity is part of a direct corporate association, the holding limit represents the maximum number of emissions units (current or prior vintage emissions units and emissions units purchased from the reserve account) and early reduction credits that may be jointly held by a group of entities.

The holding limit for current and prior vintage emissions units, for emissions units purchased in a sale by mutual agreement and early reduction credits is detailed in article 32 of the Québec regulation.

#### **Holding Limit and Limited Exemption**

Because emitters must accumulate emissions units to meet regulatory compliance requirements, MDDELCC provides them a limited exemption with respect to their holding limits. The annual value of the limited exemption is based on an entity's estimated emissions for all of its establishments for a given year. For that reason, the limited

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<sup>2</sup> The annual emissions unit (allowance) budget in a linked program includes emissions units (allowances) issued by all participating jurisdictions.

exemption is adjusted each year by the amount of the entity's emissions contained in the most recent verified emissions data report.

To take advantage of the limited exemption, an emitter must transfer emissions units (current or vintage emissions units or units purchased from the reserve) and early reduction credits from its general account to its compliance account. Emitters can then calculate the maximum number of emissions units they can purchase in a sale by mutual agreement.

**Example 2: Determining the Maximum Number of Emissions Units an Entity Can Hold and Purchase to Comply with the Holding Limit**

The term "units" used in this example refers to emissions units (current or vintage emissions units and units purchased from the reserve) and early reduction credits.

For an emitter to be eligible to participate in a sale by mutual agreement, its general account may not hold any emissions units that could be used to cover its GHG emissions for the current compliance period. If that is the case, then the maximum number of units the emitter may hold in 2015 is calculated as:

$$13,370,000 + (\text{Limited exemption} - \text{units in the compliance account})$$

Suppose an entity's limited exemption is equal to 4,000,000 units and it holds 1,000,000 units in its compliance account and an additional 2,000,000 units in its general account. In this case, the maximum number of emissions units the entity can purchase is:

$$\text{Maximum number of units} = 13,370,000 + (4,000,000 - 1,000,000 - 2,000,000) = 14,370,000 \text{ units}$$

However, the emitter will have to transfer 2,000,000 units into its compliance account in order to respect the global holding limit for all of its accounts.

If the emitter holds 4,500,000 units in its compliance account, the number of units it can purchase is:

$$\text{Maximum number of units} = 13,370,000 + (4,000,000 - 4,500,000 - 2,000,000) = 10,870,000 \text{ units}$$

Entities can hold more emissions units in their compliance account than allowed under the limited exemption, but that does not translate into the entity being able to hold more emissions units in its general account. In addition, such a situation would result in a reduction in the number of emissions units entities can possess globally.

Pursuant to article 62 of the Québec regulation, the minister will record emissions units awarded after a sale by mutual agreement in entities' compliance accounts.

**3. Auction Administrator Application of the Bid Evaluation Criteria**

Submitted bids that contain bid quantities in excess of the holding limit or have a maximum value in excess of the bid guarantee will be rejected, in bundles of 1,000 emissions units, until all bid limitations are met. Only that portion of the bid quantity that exceeds one or more limit will be rejected, not the entire bid quantity. "Qualified bids" are

the bids that remain after the submitted bids have been evaluated and reduced to meet all limits.

For example, if the bid guarantee limitation is satisfied by the purchase of no more than 10,000 allowances and the holding limit is satisfied by the purchase of no more than 25,000 allowances, the qualified bid is less than or equal to 10,000 allowances. Only qualified bids are used in the reserve sale settlement process. Determination of qualified bids occurs after the bidding window has been closed and before the final bid fulfillment and purchase determinations are made.

#### **4. Bid Fulfillment**

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

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

#### **Example 3: Bid Fulfillment with a Tiebreaker**

Examples 3, 4, and 5 represent one sale by mutual agreement across Categories A, B, and C, respectively. These examples utilize the bid schedules for Entities A, B, and C in **Table 1** and the bid guarantees in Example 1. In this example, the supply of emissions units in each category is 1,000 bid lots, equal to 1,000,000 emissions units. Example 3 shows the settlement of a sale by mutual agreement when there is an excess demand for emissions units in a category. It shows a tiebreaker in Category A, but the tiebreaker methodology is applicable to any category.

**Table 2** presents the cumulative bids of the three entities for Category A. **These bids are qualified bids and do not violate the holding limit or bid guarantee for each of**

**the entities.** Each entity has submitted a bid guarantee amount sufficient to cover all bids.

**Table 2: Category A Bid Fulfillment with a Tiebreaker**

Entity Name	Category Price (Canadian Dollars)	Bid Lots	Bid Emissions Units	Proportion	Emissions Units Sold
A	44.96	500	500,000	0.34482759	344,827
B	44.96	750	750,000	0.51724138	517,241
C	44.96	200	200,000	0.13793103	137,932
<b>Total</b>		<b>1,450</b>	<b>1,450,000</b>	<b>1.00</b>	<b>1,000,000</b>

Since the quantity of qualified bids is 1,450,000 emissions units and only 1,000,000 units are available for sale from Category A, a tiebreaker procedure is required. Each entity is sold emissions units as a proportion of their qualified bids to the total quantity of qualified bids submitted to the oversubscribed category. For example, Entity A's qualified bid is 500,000 emissions units and its proportion to the total quantity of qualified bids is  $500,000/1,450,000 = 0.34482759$ . The proportion is then multiplied by the number of emissions units available and rounded down to the nearest whole unit, in this case,  $0.34482759 \times 1,000,000 = 344,827$  emissions units.

The rounding down of emissions units results in 999,999 total emissions units sold. To sell the residual emissions unit, each entity is assigned a random number and the emissions unit is awarded to the entity with the lowest random number. In this example, Entity C is assigned the lowest random number and receives the residual emissions unit (changing the number of units sold to Entity C from 137,931 to 137,932).

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

- Entity A – 344,827 emissions units at a total cost of \$15,503,421.90;
- Entity B – 517,241 emissions units at a total cost of \$23,255,155.40;
- Entity C – 137,932 emissions units at a total cost of \$6,201,422.72.

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

#### **4.1. Applying the Holding Limit and Bid Guarantee**

##### **Example 4: Holding Limit Applied With Respect to Bids Detailed in Table 1 and Data in Table 2**

The maximum number of emissions units that can be held by any entity is a function of the holding limit and an entity's limited exemption. In this example, the available space

within an entity’s holding limit is defined as the maximum number of emissions units that can be purchased by an entity at the sale by mutual agreement while in compliance with the holding limit. These emissions units, denoted as “Holding Limit Cap” in **Table 3**, indicate how many emissions units a participant may acquire before exceeding its holding limit.

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

**Table 3** outlines the holding limit cap calculation for the three entities (A, B, and C) given each entity has a limited exemption of 4,000,000 and presents the number of emissions units that can be purchased at the sale by mutual agreement by each entity. Emissions units purchased are placed directly into the compliance account of an entity and are subject to the current vintage holding limit.

**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
A	13,370,000	4,000,000	5,000,000	11,370,000	1,000,000
B	13,370,000	4,000,000	5,000,000	11,370,000	1,000,000
C	13,370,000	4,000,000	6,000,000	10,670,000	700,000

Using the bid schedule in **Table 1**, this example presents the outcome of the sale by mutual agreement after imposing holding limit caps for all three entities.

**Table 4: Category A with Holding Limit Cap Applied**

Entity Name	Category A Price	Bid Lots	Qualified Emissions Units	Proportion	Emissions Units Sold
A	44.96	500	500,000	0.34482759	344,827
B	44.96	750	750,000	0.51724138	517,241
C	44.96	200	200,000	0.13793103	137,932
<b>Total</b>		<b>1,450</b>	<b>1,450,000</b>	<b>1.00</b>	<b>1,000,000</b>

As shown in **Table 4**, the results of the Category A sale are unchanged as no entity exceeded its holding limit. For example, Entity B has space for 1,000,000 emissions units within the holding limit cap but its Category A bid is only 750,000 units. As was the case above, Entity C is sold the residual emissions unit based on the random number draw (changing the number of units sold to Entity C from 137,931 to 137,932).

After the sale of Category A emissions units, the number of remaining purchasable units for each entity is:

- Entity A – 655,173 emissions units;
- Entity B – 482,759 emissions units;
- Entity C – 562,068 emissions units.

**Table 5: Category B with Holding Limit Applied**

Entity Name	Category B Price	Bid Lots	Qualified Emissions Units	Emissions Units Sold
A	50.58	300	300,000	300,000
B	50.58	<b>500</b>	<b>482,000</b>	<b>482,000</b>
C	50.58	100	100,000	100,000
<b>Total</b>		<b>900</b>	<b>882,000</b>	<b>882,000</b>

**Table 5** shows that Entity B’s scheduled Category B bid of 500,000 emissions units (500 bid lots) violates the holding limit as the entity has a remaining holding limit cap of 482,759 emissions units following the Category A sale. Submitted bids that contain bid quantities in excess of the holding limit will be rejected, in bundles of 1,000 emissions units, until the limit is met. Thus, only the portion of the bid that is in violation will be rejected, not the entire bid. In the Category B sale, Entity B is sold 482,000 allowances, its maximum qualified Category B bid.

The total number of Category B emissions units sold and the resulting total cost for each entity is as follows:

- Entity A – 300,000 emissions units at a total cost of \$15,174,000;
- Entity B – 482,000 emissions units at a total cost of \$24,379,560;
- Entity C – 100,000 emissions units at a total cost of \$5,058,000.

After the sale of Category B emissions units, the remaining emissions units that can be purchased by each entity are:

- Entity A – 355,173 emissions units;
- Entity B – 759 emissions units;
- Entity C – 462,068 emissions units.

**Table 6: Category C with Holding Limit Applied**

Entity Name	Category C Price	Bid Lots	Qualified Emissions Units	Emissions Units Sold
A	56.20	100	100,000	100,000
B	56.20	300	0	0
C	56.20	50	50,000	50,000
<b>Total</b>		<b>450</b>	<b>150,000</b>	<b>150,000</b>

**Table 6** shows the results for the sale of Category C emissions units. Entity B cannot participate in the final category of the sale, as any additional purchase of a lot of 1,000 emissions units would exceed its holding limit. Entities A and C have their entire Category C qualified bids fulfilled. After all qualified Category C bids are filled, there are 968,000 emissions units that will remain in the government’s reserve account.

The sale by mutual agreement is complete after the Category C sale. **Table 7** shows the total number of emissions units and the total cost for each entity.



**Table 7: Total Emissions Units Sold to Entities with Holding Limit Applied**

Entity Name	Category Price	Emissions Units Sold	Total Purchase Cost
A	44.96	344,827	15,503,422
A	50.58	300,000	15,174,000
A	56.20	100,000	5,620,000
<b>Total – Entity A</b>		<b>744,827</b>	<b>36,297,422</b>
B	44.96	517,241	23,255,155
B	50.58	482,000	24,379,560
B	56.20	0	0
<b>Total – Entity B</b>		<b>999,241</b>	<b>47,634,715</b>
C	44.96	137,932	6,201,423
C	50.58	100,000	5,058,000
C	56.20	50,000	2,810,000
<b>Total – Entity C</b>		<b>287,932</b>	<b>14,069,423</b>

**Example 5: Bid Guarantee Applied With Respect to Bids Presented in Table 1**

Assume for Example 5 that Entities A, B, and C have submitted the bid guarantee amounts outlined in **Table 8** to correspond with their bid schedules presented in **Table 1**. All submitted bids are within the holding limit for each entity.

**Table 8: Big Guarantees for Entities A, B et C**

Entity Name	Bid Guarantee
A	\$25,000,000
B	\$67,000,000
C	\$13,000,000

The results of the Category A sale, shown in **Table 9**, are unchanged as there is no bid guarantee violation. Entity C is again awarded the residual allowance (changing the number of allowances sold to it from 137,931 to 137,932).

**Table 9: Category A with Bid Guarantee Applied**

Entity Name	Category A Price	Bid Lots	Qualified Emissions Units	Proportion	Emissions Units Sold	Total Purchase Cost
A	44.96	500	500,000	0.34482759	344,827	15,503,422
B	44.96	750	750,000	0.51724138	517,241	23,255,155
C	44.96	200	200,000	0.13793103	137,932	6,201,423
<b>Total</b>		<b>1,450</b>	<b>1,450,000</b>	<b>1.00</b>	<b>1,000,000</b>	

The total purchase cost of emissions units and remaining bid guarantee amounts for each entity are:

- Entity A – \$15,503,422 total purchase cost with a remaining bid guarantee amount of \$9,496,578;
- Entity B – \$23,255,155 total purchase cost with a remaining bid guarantee amount of \$43,744,845;

- Entity C – \$6,201,423 total purchase cost with a remaining bid guarantee amount of \$6,798,577.

Given the bid guarantees in **Table 8**, the results of the Category B sale change as Entity A exceeded its bid guarantee limitation and can spend no more than \$9,496,578; at \$50.58 per emissions unit, it can purchase no more than 187,000 units ( $\$9,496,578/\$50.58 = 187,753$  units, rounded down to the nearest thousand units to 187,753 units). Therefore, Entity A’s qualified Category B bid is reduced to 187,000 emissions units.

**Table 10: Category B with Bid Guarantee Applied**

Entity Name	Category B Price	Bid Lots	Qualified Emissions Units	Emissions Units Sold
A	50.58	300	187,000	187,000
B	50.58	500	500,000	500,000
C	50.58	100	100,000	100,000
<b>Total</b>		<b>900</b>	<b>787,000</b>	<b>787,000</b>

The total purchase cost of emissions units in the Category B sale and remaining bid guarantee amounts for each entity are:

- Entity A – \$9,458,460 total purchase cost with a remaining bid guarantee amount of \$38,118;
- Entity B – \$25,290,000 total purchase cost with a remaining bid guarantee amount of \$18,454,845;
- Entity C – \$5,058,000 total purchase cost with a remaining bid guarantee amount of \$1,740,577.

Entity A cannot purchase additional emissions units from Category C as any additional purchase lots of 1,000 units at the category price would exceed the value of the entity’s bid guarantee.

**Table 11: Category C with Bid Guarantee Applied**

Entity Name	Category C Price	Bid Lots	Qualified Emissions Units	Emissions Units Sold
A	56.20	100	0	0
B	56.20	300	300,000	300,000
C	56.20	50	30,000	30,000
<b>Total</b>		<b>450</b>	<b>330,000</b>	<b>330,000</b>

Entity A has no qualified Category C bid lots and thus is not sold any qualified emissions units. Entity B receives all of the emissions units bid upon. However, the number of emissions units awarded to Entity C is reduced because its bids resulted in its bid guarantee being exceeded: the purchase of 50 bid lots of 1,000 emissions per lot has the effect of exceeding the bid guarantee ( $\$1,740,577/\$56.20 = 30,971$  emissions units, rounded down to the nearest thousand, resulting in the sale of 30,000 units.)

**Table 12** presents the total number of emissions units sold from all three tiers and the total purchase cost for each entity.

**Table 12: Total Emissions Units Sold by Entity with Bid Guarantee Applied**

Entity Name	Category Price	Emissions Units Sold	Total Purchase Cost
A	44.96	344,827	15,503,422
A	50.58	187,000	9,458,460
A	56.20	0	0
<b>Total – Entity A</b>		<b>531,827</b>	<b>24,961,882</b>
B	44.96	517,241	23,255,155
B	50.58	500,000	25,290,000
B	56.20	300,000	16,860,000
<b>Total – Entity B</b>		<b>1,317,241</b>	<b>65,405,155</b>
C	44.96	137,932	6,201,423
C	50.58	100,000	5,058,000
C	56.20	30,000	1,686,000
<b>Total – Entity C</b>		<b>267,932</b>	<b>12,945,423</b>