Attachment B: Examples

Auction Notice
California Cap-and-Trade Program and
Québec Cap-and-Trade System
Joint Auction of Greenhouse Gas Allowances

This Attachment provides information on auction bidding limitations and the settlement price determination process, and provides examples of how to determine the amount of a bid guarantee, how holding and purchase limits are applied, how United States (U.S.) and Canadian currencies are handled, and examples of how joint auctions are settled. This document is guidance only and does not supersede the California Cap-and-Trade Regulation (California Regulation) or the Québec Regulation respecting a cap-and-trade system for greenhouse gas emission allowances (Québec Regulation). In circumstances of uncertainty, the California and Québec Regulations are the controlling documents.

Entities registered under the Québec Cap-and-Trade System (QC entities) may participate in joint auctions in either United States Dollars (USD) or Canadian Dollars (CAD). Joint auction bid evaluations and settlement price determination will be conducted in USD. The value of all bid guarantees and bid prices submitted in CAD will be converted into USD in whole cents using the established Auction Exchange Rate to conduct the auction in a single currency, including the evaluation of bids on a common basis. All bid assessments, the settlement price, and the cost of all allowances awarded will be determined in USD. For any QC entity participating in CAD, the total cost of allowances is first determined in USD (USD settlement price multiplied by number of allowances awarded) and then converted to a CAD value based on the Auction Exchange Rate[1] so the entity can complete financial settlement in CAD.

For entities bidding in CAD, an example of how to determine a bid guarantee in CAD is provided in this attachment and illustrated in Table 1a. Example 9 includes a description of how the CAD amount due for allowances awarded is calculated for QC entities participating in CAD. All other examples throughout this document assume bids are submitted in USD.

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[1] To manage multiple currencies, an Auction Exchange Rate is determined prior to each joint auction.

I.   Determining an Entity's Bid Guarantee

Table 1 presents hypothetical bid submissions for an auction in which five entities are participating. In the following examples, it is assumed that each of the participants is only bidding in the Current Auction and all bids are submitted in USD. Considerations for participation in the Advance Auction are included at the end of this attachment. Each row in Table 1 provides the bid value at each bid price. The Auction Administrator will accept bids for lots of allowances; each bid lot represents a bundle of 1,000 allowances.

Table 1: Maximum Bid Value of Bidder's USD Bids

Entity Name	Bid Price (USD)	Bid Lots	Bid Number of Allowances	Cumulative Allowances	Bid Value at Each Bid Price (USD)
A	$21.26	130	130,000	130,000	$2,763,800
A	$17.29	190	190,000	320,000	$5,532,800
A	$14.46	135	135,000	455,000	$6,579,300
A	$11.62	125	125,000	580,000	$6,739,600
B	$16.67	130	130,000	130,000	$2,167,100
B	$11.34	80	80,000	210,000	$2,381,400
C	$40.35	240	240,000	240,000	$9,684,000
C	$36.50	420	420,000	660,000	$24,090,000
C	$34.59	750	750,000	1,410,000	$48,771,900
D	$20.19	900	900,000	900,000	$18,171,000
D	$17.24	780	780,000	1,680,000	$28,963,200
E	$18.48	300	300,000	300,000	$5,544,000
E	$16.44	252	252,000	552,000	$9,074,880
E	$14.46	85	85,000	637,000	$9,211,020
E	$11.34	35	35,000	672,000	$7,620,480

Table 1 Terminology
Bid Number of Allowances = Bid Lots * 1,000
Cumulative Allowances = Sum of current Bid Number of Allowances and Bid Number of Allowances at each higher Bid Price
Bid Value = Cumulative Allowances * Bid Price

When bidding in an auction, the bid currency, bid price, number of bid lots, and instrument vintage are entered for each bid. For CA entities, the bid currency will be selected as USD. For QC entities, the bid currency will be entered as USD or CAD, based on the currency selection made during the auction application or confirmation of intent to bid process. The cumulative allowances shown in Table 1 are not entered or shown in the bid schedule, but are shown here for illustrative purposes. The "Cumulative Allowances" column indicates the total allowances the entity has submitted bids to purchase at that bid price and all higher bid prices.

To determine the value of your total bid guarantee when there are multiple bids at different bid prices, the following process would apply:

> **Example 1: Calculating a Bid Guarantee When Submitting Multiple Bids in USD**
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> As shown in Table 1, Entity A has submitted four different bids at four different USD bid prices.
>
> - Bid price of $21.26: Entity A bid for 130,000 allowances at a cost of $2,763,800.
>
> - Bid price of $17.29: Entity A bid for 320,000 allowances at a cost of $5,532,800. (320,000 allowances is the sum of 130,000 plus 190,000)
>
> - Bid price of $14.46: Entity A bid for 455,000 allowances at a cost of $6,579,300. (455,000 allowances is the sum of 130,000 plus 190,000 plus 135,000)
>
> - Bid price of $11.62: Entity A bid for 580,000 allowances at a cost of $6,739,600. (580,000 allowances is the sum of 130,000 plus 190,000 plus 135,000 plus 125,000)
>
> Entity A's bid schedule shows that it is willing to purchase a total of 580,000 allowances at a price of $11.62 at a maximum bid value of $6,739,600. **Entity A should submit a bid guarantee of at least $6,739,600 if it wants to buy all the allowances in its bid schedule.**

Using the same evaluation process for the bid schedules submitted by Entities B to E, the maximum total value of each entity's bid schedule is determined, shown above in Table 1, highlighted in gray. Note that for Entity E, the highest value in the bid schedule is the third bid and that, if the settlement price dropped to the reserve price, Entity E's total cost would fall relative to the third bid at $14.46 based on the lower settlement price.

Based on this example, each entity's bid guarantee should be equal to or greater than the maximum total value for the planned bid schedule in Table 1. Entities bidding in an auction will be limited to incurring a total cost less than or equal to the dollar amount of bid guarantee submitted and should evaluate their bids against the bid guarantee they provided in the manner illustrated in this example. The California Regulation requires bid guarantees to be greater than or equal to the maximum value of the bids to be submitted.

Assuming bids are submitted in USD, the minimum bid guarantee Bidders A to E should submit to avoid having their bid(s) rejected in lots of 1,000 allowances by the Auction Administrator would be as follows:

- Bidder A – $6,739,600

- Bidder B – $2,381,400

- Bidder C – $48,771,900

- Bidder D – $28,963,200

- Bidder E – $9,211,020

Example 2: Calculating a Bid Guarantee When Submitting Multiple Bids in CAD

Example 1 above assumes an entity submitted bids in USD. A QC entity has the option of participating in a joint auction in USD or CAD, and must submit bids in the currency chosen in the auction application or confirmation of intent to bid. The value of all bids and bid guarantees submitted in CAD will be converted into USD in whole cents using the established Auction Exchange Rate to conduct the auction in a single currency, including the evaluation of bids on a common basis. A QC entity participating in CAD should consider the effect of a change in the exchange rate between the day the bid guarantee is submitted and the Auction Exchange Rate in effect for a joint auction when determining the amount of the bid guarantee. The USD value of a bid guarantee submitted in CAD will change as a result of a change in the exchange rate from the time the bid guarantee is submitted to the Auction Exchange Rate in effect for a joint auction.

Table 1a is a variation of Table 1 that presents the same bid schedule previously described for Entity A, except the bid currency is CAD and for this example the USD to CAD Auction Exchange Rate is 1.1000. A bid price of $15.91 CAD converts to $14.46 USD ($15.91/1.1000 = $14.4636, which rounds to $14.46) and a bid guarantee of $7,413,560 CAD converts to $6,739,600 USD ($7,413,560/1.1000 = $6,739,600).

For the purpose of this attachment and all examples, the Auction Exchange Rate is 1.1000 (USD to CAD) and the Auction Reserve Price for both the Current and Advance Auction is $11.34 USD / $12.47 CAD per allowance.

Table 1a: Maximum Bid Value of Bidder A's CAD Bids

Entity Name	Bid Price (CAD)	Bid Price Value (USD)	Bid Lots	Bid Number of Allowances	Cumulative Allowances	Bid Value at Each Bid Price (USD)	Bid Value at Each Bid Price (CAD)[2]
A	$23.39	$21.26	130	130,000	130,000	$2,763,800	$3,040,180
A	$19.02	$17.29	190	190,000	320,000	$5,532,800	$6,086,080
A	$15.91	$14.46	135	135,000	455,000	$6,579,300	$7,237,230
A	$12.78	$11.62	125	125,000	580,000	$6,739,600	$7,413,560

The Quebec Regulation requires that the maximum amount of an entity's bids must not exceed the amount of the bid guarantee submitted. If Entity A is participating in CAD, and assuming an Auction Exchange Rate of 1.1000 (USD to CAD), the minimum bid guarantee Entity A should submit to avoid having its bids limited by the Auction Administrator would be as follows:

Entity A – maximum value of bids submitted is $7,413,560 CAD and thus, this is the minimum amount that Entity A should submit to avoid having its bid(s) rejected in lots of 1,000 allowances by the Auction Administrator. With an Auction Exchange Rate of 1.1000 USD to CAD, that is equal to $6,739,600 USD, which is the bid guarantee amount that will be used in the Auction Platform.

II. Bid Guarantees for Current and Advance Auctions

Bidders submit a single bid guarantee for both the Current Auction and Advance Auction. Once the Current Auction settlement price has been determined, the entity's total cost for allowances awarded in the Current Auction (USD settlement price multiplied by number of allowances awarded) will be determined and deducted from the bid guarantee amount, and any bid guarantee amount remaining will be applied to the Advance Auction. The bid guarantee is applied to the Current Auction then Advance Auction in the form of USD currency, regardless of the currency selected by the bidder.

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[2] The CAD value at each bid price is calculated using the following formula: Cumulative Total Allowances Bid * USD Bid Price * Exchange Rate (1.1000).

Example 3: Application of a Single Bid Guarantee to Current and Advance Auction

If Entity A in Table 1 submitted a bid guarantee of $10,000,000 USD and the auction settlement price for the Current Auction is $14.46 USD, then the cost of allowances awarded in the Current Auction is $6,579,300. The remaining bid guarantee amount of $3,420,700 USD would be available to be applied to bids submitted for the Advance Auction.

455,000 allowances * $14.46 = $6,579,300 USD

$10,000,000 - $6,579,300 = $3,420,700 USD

For QC entities that have selected to participate in CAD, the value of all bids and bid guarantees submitted in CAD will be converted into USD in whole cents using the established Auction Exchange Rate. If Entity A in Table 1a submitted a bid guarantee of $10,000,000 CAD, the USD value would be $9,090,909 ($10,000,000/1.1000). If the auction settlement price for the Current Auction is $14.46 USD, the cost of allowances awarded would again be $6,579,300 USD (455,000 allowances * $14.46), and the remaining bid guarantee amount available for the Advance Auction would be $2,511,609 USD.

$9,090,909 (USD) - $6,579,300 (USD) = $ 2,511,609 (USD)

III. Entity Bid Evaluation Procedures for Purchase Limits and Holding Limits

Example 4 and Example 5 illustrate how bidders should evaluate their Current Auction bid schedules for the purchase limit and holding limits.

A. Purchase Limits

The purchase limits that apply to one entity or a group of entities with a direct corporate association for the auction of current vintage allowances are as follows:

For CA entities:
- The purchase limit for covered entities and opt-in covered entities will be twenty (20) percent of the allowances offered for auction;
- The purchase limit for electrical distribution utilities will be forty (40) percent of the allowances offered for auction; and
- The purchase limit for general market participants is four (4) percent of the allowances offered for auction.

For QC entities:

- The purchase limit for emitters who are eligible for the allocation of allowances free of charge is twenty (20) percent of the allowances offered for auction;
- The purchase limit for emitters who are not eligible for free allowance allocation is forty (40) percent of the allowances offered for auction; and
- The purchase limit for QC participants is four (4) percent of the allowances offered for auction.

The purchase limit percentages apply to the number of allowances offered for sale in the Current Auction as presented in the Auction Notice.

The purchase limit for the Advance Auction is twenty-five (25) percent of all Advance Auction allowances offered for sale for all California and Québec auction participants.

Example 4: Determining an Entity's Current Auction Purchase Limit

For each category of entity, multiply the purchase limit percentage for the entity category by the total amount of allowances available for auction. The purchase limit is determined separately for the Current Auction and the Advance Auction. The Current Auction purchase limit for an entity that is a CA electrical distribution utility or a QC emitter that is not eligible to receive an allowance allocation free of charge is calculated as:

Allowances offered for sale in the Current Auction = 4,020,000 allowances

Current Auction purchase limit percentage = 40 percent

Purchase limit = 4,020,000 * 0.40

Purchase limit = 1,608,000 allowances

B.   Holding Limits

Holding limits apply to all entities across all linked jurisdictions and are based on the following formula:

Holding limit = 0.1 * Base + 0.025 * (Annual Allowance Budget – Base)

Where:
"Base" equals 25 million metric tons of carbon dioxide equivalent (CO_2e).

"Annual Allowance Budget" is the number of allowances issued for the current budget year.[3]

For 2014, the annual budget in California and Québec is 182,900,000 allowances.

Holding Limit = 0.1 * 25,000,000 + 0.025 * (182,900,000 - 25,000,000)

2014 Holding Limit = 6,447,500 allowances

C.   Maximum Number of Allowances an Entity Can Hold

The holding limit is the maximum number of allowances an entity may have in its holding account or the maximum number of allowances that may be jointly held by a group of entities with a direct corporate association.

Allowances purchased in the Current Auction are subject to the current vintage holding limit detailed in section 95920(c)(1) of the California Regulation and Article 32 of the Québec Regulation. The current vintage holding limit applies to allowances from the current calendar year, previous calendar years, and allowances purchased from the Allowance Price Containment Reserve and the Minister's reserve account.

There is a separate holding limit for each calendar year of allowances with a vintage year beyond the current calendar year. For the Advance Auction, allowances purchased in the Advance Auction are subject to the holding limit for the vintage year of the allowances sold at that Advance Auction pursuant to section 95920(c)(2) of the California Regulation and Article 32 of the Québec Regulation.

A covered entity or emitter may exempt a limited number of allowances from the current vintage holding limit by transferring them to its compliance account. This "limited exemption" is described in section 95920(d)(2) of the California Regulation and Article 32 of the Québec Regulation. The limited exemption is based on an entity's emissions, and is designed to allow covered entities the ability to accumulate the allowances they need for compliance. For that reason, the limited exemption is increased each year by the amount of the entity's emissions contained in the most recent verified emissions data report. The limited exemption is decreased at the end of the year following the close of a compliance period, after the entity has completed its surrender obligation for the compliance period.

Entities can calculate the maximum number of allowances they can hold using the following example (Example 5) and using the holding limit values from Table 2.

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[3] The annual allowance budget in a linked program includes allowances issued by all participating jurisdictions.

Example 5: Determining the Maximum Number of Allowances an Entity Can Hold and Purchase to Comply with the Holding Limit

The maximum number of allowances an entity can hold at one time equals the holding limit plus the limited exemption. The limited exemption is the number of allowances that are exempt from the holding limit calculation if held by an entity in its compliance account. Assuming an entity takes full advantage of the limited exemption, in 2014 the maximum number of allowances that may be held is calculated as:

Maximum Number of Allowances Held =

6,447,500 + Limited Exemption

When submitting bids in an auction, an entity may not exceed the applicable holding limits. Suppose an entity's limited exemption is equal to 4,000,000 metric tons and it holds 1,000,000 allowances in its compliance account and an additional 2,000,000 vintage 2014 allowances in its holding account; in this case, the maximum number of allowances the entity can purchase and stay within the holding limit is:

Maximum Number of Allowances Purchasable = 6,447,500 + 4,000,000 – 1,000,000 – 2,000,000 = 7,447,500 allowances.

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

Maximum Number of Allowances Purchasable = 6,447,500 + 4,000,000 – 4,500,000 – 2,000,000 = 3,947,500.

The California Regulation allows the Executive Officer to transfer allowances awarded in an auction to an entity's holding account or its compliance account as needed to facilitate compliance with the holding limit. In Example 5, for a CA entity with a limited exemption of 4,000,000 and 1,000,000 allowances in its compliance account, 3,000,000 allowances purchased at auction could be transferred directly into the entity's compliance account, if no transfers were made prior to the distribution of allowances.

Per the Québec Regulation, Québec will not deposit allowances directly into an emitter's compliance account. Therefore, QC entities purchasing allowances that would

bring their total beyond their holding limit will have to transfer any allowances in excess of the holding limit into their compliance account. It will be their responsibility to transfer those allowances within five (5) days of allowance distribution to conform to the holding limit as indicated in the Article 32 of Québec Regulation.

In Example 5, a QC entity purchasing allowances at auction that would exceed the current vintage holding limit will have to transfer the excess allowances into their compliance account. It is the entity's responsibility to transfer sufficient allowances within five (5) days of the distribution of allowances to conform to the holding limit as indicated in the Article 32 of Québec Regulation. If allowances exceeding the holding limit remain in the holding account five (5) days after the auction allowance distribution, the excess allowances will be removed and put back in the Auction Account of the Minister to be sold in a subsequent auction.

IV.   Auction Administrator Application of the Bid Evaluation Criteria

The Auction Administrator will not accept any bids for which the bid price is less than the Auction Reserve Price. The Auction Reserve Price is stated in both USD and CAD and bid prices will be evaluated against the Auction Reserve Price in the currency in which the bids are submitted (i.e., USD bids must be submitted at a price equal to or above the Auction Reserve Price in USD, and CAD bids must be at a price equal to or above the Auction Reserve Price in CAD). For the purposes of this Attachment and all examples, the Auction Reserve Price for both the Current Auction and Advance Auction is $11.34 USD and $12.47 CAD.

Submitted bids that contain bid quantities in excess of the purchase limit or the holding limit, or have a maximum value in excess of the bid guarantee at the settlement price, will be rejected, in bundles of 1,000 allowances, until all limits are met. Only that portion of the bid quantity that exceeds one or more limit will be rejected, not the entire bid quantity. Bid quantities that have been rejected will not be considered in determining the settlement price. "Qualified bids" are the bids that remain after the submitted bids have been evaluated and reduced to meet all limits.

Determination of qualified bids occurs after the bidding window has been closed and before the settlement price is determined. The process is the same for the Current Auction and the Advance Auction. The result is a set of qualified bids from which the settlement price is determined for both the Current Auction and the Advance Auction.

Table 2 shows sample bid evaluation data for a Current Auction where 4,020,000 allowances are available. This data will be used to demonstrate how the Auction Administrator will evaluate each entity's bids submitted for the Current Auction.

In some cases, a bid may exceed more than one evaluation criterion (i.e., purchase limit, holding limit, or bid guarantee value). When a bid is limited by more than one criterion, the bid will be reduced in lots of 1,000 allowances to the most limiting constraint.

Table 2: Sample Bid Evaluation Data

Entity Name	Entity Type	Purchase Limit (Number of Allowances)	Holding Limit (Number of Allowances)[4]	Bid Guarantee (USD)
A	QC Emitter	804,000	6,447,500	$6,739,600
B	QC Participant	160,800	6,447,500	$2,381,400
C	CA Electrical Distribution Utility	1,608,000	6,447,500	$60,766,900
D	CA Electrical Distribution Utility	1,608,000	6,447,500	$28,427,200
E	QC Emitter	1,608,000	6,447,500	$13,207,270

Purchase limits in the examples throughout this Attachment are based on the percentages assigned to each entity type as described previously and assuming the following:
- Entity A is a QC emitter eligible to receive free allocation of allowances
- Entity B is a QC participant
- Entity C is a CA Electrical Distribution Utility
- Entity D is a CA Electrical Distribution Utility
- Entity E is a QC emitter not eligible to receive free allocation of allowances

In the sample bid evaluation data in Table 2, the bid guarantees represent the bid guarantees submitted. In some cases, the bid guarantee is different from the maximum total value of an entity's bid schedule shown in Table 1. This is done to demonstrate how the bid guarantee criteria impacts bids if the bid guarantee is less than the bid value at a specific bid price and how the bid guarantee is used in the Advance Auction.

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[4] This column denotes the number of current vintage allowances that can be purchased within the current vintage holding limit. Assumes holding account balance is zero and that allowances in the compliance account are exactly equal to the limited exemption.

Since the bid guarantee and bid prices submitted in CAD are converted to USD before any bid evaluations or determination of the settlement price, the bid evaluation process is the same for bids submitted in USD and CAD.

A.   Purchase Limit Evaluation

Example 6: Purchase Limit Evaluation by Comparison of Bid Schedules in Table 1 Against the Sample Bid Evaluation Data Criteria in Table 2.

Entity A: Entity A's bids are within the purchase limit of 804,000 allowances.

Entity B: Entity B's bids are not within the purchase limit as the cumulative total of the 2nd bid is 210,000 allowances and Entity B can only purchase 160,800 allowances. Submitted bids that contain bid quantities in excess of the purchase limit will be rejected in bundles of 1,000 allowances until the purchase limit is met. Thus, only the portion of the bid that exceeds a limit will be rejected, not the entire bid. Entity B's 1st bid is for 130,000 allowances, but it can purchase no more than an additional 30,000 allowances (160,000 – 130,000). Thus, Entity B's 2nd bid would be reduced to 30,000 allowances (or 30 bid lots). This qualified bid quantity would be used in calculating the settlement price.

Entity C: Entity C's bids are within the purchase limit of 1,608,000 allowances.

Entity D: Entity D's bids are not within the purchase limit as the cumulative total of bids, 1,680,000 allowances, exceeds the purchase limit of 1,608,000. Submitted bids that contain bid quantities in excess of the purchase limit will be rejected in bundles of 1,000 allowances until the purchase limit is met. Thus, only the portion of the bid that exceeds the limit will be rejected, not the entire bid. Entity D's 1st bid is for 900,000 allowances, but it can purchase no more than an additional 708,000 allowances (1,608,000 – 900,000). Thus, Entity D's 2nd qualified bid would be limited to 708,000 allowances (or 708 bid lots).

Entity E: Entity E's bids are within the purchase limit of 1,608,000 allowances.

B.   Holding Limit Evaluation

In Example 7, the available space within an entity's holding limit is defined as the maximum number of allowances that can be purchased by an entity at the auction while in compliance with the holding limit. These allowances, denoted as 'Holding Limit' in Table 2, indicate how many allowances an auction participant may acquire before exceeding their holding limit. This is described in Attachment

A as the holding limit cap that Jurisdictions transmit to the Auction Administrator prior to the auction.

Example 7: Holding Limit Evaluation by Comparison of Bids in Table 1 Against the Sample Bid Evaluation Data in Table 2.

All entities in this example meet the holding limit requirements; no bidder has bid for more than 6,447,500 cumulative allowances. Assuming there are no current vintage allowances in entity holding accounts prior to the auction, and no allowances are transferred into the holding account prior to the delivery of auction allowances, all allowances purchased at auction will be placed in the holding accounts and will be within the current vintage holding limit.

C. Bid Guarantee Evaluation

The California Regulation requires the amount of the bid guarantee to be greater than or equal to the maximum value of the bids to be submitted. Prior to auction settlement, the Auction Administrator will evaluate the submitted bid guarantee for each entity for the Current Auction in USD, regardless of the currency in which bids are submitted. As an entity provides a single bid guarantee, any funds remaining once the Current Auction settlement price has been determined will be applied to the Advance Auction. The settlement price algorithm is structured to recognize that a bid that is limited by the bid guarantee at a submitted bid price may not be limited as much or limited at all at potential settlement prices, not just those submitted by the bidder. If a bid quantity is limited by the bid guarantee at the submitted bid price, but could be fulfilled if the settlement price is lower than the submitted bid price, the bidder will be awarded allowances up to the bid quantity and the limits of the bid guarantee.

Example 8 below illustrates an example in which an entity's bid guarantee as provided in Table 2 is insufficient to cover its maximum total bid cost provided in Table 1. All bid guarantee examples below reflect a USD bid guarantee value.

Example 8: Bid Guarantee Evaluation
Entity A: Entity A's bid guarantee of $6,739,600 USD is sufficient to cover its maximum total bid cost of $6,739,600 USD.

Entity B: Entity B's bid guarantee of $2,381,400 USD is sufficient to cover its maximum total bid cost of $2,381,400 USD.

Entity C: Entity C's bid guarantee of $60,766,900 USD is sufficient to cover its maximum total bid cost of $48,771,900 USD.

Entity D: Entity D's bid guarantee of $28,427,200 USD is not sufficient to cover its maximum total bid cost of $28,963,200 USD. The Auction Administrator would reduce Entity D's 2nd bid to 748,000 allowances. A total of 1,648,909 allowances can be purchased with the submitted bid guarantee (28,427,200 / $17.24 USD = 1,648,909). The total number of allowances that can be purchased through the 2nd bid is 748,000 (1,648,000 – 900,000).

Thus, Entity D's 2nd bid would be limited to 748,000 allowances (or 748 bid lots) based on the bid guarantee limitation. See Table 1 for Entity D's bidding details.

Entity D's 2nd bid does not pass the purchase limit evaluation or the bid guarantee evaluation. When a bid is limited by more than one criterion, the bid will be reduced in lots of 1,000 allowances to the most limiting constraint. A reduction of the 2nd bid to 748,000 allowances would meet the bid guarantee limit but not the purchase limit, which requires the 2nd bid to be reduced to 708,000 allowances. The bid must pass all three (3) evaluations to be qualified and in this example, the most limiting criterion is the purchase limit. The total allowances that can be purchased through the 2nd bid in order to meet the purchase limit are 708,000 (1,608,000 – 900,000 = 708,000). Entity D's qualified second bid is 708,000 allowances (or 708 bid lots).

Entity E: Entity E's bid guarantee of $13,207,270 USD is sufficient to cover its maximum total bid cost of $9,211,020 USD.

Table 3 shows the qualified bids after the Auction Administrator has completed the bid evaluation process, with the adjusted bid quantities shaded in grey. These are the bids that would be used in calculating the settlement price. Please note that the cumulative allowances and bid costs are also adjusted to reflect adjusted bid quantities where applicable.

Table 3: Qualified Bids Accepted by Auction Administrator

Entity Name	Bid Price (USD)	Qualified Bid Lots	Qualified Bid Allowances	Cumulative Qualified Bid Allowances	Bid Value at Each Bid Price (USD)
A	$21.26	130	130,000	130,000	$2,763,800
A	$17.29	190	190,000	320,000	$5,532,800
A	$14.46	135	135,000	455,000	$6,579,300
A	$11.62	125	125,000	580,000	$6,739,600
B	$16.67	130	130,000	130,000	$2,167,100
B	$11.34	30	30,000	160,000	$1,814,400
C	$40.35	240	240,000	240,000	$9,684,000
C	$36.50	420	420,000	660,000	$24,090,000
C	$34.59	750	750,000	1,410,000	$48,771,900
D	$20.19	900	900,000	900,000	$18,171,000
D	$17.24	708	708,000	1,608,000	$27,721,920
E	$18.48	300	300,000	300,000	$5,544,000
E	$16.44	252	252,000	552,000	$9,074,880
E	$14.46	85	85,000	637,000	$9,211,020
E	$11.34	35	35,000	672,000	$7,620,480

V.   Settlement Price Determination Procedures

The process to determine the settlement price requires that the Auction Administrator rank qualified bids from all bidders from highest to lowest bid price using the USD value of the bids. Allowances will be awarded to bidders, beginning with the highest qualified bid price and moving to successively lower qualified bid prices, until the entire supply of allowances is exhausted or all qualified bids have been filled. Each bid will be assessed against purchase and holding limits and the value of the bid guarantee as described in the previous section. The bid price at which all available allowances are sold or all qualified bids are filled becomes the settlement price; this is the price per allowance that all bidders will be charged for the allowances won in the auction. Bids submitted at prices below the settlement price will not be awarded any allowances.

In determining the settlement price, the Auction Administrator may find that the quantity of allowances bid for at a specific price exceeds the remaining allowances available for sale. When this occurs, a tiebreaker procedure is used to determine the number of allowances awarded to each bidder.

This section provides three (3) examples of the calculation of the settlement price. The first example (Example 9), immediately below, results in the sale of all available allowances with the last winning bid completely exhausting the available allowances. The second example (Example 10) shows the settlement price determination when an entity's bid schedule is limited by the entity's submitted bid guarantee. The third example (Example 11) illustrates the tiebreaker procedure.

Example 9: Settlement Price When the Last Winning Bid Exhausts the Available Allowances

This example is for bids submitted in the Current Auction. (The process for determining the settlement price is the same for the Current and Advance Auction.) Qualified bids from Entities A to E in the bid evaluation process provided in Table 3 are used in this settlement price example. The quantity of allowances available for sale is 4,020,000.

All qualified bids submitted by all bidders are ranked from the highest qualified bid price to the lowest qualified bid price using the USD value of the bid prices. In Table 4, the 5th column (Cumulative Allowances) shows cumulative allowances, that is, the sum of allowances bid for at that bid price and the number of allowances bid at all higher bid prices, not cumulative allowances bid for by entity. The 6th column (Allowance Supply Remaining) shows allowances remaining to be sold, which is the difference between the allowance supply of 4,020,000 and the Cumulative Allowances in the 5th column.

Table 4: Single Round, Sealed Bid Format Example

Entity Name	Bid Price (USD)	Qualified Bid Lots	Qualified Bid Allowances	Cumulative Allowances	Allowance Supply Remaining
C	$40.35	240	240,000	240,000	3,780,000
C	$36.50	420	420,000	660,000	3,360,000
C	$34.59	750	750,000	1,410,000	2,610,000
A	$21.26	130	130,000	1,540,000	2,480,000
D	$20.19	900	900,000	2,440,000	1,580,000
E	$18.48	300	300,000	2,740,000	1,280,000
A	$17.29	190	190,000	2,930,000	1,090,000
D	$17.24	708	708,000	3,638,000	382,000
B	$16.67	130	130,000	3,768,000	252,000
E	$16.44	252	252,000	4,020,000	0
A	$14.46	135	135,000	4,155,000	0
E	$14.46	85	85,000	4,240,000	0
A	$11.62	125	125,000	4,365,000	0
B	$11.34	30	30,000	4,395,000	0
E	$11.34	35	35,000	4,430,000	0

At the highest bid price of $40.35 USD, only 240,000 of the allowances have been sold and 3,780,000 allowances remain. At the next lower bid price, $36.50 USD, a total of 660,000 allowances have been sold and 3,360,000 allowances remain to be sold. Continuing down the 6th column, at the bid price of $16.44 USD, the entire available supply of allowances is sold and qualified bids at prices below $16.44 USD cannot be filled. Hence, the settlement price is $16.44 (shaded in grey in Table 4) and 4,020,000 allowances are sold at a total bid cost of $66,088,800 USD.

Entity A would win 320,000 allowances from its first two bids, its 3rd and 4th bids would be unsuccessful, and its total bid cost is $5,260,800 USD (320,000 * $16.44 USD). Allowances won by each bidder and their respective total bid cost are shown in Table 5. If Entity A is a QC entity and has submitted a bid

guarantee and bids in CAD, the total bid cost of $5,260,800 USD will be converted to CAD for payment. With an Auction Exchange Rate of 1.1000, this bidder's CAD payment due is $5,786,880 (320,000 * $16.44 * 1.1 = $5,786,880).

Table 5: Winning Bids Example

Entity Name	Allowances Won	Total Cost (USD)	Total Cost (CAD)
A	320,000	$5,260,800	$5,786,880
B	130,000	$2,137,200	n/a
C	1,410,000	$23,180,400	n/a
D	1,608,000	$26,435,520	n/a
E	552,000	$9,074,880	n/a
Total	4,020,000	$66,088,800	n/a

In Example 9, with the settlement price of $16.44 USD Entity D is limited only by the purchase limit.

Example 10: Settlement Price Determination When an Entity's Bid Schedule is Limited by the Entity's Submitted Bid Guarantee

Quantity of allowances available for sale = 4,405,000.

Example 10 includes the same bid submissions as used in Example 9, the first settlement price example. However, the larger supply of allowances would increase the purchase limits to the following:

Table 6: Sample Bid Evaluation Data

Entity Name	Purchase Limit (Number of Allowances)	Holding Limit (Number of Allowances)	Bid Guarantee (USD)
A	881,000	6,447,500	$6,739,600
B	176,200	6,447,500	$2,381,400
C	1,762,000	6,447,500	$60,766,900
D	1,762,000	6,447,500	$28,427,200
E	1,762,000	6,447,500	$13,207,270

Entity A: Entity A's bids are still within the purchase limit.

Entity B: Entity B's bids are still <u>not</u> within the purchase limit. Given Entity B's first bid of 130,000 allowances, its 2nd bid is reduced to 46,000 allowances (or 46 bid lots) to comply with the purchase limit.

Entity C: Entity C's bids are still within the purchase limit.

Entity D: Entity D's 2nd bid is within the purchase limit (1,762,000 allowances is greater than the 1,680,000 allowances Entity D submitted bids to purchase). However, Entity D's bid guarantee is limiting, as the total bid cost of $28,963,200 USD exceeds the bid guarantee of $28,427,200 USD. Thus, Entity D's 2nd bid at $17.24 USD would be limited to 748,000 allowances.

Entity E: Entity E's bids are still within the purchase limit.

Table 7 shows the calculation of the settlement price determination with a bid guarantee limit. In this instance, the settlement price falls to $11.62 USD, the price at which all allowances are sold.

While Entity D's 2nd bid is limited by the bid guarantee at a price of $17.24 USD as detailed in Example 8, Entity D can purchase all of the 1,680,000 allowances it submitted bids to purchase at the settlement price of $16.44 USD because the total bid cost is less than its bid guarantee. Entity D's bid guarantee is $28,427,200 USD. As such, its bid of 1,680,000 allowances (Table 1 total for Entity D) is within the bid guarantee (1,680,000 * $16.44 USD = $27,619,200 USD).

Table 7: Settlement Price Determination with a Bid Guarantee Limit

Entity Name	Bid Price (USD)	Qualified Bid Lots	Qualified Bid Allowances	Cumulative Allowances	Allowance Supply Remaining
C	$40.35	240	240,000	240,000	4,165,000
C	$36.50	420	420,000	660,000	3,745,000
C	$34.59	750	750,000	1,410,000	2,995,000
A	$21.26	130	130,000	1,540,000	2,865,000
D	$20.19	900	900,000	2,440,000	1,965,000
E	$18.48	300	300,000	2,740,000	1,665,000
A	$17.29	190	190,000	2,930,000	1,475,000
D	$17.24	748	748,000	3,678,000	727,000
B	$16.67	130	130,000	3,808,000	597,000
E	$16.44	252	252,000	4,060,000	345,000
D	$16.44	32	32,000	4,092,000	313,000
A	$14.46	135	135,000	4,227,000	178,000
E	$14.46	85	85,000	4,312,000	93,000
A	$11.62	125	125,000[5]	4,437,000	0
B	$11.34	46	46,000	4,483,000	0
E	$11.34	35	35,000	4,518,000	0

Table 7 shows a "bid" shaded in grey for Entity D at $16.44 USD. This is not a bid Entity D submitted, but as it is a bid price that Entity E submitted, it is a potential settlement price. At the bid price of $16.44 USD, all 780,000 allowances that Entity D bid at $17.24 USD may be purchased. This bid price is included to demonstrate the first bid price that is a potential settlement price at which Entity D can purchase all 1,680,000 allowances with the submitted bid guarantee, since Entity D's total bid cost at $16.44 is $27,619,200 USD.

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[5] Entity A's bid at $11.62 would be awarded a total of 93,000 allowances, the total allowance supply remaining.

The settlement price algorithm is structured to recognize that a bid that is limited by the bid guarantee at a submitted bid price may not be limited as much or limited at all at potential settlement prices, not just those submitted by the bidder. If a bid quantity is limited by the bid guarantee at the submitted bid price, but could be fulfilled if the settlement price is lower than the submitted bid price, the bidder will be awarded allowances up to the bid quantity and the limits of the bid guarantee. However, the settlement price algorithm will not sell the bidder more allowances than they bid for; in Example 10 above, Entity D will not win any more than 1,680,000 allowances.

For a Current Auction allowance supply of 4,405,000 allowances, the allowances won by each bidder and their respective total bid cost are shown in Table 8.

Table 8: Winning Bids Example

Entity Name	Allowances Won	Total Cost (USD)
Entity A	548,000	$6,367,760
Entity B	130,000	$1,510,600
Entity C	1,410,000	$16,384,200
Entity D	1,680,000	$19,521,600
Entity E	637,000	$7,401,940
Total	4,405,000	$51,186,100

Example 11: Tiebreaker Example

Section 95911(e)(5) of the California Regulation and Article 52 of the Québec Regulation specify that the tiebreaker procedure is used when the sum of bid quantities at a specific bid price exceeds the remaining allowances available for sale. During the tiebreaker procedure, each entity that has submitted qualified bids at or above the settlement price will be awarded allowances based on its share of submitted and qualified bids at the settlement price. An entity does not have to submit a bid at the settlement price to be included in the tiebreaker, but must have additional ability to purchase at the settlement price based on the bids submitted.

Each entity is awarded allowances based on its share times the number of allowances remaining to be sold, rounded down to the nearest whole allowance. If there are allowances remaining as a result of rounding down, those allowances are awarded to entities by assigning a random number to each entity. The

remaining allowances are awarded to entities starting with the lowest assigned random number and proceeding to the next higher random number until all remaining allowances are awarded. Under the tiebreaker procedure, allowances are not sold in lots of 1,000.

Table 10 illustrates the bids from a single round, sealed bid auction format, but is designed to highlight the tiebreaking process as well as what happens when the number of allowances offered for sale is not easily divisible by 1,000. Example 11 includes the same bid submissions as used in Examples 9 and 10. The quantity of allowances available for sale is 4,100,000. The bid evaluation data for this example including bid guarantee amount, purchase limit, and holding limit for each entity is provided in Table 9.

Table 9: Sample Bid Evaluation Data

Bidder Name	Purchase Limit (Number of Allowances)	Holding Limit (Number of Allowances)*	Bid Guarantee (USD)
A	820,000	6,447,500	$6,739,600
B	164,000	6,447,500	$2,381,400
C	1,640,000	6,447,500	$60,766,900
D	1,640,000	6,447,500	$28,427,200
E	1,640,000	6,447,500	$13,207,270

Entity A: Entity A's bids are still within the purchase limit.

Entity B: Entity B's 2nd bid is still not within the purchase limit. Entity B's 2nd bid is reduced to 34,000 (or 34 bid lots) to comply with the purchase limit.

Entity C: Entity C's bids are still within the purchase limit.

Entity D: Entity D's 2nd bid is still not within the purchase limit but is not reduced as much as in Example 9, the first settlement price example, since the allowance supply is larger. In this example, Entity D's 2nd bid is reduced to 740,000 allowances (or 740 bid lots). Entity D's purchase limit is still more limiting than the submitted bid guarantee of $28,427,200 USD.

Entity E: Entity E's bids are still within the purchase limit.

Table 10 shows the determination of the settlement price for the larger allowance supply of 4,100,000 allowances. Again, bids from all bidders are ranked from highest bid price to lowest bid price. At the settlement price in Example 9 of $16.44 USD, there are 48,000 allowances remaining to be sold, but at the next bid price of $14.46 USD, Entities A and E want to purchase 220,000 allowances (as indicated in Table 8 by the negative number of allowances remaining for sale at a price of $14.46 USD). For this Current Auction, the settlement price is $14.46 USD where all 4,100,000 allowances are sold. The Auction Administrator must implement the tiebreaker procedure to determine allowances won by Entities A and E at the settlement price.

Table 10: Settlement Price Determination with a Tiebreaker

Entity Name	Bid Price (USD)	Accepted Bid Lots	Accepted Bid Allowances	Cumulative Allowances	Allowance Supply Remaining
C	$40.35	240	240,000	240,000	3,860,000
C	$36.50	420	420,000	660,000	3,440,000
C	$34.59	750	750,000	1,410,000	2,690,000
A	$21.26	130	130,000	1,540,000	2,560,000
D	$20.19	900	900,000	2,440,000	1,660,000
E	$18.48	300	300,000	2,740,000	1,360,000
A	$17.29	190	190,000	2,930,000	1,170,000
D	$17.24	740	740,000	3,670,000	430,000
B	$16.67	130	130,000	3,800,000	300,000
E	$16.44	252	252,000	4,052,000	48,000
A	$14.46	135	135,000	4,187,000	-87,000
E	$14.46	85	85,000	4,272,000	-172,000
A	$11.62	125	125,000	4,397,000	0
B	$11.34	34	34,000	4,431,000	0
E	$11.34	35	35,000	4,466,000	0

Entities A and E bid for a total of 220,000 allowances at the bid price of $14.46 USD.

Entity A's share is 61.3636 percent (135,000/220,000 = 0.613636[6]).

Entity E's share is 38.6363 percent (85,000/220,000 = 0.386363).

Entity A would be awarded 29,454 allowances (0.613636 * 48,000, rounded down to the nearest whole allowance).

Entity E would be awarded 18,545 allowances (0.386363 * 48,000, rounded down to the nearest whole allowance).

The total number of allowances awarded through this process is 47,999; one allowance remains to be awarded to the lowest random number. If Entity A is assigned a random number of 5 and Entity E is assigned a random number of 77, the last allowance is awarded to Entity A.

Allowances won in the tiebreaker are added to allowances won at higher bid prices. For example, Entity A's total allowances are 349,455 (130,000 + 190,000 + 29,454 + 1).

Allowances won by each bidder and their respective total bid cost are shown in Table 11.

Table 11: Winning Bids Example

Entity Name	Allowances Won	Total Cost (USD)
A	349,455	$5,053,119
B	130,000	$1,879,800
C	1,410,000	$20,388,600
D	1,640,000	$23,714,400
E	570,545	$8,250,081
Total	4,100,000	$59,286,000

VI.   Bid Evaluation in Advance Auction

In the bid evaluation examples provided in this Attachment, the assumption is that bids were submitted for a Current Auction. The bid evaluation process for an Advance Auction is the same, although the bid guarantee available, purchase limits, and holding limits would be different.

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[6] Although displayed here at six (6) decimal places, the share is determined to ten (10) decimal points to reduce potential rounding impacts.

Bidders submit a single bid guarantee for both the Current Auction and Advance Auction. As shown in Example 3, once the Current Auction settlement price has been determined, the entity's total cost for allowances awarded in the Current Auction (USD settlement price multiplied by number of allowances awarded) will be determined and deducted from the bid guarantee amount, and any bid guarantee amount remaining will be applied to the Advance Auction.