

Market Report

US

The US used cooking oil (UCO) market avoided major declines in December, but prices continued to fall on average, leaving all regions at or below November levels amid an influx of imports. "Very quiet" was how a major feedstock buyer described it.

Collectors/aggregators said volumes were mostly adequate, though as one West Coast collector noted, "UCO is local and subject to a lot of factors." With 2023 prices set to end on a down note, "profits are getting trashed" a large West Coast collector said.

CALIFORNIA

One major collector/aggregator in California is betting on better pricing in 2024, potentially starting in 2Q. Prices in the state have hovering at or below 37-39 cents a pound for much of December.

MIDWEST

Prices in the Midwest slid to 38 cents a pound in what was a very stable market for much of 2023. Feedstock buying was muted, and no major activity was reported.

SOUTH

A few areas in the South have begun to see prices in the high 30' cents a pound. Panama Canal restriction hampered operations in the Gulf market to a degree. "Margins are thin," a large collector/aggregator said.

NORTHEAST

As in other markets, prices in the Northeast moved little in December. Supply remains tight due to restaurant closures and slowdowns. One collector/aggregator in the Mid-Atlantic reported 34 cents a pound for finished UCO.

2023 Year in Review

Large Collector/Aggregators Continued to Grow

Darling, Neste, JBS, Baker and others continued to solidify their leading market positions in 2023 while maintaining relatively good operational efficiency and volumes. Major players held off on acquisitions due to higher costs and borrowing rates.

UCO Price Scan (Cents/Pound)

	This Week		Last Week		Change
	Low	High	Low	High	
Northeast	34.00	39.00	34.00	41.00	-2.00
South	38.00	42.00	41.00	42.00	NC
Midwest	35.00	38.00	37.00	39.00	-1.00
N. California	37.00	39.00	37.00	40.00	-1.00
S. California	37.00	39.00	37.00	40.00	-1.00

Region Definitions: Northeast: New York, New Jersey
 South: Carolinas, Georgia, Gulf Coast
 Midwest: Minneapolis, Chicago, Iowa

Price Assessment Notation: Green Markets' UCO price assessments are still in the development stage and are expected to improve in confidence level over time.

EPA RVO Projections Failed to Please

EPA projections for RVOs (renewable volume obligations) for the next two years weren't well received by the biofuel industry. They indicated only 60% growth, considerably less than hoped. That dented credit values for renewable identification numbers (RINs) and California's low carbon fuel standard (LCFS) program in 2H.

UCO Prices Tumble in Autumn

After rising most of the year to the high 50s to low 60s cents a pound, UCO prices fell dramatically in 4Q. All markets moved down by the end of October, and declines continued in November. The South's Gulf market, for example, slid to 41-42 cents from as high as 65 cents earlier in the year.

EPA Issues Traceability Guidelines

After weeks of speculation, EPA traceability guidelines were published midyear. Designed to prevent the sale of stolen and questionable oil, the rules aim to determine the source of UCO volumes and supplies.

Many collectors/aggregators had questions concerning the disclosure of confidential customer information. Brokers and others were said to be using encrypted software to protect confidentiality and prove sourcing.

A Look Forward

Prices May Rise in 2Q

UCO pricing through the years has tended to increase gradually, followed by decreases and stagnation. There's no reason this trend won't repeat in 2024.

Much depends on the economy, soybean pricing, RINs' status and other factors. Some in the UCO industry expect better pricing after March, with demand for renewable fuel a potential catalyst. Bloomberg NEF expects US renewable fuel capacity that can run on UCO to expand 30% in 2024.

SAF Becoming More Prominent

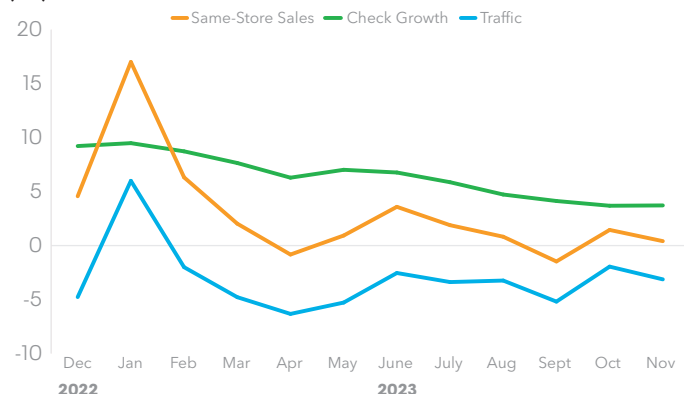
More refineries will likely build sustainable aviation fuel (SAF) processing into their plans in 2024. SAF gained ground in Europe during 2023 and it's expected the US will follow suit, though additional tax credits or other incentives may be needed to ramp up production.

Restaurant Challenges Could Mean Less UCO

Consumer spending is down, and that includes eating meals out. Restaurant same-store sales could slow in 2024 due to the resumption of student-loan payments, ballooning credit-card balances and three years of inflation and price hikes, according to Bloomberg Intelligence.

Consensus growth of 3.1% looks overstated amid persistent traffic declines. Fewer visits would lead to a smaller amount of UCO per restaurant. Still, highly franchised quick-service chains like McDonald's might fare better than company-owned full-service companies such as Darden.

Figure 1: **Casual Dining's Weak Traffic a Concern (%)**



Source: MillerPulse, Bloomberg Intelligence

UCO Imports Rising on Feedstock Advantage

US imports of UCO have jumped this year to almost 730,000 metric tons as of November, with China accounting for 79%. Those imports have added 36% to the US' annual domestic supply of 2 million tons, driven by unprecedented demand growth for renewable fuels.

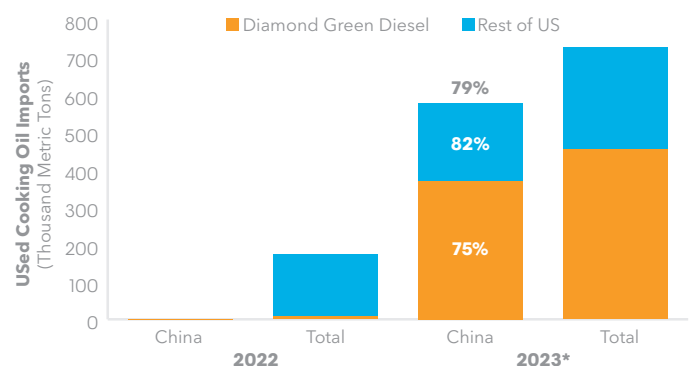
UCO is the most common feedstock used to make drop-in renewable fuels such as renewable diesel and SAF. US production of such fuels tripled in 3Q from 3Q21.

UCO is favored as a feedstock because it has a lower carbon intensity than energy crops like soybean or canola oil.

Due to UCO's edge in carbon intensity, it receives about 12 cents a gallon more than tallow and 34 cents above soybean oil under California's LCFS (at \$75 a metric ton of carbon dioxide equivalent).

This gap is set to widen further in 2025 under the IRA's 45Z tax credit, which could give UCO 24 cents a gallon more in producer tax credits than tallow and upward of \$1 over soybean oil, depending on the method adopted by the Treasury to measure lifecycle emissions. Pre-treatment units are required to run UCO, a limitation for some producers. Availability is also a concern: US biofuel producers consumed more than domestic supply in 2022, and only about 22% of biomass-based diesel feedstock was yellow grease.

Figure 2: **Seaborne UCO Imports by Company, Origin**



*Note: Percent represents China share of total. 2023 through November.
Source: IHS Markit Customs Seaborne Bill of Lading data

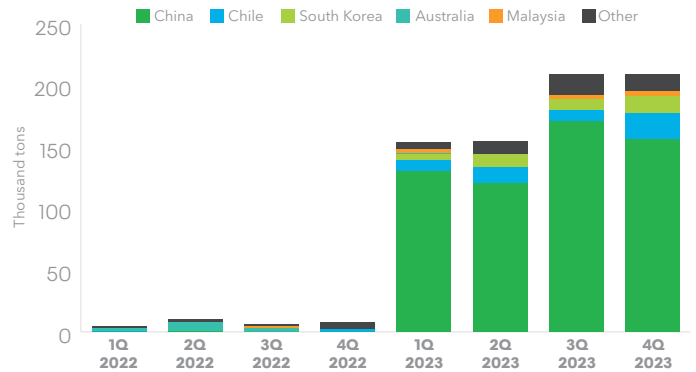
China Dominates Exports

China exported 1.5 million tons of UCO in 2022, but none to the US. It began shipping to the US in 2023 after UCO prices surged at the end of 2022 to \$1,400 a ton, a 55% increase over 2021. Prices have since softened amid the influx of supply, trading at \$880 a ton last week.

Despite the late start, China now dominates US seaborne imports of UCO, making up about 577,000 of this year's total of 728,00 metric tons, according to IHS Markit Customs Seaborne Bill of Lading data. The US imported 175,000 total tons in 2022. Based on EIA data on feedstock consumed in biofuel through September, we calculate seaborne UCO imports have represented 23% of yellow grease used in 2023 vs. 8% in 2022.

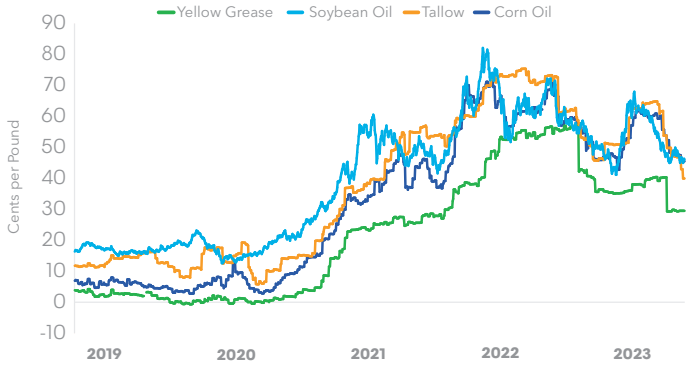
Australia, Canada, Chile and Colombia were the next-largest sources of seaborne imports since 2022. Origin traceability is of particular concern, as Germany asked the European Commission to investigate the possibility of mislabeled Chinese biofuel imports into the EU.

Figure 3: US UCO Imports by Country



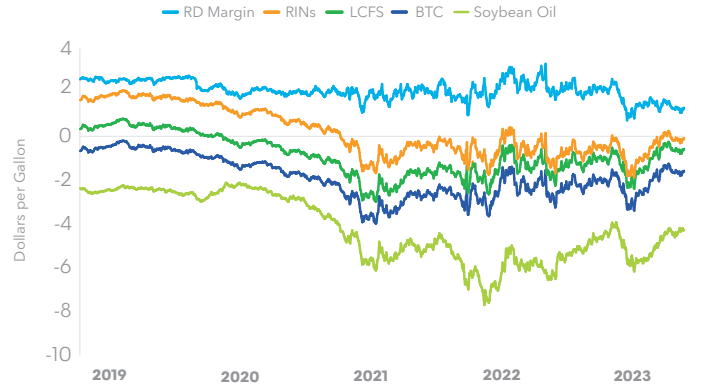
Source: Bloomberg Intelligence

Figure 4: **Renewable Diesel Feedstock Prices After LCFS Benefit**



Source: Bloomberg Intelligence

Figure 5: **Renewable Diesel Margin Components**



Source: Bloomberg Intelligence

Figure 6: **Soybean Oil Price (Historic and Futures)**



Source: Bloomberg LP

Figure 7: **Diesel Price (Historic and Futures)**



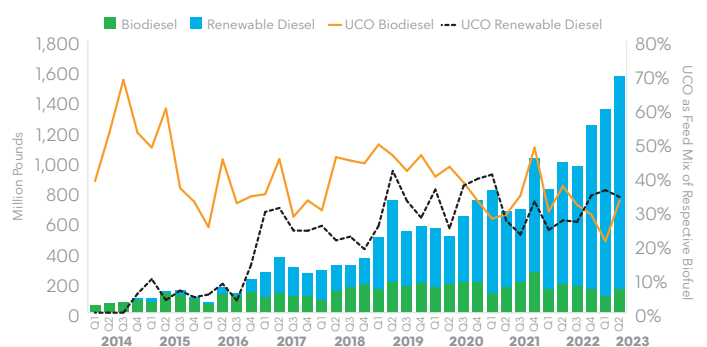
Source: Bloomberg LP

Figure 8: **Diesel - Soybean Oil (Historic and Futures)**



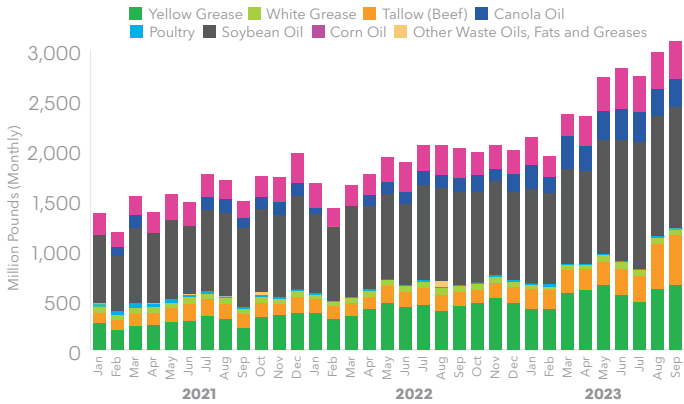
Source: Bloomberg LP

Figure 9: **UCO Consumption for California's Low Carbon Fuel Standard**



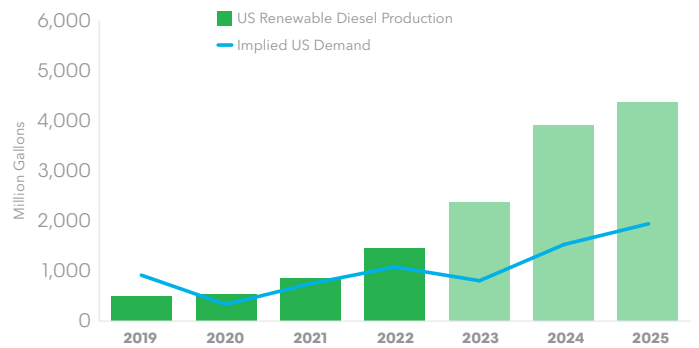
Source: California Air and Resources Board

Figure 10: **US Feedstocks Consumed for Biofuel Production**



Source: US Energy Information Administration

Figure 11: **Planned US Renewable Diesel Production vs. Implied Demand From RVO**



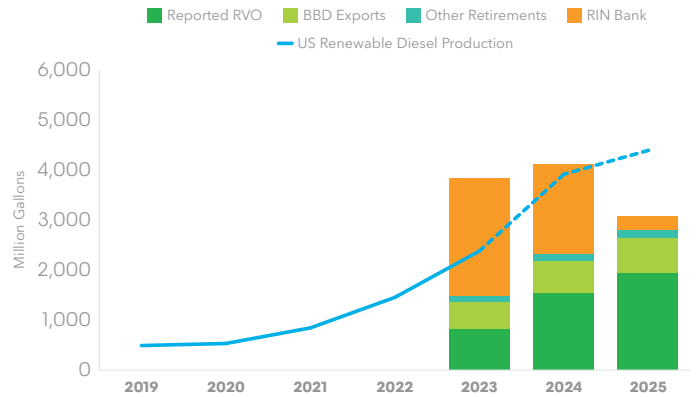
Source: US EPA, Bloomberg Intelligence

Figure 12: **University of Michigan Consumer Sentiment**



Source: University of Michigan

Figure 13: **Planned US Renewable Diesel Production vs. Implied Demand From RVO**



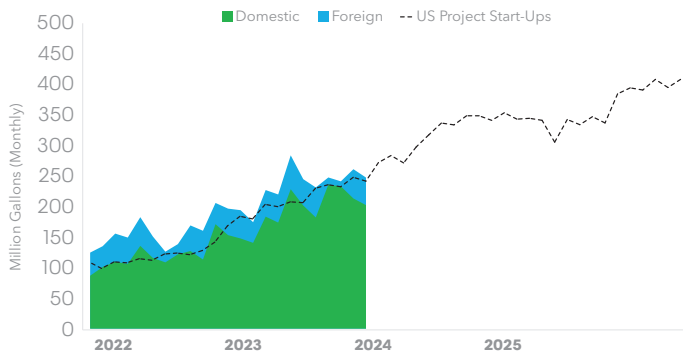
Note: 2025 RIN bank assumes the RVO stays flat in 2026 as the EPA has 14 months until rules take effect to set the mandate. An obligated party can use a maximum of 20% of prior year RINs for its compliance.

Source: US EPA, US EIA, Bloomberg Intelligence

RIN Generation Drops in November, Offset by Slumping Fuel Demand

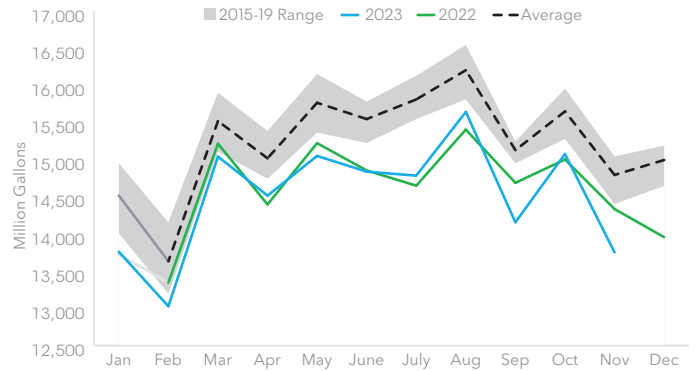
Lower fuel demand offset lower November RIN generation, restraining prices as excess supply eats into the 20% carry-forward allowance. Renewable diesel utilization has slipped, but supply is set to gain with three plants scheduled to add 70,000 barrels a day of capacity in 2024. The spread between diesel and feedstock prices are driving RINs.

Figure 13: **US Renewable Diesel Volume (RIN Generation)**



Source: US EPA, Bloomberg Intelligence

Figure 14: **Monthly Gasoline & Diesel Demand Excl. Renewables**



Source: US EPA, Bloomberg Intelligence

For any questions contact Brett Gibbs.

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Billion Ethanol Equivalent Gallons	2021	2022	2023	2024	23-Oct	23-Nov	YTD
Conventional Mandate	14.32	14.71	14.83	14.84	1.29	1.17	13.63
(-) Ethanol Blending	13.94	14.02	14.24	14.26	1.28	1.18	13.07
% of Mandate	97%	95%	96%	96%	99%	101%	96%
Excess Conventional	0.38	0.69	0.59	0.58	0.01	-0.01	0.56
(+) Non-Cellulosic Advanced Mandate	4.67	4.82	4.95	5.38	0.43	0.39	4.55
Conventional + Advanced	5.05	5.52	5.54	5.96	0.44	0.39	5.11
(-) Biodiesel	2.87	2.79	3.23	3.07	0.3	0.27	2.96
(-) Other Advanced	0.14	0.24	0.18	0.29	0.02	0.01	0.16
Available for Renewable Diesel	2.04	2.49	2.13	2.6	0.12	0.11	1.99
(-) Imported Renewable Diesel	0.77	0.72	0.75	-	0.08	0.07	0.69
Available for Domestic Renewable Diesel	1.27	1.76	1.37	2.6	0.04	0.04	1.3
Domestic Renewable Diesel	1.44	2.47	4.05	6.7	0.36	0.34	3.61
Available as % of Production	88%	71%	34%	39%	12%	11%	36%
Total Generation	19.73	20.85	23.28	25.39	2.1	1.93	21.25
(-) Implied Total Mandate	19.57	20.14	20.6	21.3	1.79	1.63	18.93
Excess (Deficit) Credits	0.17	0.71	2.68	4.09	0.31	0.3	2.31
% of Total Mandate	1%	4%	13%	19%	18%	19%	12%
Fuel Demand Excl. Renewables (bgal)	175	172	170	170	15	13	156
Domestic Renewable Diesel Production (kb/d)	55	95	155	256	162	159	151
BI Project Tracker		96	173	256	191	193	170
% vs. Tracker		99%	90%	100%	85%	83%	89%

Note: Values in ethanol equivalent gallons unless otherwise noted. Biodiesel = gallons * 1.5; Renewable diesel = gallons * 1.7

Source: Bloomberg Intelligence

US Renewable Diesel Project Startups

Location	Company	Nameplate Capacity	RD Capacity	RD Mix (%)	Start-Up
Bakersfield, California	Kern Oil	4	4	100%	9/30/2009
Geismar, Louisiana	Renewable Energy Group	90	81	90%	9/30/2010
Norco, Louisiana	Diamond Green Diesel	290	290	100%	9/30/2013
Paramount, California	World Energy	45	13	29%	9/30/2015
Silsbee, Texas	Gevo	0	0		9/30/2016
Garnett, Kansas	East-Kansas Agri-Energy	5	5	100%	9/30/2017
Sinclair, Wyoming	HF Sinclair	153	138	90%	9/30/2018
Cherry Point, Washington	BP	42	42	100%	9/30/2018
Dickinson, North Dakota	Marathon Petroleum	184	169	92%	9/30/2020
Norco, Louisiana	Diamond Green Diesel	430	400	93%	9/30/2021
Rodeo, California	Phillips 66	120	120	100%	9/30/2021
El Segundo, California	Chevron	31	23	74%	9/30/2021
Cheyenne, Wyoming	HF Sinclair	92	90	98%	9/30/2021
Wynnewood, Oklahoma	CVR Energy	100	94	94%	4/15/2022
Artesia, New Mexico	HF Sinclair	138	110	80%	6/30/2022
Hugoton, Kansas	Seaboard Energy	100	85	85%	10/15/2022
Great Falls, Montana	Calumet	184	135	73%	11/5/2022
Port Arthur, Texas	Diamond Green Diesel	470	450	96%	11/15/2022
Cherry Point, Washington	BP	67	67	100%	11/28/2022
Sierra plant, Reno, Nevada	Fulcrum Bioenergy	11	3	30%	12/1/2022
Martinez, California	Marathon Petroleum	260	260	100%	1/15/2023
Mobile, Alabama	Vertex Energy	140	126	90%	5/27/2023
Chalmette, Louisiana	PBF Energy	307	307	100%	6/30/2023
Freedom Pines, Soperton, Georgia	LanzaJet	10	1	10%	9/30/2023
New Franken, Wisconsin	University of Wisconsin Oshkosh	1	1	80%	9/30/2023
El Segundo, California	Chevron	123	123	100%	10/1/2023
Martinez, California	Marathon Petroleum	470	353	75%	12/1/2023
Alon Bakersfield, California	Global Clean Energy	230	173	75%	12/15/2023
Mobile, Alabama	Vertex Energy	75	68	90%	3/1/2024
Geismar, Louisiana	Chevron	250	225	90%	3/31/2024
Rodeo, California	Phillips 66	680	374	55%	3/31/2024
Hastings, Nebraska	Heartwell Renewables	80	80	100%	8/31/2024
Imperial County, California	Indaba	100	0	0%	9/30/2024
Missouri	Indaba	100	0	0%	9/30/2024
Port Arthur, Texas	Diamond Green Diesel	0	-225		12/1/2024
Unknown	HOBO	120	120	100%	3/1/2025
Riverbank, California	Aemetis	85	21	25%	4/1/2025
Paramount, California	World Energy	295	96	33%	6/30/2025
Great Falls, Montana	Calumet	91	46	50%	6/30/2025
Kapolei, Hawaii	Par Pacific	61	24	40%	6/30/2025
Houston, Texas	World Energy	250	75	30%	6/30/2025
Port Charles, Louisiana	Grön Fuels	996	498	50%	6/30/2025
Port Westward, Oregon	NEXT Renewable Fuels	750	675	90%	6/30/2027

Note: Future dates reflect BI assumption based on latest available project timeline. If a year, quarter or month is disclosed, BI uses best judgement to assign a date to calculate production. Actual start-up dates may differ.

Source: Company Filings, Bloomberg Intelligence, BloombergNEF

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