



CIPA

*California Independent
Petroleum Association*

INNOVATIVE

CRUDE METHODS PROGRAM



A PRODUCER'S GUIDE TO THE
LOW CARBON FUEL STANDARD

If you are not participating in this program,

**YOU ARE PROBABLY
LOSING MONEY.**



CONTENTS

- 3 What is the Innovative Crude Methods Program?
- 4 What is the Business Rationale?
- 5 Benefits of Solar Electricity
- 7 Options for Producer Participation
- 8 How to Monetize LCFS Credits
- 9 The CIPA Team
- 10 Examples of Projects



WHAT IS THE INNOVATIVE CRUDE METHODS PROGRAM?

By Executive Order, Governor Arnold Schwarzenegger enacted the Low Carbon Fuel Standard (LCFS), a program designed to reduce the carbon intensity (CI) of California fuels.

Regulated parties in California, mainly refiners, have to reduce the CI of their finished fuels. This is predominantly done by blending with other biofuels, like ethanol or biodiesel, or, alternatively, buying credits to reach the reduction goal.

Credits, however, are difficult and potentially expensive to come by since they are almost exclusively created by biofuel companies.

The California Air Resources Board (CARB), who is responsible for developing and administering the program, created the Innovative Crude Methods program to allow in-state producers of crude to generate credits by demonstrating they have lowered the carbon intensity of their production methods.

Originally limited to solar thermal steam and carbon capture and sequestration (CCS), CIPA worked with CARB to expand the program to include solar installations in the oil patch as eligible to generate credits. CIPA also worked to ensure the program allowed solar co-ops amongst numerous producers utilizing the same solar facility.

CIPA is assisting members to identify funding sources of new solar installation, get those projects certified by CARB, and generate, bank, and sell those credits to program participants. Since its inception, CIPA has expressed concerns about the viability of the LCFS program overall and will continue to ensure domestic producers are not disadvantaged by the program.

Moving forward, CIPA will serve as a facilitator for connecting members with construction firms and equity partners. CIPA can also help serve as an advocate for members with CARB, if necessary.

WHAT IS THE BUSINESS RATIONALE?

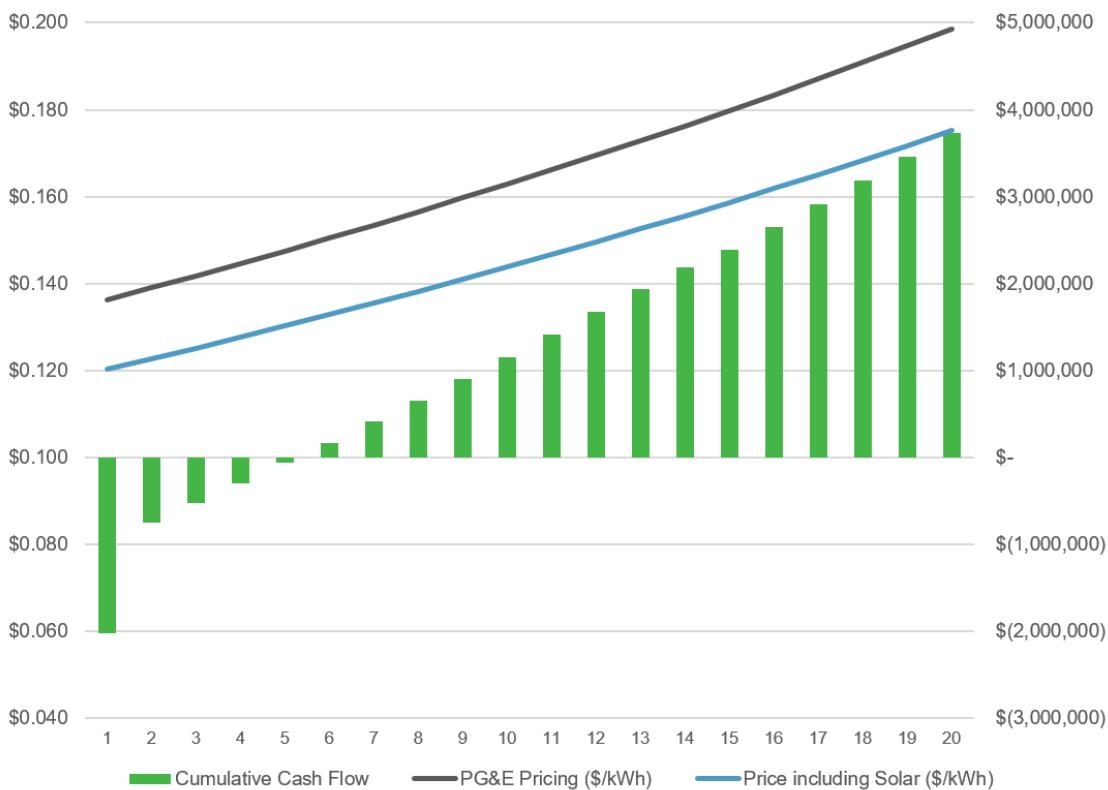
Electricity and natural gas costs are often the biggest expenses for oil producers. With the PG&E preferred E-37 rate no longer available, electricity costs will go up and bottom lines will go down.

Renewable energy can provide multiple savings. There are direct cost savings including lower electricity and/or natural gas usage, including, lower energy costs, and avoided demand charges from the local utility. Companies also earn the value of generating secondary revenue through the creation and selling of LCFS credits.

While LCFS credit values move based on supply and demand, the trend has been for them to consistently trade at or near the newly established cap of \$200 per credit. LCFS is overseen by the California Air Resources Board (CARB) and sets a carbon intensity (CI) requirement associated with transportation fuel used in California. The goal of the program is to reduce, through declining CI requirements, the carbon emissions associated with transportation fuels through 2030.

To facilitate this, CARB has set up a market system where LCFS credits are the currency to allow fuel producers to exceed the CI requirement through the purchase of credits from others, including Innovative Crude Methods producers. Credits do not expire and can be used at any point for compliance. LCFS credit prices are driven by market participants' ability to meet compliance with annually reduced CI requirements. Unlike Cap and Trade, only regulated entities (refiners, oil producers, and utilities) are allowed to generate and trade LCFS credits. The chart below represents the potential of a 1MW AC solar project.

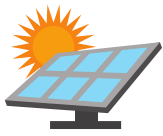
Cash Purchase @ \$2.22MM Results in \$5.68MM in Cumulative Savings over 20 Years including LCFS Revenue at \$150 per credit



There are minimum standards required to be an eligible Innovative Crude Methods producer. A solar photovoltaic (PV) installation of reasonable size should be eligible. CIPA is available to assist in an initial assessment of a new project.

LCFS credits generated are proportional to renewable energy used. If the renewable solar energy displaces grid electricity, and all the oil produced in the field goes to California refineries, then one megawatt of solar PV equates to approximately 1,000 LCFS credits each year. While LCFS credit prices are market driven, assuming a price of \$200 per credit, that is equal to \$200,000 annually.

BENEFITS OF SOLAR



Direct energy cost savings



Generate secondary revenue with carbon credit value



Reduced local air pollutants and GHG emissions



Potential Cap and Trade benefits through reduced emissions



Financing options available to offset the need for additional capital costs



Potential federal tax credits



Fosters positive partnership with state policymakers and executive leadership

BREAKDOWN OF PROJECT OPTIONS

Project Size	1 MW	5 MW	10 MW	20 MW
Capital	< \$2,000,000	\$7,500,000	\$12,500,000	\$25,000,000
Potential Annual Energy Cost Savings (PG&E) (Year 1)	\$190,000	\$800,000	\$1,585,000	\$2,400,000
Potential LCFS Credits Earned (Year 1)	1,000	5,500	11,000	22,000
LCFS Value at \$150	\$150,000	\$825,000	\$1,650,000	\$3,300,000

OPTIONS FOR COMPANY PARTICIPATION

Recognizing the variation in scope and size of CIPA member companies, there are a variety of ways for companies to participate.

There are economies of scale when multiple producers pursue a project together. This is especially the case for those whose needs are less than one megawatt. It is also possible for a single facility to serve multiple off-takers, as long as a direct connection to the facility is established. Carbon capture and sequestration is in its infancy, but several companies are pursuing this and CIPA is working with regulators to make it viable. LCFS credit producing renewable natural gas opportunities are also on the horizon.

PV and Solar Steam projects have several financing options. Cash is typically the best, though power purchase agreements (PPAs), on and off-balance sheet leases and hybrids of these are available. Don't let financing stand in the way, as multiple avenues exist. Producers should consider their specific needs when deciding how to proceed with a project.

Some of the factors to consider before moving forward include:

- Availability of land
- Tariff rates
- Finances
- Regulatory factors
- Utility interconnection



HOW TO MONETIZE LCFS CREDITS



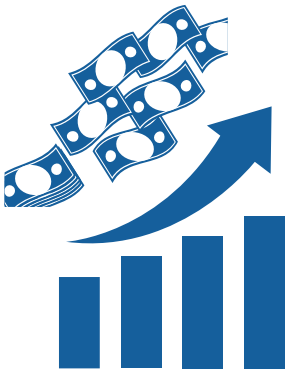
SELL TO TRADITIONAL FUEL SUPPLIER

Buying only for compliance



SELL TO A FUEL SUPPLIER WITH TRADING DESK

May provide more flexible commercial structures



SELL CONTRACTS ON FUTURES EXCHANGE

Financial hedge

A brokerage and consulting firm can assist in evaluating all these options and then assist in executing the transactions



THE CIPA TEAM

CIPA

CIPA, through its wholly-owned subsidiary, the Independent Producers' Exchange (IPEX), has established an experienced team to ensure CIPA members can enjoy the benefits of a "one stop shop" in putting a qualifying LCFS project online.

Energy Edge Consulting

Energy Edge offers strategic energy management and renewable energy solutions to a wide range of businesses and institutions. The Energy Edge team has extensive experience in various aspects of the electricity and natural gas industries, and the knowledge and expertise from this experience is leveraged every day to deliver value to clients. Energy Edge provides services in the United States, Canada, the United Kingdom, and Western Europe.

Contact: Josh Sternberg

Mobile: 713.304.5105

Email: jssternberg@energyedgeconsulting.com

Emission Advisors Inc.

Emission Advisors offers brokerage and strategic services around Low Carbon Fuel Standard, carbon cap and trade allowances and offsets, CEQA required offsets, emission reduction credits (ERCs) and RECLAIM RTCs. The Emission Advisors team has over 19 years of experience in the California markets and is able to assist your firm in evaluating all opportunities and risks in the California environmental credit markets.

Contact: Mike Taylor

Mobile: 713.385.3321

Email: mtaylor@emissionadvisors.com

IPEX, as a for-profit entity, is engaged in helping CIPA members ensure the highest level of service in the process of establishing LCFS qualifying projects.

For more information about how to proceed, please contact Sean Wallentine at: sean@cipa.org or (916) 447-1177.

EXAMPLES OF PROJECTS



INNOVATIVE SOLAR PROJECT IN CALIFORNIA'S LARGEST OIL FIELD

In October 2017, Seneca Resources Co., LLC completed its innovative solar plant project near Taft, at the Midway Sunset Oil Field. Seneca estimates it offsets 20% of its total electrical usage.



Produces enough energy to power more than **406 homes**



3.13 megawatt (MW) direct current (DC), **2.5 MW alternating current (AC)** fixed-tilt solar photovoltaic

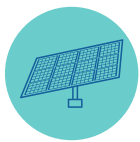


Avoids GHG emissions equivalent to burning more than **4 million pounds** of coal each year

OUR INDUSTRY'S LEADERSHIP FOR AN ALL OF THE ABOVE ENERGY STRATEGY

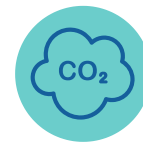


TWO SOLAR PROJECTS: VALLEY & CENTRAL COAST



23 MW DC photovoltaic facility at Poso Creek oil field (Kern County)

3 MW DC photovoltaic facility at New Cuyama oil field (Santa Barbara County)



Combined carbon dioxide emissions reductions of more than **700,000 metric tons** over 20 years.

MACPHERSON

POWERING THE FUTURE

SOLAR FOR PRODUCTION & PROCESSING

All of the solar power generated from Macpherson Energy's project at Round Mountain Oil Field in Kern County will be used in the operation of the production and processing facilities to extract and prepare oil for shipment to refineries, thereby lowering the oil's carbon footprint.

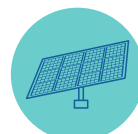


The solar project replaces 46 million cubic feet of natural gas, thereby reducing carbon dioxide emissions by an estimated **4400 metric tons annually**.



SOLAR PROJECT IN CALIFORNIA'S THIRD LARGEST OIL FIELD

Approved: August 2018
Location: Midway Sunset Oil Field



1.12 MW direct current, **0.876 MW** alternating current, fixed-tilt solar photovoltaic



California Independent Petroleum Association

1001 K Street, 6th Floor
Sacramento, CA 95814
(916) 447-1177
www.CIPA.org