

# How money flows in California's cap-and-trade program and the Low Carbon Fuel Standard

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## DISCLAIMER

- I am speaking today in my individual capacity as a researcher, not on behalf of the Independent Emissions Market Advisory Committee (IEMAC)
- You can find the IEMAC's official 2023 Annual Report here:  
<https://calepa.ca.gov/2023-iemac-annual-report/>

## WHY TALK ABOUT BOTH PROGRAMS?

### **Cap-and-trade (C&T) and the Low Carbon Fuel Standard (LCFS) both:**

- Impose direct cost on greenhouse gas emitters
- Impose indirect costs on consumers, primarily through higher energy prices (notably gasoline and diesel prices)
- Create economic benefits, both financial and environmental
- Have related cost impacts, but distinct policy choices that can affect the magnitude and equity implications of cost impacts

## TO WHOM DOES THE MONEY FLOW?

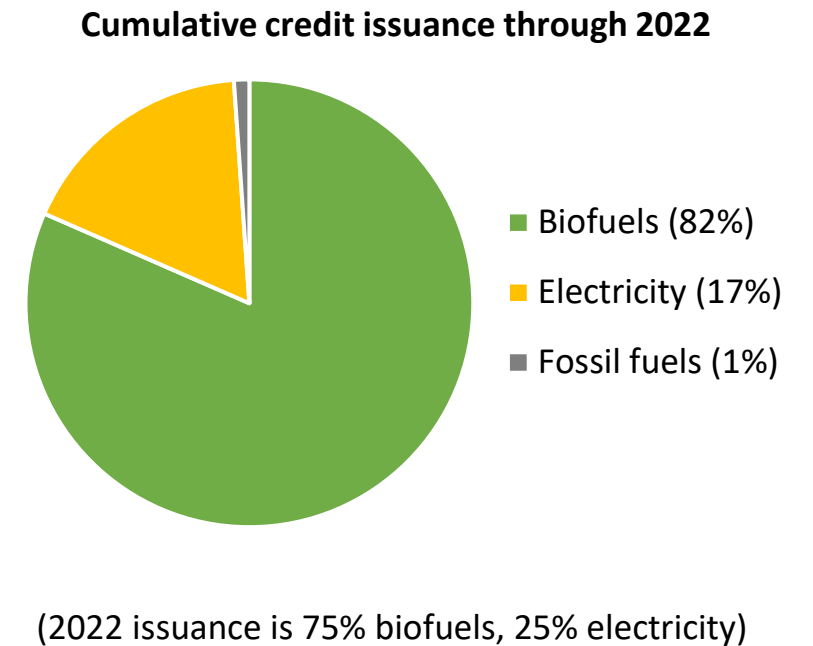
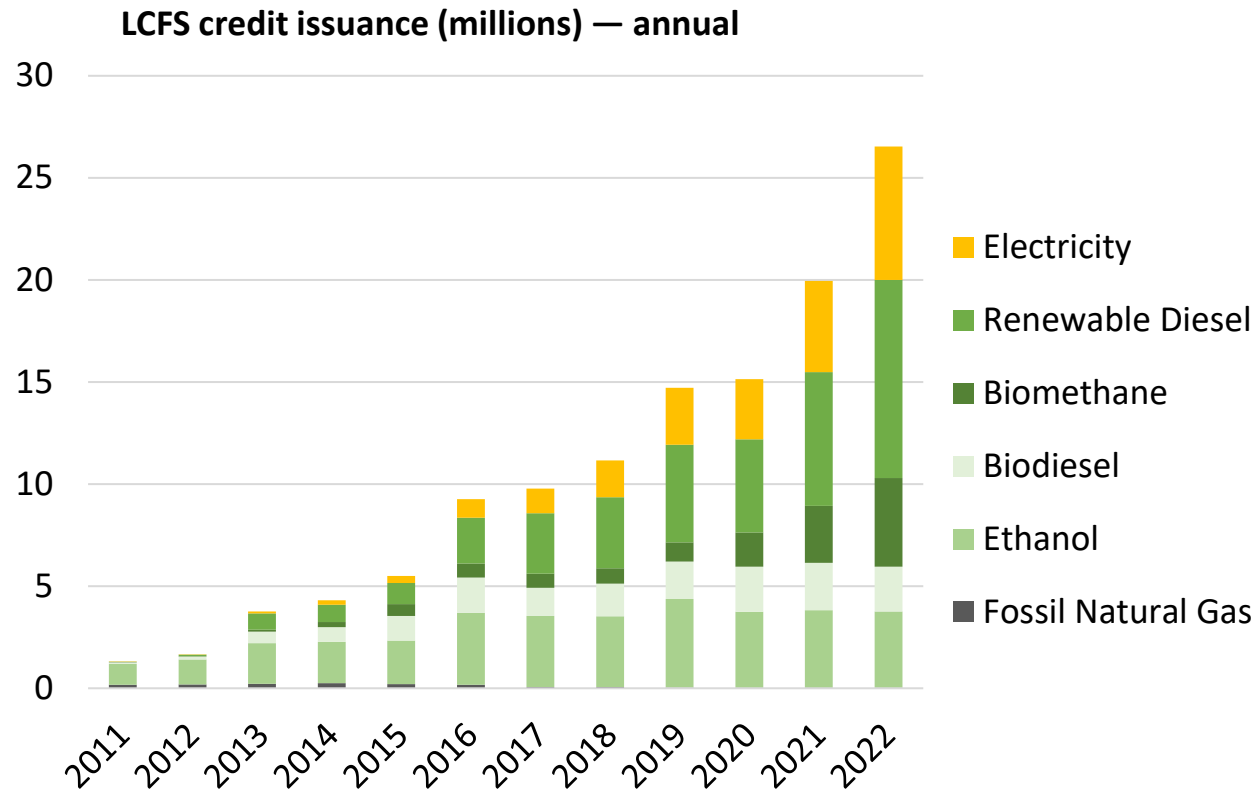
### Cap-and-trade:

- Free allowances to utilities  
(many to [consumer rebates](#))
- Free allowances to industry  
(to protect against “leakage”)
- Carbon offsets to private projects
- Auctions raise money for the  
Greenhouse Gas Reduction Fund

### Low Carbon Fuel Standard:

- Transportation fuel providers  
selling fuels that emit less than the  
LCFS carbon intensity target  
(primarily biofuels)

# LCFS CREDIT ISSUANCE



## WHO BEARS THE COSTS?

### Cap-and-trade:

- Companies that emit more than 25,000 tCO<sub>2</sub>e per year (excluding “biogenic” CO<sub>2</sub>)
- Carbon prices affect energy prices, including electricity, natural gas, and transportation fuels (i.e., gasoline and diesel)

### Low Carbon Fuel Standard:

- Transportation fuel providers selling fuels that emit more than the LCFS carbon intensity target (i.e., gasoline and diesel)
- LCFS credit prices affect transportation fuel prices (i.e., gasoline and diesel)

## INDIRECT CONSUMER COST IMPACTS FROM THE LCFS PROGRAM

$$\begin{array}{l} \text{Carbon intensity deficit (tCO}_2\text{e per gallon)} \\ \times \text{ LCFS credit price (\$ per tCO}_2\text{e)} \\ \times \text{ Percent of costs passed on to consumers (\%)} \\ \hline = \text{ Consumer cost pass-through (\$ per gallon)} \end{array}$$

The carbon intensity deficit depends on:

1. The carbon intensity of the fuel (based on a lifecycle analysis)
2. The LCFS program's target carbon intensity (a policy choice)

## HOW ARE COST IMPACTS DISTRIBUTED?

### Cap-and-trade:

- Direct costs borne broadly by emitters subject to the program;
- Indirect cost impacts borne by all consumers of electricity, natural gas, and transportation fuels

### Low Carbon Fuel Standard:

- Direct costs borne by fuel producers that sell gasoline and diesel fuels
- Indirect costs borne by all consumers of gasoline and diesel fuels



## HOW CAN POLICY CHANGE THE DISTRIBUTION OF COST IMPACTS?

### Cap-and-trade:

- Change free allocations  
(more rebates, more revenue)
- Change offsets policies  
(more revenue)
- Target GGRF spending
- Rebate GGRF funds

### Low Carbon Fuel Standard:

- I am not aware of any relevant mechanism in the program

## COMPARING C&T AND LCFS PROGRAMS

- Both programs have indirect cost impacts in the transportation fuel sector (gasoline and diesel fuels)
- The cap-and-trade program has more tools to control the distribution of indirect cost impacts (notably targeted GGRF spending and rebates)
- Choices made in one program constrain the options in the other

## 2023 ANNUAL REPORT OF THE IEMAC

Chapter 1: Greenhouse gas accounting

Chapter 2: Affordability

Chapter 3: Market links  
(recommending a link with Washington's program)

Chapter 4: Subsurface carbon management  
(CCS and carbon removal)  
(preliminary discussion, more in 2024)