Monitoring and Evaluation of the Cap-and-Trade Program

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AIR RESOURCES BOARD

Monitoring and Evaluation

- Transparent public process
- Allowance and secondary market oversight
- Offset program oversight
- Release of public information
- Economic impact assessments
- External expert review

Program Development Process

Held hundreds of individual and public meetings

- International (CDM, Australia)
- Domestic (Western Climate Initiative, RGGI)
- California stakeholders (industry, environmental groups, air districts, market participants, voluntary offset programs)

Conducted workshops and technical working groups to develop the design of the program and the Compliance Offset Protocols

Released multiple drafts of the Regulation and Compliance Offset Protocols for stakeholder comment

Multi-year process

Market Integrity



Mechanisms for ensuring market integrity

- Purchase and holding limits
- Registration and disclosure requirements
- Tracking system (CITSS)
- Financial penalties

Oversight

- Coordinate with the U.S. Commodity Futures Trading Commission (CFTC) and Federal Energy Regulatory Commission (FERC)
- Independent market monitor (in coordination with Québec)
- Independent expert reviewers

Enforcement

- Coordinate with California Department of Justice

Compliance Offset Protocols

U.S. Forestry, Urban Forestry, Ozone Depleting Substances, Mine Methane Capture, Rice Cultivation, and Livestock Digesters

- Originally developed for voluntary offset market
- Modified by CARB for compliance offset market
- Clear and enforceable requirements

Periodic Review of Protocols

Continually assess whether approved Compliance Offset Protocols need to be amended

- New scientific developments that may warrant changes in quantification or emission factors
- Regulatory and common practice changes that could affect additionality

Changes to existing protocols will be amendments to the Cap-and-Trade Regulation

- Will include a stakeholder consultation and environmental review process

Balance frequency of review with need for program and market certainty

CARB Oversight of Verification Bodies and Offset Verifiers

Strict rotation requirements for verification bodies and offset verifiers

CARB is notified before offset verification begins so that CARB can plan its audit and oversight activities

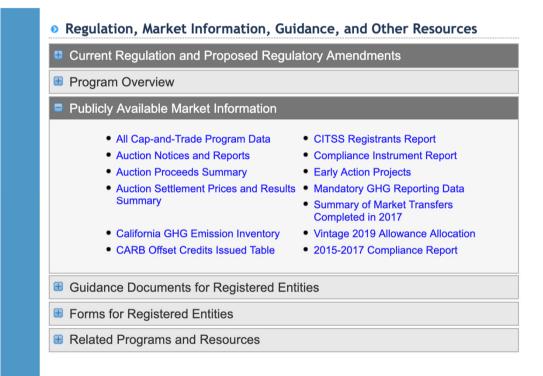
CARB staff will conduct site visits and desk reviews

Verifier accreditation may be modified, suspended or revoked if verifier is deemed to be non-compliant

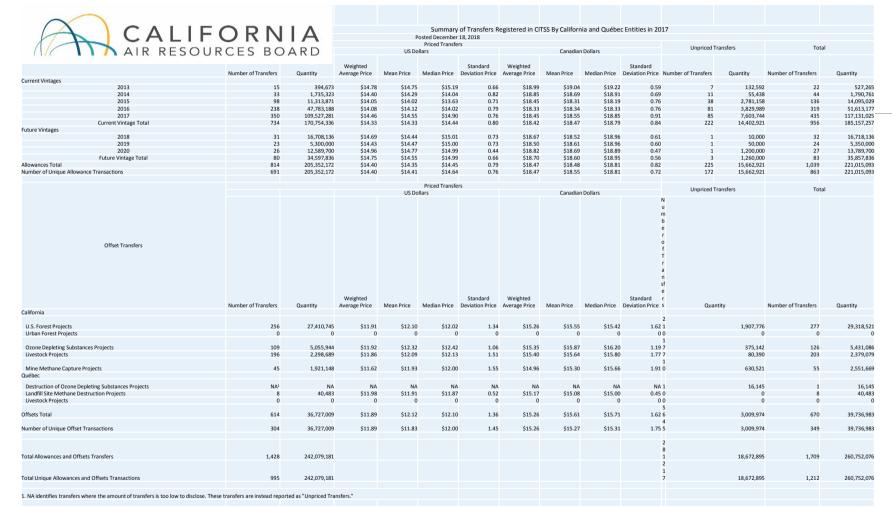
CARB activities are supplemented by additional audits conducted by Offset Project Registries (OPR)

Publicly Available Market Data





https://ww3.arb.ca.gov/cc/capandtrade/capandtrade.htm



https://ww3.arb.ca.gov/cc/capandtrade/2017transfersummaryfinal.xlsx

Economic Regulatory Requirements

Through the Administrative Procedures Act, California agencies are required to estimate the economic impact of proposed regulations on Californians and the California economy State agencies must:

Identify the regulated community

Assess the cost of the regulation

Estimate the benefits of the regulation

Present the economic impacts on impacted groups

Outline the fiscal impacts

Assess regulatory alternatives

Major Regulation Requirements

SB 617 (2011) established additional requirements for major regulations which have a greater than \$50 million impact over a 12-month period

- Creating or elimination of jobs within the state
- Creation or elimination of businesses within the state
- Change in investment in the state
- Incentives for innovation

Benefits of the regulation including but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state's environment and quality of life, among any other benefits identified by the agency

CARB examples: Cap-and-Trade Regulation, Low Carbon Fuel Standard, Oil and Gas Regulation

Social Cost Requirements

AB 197 (2016)

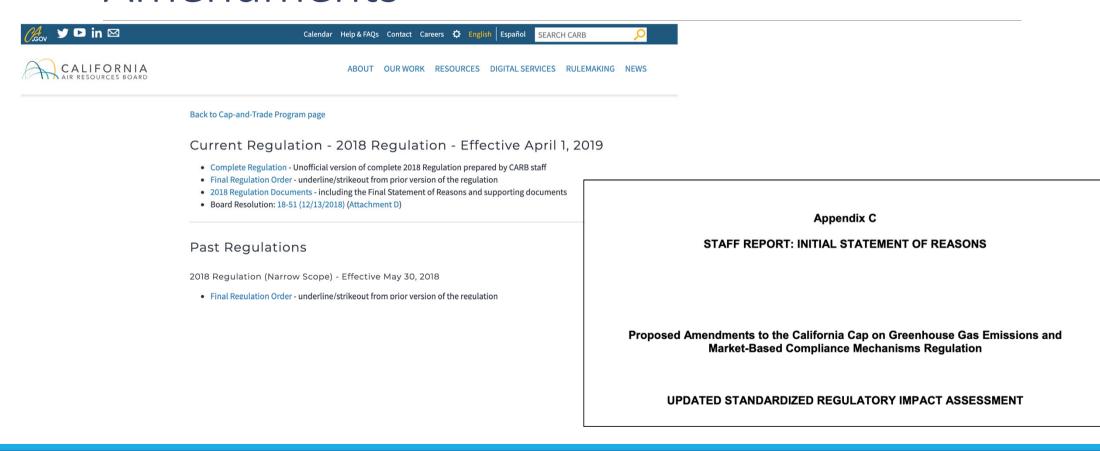
When adopting rules and regulations pursuant to this division to achieve emissions reductions beyond the statewide greenhouse gas emissions limit and to protect the state's most impacted and disadvantaged communities, the state board shall [...] consider the **social costs** of the emissions of greenhouse gases

"social costs" mean an estimate of the economic damages, including, but not limited to, changes in net agricultural productivity; impacts to public health; climate adaptation impacts, such as property damages from increased flood risk; and changes in energy system costs, per metric ton of greenhouse gas emission per year

AB 398 (2017)

In establishing the price ceiling, the state board shall consider, using the best available science [...] the full **social cost** associated with emitting a metric ton of greenhouse gases.

2018 Cap-and-Trade Program Amendments



Scoping Plan: 2030 Macroeconomic Impacts

- Impact of implanting the suite of climate measures, including Cap-and-Trade, to achieve SB 32 target relative to Business as Usual baseline in 2030
- Scoping Plan that includes Cap-and-Trade is 4 times less costly than alternatives

- California GDP: \$3.4 trillion

- Employment: 23,500,000

- Personal Income: \$3.0 trillion

	Percentage Change
California GDP (Billion \$2015)	-0.3% to -0.6%
Employment (Thousand Jobs)	-0.2% to -0.3%
Personal Income (Billion \$2015)	-0.1%

Estimated Avoided Health Impacts in 2030 of Achieving SB 32 Target

Health Impact	Reduction in incidents	Value of avoided incidents (\$ million)
Mortality	140 to 210	\$1,200 to \$1,810
Hospitalizations	20 to 31	\$1.0 to \$ 1.5
ER Visits	58 to 88	\$0.04 to \$0.07
Total		\$1,200 to \$1,800

⁻ Economic valuation includes avoided health impacts related to reductions in diesel particulate matter and NOx

Climate Plan Provides Health Benefits in 2030

AVOIDED PREMATURE DEATHS

VALUE OF AVOIDED HEALTH IMPACTS

VALUE OF AVOIDED

DAMAGES USING

SOCIAL COST OF CARBON



~ 3,300



\$1.2-1.8 billion



\$1.9-11.2 billion

Social Cost by Measure in 2017 Scoping Plan

Measure (Measures in bold are included in the Scoping Plan)	Range of Social Cost of Carbon \$ million USD (2015 dollars)**
50 percent Renewables Portfolio Standard (RPS)	\$55–\$250
Mobile Sources CTF and Freight	\$200-\$1,080
18 percent Carbon Intensity Reduction Target for LCFS -Liquid Biofuels	\$70–\$330
Short-Lived Climate Pollutant Strategy	\$860-\$2,260 (SC-CH ₄)
2x additional achievable energy efficiency in the 2015 IEPR	\$125–\$750
Cap-and-Trade Program	\$610–\$6,560

External Expert Review

- Emissions Market Assessment Committee (EMAC)
- Economic and Allocation Advisory Committee (EEAC)
- Market Simulation Group (MSG)
- Economic Reviewers for the Scoping Plan
- External Research Contracts

Additional Resources



California Air Resources Board: https://www.arb.ca.gov/homepage.htm

AB 32 Scoping Plan: https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

Cap-and-Trade Program: https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm

Compliance Offset Program: https://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm

International Tropical Forest Standard:

https://www.arb.ca.gov/cc/ghgsectors/tropicalforests.htm

WCI Linkage: https://www.arb.ca.gov/cc/capandtrade/linkage/linkage.htm