DRAFT DOCUMENT – September 17, 2019

Independent Emissions Market Advisory Committee

Chapter : Banking Metrics

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X.1. Introduction

The environmental effectiveness of a cap-and-trade program depends on the balance between the supply of compliance instruments made available to regulated emitters and the demand for those instruments, which is determined by emissions covered under the program. If there are too many compliance instruments relative to emissions—that is, too many allowances and offsets—the cap-and-trade program may fail to deliver the emission reductions policymakers expect from it. Conversely, if there are too few compliance instruments relative to emissions, the cap-and-trade program may become prohibitively costly. Tracking outcomes is important because many of the forces that determine the program's supply-demand balance are uncertain and subject to change over time.

This chapter develops a set of recommendations for how California can track the Western Climate Initiative (WCI) cap-and-trade program's supply-demand balance. Last year's IEMAC report recommended that CARB develop banking metrics to track the number of surplus allowances and offsets on both an annual basis and at the end of each three-year compliance period (IEMAC, 2018: 54). We provide specific recommendations here, including a complete set of methods for implementing annual banking metrics that was presented publicly over the course of our meetings in 2019. Similar metrics are used by other climate policy leaders to measure and manage the supply-demand balance in their cap-and-trade programs (RGGI, 2014; European Commission, 2019).

A related chapter discusses potential reforms policymakers may wish to consider if they determine the cap-and-trade program exhibits a supply-demand imbalance. This year's IEMAC report does not evaluate whether program conditions warrant reform, but future IEMAC reports may consider that topic.

X.2. Compliance period metrics

The WCI cap-and-trade program features three-year compliance periods. In California, regulated emitters must surrender allowances and offsets to cover a portion of their emissions each year, with the bulk of triennial compliance obligations due at the end of the three-year

compliance period. Québec has no partial annual obligations and instead has a compliance event only at the end of each three-year compliance period.

California's cap-and-trade program is currently in the middle of its Third Compliance Period, which runs from 2018 through 2020. In Board Resolution 18-51, CARB committed to reporting the number of unused allowances from program years 2013 through 2020 by the end of December 2021 (CARB, 2018b). This information would provide a banking metric as of the end of the program's Third Compliance Period. However, CARB has not yet specified the method by which staff would measure and report this information.

Earlier this year a group of legislators wrote CARB, raising concerns about the "overallocation" of compliance instruments in the program (Senator Allen et al. 2019; *see also* California Health & Safety Code § 38562(c)(2)(D)). In response, CARB reported data describing private holdings of unused allowances and offsets at the end of the Second Compliance Period, which ran from 2015 through 2017 (CARB & CalEPA, 2019). These data came from the program's Compliance Instrument Report issued for the fourth quarter of 2018 (CARB, 2019a). The IEMAC discussed the method CARB used to report banking metrics for the Second Compliance Period in its response letter as well as alternative options for reporting banking metrics for the Third Compliance Period.

- **Recommendation #1:** CARB should identify its preferred method for calculating banking metrics for Third Compliance Period (2018-20) well in advance of reporting results. We recommend CARB retain the approach it used for the Second Compliance Period (2015-17) (*see* CARB & CalEPA, 2019). This would require a slight delay of a week or two beyond the deadline committee to in Board Resolution 18-51, however, as the underlying data would be released in early January 2022 rather than December 2021.

X.3. Annual metrics

Banking metrics that describe program conditions at the end of every three-year compliance period are helpful, but incomplete. Program conditions can change quickly, including within individual compliance periods. As a result, policymakers and market participants would benefit from metrics that can be updated on an annual basis, rather than only once every three years.

Annual banking metrics are widely used by other governments and private parties. For example, the European Union's Emissions Trading System—the world's largest cap-and-trade program—features annual compliance obligations, and commensurately reports annual banking metrics to help manage its program's supply-demand balance (European Commission,

2019). The IEMAC also heard from a market consultant who presented annual banking metric calculations, which we understand to be a common element of how private parties analyze program conditions (ClearBlue Markets, 2019).

The purpose of annual banking metrics is to measure at the end of each year the number of allowances and offsets held in excess of what regulated emitters owe to program regulators. That is, annual banking metrics should account for previous compliance submissions, such that only those compliance obligations that have been incurred but are still outstanding at the end of a calendar year are compared against contemporaneous private entity holdings. To accomplish this purpose, any annual banking metrics should satisfy the principles in Table 1.

Table 1: Principles for annual banking metrics

#	Principle
1	Measure all fungible compliance instruments across the linked market, including all offsets and allowances issued from all jurisdictions whose instruments are eligible for compliance purposes (currently California, Québec, and Ontario).
2	Measure all covered emissions through the end of a calendar year, including emissions from all active Western Climate Initiative jurisdictions (currently California and Québec).
3	Focus on compliance instruments held in private entity accounts and report government-controlled jurisdictional holding and reserve accounts in parallel.

Tracking allowances temporarily held in government accounts and reserve allowances is important because if there is a collapse in demand at program auctions, as occurred in 2016 and 2017, then significant numbers of allowances may be temporarily held in government accounts. Eventually, these allowances will either be re-introduced and sold to private parties or transferred to program reserve accounts. Thus, it is relevant to distinguish between allowances in private accounts, allowances temporarily held by the government, and allowances held in government reserve accounts.

The IEMAC discussed methods that could be used to calculate annual banking metrics based exclusively on existing public data and without using any projections or estimations, which are presented in an appendix (Table 2; *see also* Inman et al., 2018). The proposed metrics would include only “current” allowances in order to conservatively focus on only those allowances

that are fully fungible for compliance purposes at the point of the metric's measurement. For example, a vintage 2020 allowance that a private party acquired at an advance auction would not be counted in the 2018 metric but would be included in the 2020 metric and in subsequent years' metrics.

All of the data required to measure allowance and offset holdings come from the existing Compliance Instrument Report (CARB, 2019a). Consistent with CARB's reported three-year metrics for the Second Compliance Period (2015-17) (CARB & CalEPA, 2019), the annual metric for private banking would measure all allowance and offset holdings across all private entity accounts (the "General", "Compliance", and "Limited Use Holding Account (CA)" categories in the Compliance Instrument Report). Similarly, the unsold allowances would be measured from the "Auction + Issuance + Allocation" category and the reserves would be measured from the "Reserve" category. The remaining parameters come from existing official verified emissions and compliance submission reports (Table 2).

- **Recommendation #2:** Consistent with the IEMAC's 2018 recommendations, CARB should develop annual banking metrics to measure allowance and offset holdings in private, government holding, and government reserve accounts. It is feasible to calculate annual banking metrics using existing program data and without making assumptions or projections. Annual metrics can be reported as soon as official emissions data become available in November for the previous calendar year, such that annual banking metrics for 2018 could be calculated as early as November 2019. CARB should adopt the metric described here or develop another that satisfies the principles articulated in Table 1.

X.4. References

California Air Resources Board (2018a), Mandatory Reporting Regulation program data.

California Air Resources Board (2018b), Resolution 18-51.

California Air Resources Board (2019a), Compliance Instrument Report.

California Air Resources Board (2019b), Compliance Reports 2013–2017.

California Air Resources Board & California Environmental Protection Agency (2019), Letter from CalEPA Secretary Jared Blumenfeld and CARB Chair Mary Nichols to Senator Ben Allen et al. (April 22, 2019). (Included here as an Appendix)

ClearBlue Markets (2019), WCI Market Observations (June 14, 2019).

Inman et al. (2018), Tracking Banking in the Western Climate Initiative Cap-and-Trade Program, Near Zero Research Note.

European Commission (2019), Publication of the number of allowances in circulation in 2018.

Independent Emissions Market Advisory Committee (2018), 2018 Annual Report of the Independent Emissions Market Advisory Committee.

Ministère de l'Environment et du Lutte contre les changements climatiques (MELCC) (2018), Verified and declared Emissions.

Ministère de l'Environment et du Lutte contre les changements climatiques (MELCC) (2019), Compliance Period Reports.

Regional Greenhouse Gas Initiative, Inc. (2014), Second Control Period Interim Adjustment for Banked Allowances Announcement (March 17, 2014).

Senator Ben Allen et al. (2019), Letter to CalEPA Secretary Jared Blumenfeld, CARB Chair Mary Nichols, and IEMAC Chair Dallas Burtraw (March 1, 2019). (Included here as an Appendix)

X.5. Technical Appendix – Proposed Method for Annual Metrics

One approach to calculating an annual metric for the number of unused private allowance and offset holdings would be:

$$Annual\ Bank_t = A_{P,t} + O_{P,t} - \left(\sum_{i=2013}^{t} C_i - \sum_{i=2013}^{t} S_i \right)$$

Where:

- $A_{P,t}$ = Allowances in private accounts *P* at the end of year *t*
  (Only counting allowances with vintage ≤ *t* and non-vintage allowances)
- $O_{P,t}$ = Offsets in private accounts *P* at the end of year *t*
- C_i = Compliance obligations (verified emissions) in year *i*
- S_i = Compliance instrument surrenders for emissions in year *i*

These metrics would be reported in units of million tons of carbon dioxide-equivalent, or $MMtCO_2e$.

In addition to measuring the annual bank of privately-held compliance instruments, it is feasible to measure government holdings of allowances that were offered for sale at current auctions but not purchased by private parties:

$$Unsold\ allowances_t = A_{H,t}$$

Where:

- $A_{H,t}$ = Allowances in government holding accounts *H* at the end of year *t*
  (Only counting allowances with vintage ≤ *t* and non-vintage allowances)

One can also measure government allowance reserves:

$$Government\ Reserve\ Accounts_t = A_{R,t}$$

Where:

- $A_{R,t}$ = Allowances in government reserve accounts *R* at the end of year *t*
  (Only counting allowances with vintage ≤ *t* and non-vintage allowances)

Table 2: Data sources for annual metrics

Topic	Data source	Parameter	Updates
Supply	Compliance Instrument Reports (Q4 Reports) (CARB, 2019a)	$A_{P,t}$ and $O_{P,t}$ $A_{H,t}$ $A_{R,t}$	January
Demand	Verified emissions (CARB, 2018a; MELCC, 2018)	C_i	November
	Compliance submissions (CARB, 2019b; MELCC, 2019)	S_i	December (previous year)

The proposed annual banking metrics can be calculated without the use of any projections or assumptions. Because the demand for allowances and offsets depends on verified emissions, the metric can only be calculated when verified emissions data are reported. Verified emissions data are available for the previous year in the following November, such that data on 2018 emissions will be available in November 2019. Thus, 2018 banking metrics can be calculated as soon as November 2019 (see Table 2).

Over the course of its 2019 activities, the subcommittee requested CARB's feedback on the proposed methods here and anticipates that CARB may provide feedback at the IEMAC's meeting on September 20th, 2019.

X.6. Comparison with the European Union's TNAC metric

The European Union Emissions Trading System (EU ETS) employs an annual metric called the Total Number of Allowances in Circulation (TNAC) (European Commission, 2019). The TNAC metric counts all allowances and offsets in circulation at the end of a calendar year (supply), subtracting out the total verified emissions up through the same point in time (demand). It also reports the number of allowances held in the Market Stability Reserve, a government-controlled reserve account. The TNAC measures the surplus of allowances and offsets in circulation relative to verified emissions through the end of a given calendar year.

As shown in Table 3, each of the elements of the TNAC has a corresponding component in the annual metrics described in the main committee report.

Table 3: Methodological comparison

Concept	TNAC component	WCI metric equivalent
Supply	(a) Banked allowances from previous phase	$A_{P,t}$ *Note: TNAC includes future-year vintage allowances, not just "current" vintages*
	(b) Total free allocations, current phase	
	(c) Total allowance auctions, current phase	
	(d) Special allowances, current phase	
	(e) Total offsets, current phase	$O_{P,t}$
Demand	(a) Verified emissions	$\sum_{i=2013}^{t} C_i - \sum_{i=2013}^{t} S_i$
	(b) Cancelled allowances	
Reserve	EU ETS Market Stability Reserve	$A_{H,t}$ and $A_{R,t}$

There are two significant differences between the EU ETS TNAC method and the proposed annual metrics discussed in the main chapter text.

First, the EU ETS TNAC metric counts future-year vintage allowances, whereas the proposed annual metric does not. There is no objectively preferable approach; each has advantages and disadvantages. California and Québec both limit the use of future-year vintage allowances for compliance purposes, which means that allowances from future program years are often not

valid for compliance obligations that have been incurred but not yet satisfied. Limiting a metric to current-year vintages results in a lower and more conservative metric of private banking outcomes, but one that is arguably more closely tied to the fungibility of those instruments for compliance purposes at the point of measurement.

Second, the two metrics differ in how they calculate supply and demand, even though they are essentially similar in how they compare the difference between supply and demand. In other words, each metric calculates its constituent components in different ways, but the differences cancel one another out such that both metrics measure the same concept.

The EU ETS TNAC observes market supplies by looking at the annual introductions of allowances and offsets on a calendar year basis, building on established banking metrics that report the number of unused allowances from previous compliance periods. (California and Québec currently lack such metrics.) The EU ETS observes demand for market supplies by counting the total verified emissions, adjusted by any allowances that regulators cancel.

In contrast to the EU ETS TNAC, the proposed annual metric for the WCI cap-and-trade program takes an instantaneous measure of how many allowances ($A_{P,t}$) and offsets ($O_{P,t}$) private market participants hold from the fourth quarter Compliance Instrument Reports (CARB, 2019a). Because private parties will have surrendered some allowances and offsets in annual compliance events (S_i), the number of allowances and offsets private entities hold as measured in the Compliance Instrument Report will be lower than the sum of allowances and offsets they banked from previous compliance periods, received in the form of free allocations, and purchased at auction. That is, what the Compliance Instrument Report measures for supply will be lower than what the EU ETS TNAC would measure. To account for this difference, the proposed metric subtracts the number of allowances and offsets surrendered at past compliance events (S_i) from the total compliance obligations (C_i)—that is, verified emissions—regulated parties have incurred to date. That is, what the proposed annual metric for the WCI program measures for demand will also be lower than what the TNAC would measure.

As a result, the two metrics each calculate supply and demand in different ways, owing to the different kinds of data reporting available in each program. Critically, the differences cancel each other out such that each metric reports the same concept.

X.7. Attachment: Letter from Legislators to CARB, CalEPA, and the IEMAC

Full text of: Senator Ben Allen et al. (2019), Letter to CalEPA Secretary Jared Blumenfeld, CARB Chair Mary Nichols, and IEMAC Chair Dallas Burtraw (March 1, 2019).

X.8. Attachment: Letter from CARB and CalEPA to Legislators

Full text of: CARB & CalEPA (2019), Letter from CalEPA Secretary Jared Blumenfeld and CARB Chair Mary Nichols to Senator Ben Allen et al. (April 22, 2019).