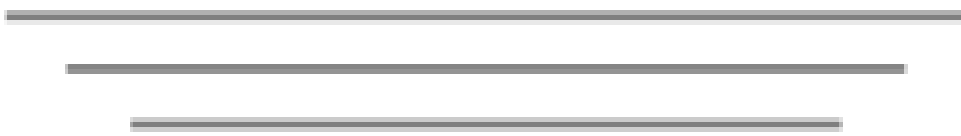
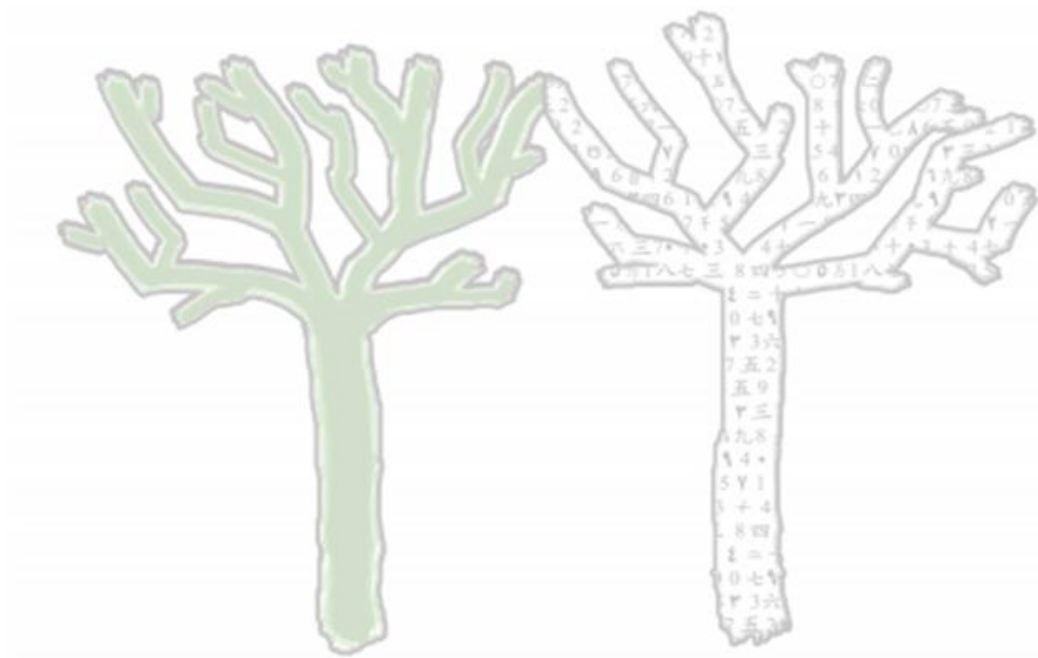
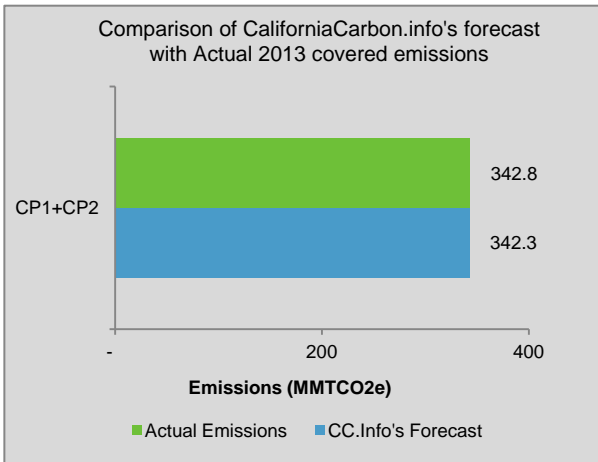


2014 California Covered Emissions Report and 2030 WCI Carbon Price Forecast Update

November 2015
CaliforniaCarbon.info



In light of recently released 2014 covered emissions data for Californian entities, emissions covered under CP1 registered a gain of 0.77% as compared to last year. The combined CP1 and CP2 covered emissions registered a fall of 1.63% between 2013 and 2014. This is in line with CaliforniaCarbon.info's 2014 emissions forecast. For combined CP1 and CP2 covered emissions, the deviation stands at 0.14% towards the lower side. It suggests that despite population growth, absolute petroleum consumption in California is marginally decoupling vis-a-vis a growing economy.



INTRODUCTION

California Air Resources Board (ARB) recently released reported and verified greenhouse gas (GHG) emissions data for

Californian entities mandated to report their GHG emissions. For 2014, emissions covered under the state's cap-and-trade program for CP1 amounted to 146,120,133 MtCO₂e, 0.77% higher than 2013, while the total emissions covered under CP1 and CP2 together was 342,809,374 MtCO₂e for 2014 - a decline of 1.63% compared to 2013.

Facilities with emissions over 25,000 MtCO₂e are mandated to report their emissions after verification by ARB-accredited third-party verifiers. For 2014, 775 entities reported their emissions to ARB.

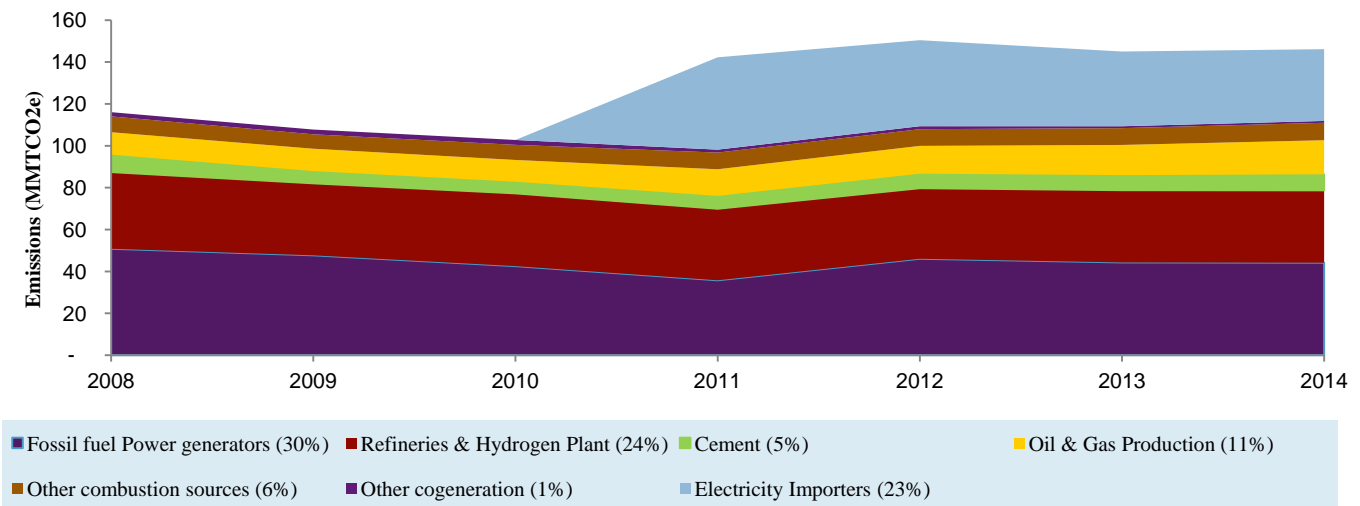
CaliforniaCarbon.info's analysis of 2014 GHG emissions

Among all the sectors covered under CP1, fossil fuel power generation was the highest emitting sector in 2014. In terms of absolute emissions, it registered a decline of 0.27% i.e. 44.15 MMtCO₂e in 2014 compared to 44.27 MMtCO₂e in 2013.

The second largest greenhouse gas emitting sector for 2014 was Refineries & Hydrogen Plants. It registered a gain of 0.15% as compared to 2013 covered emissions, emitting 34.56 MMtCO₂e. Refineries & Hydrogen Plants were followed by Electricity Importers. Emissions from Electricity Importers registered a fall of 3.99% as compared to 2013 emissions it emitted 35.69 MMtCO₂e last year.

Oil & Gas production sector saw its emissions rising from 14.41 MMtCO₂e in 2013 to 16.28 MMtCO₂e in 2014, a rise of approximately 13.01%. Emissions from the cement manufacturing sector increased from 7.20 MMtCO₂e in 2013 to 7.65 MMtCO₂e in 2014, a gain of 6.35% between 2013 and 2014. The remaining sectors include Other Combustion Sources and Other Cogeneration. Together their emissions for 2014 were approximately 9.21 MMtCO₂e.

Historical emission trends of sectors covered under first compliance period



<http://californiacarbon.info/historical-reported-emissions/>

Since the majority of the demand for CCAs comes from the largest emitters covered under the California cap-and-trade scheme, we analyse the trends of reported emissions of five of the largest emitters of each sector. These emitters may contribute as much as 80-85% of their respective sector's total reported emissions.

FOSSIL FUEL-BASED POWER GENERATION

Reporting entities
150

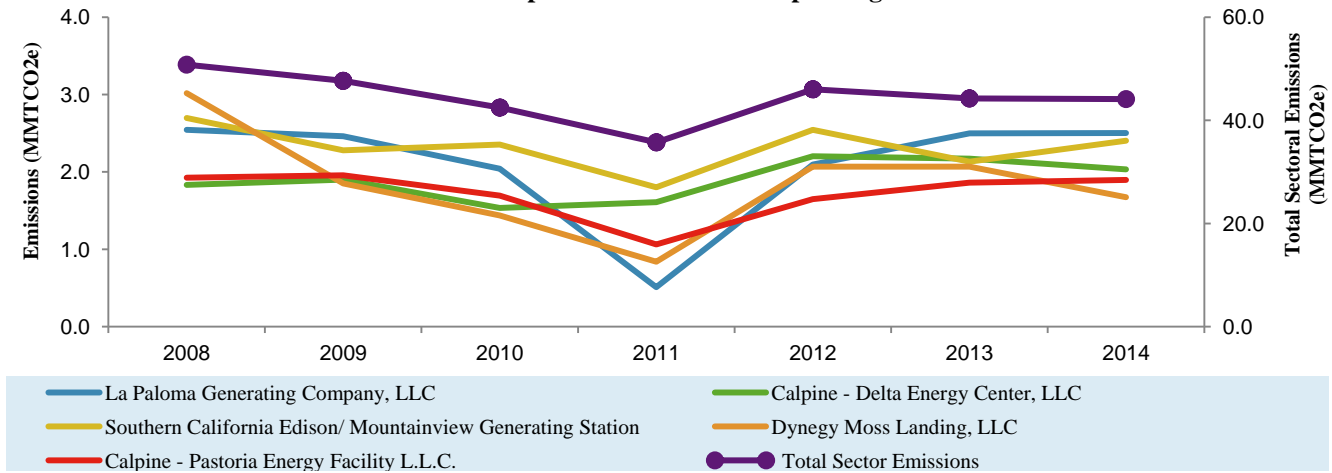
Emissions reported
44.15 million tonnes

Annual change in emissions (YOY)
- 0.27%

Fossil fuel-based power generation sector is the largest GHG emitting sector under CP1 of the cap-and-trade program. It accounted for 30.2% of total CP1 emissions in 2014. This sector has registered a year on year (YOY) fall of 0.27% in its covered emissions for 2014. This can be attributed to decline in California’s total system power generation from non-renewable sources i.e. coal, natural gas, and large hydro. Power generation from coal, natural gas and large hydro together declined from 142,635 GWh in 2013 to 136,997 GWh in 2014.

The top 5 GHG emitting entities from this sector covered 24% of the sectoral emissions, with La Paloma Generating Company as the highest emitter: 2.5MMtCO₂e for 2014.

Emissions trends of top emitters in fossil fuel power generation sector



<http://californiacarbon.info/historical-reported-emissions/>

ELECTRICITY IMPORTERS

Reporting entities
115

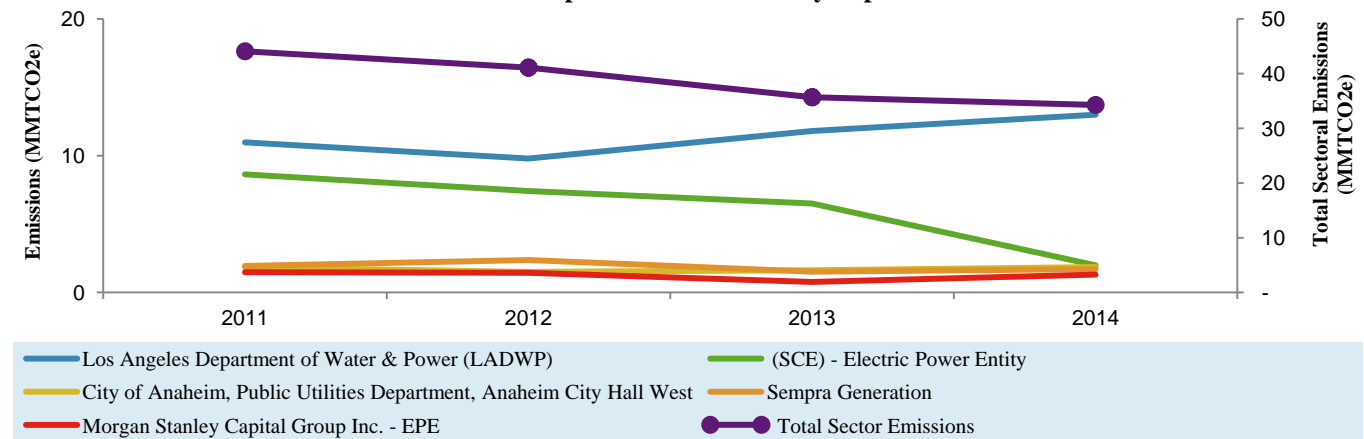
Emissions reported
34.27 million tonnes

Annual change in emissions (YOY)
- 3.99%

Electricity Importers is the third largest GHG emitting sector covered under CP1 of the cap-and-trade program. It accounted for 23.5% of the total CP1 emissions. It has witnessed a fall of 3.99% in emissions during 2013-2014. This decline can be explained by the fact that in 2014 imported power from non-renewable sources i.e. coal, natural gas and large hydro witnessed a decrease. Power imported from coal, natural gas and large hydro together declined from 34,990 GWh in 2013 to 30,327 GWh in 2014.

The top 5 GHG emitting entities from this sector covered 58% of the sectoral emissions, with Los Angeles Department of Water & Power (LADWP) as being the highest emitter: 13.0 MMtCO₂e for 2014.

Emissions trend of top emitters in electricity importers sector



<http://californiacarbon.info/historical-reported-emissions/>

REFINERIES & HYDROGEN PLANTS

Reporting entities
29

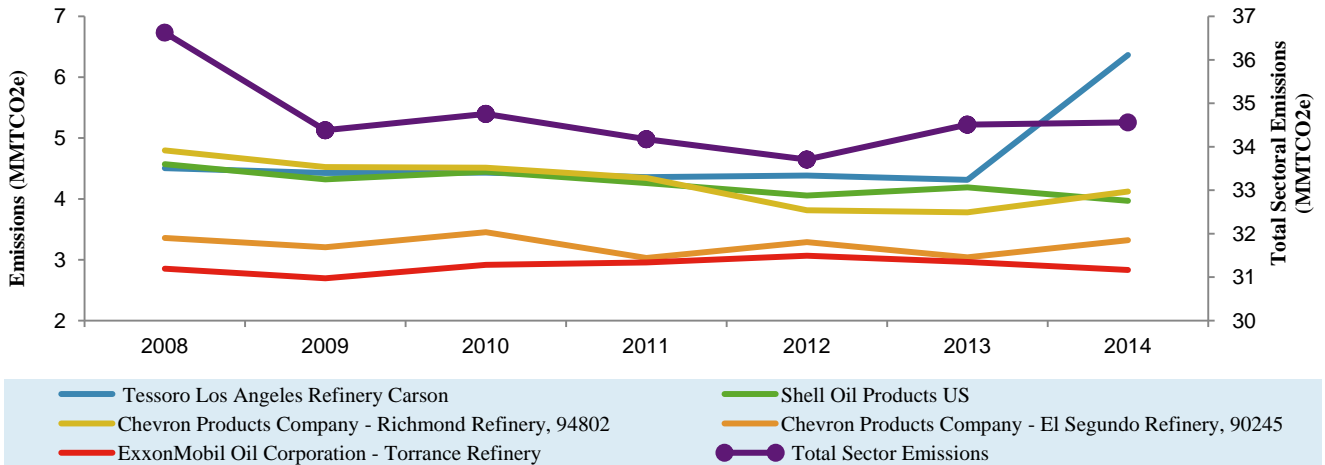
Emissions reported
34.56 million tonnes

Annual change in emissions (YOY)
+ 0.15%

After fossil fuel based power generation sector, Refineries & Hydrogen Plants is the second highest GHG emitting sector under CP1 of the cap-and-trade program in 2014. It accounts for approximately 23.7% of the total emissions covered under CP1. 2014 emissions from this sector remained in line with the 2013 emissions with a minor increase of 0.15% compared to 2013.

The top 5 GHG emitting entities from this sector covered 60% of the sectoral emissions, with Tesoro Los Angeles Refinery Carson as the highest emitter: 6.4 MMtCO_{2e} for 2014.

Emission trends of top emitters in refinery sector



<http://californiacarbon.info/historical-reported-emissions/>

OIL & GAS PRODUCTION

Reporting entities
61

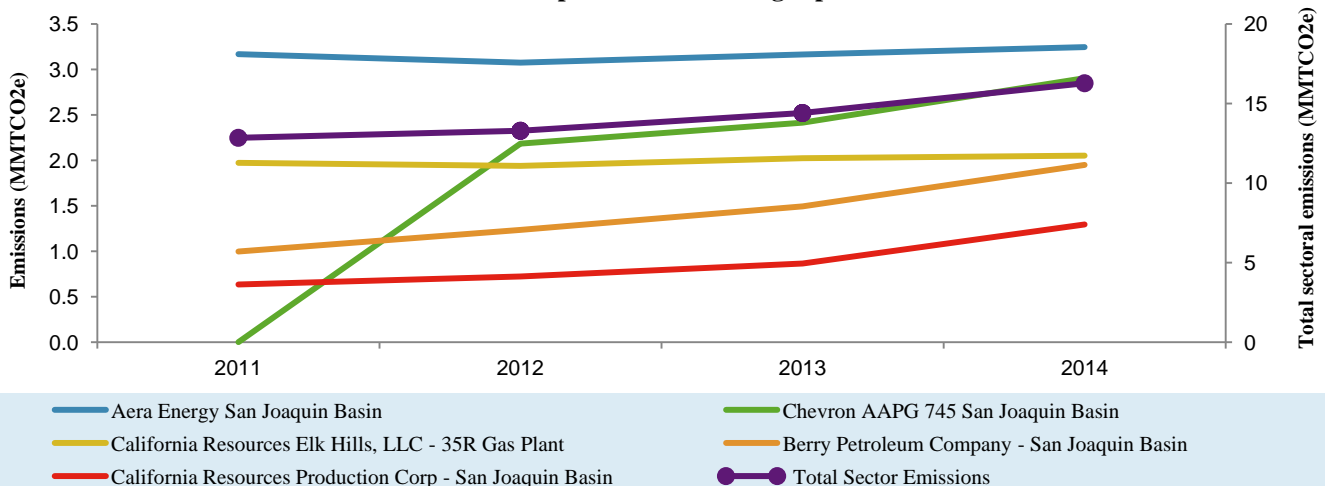
Emissions reported
16.3 million tonnes

Annual change in emissions (YOY)
+ 13.01%

Oil & Gas Production sector is next highest emitting sector under CP1 of the cap-and-trade program, after the electricity importers sector. For the year 2014, it covered approximately 11% of the total CP1 emissions. Emissions from this sector increased from 14.4 MMtCO_{2e} in 2013 to 16.3 MMtCO_{2e} in 2014, a rise of approximately 13.0%.

The top 5 GHG emitting entities from this sector covered 70% of the sectoral emissions, with Aera Energy San Joaquin Basin as the highest emitter: 3.2 MMtCO_{2e} for 2014.

Emissions trend of top emitters in oil & gas production sector



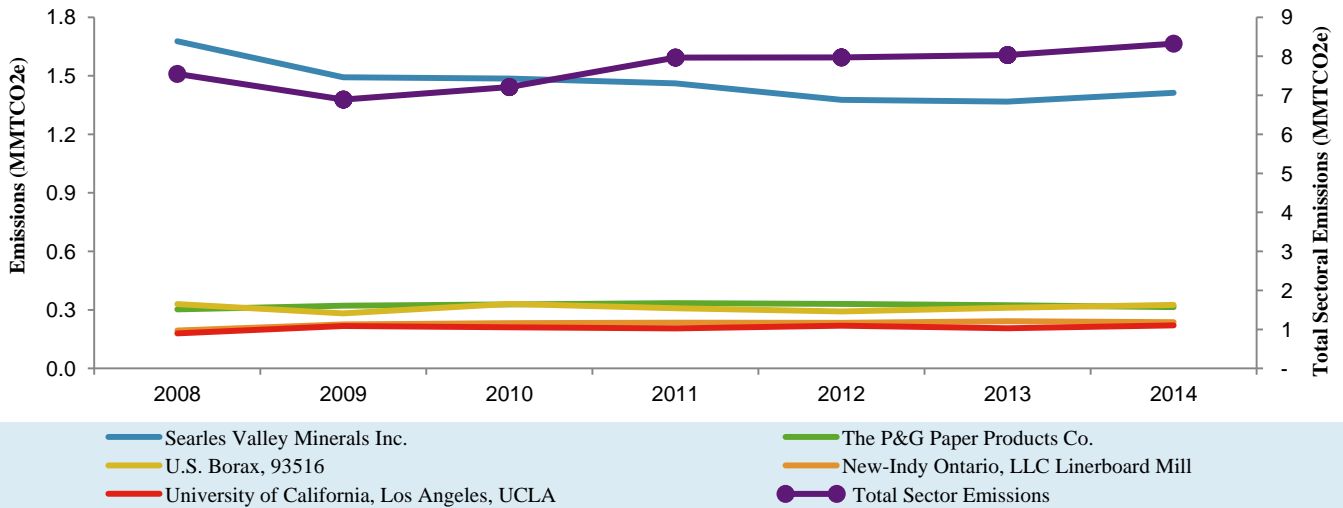
<http://californiacarbon.info/historical-reported-emissions/>

OTHER COMBUSTION SOURCES

| | | |
|---------------------------|-------------------------------------------|----------------------------------------------------|
| Reporting entities 244 | Emissions reported 8.33 million tonnes | Annual change in emissions (YOY) + 3.66% |
|---------------------------|-------------------------------------------|----------------------------------------------------|

Other Combustion Sources accounted for approximately 5.7% of the total CPI emissions. As compared to 2013, it has remained almost consistent with a minor gain of 3.66% i.e. from 8.03 MMtCO₂e in 2013 to 8.33 MMtCO₂e in 2014. The top 5 GHG emitting entities from this sector covered 30% of the sectoral emissions, with Searles Valley Minerals Inc- a mining entity, being the highest emitter: 1.4 MMtCO₂e for 2014.

Emission trends of top emitters in other combustion sector



<http://californiacarbon.info/historical-reported-emissions/>

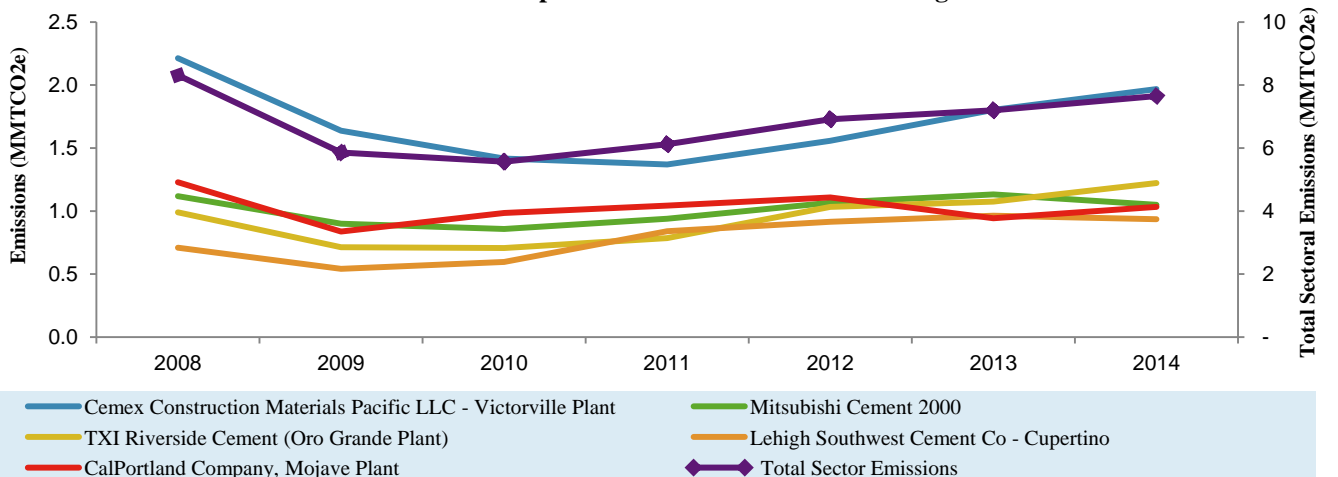
CEMENT MANUFACTURING

| | | |
|-------------------------|-------------------------------------------|----------------------------------------------------|
| Reporting entities 9 | Emissions reported 7.65 million tonnes | Annual change in emissions (YOY) + 6.35% |
|-------------------------|-------------------------------------------|----------------------------------------------------|

The Cement Manufacturing sector covered approximately 5.2% of the total CPI emissions. Emissions from this sector registered a gain of 6.4% for the period of 2013-2014, as its emissions increased from 7.2 MMtCO₂e in 2013 to 7.7 MMtCO₂e in 2014. It is in line with the Californian economic growth rate (real GDP growth rate) of 2.8% between 2013 and 2014.

The top 5 GHG emitting entities from this sector covered 81% of the sectoral emissions, with Cemex Construction Materials Pacific LLC - Victorville Plant, being the highest emitter: 1.97 MMtCO₂e for 2014.

Emission trends of top emitters in cement manufacturing sector



<http://californiacarbon.info/historical-reported-emissions/>

OTHER COGENERATION

Reporting entities
95

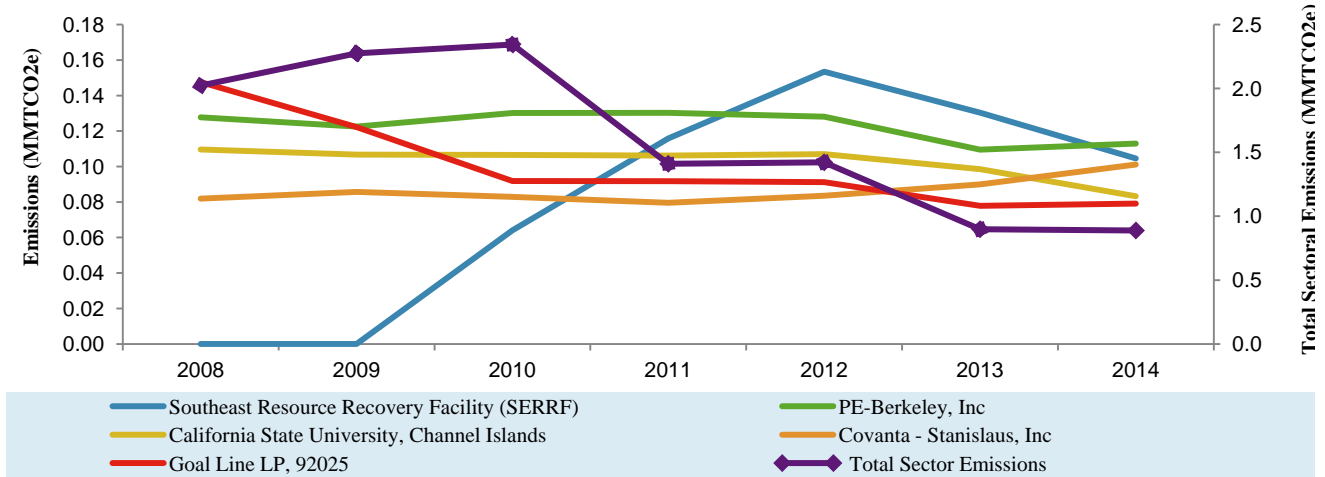
Emissions reported
0.89 million tonnes

Annual change in emissions (YOY)
- 1.11%

This sector represents entities which are part of cogeneration and instate generation excluding fossil fuel power generators. It has been done to avoid the quandary of double counting. Entities under this sector witnessed a fall in emissions from 0.90 MMtCO₂e in 2013 to 0.89 MMtCO₂e in 2014.

The top 5 GHG emitting entities from this sector covered 54% of the sectoral emissions, with Southeast Resource Recovery Facility (SERRF), being the highest emitter: 0.10 MMtCO₂e for 2014.

Emission trends of top emitters in other cogeneration sector



<http://californiacarbon.info/historical-reported-emissions/>

TRANSPORTATION FUEL & CO₂ SUPPLIERS

Reporting entities
61

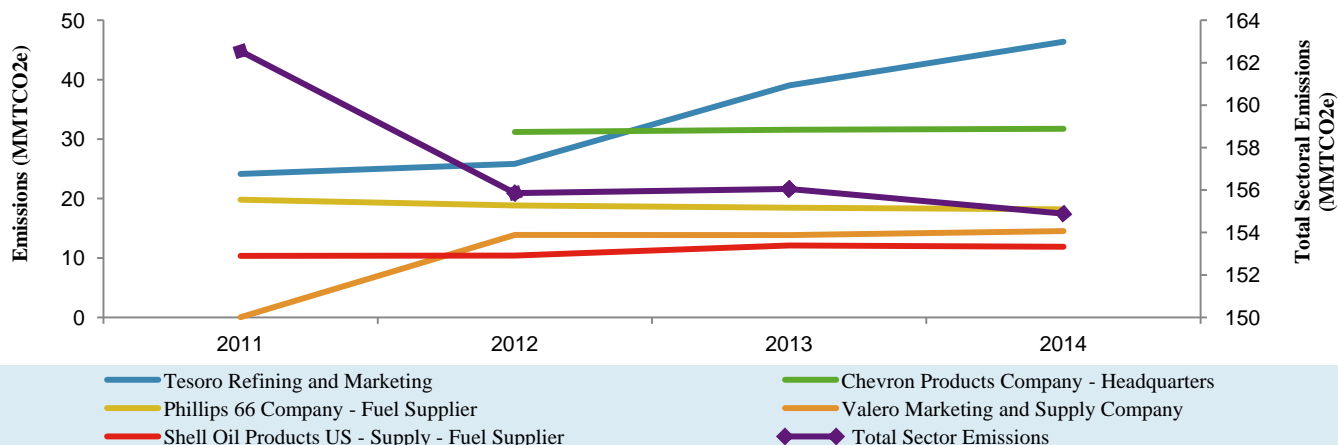
Emissions reported
154.9 million tonnes

Annual change in emissions (YOY)
- 0.74%

Transportation Fuel & CO₂ suppliers is the largest GHG emitting sector in California. It is covered under the California cap-and-trade program in CP2, beginning on 1 January, 2015. Out of the total emissions covered under CP1 and CP2, it accounted for approximately 45.2% of the overall emissions for 2014 in California. As compared to 2013, emissions from transportation fuel suppliers witnessed a fall of 0.74% i.e. emissions from this sector has decreased by approximately 1.2 MMtCO₂e.

The top 5 GHG emitting entities from this sector covered 79.2% of the sectoral emissions, with Tesoro Refining and Marketing, being the highest emitter: 46.4 MMtCO₂e for 2014.

Emission trends of top emitters in transportation fuel & CO₂ suppliers



<http://californiacarbon.info/historical-reported-emissions/>

NATURAL GAS, NGL & LPG SUPPLIERS

Reporting entities
36

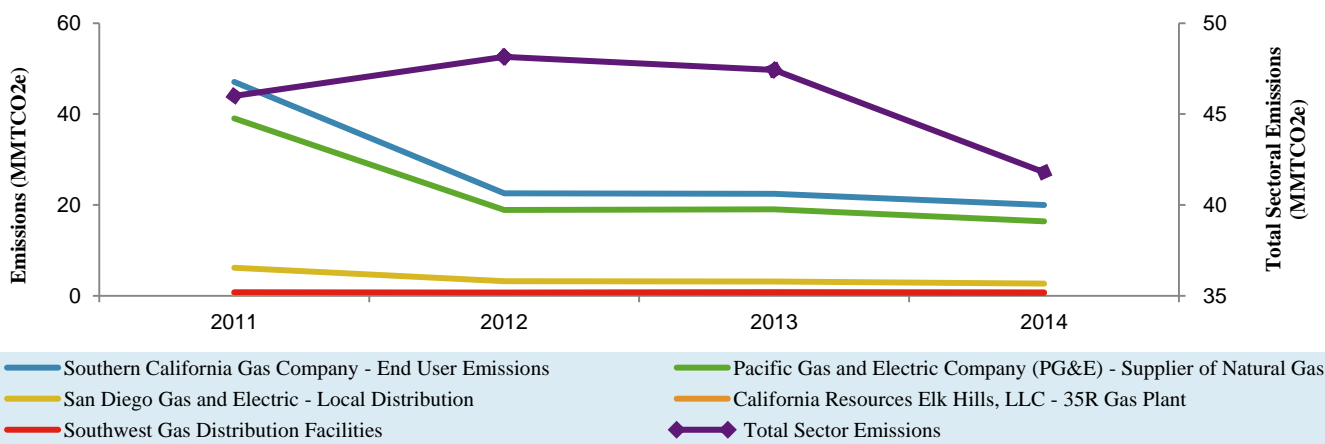
Emissions reported
41.80 million tonnes

Annual change in emissions (YOY)
- 11.87%

Suppliers of Natural Gas, NGL & LPG are the second largest GHG emitters for CP1 and CP2 combined emissions. Out of the total emissions covered under CP1 and CP2, it accounted for approximately 12.2%. Emissions from this sector declined from 47.4 MMtCO₂e in 2013 to 41.8 MMtCO₂e in 2014, a drop of 11.87% from 2013.

The top 5 GHG emitting entities from this sector covered 98% of the sectoral emissions, with Southern California Gas Company, being the highest emitter: 20.0 MMtCO₂e for 2013

Emission trends of top emitters in Natural Gas, NGL & LPG suppliers

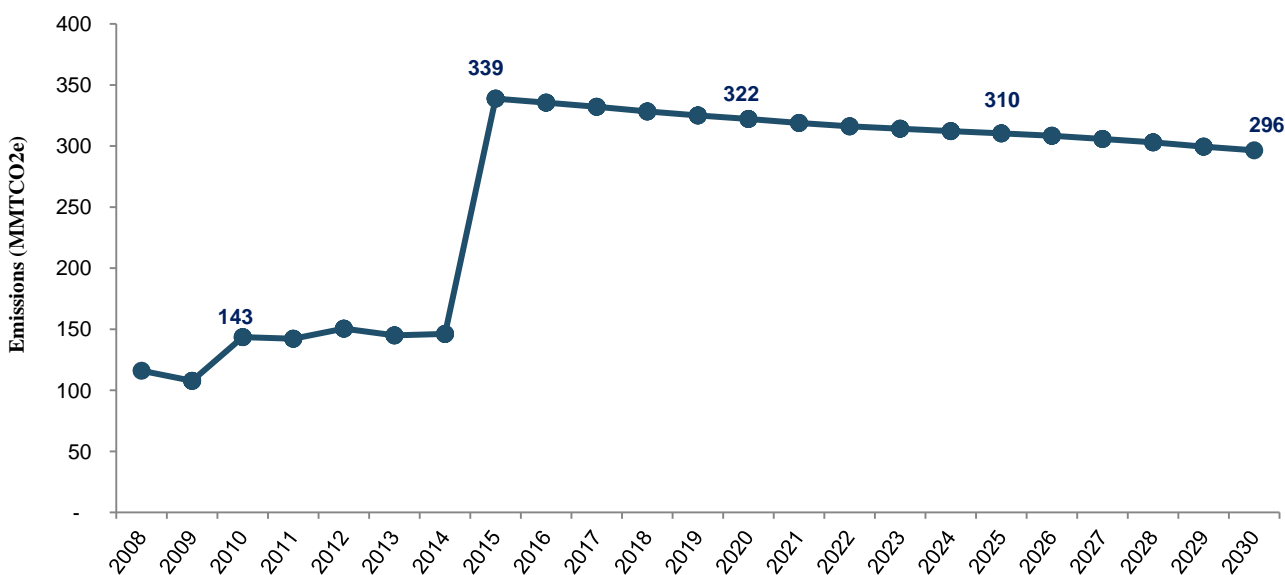


<http://californiacarbon.info/historical-reported-emissions/>

TOTAL BASELINE EMISSIONS FORECAST THROUGH 2020

Time-series econometric analysis modeled by CaliforniaCarbon.info suggests that the baseline covered emissions for California cap-and-trade program will approximately be 322 MMtCO₂e by 2020 and 296 MMtCO₂e by 2030. As compared to 2013, emissions covered under the state's cap-and-trade program for CP1 increased by 0.77% i.e. from 145.0 MMtCO₂e in 2013 to 146.1 MMtCO₂e in 2014.

California GHG emissions forecast



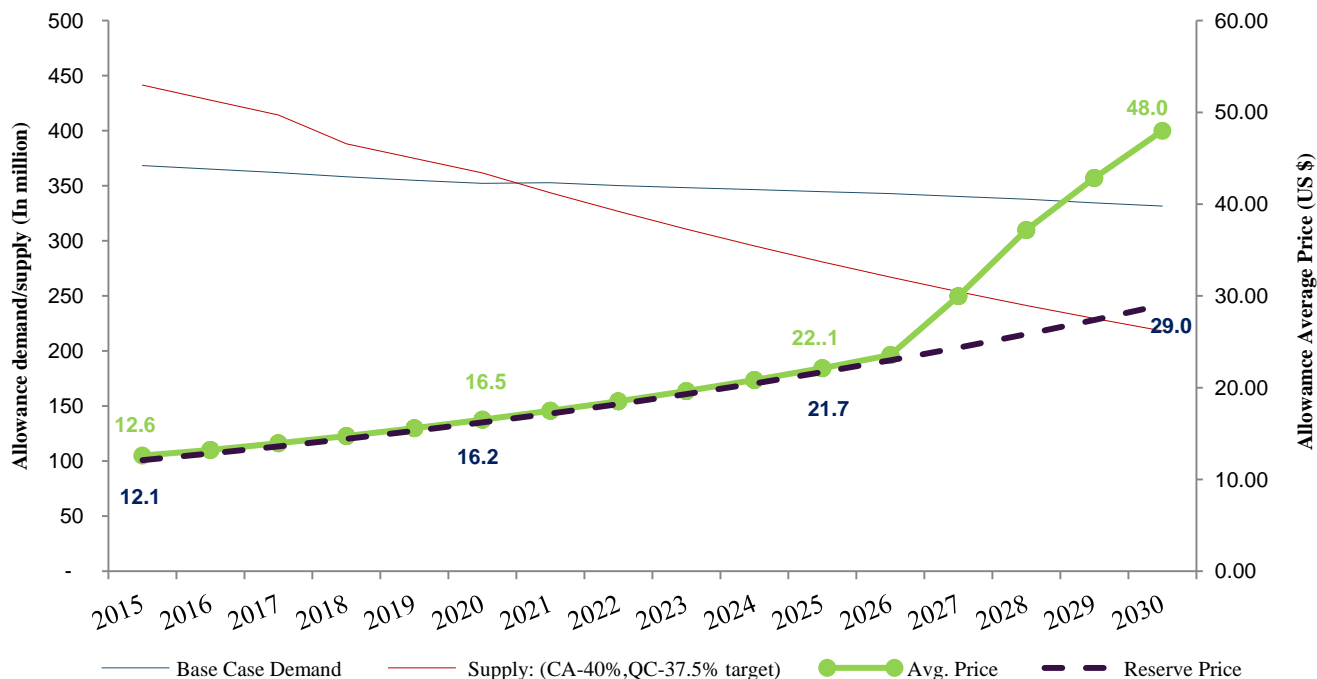
<http://californiacarbon.info/2030-california-quebec-carbon-allowance-price-forecast/>

With introduction of Transportation Fuel Suppliers and the Suppliers of Natural Gas, NGL & LPG under the California cap-and-trade program from the beginning of its second compliance period (CP2) in 2015, baseline emissions for 2015 is expected to be approximately 338.91 MMtCO₂e in 2015. The baseline emissions are expected to decrease at an annual average rate of 0.89% between 2015 and 2030.

WCI DEMAND-SUPPLY PRICE FORECAST ANALYSIS

In light of recently reported GHG emissions data for 2014 by ARB, the time-series econometric analysis conducted by CaliforniaCarbon.info suggests that the WCI carbon allowance market will be long by a cumulative total of 290 to 300 million tons by 2020, and remain annually oversupplied till 2020. For the year 2013, the WCI carbon allowance market was oversupplied by approximately 24-25 million. The effective surplus will decline as allowances are withheld under the Annual Price Containment Reserve (APCR) (1%, 4% and 7% of the total annual allowances budget for 1st, 2nd and 3rd compliance period respectively), as long as auction prices remain below the APCR trigger price. Despite the decline in effective surplus, the market is expected to see annual surplus till 2021. The first annual shortage will be seen in 2021, with an annual shortfall of approximately 9-10 million CCAs, but due to a large oversupply of allowances, and also since banking of allowances (and offsets) is allowed between different compliance periods, the market will remain substantially oversupplied until 2026.

Annual Demand-Supply Price Forecast for CCAs Under Base Case Scenario



<http://californiacarbon.info/2030-california-quebec-carbon-allowance-price-forecast/>

CaliforniaCarbon.info estimates a cumulative allowance surplus of 127.2 million for the three years from 2013 and ending on Dec 2015. Based on the estimated surplus and the fact that issuance of allowances precedes the compliance deadline every year, WCI carbon allowances are expected to trade near the floor price till 2026.

The baseline demand and supply scenarios create an annual surplus of 73 million in 2015, during which a cumulative surplus of 127 million also applies. This cumulative surplus underpins an expected auction price spread of 50 cents, with weighted clearing at approximately \$ 12.60 averaged across the four auctions. In 2020, the cumulative surplus of 300 million produces an annual spread of fewer than 30 cents, with weighted auction prices in the range of \$16.50-\$17.00.

Annual surplus turns into annual shortage in 2021, causing cumulative surplus to decline to 292 million. This produces an average spread of 32 cents and allowance prices in the range of \$17.30-\$17.60. The reduced cumulative surplus of 184 million in 2025 produces a spread of 45 cents, and allowance prices in the range of \$22.00-\$22.30. With cumulative surplus turning into a 46 million cumulative shortage in 2027, a spread of approximately \$6 results, with average allowance price in the range of \$30.10-\$30.50. Even though annual shortage increases at a decreasing rate in the 2020s, a 2030 cumulative shortage of 361 million produces a spread of approximately \$19, with average allowance price in the range of \$48.10-\$50.10.

ANALYST COMMENTS

The decline in total covered emissions shows that California's cap-and-trade program is producing the desired environmental effects. While the sectors covered under first compliance period registered a gain of 0.77% between 2013 and 2014, total covered emission including new entrants like transportation fuel suppliers and natural gas suppliers registered a fall of 1.63%. It is worth noting that the electricity generators and importers together reduced their emissions by 1.93% between 2013 and 2014 sectors where as oil & gas production sector registered highest jump in emissions of approximately 1.9 MMtCO_{2e} between 2013 and 2014.

Rise in renewable energy generation

The growth of in-state renewable generation (from 19.6% in 2013 to 22.5% in 2014), credited in part to the Renewable Portfolio Standard (RPS) has undoubtedly played its part. Electricity import from solar power by Californian utilities increased from 2013 levels by 83% to 2,009 GWh in 2014. This increase helped total solar account for 4.20 percent of total system power, up from 1.8 percent in 2013.

SECONDARY MARKET IMPACTS

Covered emissions for the first compliance period (2013-14) increased marginally in 2014 to 146,120,333, 0.77% up on 2013's total of 144,999,976. Californian entities were hence required to submit allowances and offsets to cover a total of 291,120,309 tCO₂e across the first compliance period, with an additional 36,664,703 instruments required of covered entities from Quebec. 322,181,742 V2013 and V2014 allowances were held in the various compliance and holding accounts at the end of the third quarter of 2015, in addition to 2,040,026 non-vintage early action allowances from Quebec.

Furthermore, entities may use offsets and true-up allowances to meet a portion of their obligations. Last year, 1,687,432 offsets and 1,758,738 true-up V2015s were surrendered. This leaves a carry-over long position of 34.5 million at the end of the first compliance period, in addition to whatever amount of offsets was used for this month's surrender (ARB reports hint that some 13 million offsets were surrendered for CP1 by California entities). As has been reported in various channels, the biennial surrender fell short of 100% compliance by some 500,000 tCO₂e. As a penalty for non-compliance, instruments equal to 2,000,000 tCO₂e need to be surrendered by mid-December this year, which could slightly shorten the stated oversupply.

The results of the 2013 emissions were in line with most expectations, and the secondary market has not shown any immediate impact following the release of the data. Prices continue to ascend due to end-of-year fundamentals and the market continues to see reasonable liquidity in the preceding weeks.

It is likely that the imminent increase in the floor price (5% over inflation) and the expansion of the market in January 2015, when transport fuels will also be placed under the cap effectively doubling the market size, are the two main drivers behind the increase in liquidity seen in the past few weeks.

CONCLUSION

Greenhouse gas emissions currently covered under the 1st and 2nd compliance period of the California's cap-and-trade program register a fall of 1.63 % to 342.8 MMtCO₂e in 2014, despite of Californian economy registering a year on year growth of 2.8% between 2013 and 2014. It suggests that California is on track to achieve AB-32's emission reduction target for 2020 and longer term target of 2030. Various complementary measures working in line with the cap-and-trade program such as Renewable Portfolio Standard, Low Carbon Fuel Standard, Pavley regulation etc, are certainly playing a major role reducing emissions.

DISCLAIMER

While Climate Connect, its data or content providers, the financial exchanges and each of their affiliates and business partners display information on the web site in good faith, no representation or warranty is given or shall be deemed given or implied by Climate Connect, its data or content providers, the financial exchanges and each of their affiliates and business partners to you or any other person as to the completeness, accuracy, sufficiency, currency, reliability or suitability of any such information, all which information is provided on an 'as is' basis, and all such representations warranties or conditions that may be implied by statute, general law or otherwise (whether as to title, non-infringement, merchantability, fitness for purpose or otherwise) are hereby excluded. [Access full disclaimer statement.](#)

About CaliforniaCarbon.info

CaliforniaCarbon.info is your knowledge hub for the California cap-and-trade market. It is an online news, data, and analytics portal designed to empower high-stakes decision-making, both for policy-makers and for the market. Access to commentary on the latest developments concerning the program, to real-time trading data, to advanced modelling and analytics, and to themed periodicals such as this one, is available on a subscriber basis. CaliforniaCarbon.info has content and/or data partnerships with a large number of market participants, and has been a media partner to the Navigating the American Carbon World and Argus California Carbon Summit conferences in the past year.

About Climate Connect Limited

CaliforniaCarbon.info is operated by Climate Connect Ltd, an online media firm established in London in 2010. With headquarters in London and in New Delhi, Climate Connect's dedicated editorial, research, forecasting, and IT solutions desks have a global reach that allows us to serve clients in four continents. Climate Connect's distinguished board of advisors consists of high net-worth individuals in the Bay Area and in New Hampshire, who boast 40 years of cumulative experience in the climate change markets. Climate Connect also operates several other websites, including www.chinacarbon.net.cn, www.cleantechdeals.com and www.energyportal.in.