

## Insights

### Biodiesel May 'Go the Way of The Dodo Bird,' Warns Industry Official

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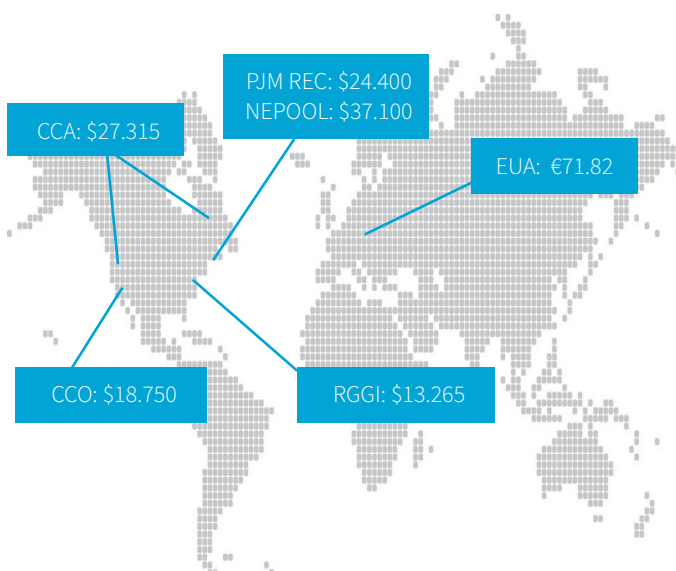
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Vertex Energy Inc. has extended its schedule for completing the conversion of its 75,000 b/d Mobile, Ala., refinery to renewable diesel production from the end of the year to the first quarter of 2023, it said Monday. See page 3.

## Global Compliance Carbon Markets



## Key Benchmarks

### CALIFORNIA CARBON ALLOWANCES (US\$/MT)

| Product         | Vintage | Timing | Price  | Change |
|-----------------|---------|--------|--------|--------|
| Current Yr. CCA | V22     | Sep'22 | 27.315 | 0.465  |
| Current Yr. CCA | V22     | Dec'22 | 27.675 | 0.475  |

### CALIFORNIA CARBON OFFSETS (US\$/MT)

| Product         | Timing | Price  | Change |
|-----------------|--------|--------|--------|
| Golden CCO      | 2022   | 18.750 | 0.000  |
| DEBS Golden CCO | 2022   | 21.350 | 0.000  |
| Zero CCO        | Sep'22 | 19.150 | 0.000  |

### CALIFORNIA LOW CARBON FUEL STANDARD (CTS/GAL)

| Product                            | Price   | Change  |
|------------------------------------|---------|---------|
| Carbon Credit (\$/mt)              | 81.5000 | -0.2500 |
| Gasoline LCFS/Crude CI Deficit 90% | 10.7340 | -0.0335 |
| Diesel LCFS/Crude CI Deficit 95%   | 11.4125 | -0.0315 |

### OREGON CLEAN FUELS PROGRAM (CTS/GAL)

| Product                 | Price    | Change |
|-------------------------|----------|--------|
| Carbon Credit (\$/mt)   | 113.5000 | 0.0000 |
| Carbon CPG Gasoline 90% | 8.745    | 0.000  |
| Carbon CPG Diesel 95%   | 10.050   | 0.000  |

### REGIONAL GREENHOUSE GAS INITIATIVE ALLOWANCES (US\$/ST)

| Product | Vintage | Timing | Price  | Change |
|---------|---------|--------|--------|--------|
| RGGI    | V21-V22 | Sep'22 | 13.265 | 0.015  |
| RGGI    | V21-V22 | Dec'22 | 13.425 | 0.015  |

### EUROPEAN CARBON FUTURES

| ICE Exchange | Timing | Settle | Change |
|--------------|--------|--------|--------|
| EUA €/mt     | Dec'22 | 71.82  | 5.74   |
| UKA £/mt     | Dec'22 | 79.86  | 3.19   |

### RENEWABLE ENERGY CERTIFICATES (US\$/MWH)

| Product               | Vintage | Price  | Change |
|-----------------------|---------|--------|--------|
| New Jersey Class I    | 2022    | 24.350 | 0.000  |
| PJM Tri-Qualified     | 2022    | 24.400 | 0.000  |
| NEPOOL Dual Qualified | 2022    | 37.100 | 0.000  |

## Biodiesel May 'Go the Way of The Dodo Bird,' Warns Industry Official

CHICAGO -- The state of the biodiesel industry is such that the biofuel may "go the way of the dodo bird," an industry official said Thursday.

Speaking on a panel at the 14th Annual RFS, RINs & Biofuels Forum here, David Fialkov, executive vice president of government affairs for the National Association of Truck Stop Operators, painted a fairly grim picture for the fuel's future.

"I think biodiesel writ large is going to go the way of the dodo bird," he said.

Incentives at the federal and state levels are going to work in conjunction with one another to "incentivize some combination of renewable diesel and/or aviation fuel," Fialkov said afterward in an interview.

"As those come online, it will virtually swallow any mandate for biodiesel. If there is a mandate of 'X' billion gallons in the Renewable Fuel Standard (RFS) and all of that can be satisfied more economically with renewable diesel or SAF, I don't know where the return on investment on biodiesel is going to come from absent some new state policy that hasn't been developed yet."

Fialkov also described the retail community's concerns with the biofuels provisions within the Inflation Reduction Act, particularly what he called "exorbitantly favorable treatment" for Sustainable Aviation Fuel (SAF) relative to other fuels.

"I understand the motivation for that special treatment to get investment to migrate toward aviation fuel," he said. "But the fact is that however we want the world to look in 30 years, I know how the world probably will look in 10 years and there will not be interstate highways littered with hydrogen and electric trucks.

"There are still going to be diesel trucks, and today and for the next decade the best way of decarbonizing diesel is through biodiesel and renewable diesel, and my concern is that we are going to lose out on some of that potentially because a lot of the feedstock will migrate toward aviation."

Fialkov laid the blame for the limited SAF output at the feet of the airlines.

"The fact that airlines don't want to pay more for clean fuels than for petroleum-based fuel is why there is not a sufficient amount of SAF production to this point," he said. "Climate is very important, but it is not quite that important evidently."

Separately, Kurt Kovarik, vice president of federal affairs for Clean Fuels Alliance America, downplayed any immediate threat to biofuels posed by electric vehicles.

"I think we can all agree that there are a lot of sectors of the transportation economy that are going to rely upon liquid fuels, not electric, for a long time," he said. "Heavy duty trucking is not going to be electrified, rail is not going to be electrified, marine and aviation are not going to be electrified.

"There is going to be a place for biodiesel, renewable diesel and

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SAF for a long time to come."

Kovarik lauded EPA's plan to propose biofuel blending mandates this fall for at least two years in an effort to provide the RFS program with more certainty than it has seen in recent years. Dallas Burkholder, with the agency's Office of Transportation and Air Quality, detailed the plan on Thursday at the conference.

"Two or three years ago, we would have been hopeful to get a 10-year schedule," he said. "But with the significant uncertainty and the amount of new entrants and new gallons, SAF, etc., I would agree that the more-prudent approach is probably going to be two to three years because there is a lot of uncertainty."

--Reporting by Michael Schneider, mschneider@opisnet.com; Editing by Jordan Godwin, jgodwin@opisnet.com

## CFAA, EPA Agree to Try to Find Compromise Solution to UCO Recordkeeping Rule

Clean Fuels Alliance America and the U.S. Environmental Protection Agency have asked a federal appeals court to suspend until Nov. 30 the industry group's lawsuit challenging recordkeeping requirements for food waste feedstocks used to produce biomass-based diesel.

CFAA on Thursday said the joint motion submitted to the U.S. Court of Appeals for the District of Columbia Circuit is designed to give it and EPA more time to come up with "practical compliance options" to ensure the industry is using qualifying feedstocks.

The recordkeeping language, which EPA included in the final 2020 Renewable Fuel Standard rule, would require biodiesel and renewable diesel producers to document the original collection points for used cooking oil (UCO) and to hire third-party auditors to verify the documentation.

CFAA sued the agency over the rule, arguing, among other things, that most producers, including those that collect UCO themselves, buy feedstock from third-party aggregators.

In most cases, CFAA said, those aggregators, some of which compete with producers, consider their collection records as confidential business information.

Since the court in early August agreed to separate the CFAA suit from other challenges to the final 2020 blending rule, CFAA said its members and EPA have been working to develop alternative methods for biodiesel and renewable diesel producers to meet the new recordkeeping requirements.

One possible option would see EPA adopt procedures followed in California that require UCO collectors to file reports with the state department of agriculture. Biofuel producers are then permitted to rely on those reports as verification that they are using qualifying feedstocks, a CFAA official said.

"We appreciate EPA's willingness to meet with our members, listen to the issues they faced in complying with the new recordkeeping requirements, and work cooperatively to help our members meet the requirements, Kurt Kovarik, CFAA's vice president of federal affairs, said in a statement.

"Biodiesel and renewable diesel are the cleanest low-carbon fuels on the market today. Along with the RFS program, they are essential tools in meeting the nation's climate goals."

--Reporting by Jeff Barber, jbarber@opisnet.com; Editing by Steve Cronin, scronin@opisnet.com

## Vertex Pushes Renewable Diesel Project Start into 2023, Citing Supply Issues

Vertex Energy Inc. has extended its schedule for completing the conversion of its 75,000 b/d Mobile, Ala., refinery to renewable diesel production from the end of the year to the first quarter of 2023, it said Monday.

The Houston-based company blamed the decision to push back the project's completion date on "recent COVID-19 induced product delays and global supply chain shortages."

In addition, it cited the "notable financial benefits" of extending current production of petroleum products, given the sizzling margins diesel, jet and marine fuel.

Under the company's revised schedule, mechanical completion of the project is set for the first quarter, with production expected in the second quarter of next year.

The project, which has an estimated cost of \$90 million to \$100 million is expected to initially produce 8,000 to 10,000 b/d of renewable diesel, then ramp up to 14,000 b/d.

The conversion requires shutting the hydrocracker for some period and continued operation of the unit will have a "positive impact to fourth quarter 2022 gross margin" of \$15 million to \$17 million, Vertex said.

That assessment is based on current refinery spreads. OPIS' assessments for ULSD and jet fuel at the Gulf Coast yield numbers of \$3.634/gal and \$3.478/gal, or about \$57.60/bbl to \$64/bbl above the price of sweet crude.

Those numbers are exponentially higher than margins realized

when Shell was operating the refinery.

"I am pleased with the team's ability to remain nimble in a highly dynamic environment," CEO Benjamin Cowart said in the release.

"While we are eager to begin the production of renewable diesel, we are confident in this decision to extend the timeline, while seeking to achieve an improvement in safety and reduction in project risk, compounded by the expected incremental financial benefit of maximizing participation in current market economics."

--Reporting by Tom Kloza, tkloza@opisnet.com; Editing by Jeff Barber, jbarber@opisnet.com

## Toyotsu Energy Supplies Marine Biodiesel To Coastal Trading Vessel

Toyotsu Energy Corporation has supplied marine biodiesel via ship-to-ship bunkering to a vehicle carrier at Japan's Nagoya Port on July 26 and August 3, marking the first attempts in the country to supply this bunker blend to coastal trading vessels, according to a press release published Monday by parent company Toyota Tsusho Corporation

The marine biodiesel used in the trial was a blend of low sulfur fuel oil and neat biodiesel produced from used cooking oil (UCO) collected from Toyota Group and Toyota Group companies in Japan. The press release did not specify the proportion of neat biodiesel in the blend.

The Japanese government is targeting a greenhouse gas (GHG) emission reduction of 17% in the shipping sector by 2030 using 2013 level of around 1.81 million mt as a baseline.

The government has identified the replacement of conventional fossil fuels with biofuel in the near term, and hydrogen and ammonia in the medium to long term as key to decarbonization in the marine sector.

--Reporting by Kite Chong, kchong@opisnet.com; Editing by Hanwei Wu, hwu@opisnet.com

## California Carbon Allowances (\$/mt)

| Product      | Vintage | Timing | Low   | High  | Mean   | Change | Wt. Avg. | MTD    |
|--------------|---------|--------|-------|-------|--------|--------|----------|--------|
| Previous Yr. | V21     | Sep'22 | 26.99 | 27.64 | 27.315 | 0.465  | ---      | 26.861 |
| Previous Yr. | V21     | Dec'22 | 27.35 | 28.00 | 27.675 | 0.475  | ---      | 27.218 |
| Current Yr.  | V22     | Sep'22 | 26.99 | 27.64 | 27.315 | 0.465  | 27.300   | 26.861 |
| Current Yr.  | V22     | Oct'22 | 27.11 | 27.76 | 27.435 | 0.465  | ---      | 26.982 |
| Current Yr.  | V22     | Nov'22 | 27.22 | 27.87 | 27.545 | 0.465  | ---      | 27.101 |
| Current Yr.  | V22     | Dec'22 | 27.35 | 28.00 | 27.675 | 0.475  | 27.686   | 27.218 |
| Next Yr.     | V23     | Sep'22 | 26.99 | 27.64 | 27.315 | 0.465  | ---      | 26.861 |
| Next Yr.     | V23     | Dec'22 | 27.35 | 28.00 | 27.675 | 0.475  | ---      | 27.218 |
| Forward Yr.  | V24     | Sep'22 | 26.99 | 27.64 | 27.315 | 0.465  | ---      | 26.861 |
| Forward Yr.  | V24     | Dec'22 | 27.35 | 28.00 | 27.675 | 0.475  | ---      | 27.218 |
| Advanced Yr. | V25     | Sep'22 | 26.99 | 27.64 | 27.315 | 0.465  | ---      | 26.861 |
| Advanced Yr. | V25     | Dec'22 | 27.35 | 28.00 | 27.675 | 0.475  | ---      | 27.218 |

## California Carbon Offsets (\$/mt)

| Product         | Timing | Low   | High  | Mean   | Change | MTD    |
|-----------------|--------|-------|-------|--------|--------|--------|
| Golden CCO      | 2022   | 18.70 | 18.80 | 18.750 | 0.000  | 18.621 |
| CCO(3)          | 2022   | 18.00 | 18.10 | 18.050 | 0.000  | 17.921 |
| CCO(8)          | 2022   | 17.90 | 18.00 | 17.950 | 0.000  | 17.821 |
| DEBS Golden CCO | 2022   | 21.30 | 21.40 | 21.350 | 0.000  | 21.021 |
| DEBS CCO(3)     | 2022   | 20.60 | 20.70 | 20.650 | 0.000  | 20.321 |
| DEBS CCO(8)     | 2022   | 20.50 | 20.60 | 20.550 | 0.000  | 20.221 |
| Zero CCO        | Sep'22 | 19.10 | 19.20 | 19.150 | 0.000  | 19.143 |
| Zero CCO        | Dec'22 | 19.25 | 19.35 | 19.300 | 0.000  | 19.286 |
| Zero CCO        | Dec'23 | 20.20 | 20.30 | 20.250 | 0.000  | 20.236 |
| Zero CCO        | Dec'24 | 20.95 | 21.05 | 21.000 | 0.000  | 20.986 |

## California Carbon Market Analysis

California Carbon Allowances (CCA) notched modest gains Monday, following a week where prices continued to feel the pressure from an underwhelming Q3 auction settlement last month.

The V22 December 2022 CCA futures contract traded on the Intercontinental Exchange (ICE) from \$27.40/mt to \$28.00/mt, and on Nodal at \$27.46/mt. The OPIS V22 December 2022 mean was assessed at \$27.675/mt, up 47.5cts from Friday.

Trade for the V22 September 2022 contract was far less liquid, changing hands at \$27.04/mt. The V22 September 2022/December 2022 spread was seen bid minus 40cts and offered minus 36cts. The OPIS V22 September 2022 CCA mean was assessed at \$27.315/mt, a 36ct/mt discount to December 2022 prices, widening the gap

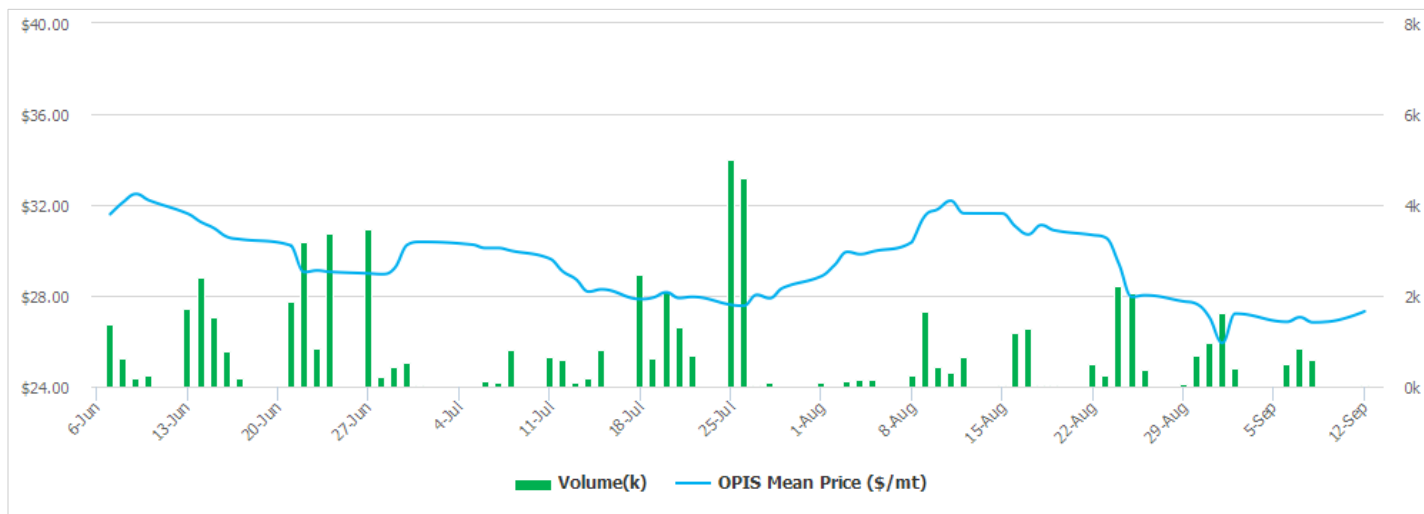
slightly between the two assessments.

Despite gains on Monday, overall sentiment remains bearish.

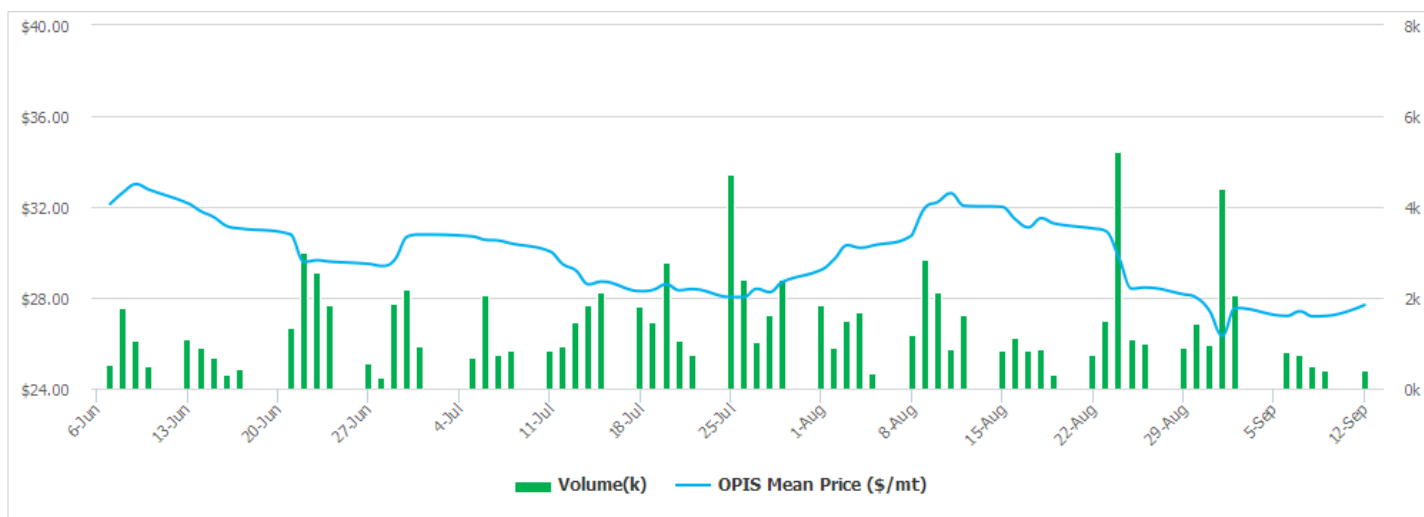
“CCAs seem to not be able to recover from the surprising August auction results from two weeks ago, with prices continuing to trade at a 6-month lows,” Analyst ClearBlue Markets noted in a subscriber update Monday morning.

Prices took a nosedive in late August upon the release of the California and Quebec Cap-and-Trade programs' third-quarter auction results, which featured a lower-than-expected settlement price of \$27/mt. Settlement prices have continuously climbed since early 2020, so the Q3 results set off particularly cautionary sentiment.

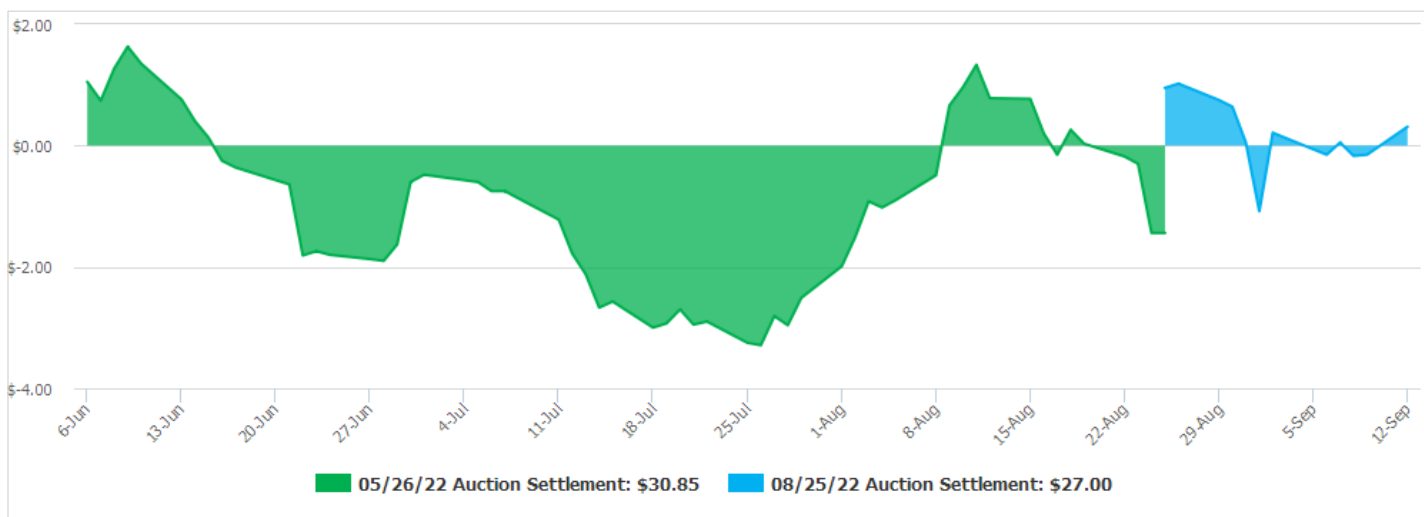
OPIS CCA CURRENT YR. PROMPT PRICES & VOLUMES



OPIS CCA CURRENT YR. FORWARD PRICES & VOLUMES



OPIS CCA CURRENT YR. PROMPT PRICE VS AUCTION SETTLEMENT SPREAD (\$/MT)



## Prompt California Static Carbon Emissions Prices (cts/gal)

| Product  | Price | Wk. Avg. | 30-Day Avg. |
|----------|-------|----------|-------------|
| Refinery | 2.92  | 2.887    | 3.131       |

## Prompt California Cap-at-the-Rack Prices (cts/gal)

| Product           | Price | Wk. Avg. | 30-Day Avg. |
|-------------------|-------|----------|-------------|
| CARB No. 2        | 27.97 | 27.625   | 29.963      |
| B5 Biodiesel      | 26.57 | 26.246   | 28.466      |
| Summer CARB RFG-R | 22.01 | 21.742   | 23.581      |
| Summer CARB RFG-M | 21.96 | 21.693   | 23.529      |
| Summer CARB RFG-P | 21.94 | 21.669   | 23.502      |
| LPG               | 15.90 | 15.701   | 17.030      |
| LNG (cts/DGE)     | 19.99 | 19.748   | 21.419      |

## Prompt Quebec Cap-at-the-Rack Prices

| Product                 | Price (US cts/gal) | Price (CAN cts/lit) | Wk. Avg. (US cts/gal) | 30-Day Avg. (US cts/gal) |
|-------------------------|--------------------|---------------------|-----------------------|--------------------------|
| Conv. 87 Unl            | 24.42              | 8.40                | 24.118                | 26.159                   |
| Conv. 89 Mid            | 24.42              | 8.40                | 24.118                | 26.159                   |
| Conv. 91 Pre            | 24.42              | 8.40                | 24.118                | 26.159                   |
| HS No. 2 Diesel         | 31.08              | 10.72               | 30.701                | 33.299                   |
| ULSD No. 2              | 31.08              | 10.72               | 30.701                | 33.299                   |
| ULSD No. 2 Winter       | 31.08              | 10.72               | 30.701                | 33.299                   |
| ULSD No. 1              | 31.08              | 10.72               | 30.701                | 33.299                   |
| Furn. Fuel Oil HS No. 2 | 28.27              | 9.76                | 27.922                | 30.285                   |
| Stove Oil LS No. 1      | 28.27              | 9.76                | 27.922                | 30.285                   |
| ULSD Furnace Oil        | 28.27              | 9.76                | 27.922                | 30.285                   |
| B5 Biodiesel            | 29.53              | 10.18               | 29.166                | 31.634                   |
| Conv. 87 Unl 10% Ethol. | 21.98              | 7.56                | 21.706                | 23.543                   |
| Conv. 89 Mid 10% Ethol. | 21.98              | 7.56                | 21.706                | 23.543                   |
| Conv. 91 Pre 10% Ethol. | 21.98              | 7.56                | 21.706                | 23.543                   |
| Conv. 89 Mid 5% Ethol.  | 23.20              | 7.98                | 22.912                | 24.851                   |

## California Low Carbon Fuel Standard

| Product  | Low     | High    | Mean     | Change    | Wk. Avg. | MTD      |
|--|---------|---------|----------|-----------|----------|----------|
| Carbon Credit (\$/mt)  | 81.000  | 82.000  | 81.5000  | -0.2500   | 83.0000  | 83.5714  |
| Carbon Intensity Pts Ethanol (\$/Cl)                             | 0.00660 | 0.00668 | 0.006640 | -0.000020 | 0.006765 | 0.006812 |
| Carbon Intensity Pts Biodiesel (\$/Cl)                           | 0.01022 | 0.01034 | 0.010280 | -0.000030 | 0.010468 | 0.010540 |
| Carbon CPG Diesel (cts/gal)                                      | 10.94   | 11.07   | 11.005   | -0.030    | 11.207   | 11.284   |
| Carbon CPG Diesel 95% (cts/gal)                                  | 10.39   | 10.52   | 10.455   | -0.030    | 10.646   | 10.719   |
| Carbon CPG Gasoline (cts/gal)                                    | 10.96   | 11.10   | 11.030   | -0.035    | 11.232   | 11.310   |
| Carbon CPG Gasoline 90% (cts/gal)                                | 9.86    | 9.99    | 9.925    | -0.030    | 10.108   | 10.177   |
| Carbon CPG Gasoline Crude CI Deficit (cts/gal)                   | 0.891   | 0.902   | 0.8965   | -0.0025   | 0.9129   | 0.9192   |
| Carbon CPG Gasoline Crude CI Deficit 90% (cts/gal)               | 0.802   | 0.812   | 0.8070   | -0.0020   | 0.8218   | 0.8274   |
| Carbon CPG Diesel Crude CI Deficit (cts/gal)                     | 1.002   | 1.014   | 1.0080   | -0.0030   | 1.0267   | 1.0338   |
| Carbon CPG Diesel Crude CI Deficit 95% (cts/gal)                 | 0.952   | 0.963   | 0.9575   | -0.0030   | 0.9753   | 0.9821   |
| Carbon CPG Gasoline Combined LCFS/Crude CI Deficit (cts/gal)     | 11.851  | 12.002  | 11.9265  | -0.0375   | 12.1449  | 12.2292  |
| Carbon CPG Gasoline Combined LCFS/Crude CI Deficit 90% (cts/gal) | 10.666  | 10.802  | 10.7340  | -0.0335   | 10.9306  | 11.0064  |
| Carbon CPG Diesel Combined LCFS/Crude CI Deficit (cts/gal)       | 11.942  | 12.084  | 12.0130  | -0.0330   | 12.2337  | 12.3174  |
| Carbon CPG Diesel Combined LCFS/Crude CI Deficit 95% (cts/gal)   | 11.345  | 11.480  | 11.4125  | -0.0315   | 11.6220  | 11.7014  |

## Oregon Clean Fuels Program

| Product                                | Low     | High    | Mean     | Change   | Wk. Avg. | MTD      |
|--|---------|---------|----------|----------|----------|----------|
| Carbon Credit (\$/mt)                  | 112.000 | 115.000 | 113.5000 | 0.0000   | 113.5000 | 113.3571 |
| Carbon Intensity Pts Ethanol (\$/Cl)   | 0.00913 | 0.00937 | 0.009250 | 0.000000 | 0.009250 | 0.009239 |
| Carbon Intensity Pts Biodiesel (\$/Cl) | 0.01413 | 0.01450 | 0.014315 | 0.000000 | 0.014315 | 0.014298 |
| Carbon CPG Diesel (cts/gal)            | 10.44   | 10.72   | 10.580   | 0.000    | 10.580   | 10.566   |
| Carbon CPG Diesel 95% (cts/gal)        | 9.92    | 10.18   | 10.050   | 0.000    | 10.050   | 10.037   |
| Carbon CPG Gasoline (cts/gal)          | 9.59    | 9.85    | 9.720    | 0.000    | 9.720    | 9.707    |
| Carbon CPG Gasoline 90% (cts/gal)      | 8.63    | 8.86    | 8.745    | 0.000    | 8.745    | 8.734    |

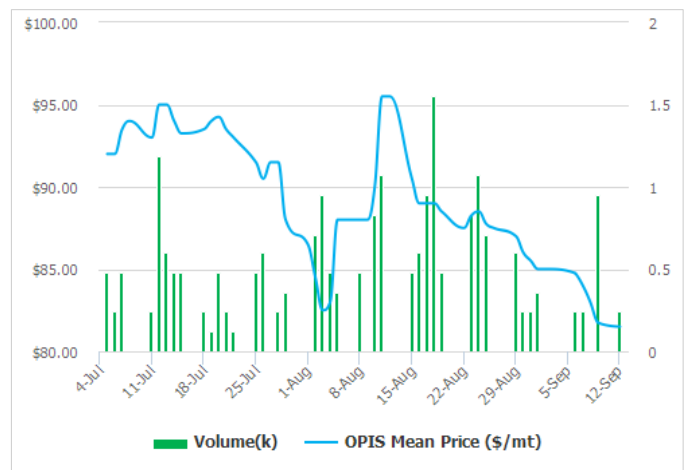
## LCFS & CFP Analysis

California Low Carbon Fuel Standard (LCFS) credit prices dropped to a three-month low on Monday, when market sources reported the credits traded at \$81.50/credit. OPIS assessed the credits at that level, the assessment’s lowest since June 9, when it fell to \$79.50/credit

The LCFS assessment is down \$14 month to month and has not posted a day-to-day increase since Aug. 24.

Oregon Clean Fuel Program (CFP) credits were assessed at \$113.50/credit, unchanged from Friday, when the assessment was up 50cts week to week and \$5.50 higher month to month.

### OPIS LCFS CARBON CREDIT PRICES & VOLUMES



## Renewable Energy Certificates (\$/Mwh)

| Product        | Vintage | Low    | High   | Mean    | Change | MTD     |
|----------------|---------|--------|--------|---------|--------|---------|
| New Jersey     |         |        |        |         |        |         |
| Class I        | 2022    | 24.30  | 24.40  | 24.350  | 0.000  | 24.452  |
| Class I        | 2023    | 24.55  | 24.65  | 24.600  | 0.000  | 24.704  |
| SREC           | 2022    | 236.00 | 237.00 | 236.500 | 0.000  | 235.786 |
| SREC           | 2023    | 226.85 | 227.85 | 227.350 | 0.000  | 227.339 |
| Pennsylvania   |         |        |        |         |        |         |
| SREC           | 2023    | 44.45  | 44.55  | 44.500  | 0.000  | 44.500  |
| SREC           | 2024    | 37.00  | 37.10  | 37.050  | 0.300  | 36.793  |
| Tier I         | 2023    | 24.50  | 24.60  | 24.550  | 0.000  | 24.579  |
| Tier I         | 2024    | 24.40  | 24.50  | 24.450  | 0.000  | 24.493  |
| Maryland       |         |        |        |         |        |         |
| SREC           | 2022    | 61.95  | 62.05  | 62.000  | 0.000  | 62.000  |
| SREC           | 2023    | 60.85  | 60.95  | 60.900  | 0.000  | 60.900  |
| Tier I         | 2022    | 24.35  | 24.45  | 24.400  | 0.000  | 24.399  |
| Tier I         | 2023    | 24.55  | 24.65  | 24.600  | 0.000  | 24.693  |
| PJM            |         |        |        |         |        |         |
| Tri Qualified  | 2022    | 24.35  | 24.45  | 24.400  | 0.000  | 24.393  |
| Tri Qualified  | 2023    | 24.65  | 24.75  | 24.700  | 0.000  | 24.786  |
| Massachusetts  |         |        |        |         |        |         |
| Class I        | 2022    | 37.00  | 37.10  | 37.050  | 0.000  | 36.879  |
| Class I        | 2023    | 36.00  | 36.10  | 36.050  | 0.000  | 35.907  |
| SREC I         | 2022    | 337.50 | 338.50 | 338.000 | 0.000  | 338.000 |
| SREC I         | 2023    | 321.00 | 322.00 | 321.500 | 0.000  | 321.500 |
| SREC II        | 2022    | 282.00 | 283.00 | 282.500 | 0.000  | 282.500 |
| SREC II        | 2023    | 265.00 | 266.00 | 265.500 | 0.000  | 265.800 |
| Connecticut    |         |        |        |         |        |         |
| Class I        | 2022    | 37.00  | 37.10  | 37.050  | 0.000  | 36.743  |
| Class I        | 2023    | 36.00  | 36.10  | 36.050  | 0.000  | 35.879  |
| NEPOOL         |         |        |        |         |        |         |
| Dual Qualified | 2022    | 37.05  | 37.15  | 37.100  | 0.000  | 36.900  |
| Dual Qualified | 2023    | 36.45  | 36.55  | 36.500  | 0.000  | 36.150  |



## RECs Market Analysis

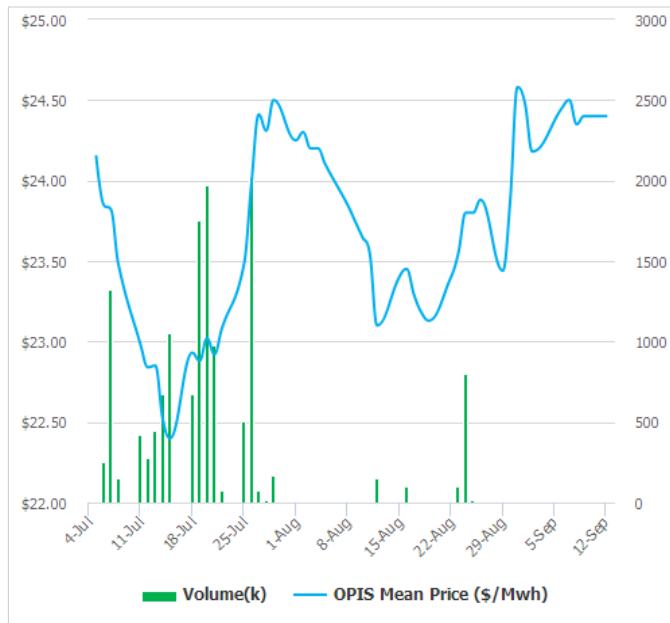
Subdued buyer interest kept Renewable Energy Certificate (REC) prices largely unchanged Monday in both the Mid-Atlantic and New England.

High bids came close to triggering an adjustment of prices in the PJM region. PJM Tri Qualified V23, which is currently assessed at \$24.70/MWh, was bid as high as \$24.65/MWh. New Jersey Class I V23, currently assessed at \$24.60/MWh, was bid as high as \$24.55/MWh. Maryland Tier I V23 was bid as high as \$24.50/MWh, 10cts below its current assessed price of \$24.60/MWh.

Some bids came within 5cts of assessed prices in New England as well. Both Massachusetts Class I V23 and Connecticut Class I V23 are currently priced at \$36.05/MWh. Both were bid at \$36/MWh.

The only REC that was changed Monday was Pennsylvania Solar REC (SREC) V24. It rose 30cts to \$37.05/MWh after it was bid as high as \$37/MWh.

OPIS FRONT YEAR PJM TRI-QUALIFIED REC PRICES & VOLUMES



## Regional Greenhouse Gas Initiative Allowances (\$/st)

| Product | Vintage | Timing | Low   | High  | Mean   | Change | Wt. Avg. | MTD    |
|---------|---------|--------|-------|-------|--------|--------|----------|--------|
| RGGI    | V21-V22 | Sep'22 | 13.24 | 13.29 | 13.265 | 0.015  | 13.265   | 13.311 |
| RGGI    | V21-V22 | Dec'22 | 13.40 | 13.45 | 13.425 | 0.015  | 18.775   | 13.447 |

## RGGI Market Analysis

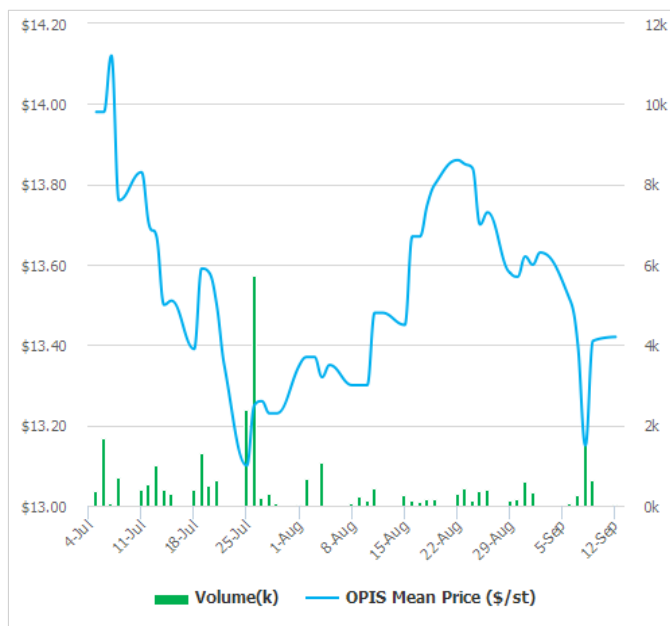
Trade activity for Regional Greenhouse Gas (RGGI) allowances on Monday was light, but indicated slightly firmer prices to start the week.

The ICE V22 December 2022 futures contract traded \$13.40/st and \$13.45/st, translating to an OPIS blended V21/V22 December 2022 assessment mean of \$13.425/st, up from Friday's assessment at \$13.41/st.

No trades were seen for V22 September 2022 RGGI allowances, but bids and offers on the September 2022/December 2022 spread indicated it hadn't shifted from Friday's 16ct/st discount. Accordingly, the OPIS blended V21/V22 September 2022 mean was assessed 16cts below December 2022, at \$13.265/st, also up 1.5cts from Friday.

The removal of Pennsylvania's credits from the Q3 auction amid legislative challenges to its participation in the program provided a temporary lift for prices, but Virginia's movement closer to exiting RGGI provided a negative counter-balance, according to a subscriber update from analysis firm ClearBlue Markets on Monday.

OPIS RGGI ALLOWANCES FORWARD PRICES & VOLUMES



## Europe Carbon Market Analysis

The benchmark ICE December 2022 European Union emissions allowances (EUAs) contract rose more than 10% from its intra-day low, as strong demand during the morning EEX auction boosted prices.

The European Union’s energy saving plan demanding a 5% peak-time cut in member states’ electricity demand has resulted in carbon prices falling by a third, but strong utility demand during the auction appeared to mark the bottom of the market.

The recovery might also have been spurred by sliding TTF natural gas prices as well as Ukraine’s advances in beating back occupying Russian forces, a turn of events that could encourage Moscow to sue for peace while it has made some territorial gains in Ukraine.

## European Carbon Futures

| ICE Exchange | Timing | Low   | High  | Settle | Change |
|--------------|--------|-------|-------|--------|--------|
| EUA €/mt     | Sep'22 | 65.40 | 72.11 | 71.43  | 5.72   |
| EUA €/mt     | Dec'22 | 65.73 | 72.62 | 71.82  | 5.74   |
| EUA €/mt     | Dec'23 | 68.38 | 75.27 | 74.48  | 5.78   |
| UKA £/mt     | Dec'22 | 75.75 | 81.52 | 79.86  | 3.19   |

## European Carbon Auctions

| Product  | Exchange | Price | Change | Volume (0'000mt) |
|----------|----------|-------|--------|------------------|
| EUA €/mt | EEX      | 65.96 | 0.75   | 2.51             |
| UKA £/mt | ICE      | 80.00 | -10.00 | 3.22             |

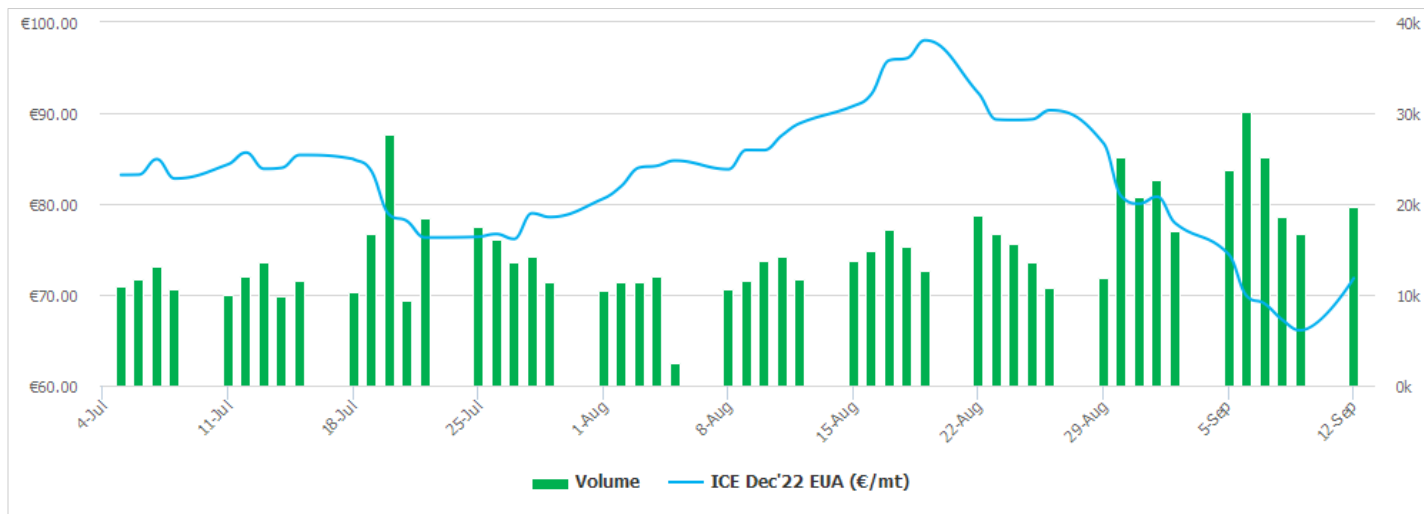
Latest auction clearing price and volume

## IHS Markit Global Carbon Index

| Symbol | Total Return | Change | Wt. Avg. Carbon \$ | Change |
|--------|--------------|--------|--------------------|--------|
| GLCARB | 556.95       | -1.62  | 39.37              | -0.12  |

Previous business day closing price

### ICE EUA FORWARD PRICES & VOLUMES

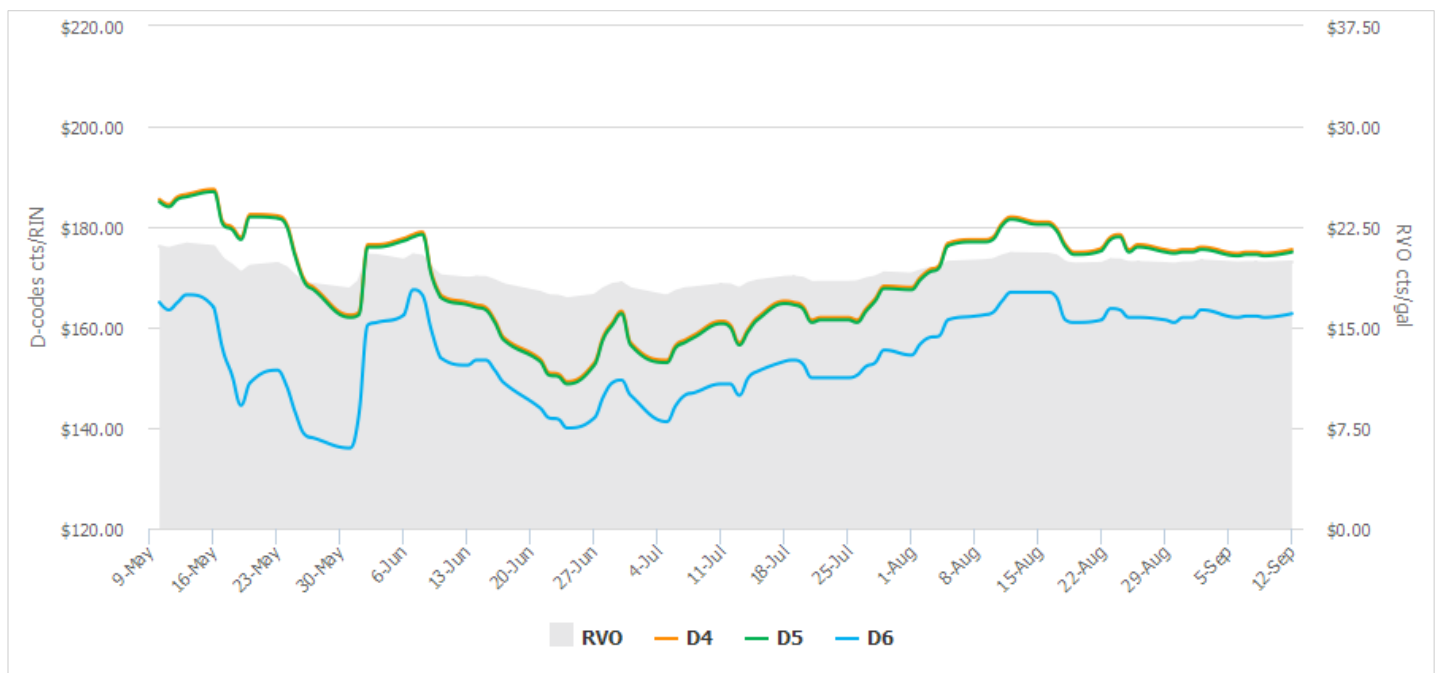


## U.S. RINs (cts/RIN)

| Product       | Year | Low    | High   | Mean    | Change | MTD     |
|---------------|------|--------|--------|---------|--------|---------|
| D6            | 2019 | 162.00 | 166.00 | 164.000 | 0.750  | 163.643 |
| D6            | 2020 | 162.00 | 166.00 | 164.000 | 0.750  | 163.643 |
| D6            | 2021 | 162.00 | 163.00 | 162.500 | 0.750  | 162.071 |
| D6            | 2022 | 162.00 | 163.50 | 162.750 | 0.750  | 162.393 |
| D6            | 2023 | 156.50 | 158.00 | 157.250 | 0.250  | 157.357 |
| D3            | 2019 | 290.00 | 293.00 | 291.500 | 0.000  | 291.929 |
| D3            | 2020 | 321.00 | 331.00 | 326.000 | 0.000  | 326.429 |
| D3            | 2021 | 335.00 | 338.00 | 336.500 | 0.000  | 336.929 |
| D3            | 2022 | 286.00 | 288.00 | 287.000 | 0.000  | 287.429 |
| D3            | 2023 | 241.00 | 251.00 | 246.000 | 0.000  | 246.429 |
| D4            | 2019 | 190.50 | 194.00 | 192.250 | 0.750  | 192.036 |
| D4            | 2020 | 190.50 | 194.00 | 192.250 | 0.750  | 192.036 |
| D4            | 2021 | 183.50 | 187.00 | 185.250 | 0.750  | 185.036 |
| D4            | 2022 | 175.00 | 176.00 | 175.500 | 0.750  | 175.214 |
| D4            | 2023 | 163.00 | 164.00 | 163.500 | 0.500  | 162.750 |
| D5            | 2019 | 189.50 | 194.00 | 191.750 | 0.750  | 191.536 |
| D5            | 2020 | 189.50 | 194.00 | 191.750 | 0.750  | 191.536 |
| D5            | 2021 | 182.50 | 187.00 | 184.750 | 0.750  | 184.536 |
| D5            | 2022 | 174.00 | 176.00 | 175.000 | 0.750  | 174.714 |
| D5            | 2023 | 162.00 | 164.00 | 163.000 | 0.500  | 162.250 |
| RVO (cts/gal) | 2022 | ---    | ---    | 19.881  | 0.085  | 19.844  |

D6: Corn Ethanol RIN, D3: Cellulosic RIN, D4: Biodiesel RIN, D5: Advanced Biofuel RIN, RVO: Renewable Volume Obligation.

## OPIS U.S. RIN PRICES – 90 DAY TREND (CTS/RIN)



## Trade Log

### CALIFORNIA

| Product          | Timing | Cash Price (\$/mt) | Reference | Volume(K) | Notes |
|------------------|--------|--------------------|-----------|-----------|-------|
| CCA Current Year | Sep'22 | 27.30              | ---       | 20        | ---   |
| CCA Current Year | Dec'22 | 27.40              | ---       | 20        | ---   |
| CCA Current Year | Dec'22 | 27.50              | ---       | 30        | ---   |
| CCA Current Year | Dec'22 | 27.54              | ---       | 25        | ---   |
| CCA Current Year | Dec'22 | 28.00              | ---       | 95        | ---   |
| CCA Current Year | Dec'22 | 27.70              | ---       | 50        | ---   |
| CCA Current Year | Dec'22 | 27.60              | ---       | 50        | ---   |
| CCA Current Year | Dec'22 | 27.65              | ---       | 50        | ---   |
| CCA Current Year | Dec'22 | 27.75              | ---       | 10        | ---   |
| CCA Current Year | Dec'22 | 27.46              | ---       | 35        | ---   |
| CCA Current Year | Dec'22 | 27.45              | ---       | 10        | ---   |
| CCA Current Year | Dec'22 | 27.35              | ---       | 20        | ---   |

### EAST COAST

| Product           | Timing | Cash Price (\$/st) | Reference | Volume(K) | Notes |
|-------------------|--------|--------------------|-----------|-----------|-------|
| RGGI Current Year | Dec'22 | 13.40              | ---       | 22        | ---   |
| RGGI Current Year | Dec'22 | 13.45              | ---       | 10        | ---   |

### RECS

| Product | Vintage | Cash Price (\$/mwh) | Reference | Volume(K) | Notes |
|---------|---------|---------------------|-----------|-----------|-------|
|---------|---------|---------------------|-----------|-----------|-------|

Trade Log may contain Intercontinental Exchange data.

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