CALIFORNIA CARBON.info

2030 WCI Emissions and Price Forecast

Analyst contacts

Harry Horner

Anant Jain

insights@CaliforniaCarbon.info

CALIFORNIA CARBON.info

Table of contents

Tables

Figures

Snapshot

2020 introduced 2 significant variables that will influence the WCI market till 2030:

a) One is the impact of COVID-19 and the ripple effect it will have.
b) The second is changing dynamics in the transportation sector emissions, driven by the increasing robustness of the California LCFS market, penetration of EVs and the possible impact of the Canadian Clean Fuel Standards in Quebec.

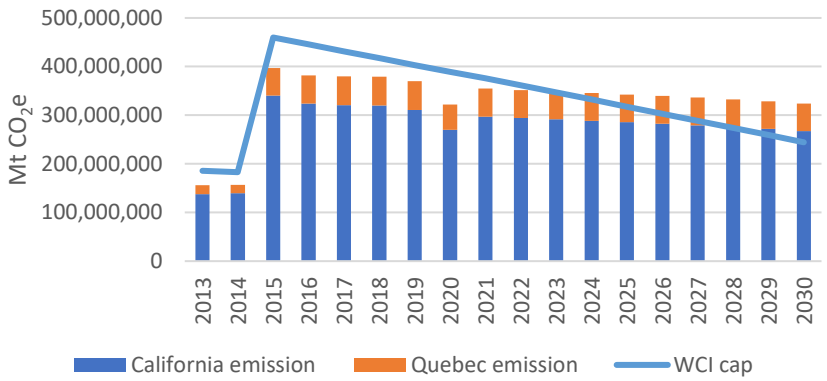
These variables have led us to revise our forecast for Jan 2020 quite drastically, in fact it is probably the most significant revision since we started market coverage 8 years ago. The primary disruptor has been COVID-19. We have yet to see its impact play out, and will be providing quarterly updates throughout 2021, as well as revisiting our present forecast in July 2021.

As a result of COVID-19, we estimate that 50 to 55 million allowances remain in entity accounts that would otherwise have been used for surrender at the end of 2021/ 22. This is equivalent to the anticipated fall in emissions versus the normal scenario without a pandemic.

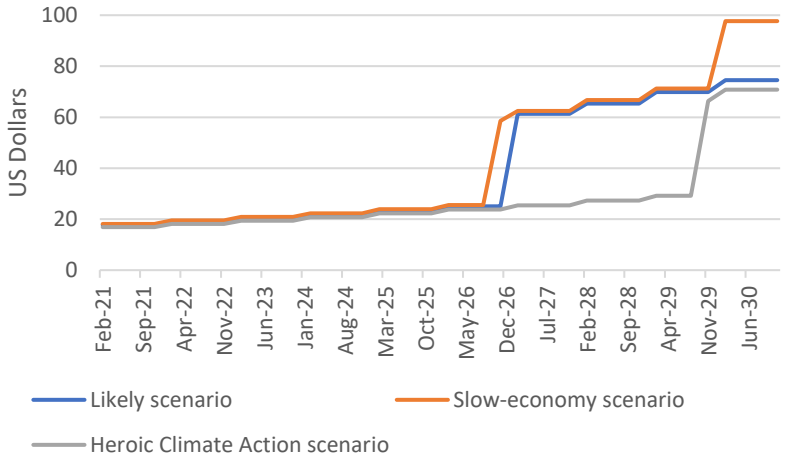
Additionally, EV purchases are now likely on an exponential growth curve. As humans, our minds are wired to think linearly and not exponentially; and there is a strong probability that we will see the rise of EVs (as evidenced through sales) in 2021 and 2022.

We have modeled 3 scenarios in this note: (a) Likely Scenario, (b) Slow-economy scenario and (c) Heroic Climate Action scenario. The scenarios are built around potential linkages between different key variables that are detailed in Section 3. The scenarios take into account the interplay between policies, technologies, economic progress, and other carbon interventions in California and Quebec.

Likely scenario: California and Quebec Emissions compared with the WCI Cap (data till 2019 is actual)



Forecasted CCA prices for different scenarios



This year's model builds on an expanded CarbonOutlook™ model that also interlinks with the LCFS (low Carbon Fuel Standards) model, and our model on Offsets. The variables that have been enumerated in this report. Should any reader be interested in developing a custom scenario, our analyst team would be glad to support.

1 Variables taken into account in the forecasting

- Macro variables
  - GSP for California
  - GSP for Quebec
  - Population for California
  - Population for Quebec
  - Vehicle Miles Traveled for different types of vehicles
  - Inflation
  - Cost of capital for covered entities
- Electrification in California
  - Fossil fuel-based electricity generation
    - Age of plants
    - Thermal efficiency of plants
  - Renewable electricity generation
  - In-state vs imported electricity
  - Increased electricity demand due to EVs
- Fuel usage/ production in Quebec
  - Quebec gasoline fuel sales (volume)
  - Quebec gasoline fuel sales (currency)
  - Quebec Natural gas deliveries
    - Commercial and institutional consumers
    - Industrial consumers
    - Residential consumers
- Fuel usage/ production in California
  - Gasoline retail sales
  - Diesel retail sales
  - Volume of fuel used
    - Starch Ethanol
    - Sugar Ethanol
    - Cellulosic Ethanol
    - Renewable Gasoline
    - Hydrogen for LDVs
    - Electricity for LDVs
    - CARBOB
    - Biodiesel
    - Renewable Diesel
    - Conventional NG
    - Renewable NG
    - Hydrogen for HDVs
    - Electricity for HDVs
    - Electricity for Rail/Forklift/etc.
    - CARB Diesel
    - Aviation fuel (for LCFS)
  - Blends/ ratios of fuels
  - Refinery production
  - Oil and gas production
  - California Natural Gas Delivered
    - to Consumers in California (Including Vehicle Fuel)
    - Residential Consumption
    - Commercial Consumers California Natural Gas Industrial Consumption
    - Vehicle Fuel Consumption
    - Electric Power Consumers
- Industry
  - Cement production in California
  - Quebec mineral products sector emissions
  - Quebec metal production sector emissions
  - Quebec chemical Industry sector emissions

- Emissions inventory
  - Historical emissions inventory of sites
- Corporate data
  - Financials of companies that own the emissions
  - Emission targets of companies
- Behavior/ consumption pattern
  - Vehicle miles traveled per capita
  - Households using electricity for heating
- Vehicles
  - Vehicles on road in California
    - Light and Heavy vehicles
    - Gasoline, Flex fuel, hybrid, hydrogen and EVs
  - Sales of vehicles in California in above categories
  - Vehicles on road in Quebec
  - EV sales in Quebec
  - Efficiency of different vehicles
- Emission factors
  - Grid emission factor
  - Emission factors for different fuels
- Technology advancements
  - Carbon Capture and Storage
  - Sector energy conversion efficiency
  - Renewable Natural Gas (RNG) in network
- ARB cap and trade program/ legislation
  - California Allowance budget
  - Current and advance auction split
  - Cap adjustment factors for different NAICs
  - Allocations
    - Allocations / consignment to Electricity Distribution Utilities
    - Allocations / consignment to Natural gas sector
    - Allocations to industry
    - Allocation to Public Wholesale Water Agencies
    - Allocation to Industrial Covered Entities
    - Allocation to University Covered Entities and Public Service Facilities
    - Voluntary Renewable Electricity Reserve Account (phased out in 2020)
    - Historic true-up values
  - Timing and quantity of obligation submission
  - Reserves
    - Allowance Price Containment reserves (APCR)
    - Reserves and operation at price ceiling
  - Prices
    - Floor price
    - APCR prices
    - Ceiling prices
- Quebec cap and trade program/ legislation
  - Quebec Allowance Budget
  - Current and advance auction split
  - Allocations to covered entities
  - Timing and quantity of obligation submission
  - Emission units floor price
  - Emission Units Reserve Price (from 2021)
- Offsets in California and Quebec
  - California offset limits
  - California offset usage
  - California offset supply: DEBs and Non DEBs in key categories
  - Quebec offset limits

  - Quebec offset usage
- Market data
  - Historic price of offsets
  - Joint Auction clearing price – current auction
  - Joint Auction clearing price – advance auction
- Operations in the LCFS market
  - Carbon intensity realized/ planned
  - Credits and deficits generated in the LCFS market

CALIFORNIA CARBON.info

Coming Soon

To download and access this report, please visit:

https://go.californiacarbon.info/2030-Emissions-Forecast-2021-update

CaliforniaCarbon

Carbon Markets | Climate Finance Analytics

insights@CaliforniaCarbon.info
www.CaliforniaCarbon.info
19925 Stevens Creek Blvd, Cupertino, CA 95014