

Walk-Through of CARB GHG Programs - Applicability, Reporting, and Compliance

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INTRODUCTION

California has the longest established greenhouse gas (GHG) legislation and accompanying regulatory program in the United States, implemented by the California Air Resources Board (CARB) under the California Global Warming Solutions Act (AB32, 2006). AB32 created two primary pathways for reporting/reducing GHG emissions:

- A Mandatory Reporting Program (MRP), which started in 2008, with the CARB Regulation for the Mandatory Reporting of Greenhouse Gas Emissions¹ (Reporting Regulation).
- In 2012, the Cap and Trade (C&T) Program was developed with the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms² (C&T Regulation).

In addition to AB32, the California legislator has based other legislation and executive orders to extend and expand California's GHG programs. These include but are not limited to California Global Warming Solutions Act of 2006: Emissions Limit (SB32, 2016) and Executive Order (EO) B-30-15, which provides for a 40 percent reduction in GHG emissions from 1990 levels by 2030.

The implementation of the MRP and C&T Programs in California became one of the United States' (U.S.) first carbon reduction schemes, one thing that made it unique was that it was not sector or industry specific. This paper covers the applicability, reporting and verification requirements; compliance obligations; and overall GHG emission reductions achieved. This paper also summarizes the various options covered facilities (e.g. cement plants, power plants, refineries) and entities (e.g. electric power entities and transportation fuel suppliers) have for meeting their compliance obligations.

¹ California Code of Regulation (CCR), Title 17, Subchapter 10, Article 2, Sections 95100 to 95163, amended March 29, 2019.

² CCR Title 17, Subchapter 10, Article 5, Sections 95801 to 96022, amended April 1, 2019.

This paper discusses the use of purchased allowances/auctions, Reserve allowances/allocations, and compliance-offset credits and how each may be used in the C&T Program; as well as how covered facilities/entities can use them for compliance.

This paper identifies the jurisdictions, which have linked programs with CARB's C&T Program, as well as other jurisdictions in the western Pacific Coast Collaborative (PCC), a regional agreement to strategically align policies to reduce GHGs and promote clean energy.

START OF GHG REPORTING PROCESS - MRP

MRP created two separate GHG reporting/reduction pathways which CARB implements. The first step in determining if an entity is subject to the CARB programs is to look at the applicability, reporting, and verification requirements under the MRP, which are discussed below.

Applicability

The current CARB Reporting Regulation applicability thresholds for reporting annual GHG emissions may be found in Section 95101 of the Reporting Regulation and key components are shown below:

- Facilities meeting one of the following source category requirements, regardless of emissions limit:
 - 40 Code of Federal Regulations (CFR) Part 75 electricity generation units,
 - Cement production,
 - Lime manufacturing,
 - Nitric acid production,
 - Petroleum refineries,
 - Geologic sequestration of carbon dioxide, and
 - Injection of carbon dioxide
- All facilities in California with stationary combustion and process emissions over 10,000 metric tons carbon dioxide equivalent (MTCO₂e)
- Suppliers of fuels provided for consumption within California that would result in the release of greater than or equal to 10,000 MTCO₂e
- Carbon dioxide (CO₂) suppliers, including CO₂ producers regardless of quantity produced, and CO₂ importers and exporters when annual bulk imports or exports equal or exceed 10,000 MTCO₂e
- Operators of petroleum and natural gas systems with stationary combustion and process emissions over 10,000 MTCO₂e or stationary combustion, process, fugitive, and vented emissions equal or over 25,000 MTCO₂e
- All electric power entities that are electricity importers and exporters, retail providers, California Department of Water Resources (DWR), Western Area Power Administration (WAPA), and Bonneville Power Administration (BPA)

The applicability applies to anthropogenic (e.g. combustion of fossil fuels [natural gas or diesel]) and biogenic (e.g. combustion of biogenic fuels [biodiesel or landfill gas] CO₂e equivalent (CO₂e) emissions.

Reporting

Once an entity meets the applicability requirements, they are required to report their annual GHG emissions to CARB. Reports not subject to the verification or compliance obligations, and have emissions between 10,000 MTCO₂e and 25,000 MTCO₂e, are able to submit abbreviated reports by June 1st of each calendar year.

Each facility or supplier over 25,000 MTCO₂e or with a compliance obligation must submit an emissions data report (EDR) no later than April 10th of each calendar year and all electric power entity must submit an EDR no later than June 1st of each calendar year. Full requirements of what each entity's EDR must contain can be found in Section 95105 of the Reporting Regulation and the key components are shown below:

- General Content (e.g. CARB identification number, air district, and geographic location)
- Facility Level Energy Input and Output (e.g. electricity, natural gas, and thermal energy purchases or sales)
- Total GHG Emissions
 - Facilities - stationary combustion and process emission
 - Suppliers of fuels - production, imports, or deliveries that will result in emissions
 - CO₂ suppliers - emissions associated with production, imports, and exports
 - Petroleum and natural gas systems - stationary combustion, process, fugitive, and vented emissions
 - Electric power entities – emissions associated with imports, exports, and wheeled wholesale power transactions
- Product Data as Specified in the Reporting Regulation
- Individual Reporting Regulation Subpart Additional Reporting Requirements

Reported emissions are reported as a total CO₂e for the entity (reported in MTCO₂e), as well as broken down into the following components: CO₂, methane (CH₄), nitrous oxide (N₂O), exempt biogenic CO₂, and total covered CO₂e emissions. The “total covered emissions” represent what is used by the C&T Program for a facility's compliance obligation and are discussed in more detail below.

Emissions without a compliance obligation (e.g. CO₂ emissions from biomass-derived fuels [biodiesel, digester gas]; specified process, vented, and fugitive emissions [fuel cells, fugitive emissions estimated using leak detection]; and NAICS Code 92811 [national security]) are included in the aforementioned individual component emissions for determining total CO₂e but are excluded from total covered emissions.

Verification Requirements

All reporters with total emissions over 25,000 MTCO₂e, or mandated by the Reporting Regulation are required to have their emissions verified by an accredited third party verification body on an annual basis. Abbreviated reporters are not required to obtain verification unless they opt into the Cap and Trade System.

Verification services requirements are laid out in Section 95131 of the Reporting Regulation. CARB requires an initial submittal of a conflict of interest (COI) form and notification of verification services (NOVS) form for their approval prior to starting verification services. Once approved, verification services include the following services:

- Development of a verification plan
- Site visit (if deemed required [e.g. the first year of a new compliance period])
- Reviewing a reporting entity's EDR
- Developing a sampling plan
- Ensuring the EDR accuracy according to the standards specified in the Reporting Regulation
- Assessing the reporting entity's compliance with the Reporting Regulation
- Submitting a verification statement(s) to the CARB.

The verification deadline is August 10th of each calendar year for all reporters. There are three types of verification statements: positive, qualified positive, or adverse. These statements mirror the discussion below, including the impact on an entity's compliance obligation.

START OF GHG REDUCTION PROCESS – C&T

Once an entity has gone through the process of determining applicability, reporting, and verification under the MRP, the requirements under that program are complete. The project then transfers to the C&T Program, where the second step for a facility is meeting its compliance obligation, reducing emissions, and determining best methods for meeting future compliance requirements.

Compliance Obligations

Once the MRP process is completed, the C&T Program takes the total verified covered emissions and product data reported under the MRP and uses that as an entity's compliance obligation. If in any of the four data years preceding the start of a compliance period, an entity meets the inclusion thresholds for covered entities, then that entity is subject C&T for the entire compliance period. The inclusion threshold requirements can be found in the C&T Regulation Section 95811 and are summarized below:

- Emissions Equal to or Greater than 25,000 MTCO₂e per Data Year
 - Facilities - as described in the applicability section above
 - CO₂ Suppliers
 - Petroleum and Natural Gas Facilities
 - Fuel Suppliers
- First Deliverers of Electricity

- Opt-in Facilities – abbreviated reporters who voluntarily opt-in to the C&T Program and be willing to be subject to the requirements C&T Regulation

All covered entities are required to open a Compliance Instrument Tracking System Service (CITSS) account, which is administrated by Western Climate Initiative, Inc. (WCI). At a minimum, each entity will have a Holding Account and a CARB Compliance Account. When compliance instruments are purchased, provided by CARB, or sold, they switch between CARB and another registered entity’s CITSS Holding Account. Once an entity is ready to surrender a compliance instrument, it will be placed in their CARB Compliance Account, however, once a compliance instrument is in the CARB Compliance Account it cannot be removed from that account.

An entity’s full compliance period compliance obligations are calculated as the total emissions with compliance obligation (covered emissions) that received a positive, or qualified positive, verification statement. An entity that receives an adverse verification statement will be assigned an emissions level and compliance obligation by CARB. One compliance instrument is equal to 1 MTCO_{2e}. A covered entity must surrender one compliance instrument for the annual and full compliance period compliance obligation. Compliance instruments that may be used are California GHG Emission Allowances created by CARB (allocations provided by CARB or purchased in an auction) include; Offset Credits Issued by CARB, and compliance instruments issued by a CARB-approved program (e.g. Government of Quebec [effective January 1, 2014] and Government of Ontario [effective January 1, 2018 through June 15, 2018]). Note for the current compliance period, a covered entity may only use up to eight percent of their compliance obligation with Offset Credits for each compliance year.

The C&T Program works in three-year compliance periods. The current compliance period covers the 2018, 2019, and 2020 calendar year emissions and will be used to demonstrate what the compliance obligations for a covered entity are and when the deadlines occur.

Table 1. Compliance Obligations by Year

Compliance Year	Compliance Obligation	Deadline for Surrender of Annual Compliance Obligation		Compliance Allowance Vintages
1 st 2018	Annual 30% Year 1	November 1, 5PM PST of the calendar year following the year for which the obligation is calculated	November 1, 2019	2018 or older Any vintage offset credit
2 nd 2019	Annual 30% Year 2		November 1, 2021	2019 or older Any vintage offset credit
3 rd 2020	Full 70% Year 1 70% Year 2 100% Year 3		November 1, 2021	2020 or older Any vintage offset credit

On November 1st of the preceding calendar year, a covered entity is required to have the required compliance obligation in their CITSS CARB Compliance Account. CARB will only surrender the required obligation for that year, and any remaining credits will be kept in the CITSS CARB Compliance Account for future years’ use.

Options for Covered Entities to Meet their Compliance Obligations

Covered entities have a few methods they can use for meeting their compliance obligations, which range from purchasing allowances at an auction, from a broker, another party with a CITSS account/compliance obligation, or a linked program; to purchasing offset credits, or having CARB allocations (allocations CARB has provided for the purpose of assistance). CARB allocates allowances for the electricity sector (electrical distribution utility sector and public wholesale water agencies), industrial covered entities, University Covered Entities and Public Service Facilities, Legacy Contract Generators, Natural Gas Supplier Sector, and Waste-to-Energy Facilities. All remaining allowances not allocated for uses for the aforementioned sectors/facilities will be designated for sale at auction.

An entity may also buy CARB offset compliance credits known as Air Resources Board Offset Credits (ARBOCs), or offset credits from linked GHG external trading systems (ETS) approved by CARB. CARB has set a quantitative usage limit when used to meet an entities compliance obligation.

Table 2. Offset Credit Usage by Compliance Period

Compliance Period	Compliance Years	Quantitative Usage Limit (L_o)	Sector-Based Offset Credits
1 st	2012, 2013, 2014	8%	Less than 25% of the L_o
2 nd	2015, 2016, 2017	8%	Less than 25% of the L_o
3 rd (Current)	2018, 2019, 2020	8%	Less than 50% of the L_o
4 th	2021, 2022, 2023	4%	Less than 50% of the L_o
5 th	2024, 2025	4%	Less than 50% of the L_o
5 th	2026	6%	Less than 50% of the L_o
6 th	2027, 2028, 2029	6%	Less than 50% of the L_o

CARB will retire compliance instruments in an entity’s CITSS CARB Compliance Account in the following order:

- Offset credits;
- Reserve Allowances followed by non-vintage allowances issued by a linked external GHG emissions trading system/program approved by CARB;
- Allowances from CARB issued California GHG Emissions Allowances or Approved program compliance instruments with earlier vintage allowances retired first;
- The current calendar year’s vintage allowances and allowances allocated just before the annual surrender deadline up to the true-up allowance amount, if eligible; and
- Price ceiling units (sales may be held beginning in 2021).

LINKED JURISDICTIONS AND REGIONAL AGREEMENTS

Québec's GHG C&T Programs

Québec's C&T system for reducing GHG emissions was introduced in 2012 with the program's enforceable compliance obligation beginning on January 1, 2013. Similar to the CARB C&T program, Québec's compliance periods are three years long, except for the initial compliance period which was two years. Québec has been a member of the Western Climate Initiative since 2008 and formally linked its system with the CARB C&T Program on January 1, 2014.

Québec's system covers fossil fuel combustion and industrial emissions in power, buildings, transport, and industry. It has also already met the carbon pricing requirement of Canada's national Pan-Canadian Framework on Clean Growth and Climate Change. Québec's GHG reductions targets are to achieve a 20 percent reduction from 1990 levels by 2020 and a 37.5 percent reduction from 1990 levels by 2030.

Québec C&T program has started their third compliance period which covers 2018 through 2020. Their inclusion threshold, similar to CARB's, includes facilities greater or equal to 25,000 MTCO_{2e}, electricity and industry specified, and fuel distributors that have distributed 200 liters (L) or more of fuel even if the total combustion of their fuel resulted in the emission of less than 25,000 MTCO_{2e}. In 2017, there were 149 covered entities: 74 industrial entities, and 75 fuel distributors. Québec's emissions cap by compliance period is shown below.

Table 3. Québec Cap by Compliance Period

Compliance Period	Compliance Years	Cap (Millions of Allowances)		
1 st	2013-2014	2013: 23.20	2014: 23.20	
2 nd	2015-2017	2015: 65.30	2016: 63.19	2017: 61.08
3 rd (Current)	2018-2020	2018: 58.96	2019: 56.85	2020: 54.74
4 th	2021-2023	2021: 55.26 ¹	2022: 54.02	2023: 52.79
5 th	2024-2026	2024: 51.55	2025: 50.31	2026: 49.08
6 th	2027-2029	2027: 47.84	2028: 46.61	2029: 45.37

¹Note, the increase in the cap in 2021 is due to an adjustment of the global warming potential (GWP) of different GHGs.

Similarly to CARB, the Québec C&T program uses free allocations, auctions for allowances, and offset credits to allow entities to meet their compliance obligations.

Ontario's GHG C&T Program

Ontario created a GHG cap and trade system which was linked with CARB in January 2018, however the link was terminated six months later. Soon afterward, the Ontario C&T regulation and associated legislation was cancelled completely. As of June 15, 2018, any compliance instruments issued by the Government of Ontario that are held by a CARB entity's compliance account or that are held in approved linked GHG ETS (e.g. Québec) compliance accounts, continue to remain valid for compliance and trading purposes.

British Columbia and Nova Scotia also have GHG programs and are also working through WCI, however they are not currently linked with CARB's program.

Pacific Coast Collaborative (PCC)

Separate from CARB's C&T program, in 2013 the PCC, a regional agreement between British Columbia, California, Oregon, and Washington was created. In 2016, the cities of Vancouver, Seattle, Portland, San Francisco, Oakland, and Los Angeles were added to the PCC. The PCC members work together to strategically align policies to reduce GHGs and promote clean energy. The PCC has an ambitious goal for reducing GHG emissions at least 80 percent by 2050. Similar to AB32, the PCC looks at multiple avenues to reduce GHG by transforming the power grid, transportation systems, buildings, and economies. The guiding principles of the PCC are:

- Reduce GHG emissions while growing our regional economy
- Ensure the benefits and opportunities of a clean and resilient economy are shared by all residents, especially those most vulnerable
- Create great places to live, work, and start and grow businesses
- Protect our oceans and unique natural resources
- Leverage our shared geography, infrastructure, and regional economy
- Align our actions and combine our relative strengths and authorities
- Connect state, provincial, and local leadership
- Provide a model for decisive, coordinated sub-national climate action

Some of the programs initiatives are decarbonizing buildings, creation of a low-carbon economy, putting a price on carbon, transforming transportation, transitioning to clean energy, reducing wasted food, and protecting coastal communities. An example of one of these policies, the PCC reported that non-hydroelectric renewable energy has increased by over 250 percent from 2005 to 2015 through investments in wind and solar and policies like the renewable portfolio standard (RPS).

SUMMARY

California leads the way in the United States with a GHG MRP and C&T program that continues to grow and link with other jurisdictions. The CARB MRP initially started with basic facility reporting and has grown and adopted to include multiple non-facility specific sectors of the economy, as dictated by the growing initiatives and programs that CARB joins or creates. However, as the program applicability may change, the basics tenants of MRP stay the same with reporting and verification at the center of the program.

By having CARB's C&T Program as a separate program, entities have to navigate if they have a compliance obligation and how they will meet that obligation in addition to complying with reporting requirements. Entities can reduce their emissions by switching to biomass-derived fuels or meeting their compliance obligation by using CARB-provided allowances or purchasing allowances and/or compliance offset credits.

As CARB's programs grow, it will likely trigger similar growth in the western North American GHG programs and regional agreements. As discussed, Québec's C&T system, which is linked with CARB's program, has been growing and is being used to meet the Canadian federal GHG rules that are being put in place. Ontario's program was annulled but shows that the discussion on how best to reduce GHG emission is a topic that continues to thrive, and we may see new programs developing even though some may hit some setbacks. The PCC shows that even if a MRP and C&T Program is not the particular method for chosen by a region to reduce emissions, many regions still see reducing GHG emissions as the future to create jobs, develop the economy, develop new infrastructure and maintain growth while protecting the environment.

REFERENCES

- California Executive Order B-30-15, April 29, 2015
- California Global Warming Solutions Act of 2006, Assembly Bill No. 32, Chapter 488, Section 1, Division 25.5
- California Global Warming Solutions Act of 2006: Emissions Limit, Senate Bill No. 32, Chapter 249, Section 2
- California Code of Regulation (CCR), Title 17, Subchapter 10, Article 2, Sections 95100 to 95163, Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, amended March 29, 2019.
- California Code of Regulations (CCR), Title 17 Subchapter 10, Article 5 Sections 95800 to 96022, California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms, amended April 1, 2019
- CARB Compliance Offset Program website (<https://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm>)
- Government of Ontario Cap and Trade website (<https://www.ontario.ca/page/cap-and-trade>)
- PCC website (www.pacificcoastcollaborative.com)
- Regulation Respecting a Cap-and-trade System for Greenhouse Gas Emissions Allowances, Québec Environmental Quality Act, CQLR c Q-2, r 46.1, amended June 1, 2019
- Québec Environnement et Lutte Contre les Changements Climatiques Program website (http://www.environnement.gouv.qc.ca/index_en.asp)