

# Monitoring and Evaluation of the Cap-and-Trade Program



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JULY 25, 2019

# Monitoring and Evaluation

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

# Program Development Process

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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

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## **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

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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

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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

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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



## ▸ Regulation, Market Information, Guidance, and Other Resources

⊕ Current Regulation and Proposed Regulatory Amendments

⊕ Program Overview

⊖ Publicly Available Market Information

- All Cap-and-Trade Program Data
- Auction Notices and Reports
- Auction Proceeds Summary
- Auction Settlement Prices and Results Summary
- California GHG Emission Inventory
- CARB Offset Credits Issued Table
- CITSS Registrants Report
- Compliance Instrument Report
- Early Action Projects
- Mandatory GHG Reporting Data
- Summary of Market Transfers Completed in 2017
- Vintage 2019 Allowance Allocation
- 2015-2017 Compliance Report

⊕ Guidance Documents for Registered Entities

⊕ Forms for Registered Entities

⊕ Related Programs and Resources

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





Summary of Transfers Registered in CITSS By California and Québec Entities in 2017  
 Posted December 18, 2018

		Priced Transfers				Unpriced Transfers				Total				
		US Dollars				Canadian Dollars								
		Weighted Average Price	Mean Price	Median Price	Standard Deviation Price	Weighted Average Price	Mean Price	Median Price	Standard Deviation Price	Number of Transfers	Quantity	Number of Transfers	Quantity	
<b>Current Vintages</b>														
2013	15	394,673	\$14.78	\$14.75	\$15.19	0.66	\$18.99	\$19.04	\$19.22	0.59	7	132,592	22	527,265
2014	33	1,735,323	\$14.40	\$14.29	\$14.04	0.82	\$18.85	\$18.69	\$18.91	0.69	11	55,438	44	1,790,761
2015	98	11,313,871	\$14.05	\$14.02	\$13.63	0.71	\$18.45	\$18.31	\$18.19	0.76	38	2,781,158	136	14,095,029
2016	238	47,783,188	\$14.08	\$14.12	\$14.02	0.79	\$18.33	\$18.34	\$18.33	0.76	81	3,829,989	319	51,613,177
2017	350	109,527,281	\$14.46	\$14.55	\$14.90	0.76	\$18.45	\$18.55	\$18.85	0.91	85	7,603,744	435	117,131,025
Current Vintage Total	734	170,754,336	\$14.33	\$14.33	\$14.44	0.80	\$18.42	\$18.47	\$18.79	0.84	222	14,402,921	956	185,157,257
<b>Future Vintages</b>														
2018	31	16,708,136	\$14.69	\$14.44	\$15.01	0.73	\$18.67	\$18.52	\$18.96	0.61	1	10,000	32	16,718,136
2019	23	5,300,000	\$14.43	\$14.47	\$15.00	0.73	\$18.50	\$18.61	\$18.96	0.60	1	50,000	24	5,350,000
2020	26	12,589,700	\$14.96	\$14.77	\$14.99	0.44	\$18.82	\$18.69	\$18.89	0.47	1	1,200,000	27	13,789,700
Future Vintage Total	80	34,597,836	\$14.75	\$14.55	\$14.99	0.66	\$18.70	\$18.60	\$18.95	0.56	3	1,260,000	83	35,857,836
Allowances Total	814	205,352,172	\$14.40	\$14.35	\$14.45	0.79	\$18.47	\$18.48	\$18.81	0.82	225	15,662,921	1,039	221,015,093
Number of Unique Allowance Transactions	691	205,352,172	\$14.40	\$14.41	\$14.64	0.76	\$18.47	\$18.55	\$18.81	0.72	172	15,662,921	863	221,015,093
<b>Offset Transfers</b>														
		Priced Transfers				Unpriced Transfers				Total				
		US Dollars				Canadian Dollars								
		Weighted Average Price	Mean Price	Median Price	Standard Deviation Price	Weighted Average Price	Mean Price	Median Price	Standard Deviation Price	Number of Transfers	Quantity	Number of Transfers	Quantity	
<b>California</b>														
U.S. Forest Projects	256	27,410,745	\$11.91	\$12.10	\$12.02	1.34	\$15.26	\$15.55	\$15.42	1.62	1	1,907,776	277	29,318,521
Urban Forest Projects	0	0	0	0	0	0	0	0	0	0	0	0	0	
Ozone Depleting Substances Projects	109	5,055,944	\$11.92	\$12.32	\$12.42	1.06	\$15.35	\$15.87	\$16.20	1.19	7	375,142	126	5,431,086
Livestock Projects	196	2,298,689	\$11.86	\$12.09	\$12.13	1.51	\$15.40	\$15.64	\$15.80	1.77	1	80,390	203	2,379,079
Mine Methane Capture Projects	45	1,921,148	\$11.62	\$11.93	\$12.00	1.55	\$14.96	\$15.30	\$15.66	1.91	0	630,521	55	2,551,669
<b>Québec</b>														
Destruction of Ozone Depleting Substances Projects	NA <sup>1</sup>	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	16,145	1	16,145
Landfill Site Methane Destruction Projects	8	40,483	\$11.98	\$11.91	\$11.87	0.52	\$15.17	\$15.08	\$15.00	0.45	0	0	8	40,483
Livestock Projects	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offsets Total	614	36,727,009	\$11.89	\$12.12	\$12.10	1.36	\$15.26	\$15.61	\$15.71	1.62	6	3,009,974	670	39,736,983
Number of Unique Offset Transactions	304	36,727,009	\$11.89	\$11.83	\$12.00	1.45	\$15.26	\$15.27	\$15.31	1.75	5	3,009,974	349	39,736,983
<b>Total Allowances and Offsets Transfers</b>														
	1,428	242,079,181									18,672,895	1,709	260,752,076	
<b>Total Unique Allowances and Offsets Transactions</b>														
	995	242,079,181									18,672,895	1,212	260,752,076	

1. NA identifies transfers where the amount of transfers is too low to disclose. These transfers are instead reported as "Unpriced Transfers."

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

# Economic Regulatory Requirements

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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

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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

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## 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



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## Current Regulation - 2018 Regulation - Effective April 1, 2019

- [Complete Regulation](#) - Unofficial version of complete 2018 Regulation prepared by CARB staff
- [Final Regulation Order](#) - underline/strikeout from prior version of the regulation
- [2018 Regulation Documents](#) - including the Final Statement of Reasons and supporting documents
- [Board Resolution: 18-51 \(12/13/2018\) \(Attachment D\)](#)

## Past Regulations

2018 Regulation (Narrow Scope) - Effective May 30, 2018

- [Final Regulation Order](#) - underline/strikeout from prior version of the regulation

### Appendix C

#### STAFF REPORT: INITIAL STATEMENT OF REASONS

#### Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation

#### UPDATED STANDARDIZED REGULATORY IMPACT ASSESSMENT

# 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

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AVOIDED  
PREMATURE DEATHS



~ 3,300

VALUE OF AVOIDED  
HEALTH IMPACTS



\$1.2-1.8 billion

VALUE OF AVOIDED  
DAMAGES USING  
SOCIAL COST OF CARBON



\$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)**
<b>50 percent Renewables Portfolio Standard (RPS)</b>	\$55–\$250
<b>Mobile Sources CTF and Freight</b>	\$200–\$1,080
<b>18 percent Carbon Intensity Reduction Target for LCFS -Liquid Biofuels</b>	\$70–\$330
<b>Short-Lived Climate Pollutant Strategy</b>	\$860-\$2,260 (SC-CH <sub>4</sub> )
<b>2x additional achievable energy efficiency in the 2015 IEPR</b>	\$125–\$750
<b>Cap-and-Trade Program</b>	\$610–\$6,560

# External Expert Review

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- 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

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**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>