International Carbon Action Partnership

USA - California Cap-and-Trade Program

General Information

ETS Description

The California Cap-and-Trade Program began operation in 2012, with the opening of its tracking system for allocation, auction distribution, and trading of compliance instruments. Compliance obligations started in January 2013 under the first compliance period, which ended in 2014.

The program is implemented under the authority of the California Air Resources Board (CARB) and covers sources responsible for approximately 74% of the state's GHG emissions. California has been part of the Western Climate Initiative (WCI) since 2007 and formally linked its cap-and-trade program with Québec's in January 2014.

ETS Status

in force

Jurisdictions

California

Year in Review

In January 2021, major changes to the program took effect, including the addition of a price ceiling, the inclusion of two allowance price containment reserve tiers below the price ceiling, reductions in the use of offset credits (especially for credits generated from projects which do not provide direct environmental benefits in the state), and a steeper allowance cap decline to 2030.

During the summer, CARB launched the Climate Change Scoping Plan update process, which seeks to develop policy strategies to achieve 2030 and 2045 targets. The Scoping Plan will be published during 2022.

By May 2021, prices reached record highs for California Carbon Allowances (CCAs), as observed by the auction settlement price and in reported prices for commodity exchange futures contract for near-month delivery and brokered transactions.

Sectoral coverage

Transport
Buildings
Industry
Power

Emissions & Targets

Overall GHG Emissions excl. LULUCF (MtCO2e)

418.2

GHG reduction targets

By 2030: 40% reduction from 1990 GHG levels (SB 32)

By 2045: Achieve carbon neutrality (Executive Order B-55-18)

Current Allowance Price (per t/CO2e)

USD 22.43 (average auction settlement price in 2021; updated prices available here)

Size & Phases

Covered emissions (2019)

74.00%

Verified ETS Emissions

311.20MtCO_2e

GHGs covered

CO2, CH4, N2O, SF6, HFCs, PFCs, NF3, and other fluorinated GHGs.

Phases

The California Cap-and-Trade Program is structured around compliance periods (see "Compliance" section). A cap trajectory has been set through 2030, with a formula for the declining annual caps through 2050 (see "Cap" section).

Allowances are both allocated and auctioned, with each allowance associated with a specific calendar year vintage. Some allowances with a vintage three years in the future are offered at each auction and may be traded, but these future vintage allowances may not be used for compliance until the compliance date for the vintage year.

Cap

FIRST COMPLIANCE PERIOD (2013-2014): The system started in 2013 with a cap of 162.8 MtCO_2e, declining to 159.7 MtCO_2e in 2014, at a rate of approximately 2% annually.

SECOND COMPLIANCE PERIOD (2015-2017): With the program expanding to include fuel distribution, the cap rose to 394.5 MtCO_2e in 2015. The cap decline factor averaged 3.1% per year in the second compliance period (2015-2017), reaching 370.4 MtCO_2e.

THIRD COMPLIANCE PERIOD (2018-2020): The cap in the third compliance period started at 358.3 MtCO_2e and declined at an average annual rate of 3.3% to 334.2 MtCO_2e in 2020.

FOURTH COMPLIANCE PERIOD (2021-2023) AND BEYOND: During the period 2021-2030, the cap declines by about 13.4 MtCO_2e each year, averaging about 4% per year, to reach 200.5 MtCO_2e in 2030.

The Cap-and-Trade Regulation sets a formula for declining caps after 2030 through 2050.

Sectors and thresholds

FIRST COMPLIANCE PERIOD (2013-2014): Covered sectors included those that have one or more of the following processes or operations: large industrial facilities (including cement, glass, hydrogen, iron and steel, lead, lime manufacturing, nitric acid, petroleum and natural gas systems, petroleum refining, and pulp and paper manufacturing, including cogeneration facilities co-owned/operated at any of these facilities); electricity generation; electricity imports; other stationary combustion; and CO_2 suppliers.

SECOND COMPLIANCE PERIOD AND BEYOND (2015-2030): In addition to the sectors listed above, suppliers of natural gas, suppliers of reformulated blendstock for oxygenate blending (i.e., gasoline blendstock) and distillate fuel oil (i.e., diesel fuel), suppliers of liquid petroleum gas in California, and suppliers of liquefied natural gas are covered by the program.

INCLUSION THRESHOLDS: Facilities emitting ≥25,000 tCO_2e per year. Electricity providers that import 25,000 tCO_2e per year or more from specified sources of electricity (i.e., where the imported electricity can be connected to a specific generator with a known emissions factor) are included. All electricity imported from unspecified sources (i.e., where the imported electricity cannot be connected to a specific generator) is deemed above the threshold, and a default emissions factor is applied.

OPT-IN COVERED ENTITIES: A facility in one of the covered sectors that emits less than 25,000 tCO_2e annually can voluntarily participate in the program. Opted-in entities are subject to all reporting, verification, enforcement, registration, and compliance obligations applicable to covered entities.

Point of regulation

Mixed

Number of entities

~500 entities*

*Approximately 330 registered covered/opt-in entities. These entities represent approximately 500 registered emitting sources/facilities.

Allowance Allocation & Revenue

Allowance allocation

Allowances are distributed via free allocation, free allocation with consignment, and auction.

FREE ALLOCATION: Industrial facilities receive free allowances to minimize carbon leakage. For nearly all industrial facilities, the amount is determined by product-specific benchmarks, recent production volumes, a cap adjustment factor, and an assistance factor based on assessment of leakage risk.

Leakage risk is divided into "low", "medium", and "high" risk tiers based on levels of emissions intensity and trade exposure for each specific industrial sector.

FIRST COMPLIANCE PERIOD (2013-2014): The "Cap-and-Trade Regulation" as adopted in 2011 set assistance factors of 100% for the first compliance period regardless of leakage risk.

SECOND COMPLIANCE PERIOD AND BEYOND (2015-2030): For facilities with medium leakage risk, the original regulation included an assistance factor decline to 75% for the second compliance period and to 50% for the third. For facilities with low leakage risk, it included an assistance factor decline to 50% for the second compliance period and to 30% for the third. However, amendments to the "Cap-and-Trade Regulation" in 2013 delayed these assistance factor declines by one compliance period. Pursuant to AB 398, which was adopted in 2017, all assistance factors were changed to 100% through 2030, citing continued vulnerability to carbon leakage. There is no cap on the total amount of industrial allocation, but the formula for allocation includes a declining cap adjustment factor to gradually reduce allocation in line with the overall cap trajectory.

Free allocation is also provided for transition assistance to public wholesale water entities, legacy contract generators, universities, public service facilities, and, during the period 2018-2024, waste-to-energy facilities.

FREE ALLOCATION WITH CONSIGNMENT: Electrical distribution utilities and natural gas suppliers receive free allocation on behalf of their ratepayers. Natural gas and electrical utilities must use the allowance value for ratepayer benefit and for emissions reductions. All allowances allocated to investor-owned electric utilities and an annually increasing percentage of allowances allocated to natural gas suppliers must be consigned for sale at the state's regular quarterly auctions. Publicly owned electrical utilities can choose to consign freely allocated allowances to auction or use them for their own compliance needs.

AUCTIONING: In 2021, about 62% of total California-issued vintage 2021 allowances were made available through auction, which included allowances owned by CARB (about 37%) and allowances consigned to auction by utilities (about 25%).

Unsold allowances in past auctions are removed from circulation and will gradually be released for sale at auction after two consecutive auctions are held in which the clearing price is higher than the minimum price. However, if any of these allowances remain unsold after 24 months, they will be placed into CARB's price ceiling reserve or into the two lower reserve tiers (see 'Market Stability Provisions' section). To date, 37 million allowances originally designated for auction have been placed in reserves through those provisions.

Total Revenue

SINCE BEGINNING OF PROGRAM: USD 18.23 billion

COLLECTED IN 2021: USD 3.99 billion*

*Does not include revenue from auctioning of consigned allowances.
2021

Use of Revenues

Revenue from auction of California-owned allowances: Most of California's revenue goes to the Greenhouse Gas Reduction Fund, of which at least 35% must benefit disadvantaged and low-income communities. The fund also invests the proceeds in projects that reduce GHG emissions.

Revenue from auction of utility-owned allowances: Investor-owned electric utilities and natural gas suppliers are allocated allowances, a portion of which must be consigned to auction. Auction proceeds must be used for ratepayer benefit and for emissions reductions.

Flexibility & Linking

Offsets and credits

Offsets, issued by CARB or by the authority of a linked cap-and-trade system, are compliance instruments under the California Cap-and-trade Program.

QUALITATIVE LIMITS: Currently, six domestic offset types are accepted as compliance units originating from projects carried out according to six compliance offset protocols:

- US forest projects;
- urban forest projects;
- livestock projects (methane management);
- ozone-depleting substances projects;
- mine methane capture projects; and
- rice cultivation projects.

Offset credits issued by jurisdictions linked with California (e.g., Québec) are eligible to be used to satisfy a California entity's compliance obligation, subject to the quantitative usage limit described below.

To ensure environmental integrity, California's offset program has incorporated the principle of buyer liability. The state may invalidate an offset credit that is later determined to have not met the requirements of an offset protocol because of double counting, over-issuance, or regulatory non-conformance. The entity that surrendered that offset credit for compliance must then substitute a valid compliance instrument for the invalidated offset credit.

QUANTITATIVE LIMITS: For 2013-2020 emissions, entities could meet up to 8% of their obligations using offset credits. For emissions after 2020, entities are subject to new offset usage limits established by AB 398. The share of offsets that can be used to fulfil the compliance obligation decreases to 4% per year for 2021-2025 before increasing to 6% from 2026 emissions.

In addition to setting new quantitative limits on the use of offsets, AB 398 set new limits on the types of units that can fulfil compliance obligations. Starting with compliance obligations for 2021 emissions, no more than one half of any entity's offset usage limit can come from offset projects that do not provide direct environmental benefits to the state (DEBS).

Projects located within California are automatically considered to provide DEBS. Offset projects implemented outside of California may still result in DEBS, based on scientific evidence and project data provided. For example, a forest project outside California has been determined to provide benefits within California by improving the quality of waters flowing through the state. Recent regulatory amendments specify the criteria that will be used for determining DEBS.

Banking and borrowing

Banking is allowed, subject to a holding limit on allowances to which all entities in the system are held. The holding limit varies based on the year's cap and decreases each year. Entities may also be eligible for a limited exemption from the holding limit based on their emissions levels, to meet annual compliance obligations or obligations at the end of a three-year compliance period.

Borrowing future vintage allowances is not allowed.

Links with other Systems

California linked with Québec's ETS in January 2014. The two extended their joint market by linking with Ontario in January 2018 until the termination of Ontario's system in mid-2018.

Compliance

Monitoring, Reporting, Verification (MRV)

REPORTING FREQUENCY: Annually

VERIFICATION: Emission data reports and their underlying data require independent third-party verification annually for all entities covered by the program.

FRAMEWORK: Reporting is required for most emitters at or above 10,000 tCO_2e per year. They must implement internal audits, quality assurance, and control systems for the reporting program and the data reported.

Enforcement

A covered entity that fails to surrender sufficient compliance instruments to cover its verified GHG emissions on either an annual surrender deadline or at the end of a compliance period is automatically assessed as an untimely surrender obligation, requiring it to surrender each missing compliance instrument as well as three additional compliance instruments for each compliance instrument it failed to surrender.

Failure to meet the untimely surrender obligation as described above would subject the entity to substantial financial penalties for its noncompliance pursuant to California Health and Safety Code Section 38580.

Separate and substantial penalties apply to mis- or non-reporting under the "Regulation for the Mandatory Reporting of Greenhouse Gas Emissions".

Compliance Period

Except for the year following the last year of a compliance period, compliance instruments equal to 30% of the previous year's verified emissions must be surrendered annually, by the start of November (or the first business day thereafter). Compliance instruments equal to all remaining emissions must be surrendered by the start of November (or the first business day thereafter) of the year following the last year of a compliance period.

Market Regulation

Market Stability Provisions

Auction Reserve Price: USD 19.70 per allowance in 2022. The auction reserve price increases annually by 5% plus inflation, as measured by the Consumer Price Index.

Reserve: Allowances from each annual cap are placed in an Allowance Price Containment Reserve (APCR). Prior to amendments mandated by AB 398, these allowances were spread across three reserve tiers in an earlier APCR. Pursuant to AB 398, from 2021 onward, these allowances have been placed into two price tiers and a price ceiling.

Specifically, AB 398 directed where allowances from the earlier APCR would be distributed. Two-thirds of those allowances have been spread evenly across the two price tiers. The remaining one-third (which had been spread evenly across the original three price tiers), plus unsold allowances that have been transferred into the APCR (about 37 million to date), are placed into the price ceiling. In addition, the "Cap-and-Trade Regulation" also set aside portions of annual allowance caps for the two lower price tiers from 2021-2030.

Although no reserve sale has been held to date, CARB will offer a reserve sale when auction settlement prices from the preceding quarter are greater than or equal to 60% of the lowest price tier. CARB will also offer the third quarter reserve sale just before the compliance obligation deadline.

At the price ceiling, a covered entity can purchase CCAs (or, if no allowances remain, "price ceiling units") up to the amount of its current unfulfilled emissions obligation. The revenues from the sale of price ceiling units will be used to purchase real, permanent, quantifiable, verifiable, enforceable, and additional emissions reductions on at least a tonne for tonne basis. Sales at the price ceiling will only be conducted if no allowances remain at the two lower tiers and a covered entity has demonstrated that it does not have sufficient compliance instruments in its accounts for that year's compliance event.

In 2022, the two cost containment reserve tiers and the price ceiling are set at USD 46.05, USD 59.17, and USD 72.29, respectively. Tier prices increase by 5% plus inflation (as measured by the Consumer Price Index).

Market Design

MARKET PARTICIPATION: Covered entities, opt-in covered entities and Voluntarily Associated Entities can participate in the program. Voluntarily Associated Entities are approved individuals or entities that intend to:

- purchase, hold, sell, or retire compliance instruments but are not covered under the program;
- operate an offset project registered with CARB; or
- provide clearing services and derivative clearing services as qualified entities.

Voluntarily Associated Entities must be in the United States and have an approved Compliance Instrument Tracking System Service (CITSS) account. There are additional eligibility criteria that apply, including for individual market participants.

MARKET TYPES:

Primary: State-owned and consigned allowances are offered through quarterly allowance auctions organized jointly with Québec. Auctions are administered by the Western Climate Initiative; Inc. Companies can also trade allowances and offsets directly amongst themselves within CITSS.

Secondary: Allowances, offsets, and financial derivatives are traded in the secondary market in the Intercontinental Exchange (ICE) or the CME group platforms. Any company qualified to access ICE or CME can trade directly or through a future commission merchant. Companies can also trade directly over the counter but must have a CITSS account to take delivery of compliance instruments.

LEGAL STATUS OF ALLOWANCES: CCAs are defined as limited tradable authorizations to emit up to one tonne of CO_2e. According to the California Code of Regulations, an allowance does not constitute property or bestow property rights and cannot limit the authority of the regulator to terminate or limit such authorization to emit.

Other Information

Institutions involved

CARB

Regulatory Framework

Global Warming Solutions Act of 2006 (AB 32)

AB 398

2018 amendments to the 2021-2030 period

Current regulation can be found on the CARB website

Evaluation / ETS review

Pursuant to requirements in existing legislation (AB 32, AB 197, and AB 398), CARB must update the "California Climate Change Scoping Plan" at least every five years and must provide annual reports to various committees of the legislature and the board. The Scoping Plan provides updates on progress toward climate targets and lays out strategies to achieve them, including the role and level of effort accorded different programs in the state's portfolio approach to climate mitigation.

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