

MARKETS AND NEWS

- California Carbon Allowances (CCAs) rose on Thursday following news that last week's auction clearing price was the highest since last May.
- Regional Greenhouse Gas Initiative (RGGI) CO₂ allowances were unchanged for the second consecutive day as market activity remained light.
- PJM Class I renewable energy certificates (RECs) extended their recent decline on Thursday.
- California Low Carbon Fuel Standard (LCFS) credits slipped back into a months-long trading band today after a week-long rally to the highest levels in five months.
- Cross-State Air Pollution Rule (CSAPR) allowances were unchanged on Thursday following recent dips in price for ozone season NO_x allowances.
- Low carbon fuel supplies could not keep pace with new Oregon Clean Fuels Program deficits during the third quarter of 2022, according to the latest data.

Global emissions pricing

| | Price | ± |
|-------------------------------------|-------|-------|
| Global compliance carbon index \$/t | 80.24 | +0.16 |
| Global green power index \$/MWh | 7.01 | +0.26 |

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KEY MARKET PRICES

| Carbon | | | | | \$/t |
|---------------------------------|---------|----------|-------|-------|-------|
| | Vintage | Delivery | MTD | Price | ± |
| CCA | 2023 | Dec 23 | | 29.80 | +0.45 |
| CCA VWA | 2021-23 | Dec 23 | 29.60 | | |
| RGGI CO ₂ allowances | 2021-22 | Dec 23 | | 13.25 | nc |
| RGGI CO ₂ VWA | 2021-22 | Dec 23 | 13.34 | | |
| CCA/CCO 3 | | | | 11.65 | +0.45 |
| CCA/CCO 8 | | | | 11.85 | +0.45 |
| CCA/CCOG | | | | 11.00 | +0.45 |

| Renewable fuels | | | | | €/RIN |
|-----------------------------|---------|----------|--------|-------|--------|
| | Vintage | Delivery | Price | ± | ±2022 |
| LCFS California \$/t | | spot | 69.00 | -5.00 | |
| LCFS Oregon \$/t | | spot | 122.50 | 0.00 | |
| Renewable fuel (ethanol D6) | 2023 | | 162.25 | -1.75 | -0.75 |
| Biomass-based diesel (D4) | 2023 | | 166.00 | -1.50 | -12.00 |
| Cellulosic biofuel (D3) | 2023 | | 194.50 | 0.50 | nc |
| Advanced biofuel (D5) | 2023 | | 165.00 | -1.75 | -12.00 |

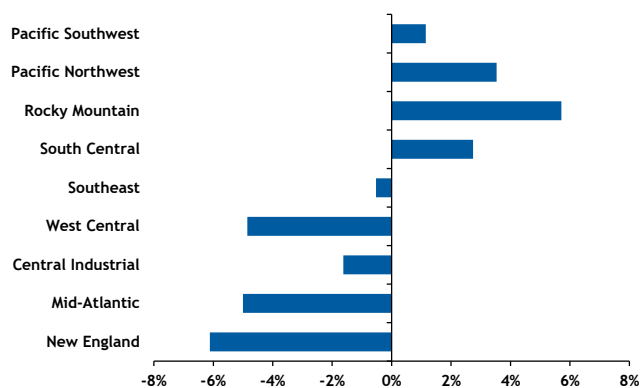
| RECs | | | | | \$/MWh |
|-------------------------------|---------|--------|--------|--------|--------|
| | Vintage | Bid | Ask | Price | ± |
| RECs | | | | | |
| Massachusetts Class I | 2022 | 36.00 | 37.00 | 36.50 | nc |
| Connecticut Class I | 2022 | 36.00 | 37.00 | 36.50 | nc |
| New Jersey Class I | 2023 | 28.40 | 28.80 | 28.60 | -0.15 |
| Pennsylvania Tier I | 2023 | 28.10 | 28.50 | 28.30 | -0.20 |
| Maryland Tier I | 2022 | 28.40 | 28.80 | 28.60 | -0.15 |
| PJM tri-qualified Class I | 2023 | 28.40 | 28.80 | 28.60 | -0.15 |
| SRECs | | | | | |
| New Jersey | 2023 | 225.00 | 226.00 | 225.50 | nc |
| Maryland | 2022 | 59.00 | 60.40 | 59.70 | nc |
| Washington DC | 2022 | 400.00 | 420.00 | 410.00 | nc |
| Green-e eligible RECs, 17 Feb | | | | | |
| National any | 2023 | 3.00 | 3.30 | 3.15 | -0.10 |
| Texas wind | 2023 | 3.10 | 3.30 | 3.20 | -0.20 |

| SO ₂ and NO _x allowances | | | | | \$/st |
|--|---------|-----------|-----------|-----------|-------|
| Vintage | Vintage | Bid | Ask | Price | ± |
| SO ₂ Cross-State Group 1 | 2022 | 2.00 | 4.00 | 3.00 | nc |
| SO ₂ Cross-State Group 2 | 2022 | 1.00 | 3.00 | 2.00 | nc |
| NO _x Cross-State annual | 2022 | 2.00 | 4.00 | 3.00 | nc |
| NO _x Cross-State Group 2 seasonal | 2022 | 1,900.00 | 2,700.00 | 2,300.00 | nc |
| NO _x Cross-State Group 3 seasonal | 2022 | 12,500.00 | 16,500.00 | 14,500.00 | nc |

*Tables include hyperlinks to those values maintained in the Argus database.

MARKET MOVES

US generation change, week ended 18 Feb



Market movers

| | Price | %± |
|--|-------|--------|
| Largest gains | | |
| California CO ₂ year, 2024, Dec-24, \$/t | 31.90 | +1.66% |
| California CO ₂ year, 2023, Dec-23, \$/t | 29.80 | +1.53% |
| California CO ₂ Month 1, 2023, Feb-23, \$/t | 28.22 | +1.44% |
| Largest losses | | |
| California LCFS credits prompt, 2023, 2023, \$/t | 69.00 | -6.76% |
| California LCFS credits 1Q23, 2023, 2023, \$/t | 69.00 | -6.76% |
| California LCFS credits 2Q23, 2023, 2023, \$/t | 69.00 | -6.76% |

REGULATORY AND MARKET EVENTS CALENDAR

| Date | Market | Event | More info |
|--------|--------|--|---|
| 23 Feb | CCA | Western Climate Initiative quarterly allowance auction results | https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/auction-information |
| 28 Feb | WCA | Washington state carbon allowance auction | https://ecology.wa.gov/Air-Climate/Climate-Commitment-Act/Cap-and-invest/ |
| 7 Mar | WCA | Washington state carbon allowance auction results | https://ecology.wa.gov/Air-Climate/Climate-Commitment-Act/Cap-and-invest/ |
| 8 Mar | RGGI | RGGI quarterly CO ₂ allowance auction | https://www.rggi.org/auctions/auction-materials |
| 8 Mar | CCO | California Carbon Offsets issued | https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program |
| 10 Mar | RGGI | RGGI quarterly CO ₂ allowance auction results | https://www.rggi.org/auctions/auction-results |
| 14 Mar | LCFS | California LCFS monthly credit transfer report | https://ww2.arb.ca.gov/resources/documents/monthly-lcfs-credit-transfer-activity-reports |
| 22 Mar | CCO | California Carbon Offsets issued | https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program |
| 3 Apr | LCFS | California publishes new maximum LCFS credit price | https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard |
| 3 Apr | LCFS | California LCFS 4Q 2022 reporting deadline | https://ww3.arb.ca.gov/fuels/lcfs/lrtqsummaries.htm |
| 11 Apr | LCFS | California LCFS monthly credit transfer report | https://ww2.arb.ca.gov/resources/documents/monthly-lcfs-credit-transfer-activity-reports |
| 28 Apr | LCFS | California LCFS 4Q 2022 data release | https://ww3.arb.ca.gov/fuels/lcfs/lrtqsummaries.htm |
| 9 May | LCFS | California LCFS monthly credit transfer report | https://ww2.arb.ca.gov/resources/documents/monthly-lcfs-credit-transfer-activity-reports |
| 13 Jun | LCFS | California LCFS monthly credit transfer report | https://ww2.arb.ca.gov/resources/documents/monthly-lcfs-credit-transfer-activity-reports |
| 30 Jun | LCFS | California LCFS 1Q 2023 reporting deadline | https://ww3.arb.ca.gov/fuels/lcfs/lrtqsummaries.htm |
| 31 Jul | LCFS | California LCFS 1Q 2023 data release | https://ww3.arb.ca.gov/fuels/lcfs/lrtqsummaries.htm |

CARBON MARKETS

CANADA

| Quebec carbon price for gasoline, diesel | | | CA\$/l |
|--|-------|--|--------|
| Fuel | Price | | ± |
| Gasoline | 8.58 | | +0.13 |
| Diesel | 10.67 | | +0.16 |

Represents the per-gallon cost of compliance for distributors

| Alberta CO ₂ offsets, 17 Feb | | | | | C\$/t |
|---|---------|-------|-------|-------|-------|
| | Vintage | Bid | Ask | Price | ± |
| Renewable energy | 2022 | 50.00 | 58.00 | 54.00 | nc |

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- California issues more than 816,000 offsets 11

COMMENTARY

CCAs climb in wake of auction results

California Carbon Allowances (CCAs) rose on Thursday following news that last week's auction clearing price was the highest since last May.

December 2023 CCAs increased by 45¢ to \$29.80/metric tonne after trading 260 times for nearly 5.6mn t.

Prompt-month CCAs rose by 40¢ to \$28.22/t and traded nine times for 488,000t combined.

December 2024 CCAs increased by 52¢ to \$31.90/t. The contract did not trade today.

Washington Carbon Allowances (WCAs) for December 2023 held at \$43/t. The contract did not trade.

Today's gains came after California and Quebec released the results of last week's auction, the first one of 2023.

The 15 February auction sold all of the nearly 56.4mn current vintage allowances offered for \$27.85/t, which was \$1.05/t higher than the previous auction held in November 2022 and 85¢/t higher than the auction held in August.

The auction for vintage 2026 allowances sold all of the almost 7.6mn t offered for \$27.01/t, a \$1.01 bump from the previous auction.

The California Air Resources Board (CARB) issued about 816,500 California Carbon Offsets (CCOs) in its latest round of new credits to four projects.

CALIFORNIA

| California carbon allowances (CCA) | | | | | \$/t |
|------------------------------------|----------|-------|-------|-------|-------|
| Vintage | Delivery | Bid | Ask | Price | ± |
| 2023 | Feb 23 | 28.17 | 28.27 | 28.22 | +0.40 |
| | Dec 23 | 29.75 | 29.85 | 29.80 | +0.45 |
| 2024 | Dec 24 | 31.85 | 31.95 | 31.90 | +0.52 |

| CCA volume-weighted averages | | | | | \$/t |
|------------------------------|----------|-------|-------|-------|---------|
| Vintage | Delivery | Low | High | VWA | MTD VWA |
| 2021-23 | Dec 23 | 28.85 | 29.99 | 29.77 | 29.60 |

| Vintage | Delivery | Trades | MTD | Volume | MTD |
|---------|----------|--------|-----|-----------|------------|
| 2021-23 | Dec 23 | 260 | 987 | 5,584,000 | 24,516,000 |

| California carbon price for gasoline, diesel | | | | ¢/USG |
|--|---------|-------|------------|-------|
| Fuel | Price | ± | Price | ± |
| Carbob | Summer | | Winter | |
| | Regular | 22.74 | +0.32 | 22.68 |
| Midgrade | 22.69 | +0.33 | 22.68 | +0.32 |
| Premium | 22.64 | +0.32 | 22.70 | +0.32 |
| Distillate | | | ULSD No. 2 | |
| Ultra-low sulfur diesel | | | 28.89 | +0.41 |

Represents the per-gallon cost of compliance for distributors

| California Carbon offsets (CCO), 17 Feb | | | | \$/t |
|---|-------|-------|-------|------|
| | Bid | Ask | Price | ± |
| Seller-guaranteed (CCOG) | 18.75 | 18.85 | 18.80 | nc |
| 3-year invalidation (CCO 3) | 18.10 | 18.20 | 18.15 | nc |
| 8-year invalidation (CCO 8) | 17.90 | 18.00 | 17.95 | nc |
| CCO-G DEBS | 24.35 | 24.45 | 24.40 | nc |
| CCO-3 DEBS | 23.70 | 23.80 | 23.75 | nc |
| CCO-8 DEBS | 23.50 | 23.60 | 23.55 | nc |

DEBS represent offsets that provide direct environmental benefits in the state

| California carbon spreads | | | \$/t |
|---------------------------|--------|--|-------|
| | Price | | ± |
| CCA/CCO 3 | +11.65 | | +0.45 |
| CCA/CCO 8 | +11.85 | | +0.45 |
| CCA/CCOG | +11.00 | | +0.45 |
| CCA Feb 23/CCA Dec 23 | -1.58 | | -0.05 |
| CCA Dec 23/CCA Dec 24 | -2.10 | | -0.07 |

WASHINGTON

| Washington carbon allowances (WCA) | | | | | \$/t |
|------------------------------------|----------|-------|-------|-------|------|
| Vintage | Delivery | Bid | Ask | Price | ± |
| 2023 | Dec 23 | 40.00 | 46.00 | 43.00 | nc |

CARBON MARKETS

RGGI allowances flat

Regional Greenhouse Gas Initiative (RGGI) CO₂ allowances were unchanged for the second consecutive day on Thursday as market activity remained light.

December 2023 allowances held at \$13.25/short ton after trading five times for 108,000st.

Prompt-month allowances remained at \$12.64/st and did not trade.

December 2024 allowances were steady at \$14.00/st and did not trade.

Following a spike in activity in January in relation to unusually mild winter temperatures and low power demand, the RGGI market has been much less active this month. Price changes have been minimal, and most sessions have had few trades, which have been for mostly smaller volumes.

The first auction of the year is less than two weeks away on 8 March, when the RGGI states will offer 21.5mn allowances. The most recent auction in December cleared at \$12.99/st, a low for the year. Argus has assessed prompt-month allowances below that level for the last two weeks.

Pennsylvania, which would be the largest RGGI member in terms of emissions, will miss at least the upcoming auction because of pending legal challenges to its CO₂ trading regulation.

RGGI

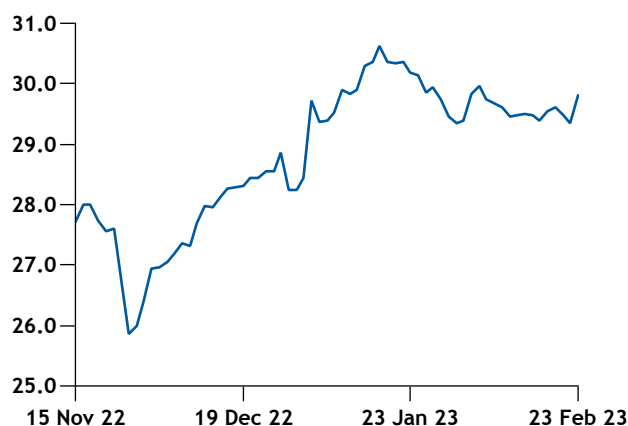
| RGGI CO ₂ allowances | | | | | \$/st |
|---------------------------------|----------|-------|-------|-------|-------|
| Vintage | Delivery | Bid | Ask | Price | ± |
| 2021-22 | Feb 23 | 12.59 | 12.69 | 12.64 | nc |
| | Dec 23 | 13.20 | 13.30 | 13.25 | nc |
| | Dec 24 | 13.95 | 14.05 | 14.00 | nc |

| RGGI CO ₂ volume-weighted averages | | | | | \$/st |
|---|----------|-------|-------|-------|-------|
| Vintage | Delivery | Low | High | Daily | MTD |
| 2021-22 | Dec 23 | 13.23 | 13.28 | 13.24 | 13.34 |
| | Feb 23 | na | na | 12.64 | 12.72 |

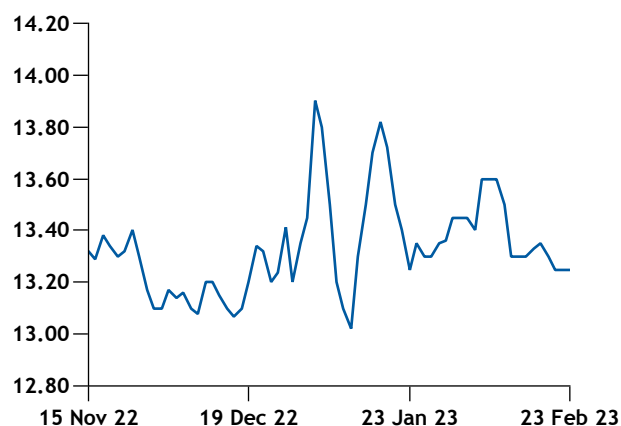
| Weekly index, 17 Feb | | | | \$/st |
|---------------------------------|----------|---------|-------|-------|
| | Delivery | Vintage | Index | ± |
| RGGI CO ₂ allowances | Dec 23 | 2021-22 | 13.32 | -0.20 |

| RGGI CO ₂ spreads | | \$/t |
|------------------------------|--|-------|
| | | Price |
| | | ± |
| Feb 23/Dec 23 | | -0.61 |
| Dec 23/Dec 24 | | -0.75 |

California Carbon allowances \$/t



RGGI CO₂ \$/st



RENEWABLE FUEL MARKETS

NEWS INSIDE

Oregon draws down CFP credits

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COMMENTARY

California LCFS credits sink

California Low Carbon Fuel Standard (LCFS) credits slipped back into a months-long trading band on Thursday after a week-long rally to the highest levels in five months.

Spot credits fell by \$5 to \$69/metric tonne. LCFS credits began the day offered \$76/t across multiple deliveries, but offers sank in the first half of the session with few bids. Fourth quarter credits traded at \$70/t late in the first half of the session, and prompt credits were heard traded at \$72/t and \$70/t.

Discussion thinned in the second half of the session as offers and to \$70/t. Some participants turned attention to California Carbon Allowance (CCA) auction results.

Intercontinental Exchange futures remained very active over the course of the day, including 44 contracts for December 2024.

California LCFS spot

\$/t



| Oregon LCFS market biogas value | | \$/mmBtu | |
|---------------------------------|-------------|-----------------|--------------|
| | Natural gas | Landfill Biogas | Dairy Biogas |
| PG&E Malin | 13.28 | 36.66 | 50.28 |

| Low-carbon fuel standard (LCFS) credits | | | | | \$/t |
|---|----------|--------|--------|--------|-------|
| | Delivery | Bid | Ask | Price | ± |
| California | spot | 68.00 | 70.00 | 69.00 | -5.00 |
| | 1Q23 | 68.00 | 70.00 | 69.00 | -5.00 |
| | 2Q23 | 68.00 | 70.00 | 69.00 | -5.00 |
| | 3Q23 | 68.00 | 71.00 | 69.50 | -4.50 |
| | 4Q23 | 69.00 | 71.00 | 70.00 | -4.00 |
| Oregon | spot | 121.00 | 124.00 | 122.50 | nc |

| LCFS volume-weighted averages | | | | \$/t |
|-------------------------------|----------|--------|--------|---------|
| | Delivery | Trades | Volume | MTD VWA |
| California | Spot | 6 | 42,500 | 63.76 |
| | 4Q23 | 12 | 70,000 | 67.14 |

| LCFS premium per carbon intensity point | | ¢/USG | |
|---|--|-------|-------|
| | | Price | ± |
| California | | | |
| Ethanol | | 0.56 | -0.04 |
| Biodiesel | | 0.87 | -0.06 |
| Alternative jet | | 0.87 | -0.07 |
| Renewable diesel | | 0.89 | -0.07 |
| Oregon | | | |
| Ethanol | | 1.00 | nc |
| Biodiesel | | 1.55 | nc |
| Alternative jet | | 1.55 | nc |
| Renewable diesel | | 1.59 | nc |

Represents cost savings of using ethanol, biodiesel or alternative jet fuel.

| LCFS cost for gasoline, diesel | | | ¢/USG |
|--------------------------------|---------|-------|-------|
| Fuel | Vintage | Price | ± |
| California | | | |
| Carbob (No CI ethanol) | 2023 | 9.33 | -0.68 |
| | 2024 | 10.25 | -0.74 |
| | 2025 | 11.17 | -0.81 |
| Carbob (79.9 CI ethanol) | 2023 | 8.86 | -0.64 |
| | 2024 | 9.85 | -0.71 |
| | 2025 | 10.84 | -0.79 |
| Ultra-low sulphur diesel | 2023 | 10.48 | -0.76 |
| | 2024 | 11.65 | -0.85 |
| | 2025 | 12.81 | -0.93 |
| Crude CI deficit Carbob | 2023 | 0.91 | -0.06 |
| Crude CI deficit diesel | 2023 | 1.02 | -0.07 |
| Oregon | | | |
| E10 gasoline | 2023 | 9.25 | nc |
| B5 diesel | 2023 | 10.54 | nc |

Represents per-gallon cost of compliance.

| California LCFS market biogas value | | | \$/mmBtu |
|-------------------------------------|-------------|-----------------|--------------|
| | Natural gas | Landfill Biogas | Dairy Biogas |
| SoCal Citygates | 13.90 | 37.28 | 50.90 |
| PG&E Citygates | 15.22 | 38.60 | 52.22 |

RENEWABLE FUEL MARKETS

Credits ended the day in the upper end of the \$60-70/t trading range where the market has spent most of the past five months. Yesterday's session saw credits quickly rise to their highest levels since September before trading back down as a state workshop to discuss potential new program targets and other contemplated changes got underway.

Oregon Clean Fuels Program credits remained at \$122.50/t. Data released around 5pm ET showed that the program drew down its available, unused credits by 15pc in the third quarter to less than 600,000 t. New credit generation fell by 1.7pc from the previous quarter and new deficits increased by 13pc.

RINs decline

Federal renewable identification number (RIN) credit prices decreased on Thursday.

Vintage 2023 ethanol D6 RINs dropped by 1.75¢/RIN from Wednesday's session, with trades occurring between 161¢-163.5¢/RIN. Prior year credits exchanged hands between 162¢-164¢/RIN, down by 1¢/RIN from the previous session.

Biomass-based diesel D4 RIN credits from 2023 traded between 165¢-167¢/RIN, a 1.5¢/RIN drop from Wednesday.

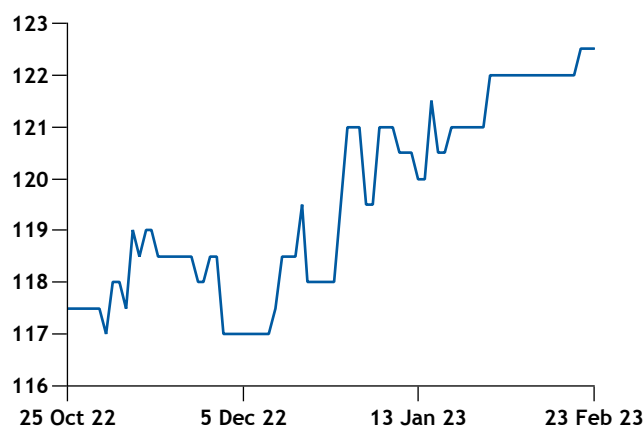
The 2023 cellulosic biofuel D3 RINs were the lone riser on Thursday, gaining 0.5¢/RIN after sizable volume traded between 194¢-195¢/RIN. Credits from 2022 were valued flat to those from 2023.

| Renewable identification numbers (RINs) | | | ¢/RIN |
|---|--------|--------|--------|
| | Low | High | ± |
| Renewable fuel (ethanol D6) | | | |
| 2020 | 161.75 | 163.75 | -1.25 |
| 2021 | 161.75 | 163.75 | -1.25 |
| Weighted average, 2023 | | | 162.49 |
| 2022 | 162.00 | 164.00 | -1.00 |
| 2023 | 161.00 | 163.50 | -1.75 |
| Biomass-based diesel (D4) | | | |
| 2020 | 182.50 | 183.50 | -0.75 |
| 2021 | 183.50 | 184.50 | -0.75 |
| 2022 | 177.50 | 178.50 | -0.75 |
| 2023 | 165.00 | 167.00 | -1.50 |
| Cellulosic biofuel (D3) | | | |
| 2020 | 207.00 | 208.00 | +0.50 |
| 2021 | 209.00 | 210.00 | +0.50 |
| 2022 | 194.00 | 195.00 | +0.50 |
| 2023 | 194.00 | 195.00 | +0.50 |
| Advanced biofuel (D5) | | | |
| 2020 | 181.50 | 182.50 | -0.75 |
| 2021 | 182.50 | 183.50 | -0.75 |
| 2022 | 176.50 | 177.50 | -0.75 |
| 2023 | 164.00 | 166.00 | -1.75 |

| Renewable fuel spreads | | |
|---|--------|-------|
| | Price | ± |
| LCFS California spot/LCFS California 4Q23, \$/t | -1.00 | -1.00 |
| LCFS California spot/LCFS Oregon spot, \$/t | -53.50 | -5.00 |
| Advanced biofuel (D5) RIN 2022/2023 ¢/RIN | +12.00 | +1.00 |

Oregon LCFS spot

\$/t



California LCFS spot-Oregon LCFS spot spread

\$/t



RENEWABLE ENERGY CERTIFICATE (REC) MARKETS

| Weekly REC market prices, 17 Feb | | | | | \$/MWh |
|----------------------------------|---------|-------|-------|-------|--------|
| | Vintage | Bid | Ask | Price | ± |
| Connecticut | | | | | |
| Class III | 2022 | 18.50 | 21.00 | 19.75 | nc |
| | 2023 | 25.50 | 26.50 | 26.00 | nc |
| New Hampshire | | | | | |
| Class I | 2022 | 35.50 | 37.00 | 36.25 | nc |
| | 2023 | 37.00 | 38.50 | 37.75 | nc |
| Rhode Island | | | | | |
| New | 2022 | 35.50 | 37.00 | 36.25 | nc |
| | 2023 | 37.00 | 38.50 | 37.75 | nc |
| New Jersey | | | | | |
| Class II | 2023 | 22.00 | 23.00 | 22.50 | nc |
| | 2024 | 24.75 | 25.25 | 25.00 | nc |
| New York | | | | | |
| Tier 1 | 2022 | 28.50 | 31.00 | 29.75 | nc |
| Virginia | | | | | |
| Compliance | 2022 | 18.50 | 21.00 | 19.75 | +4.75 |
| California | | | | | |
| Category 3 | 2022 | 5.00 | 5.50 | 5.25 | +0.25 |
| Texas | | | | | |
| Compliance | 2022 | 2.40 | 2.60 | 2.50 | -0.05 |
| Solar | 2022 | 2.90 | 3.60 | 3.25 | nc |
| | 2023 | 3.75 | 4.15 | 3.95 | -0.05 |

| Weekly Green-e eligible REC market prices, 17 Feb | | | | | \$/MWh |
|---|---------|------|------|-------|--------|
| | Vintage | Bid | Ask | Price | ± |
| National any | 2023 | 3.00 | 3.30 | 3.15 | -0.10 |
| | 2024 | 3.60 | 4.00 | 3.80 | -0.15 |
| Texas wind | 2023 | 3.10 | 3.30 | 3.20 | -0.20 |
| | 2024 | 3.70 | 4.00 | 3.85 | -0.15 |

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Vermont bill would mandate 100pc renewables **12**

New Jersey solar starts 2023 slowly **13**

COMMENTARY

PJM RECs slip

PJM Class I renewable energy certificates (RECs) extended their recent decline on Thursday.

PJM credits for 2023 shed 15¢ on the day to finish at \$28.60/MWh. Their 2024 counterparts fell to \$28.70/MWh, a 20¢ drop.

| REC market prices | | | | | \$/MWh |
|-----------------------------|---------|--------|--------|--------|--------|
| | Vintage | Bid | Ask | Price | ± |
| Massachusetts | | | | | |
| Class I | 2022 | 36.00 | 37.00 | 36.50 | nc |
| | 2023 | 37.00 | 38.50 | 37.75 | nc |
| SREC I | 2022 | 336.00 | 341.00 | 338.50 | nc |
| SREC II | 2022 | 280.00 | 282.00 | 281.00 | nc |
| Connecticut | | | | | |
| Class I | 2022 | 36.00 | 37.00 | 36.50 | nc |
| | 2023 | 37.00 | 38.50 | 37.75 | nc |
| Nepool dual class | | | | | |
| Class I | 2022 | 36.50 | 37.00 | 36.75 | nc |
| | 2023 | 37.00 | 38.50 | 37.75 | nc |
| New Jersey | | | | | |
| Class I | 2023 | 28.40 | 28.80 | 28.60 | -0.15 |
| | 2024 | 28.50 | 28.90 | 28.70 | -0.20 |
| SREC | 2023 | 225.00 | 226.00 | 225.50 | nc |
| | 2024 | 214.50 | 216.50 | 215.50 | nc |
| Pennsylvania | | | | | |
| Tier I | 2023 | 28.10 | 28.50 | 28.30 | -0.20 |
| SREC | 2023 | 46.50 | 48.00 | 47.25 | nc |
| Maryland | | | | | |
| SREC | 2022 | 59.00 | 60.40 | 59.70 | nc |
| Tier I | 2022 | 28.40 | 28.80 | 28.60 | -0.15 |
| PJM tri-qualified | | | | | |
| Class I | 2023 | 28.40 | 28.80 | 28.60 | -0.15 |
| | 2024 | 28.50 | 28.90 | 28.70 | -0.20 |
| District of Columbia | | | | | |
| SREC | 2022 | 400.00 | 420.00 | 410.00 | nc |

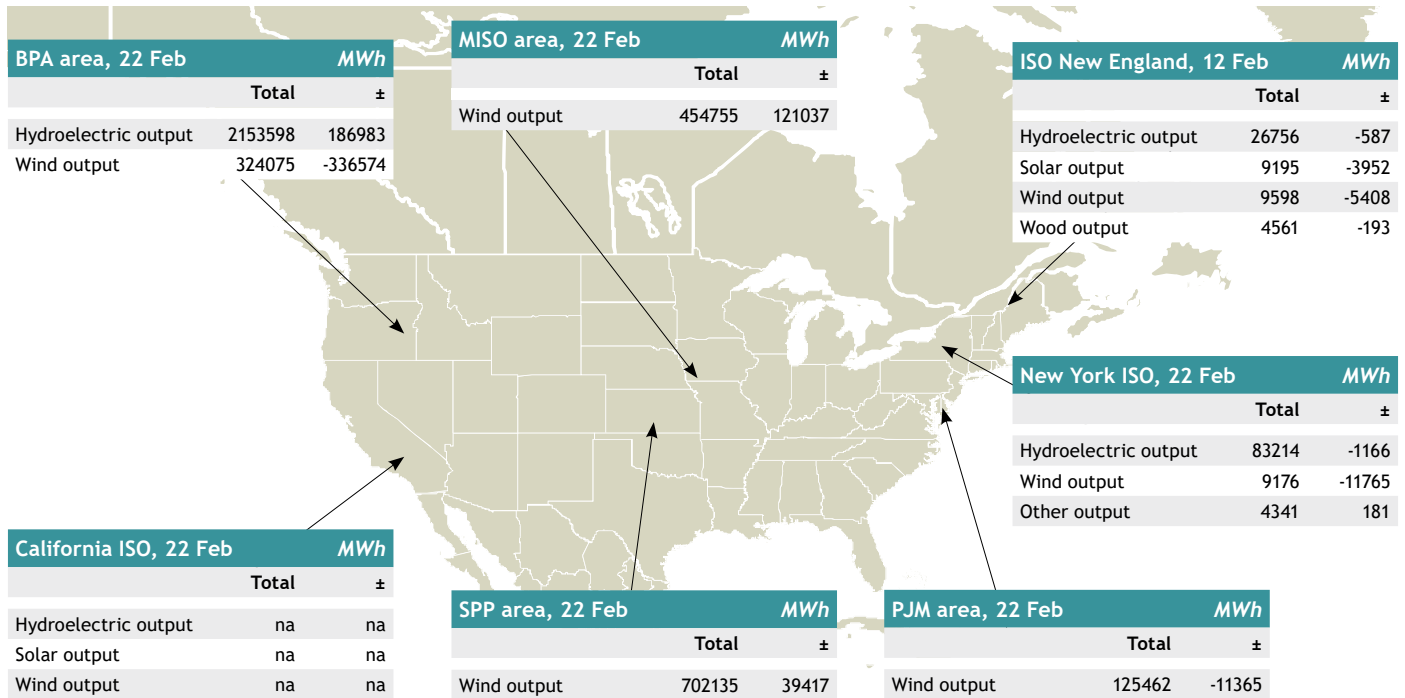
| REC spreads | | \$/MWh |
|-------------------------------------|--------|--------|
| | Price | ± |
| PJM tri-qualified Class I 2023/2024 | -0.10 | +0.05 |
| Massachusetts Class I 2022/2023 | -1.25 | nc |
| Connecticut Class I 2022/2023 | -1.25 | nc |
| New Jersey Class I 2023/2024 | -0.10 | +0.05 |
| New Jersey SREC 2023/2024 | +10.00 | nc |

Today was the third consecutive session of declines for both the 2023 and 2024 PJM RECs.

The drop-off comes in the wake of New Jersey's basic generation service auction, which ended on 6 February. The auctions can spark demand among compliance buyers, which must cover their obligations under renewable portfolio standard programs. That demand helped bring PJM credits to just above \$30/MWh immediately following the auction after they had slipped as low as \$29.90/MWh at the beginning of February.

But following that bump, the PJM market has reversed

RENEWABLE ENERGY CERTIFICATE (REC) MARKETS



course, with Class I RECs moving lower for the most part since.

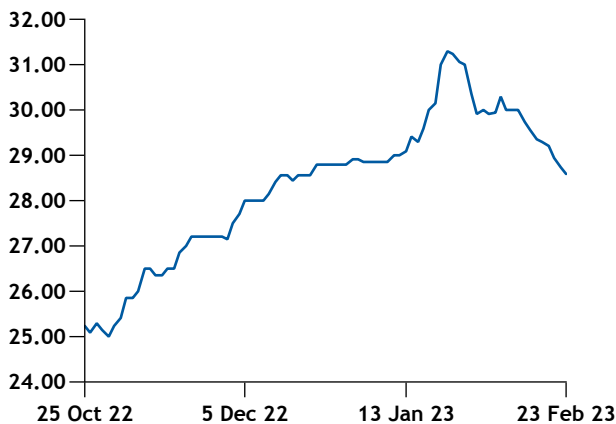
Voluntary markets were active on the Nodal Exchange and over the counter. Front and back half 2023 Texas RECs from Green-e eligible facilities traded in a series of strips with a price range of \$3-\$3.10/MWh. Argus last assessed the calendar 2023 RECs at \$3.20/MWh on 17 February.

Front half 2023 US Green-e eligible wind RECs traded over the counter at \$2.60/MWh for 100,000MWh.

Texas Green-e eligible back half 2022 wind credits were heard traded over the counter at \$2.45/MWh for more than 300,000MWh. The front half 2023 vintage was heard traded at \$2.65/MWh for 200,000MWh.

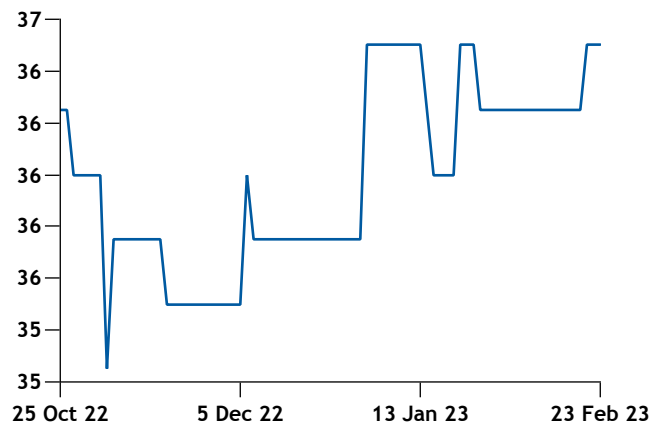
PJM Class I current year

\$/MWh



Massachusetts Class I current year

\$/MWh



FEDERAL MARKETS

COMMENTARY

Cross-state allowances steady

Cross-State Air Pollution Rule (CSAPR) allowances were unchanged on Thursday following recent dips in price for ozone season NO_x allowances.

Group 3 seasonal NO_x allowances were steady at \$14,500/short ton, holding at its lowest price of the year to date, after falling by \$1,000 yesterday.

Group 2 seasonal NO_x allowances were flat at \$2,300/st.

Annual NO_x allowances held at \$3/st.

Group 1 SO₂ allowances were unchanged at \$3/st, while Group 2 SO₂ allowances remained at \$2/st.

This week's decline for Group 3 seasonal NO_x allowances is the largest price change for the CSAPR market so far this year. Market activity has otherwise largely been limited, as expected updates to the program from the US Environmental Protection Agency (EPA) loom.

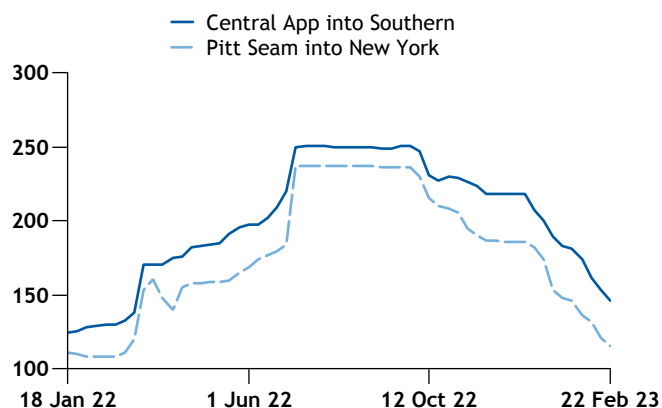
EPA's final rulemaking - which could involve adding more states to the Group 3 market, setting more stringent emissions caps, and regularly recalibrating the allowance bank - is expected by mid-March. The rule is currently undergoing a White House-led interagency review.

| SO ₂ and NO _x allowances | | | | | |
|--|-----------|-----------|-----------|-----------|----|
| Vintage | Vintage | Bid | Ask | Price | ± |
| SO ₂ | | | | | |
| Acid Rain Program \$/allowance | 2022 | 0.45 | 0.85 | 0.65 | nc |
| Cross-State Group 1 \$/st | 2022 | 2.00 | 4.00 | 3.00 | nc |
| Cross-State Group 2 \$/st | 2022 | 1.00 | 3.00 | 2.00 | nc |
| Cross-State \$/st | Group avg | | | 2.50 | nc |
| NO _x \$/st | | | | | |
| Cross-State annual | 2022 | 2.00 | 4.00 | 3.00 | nc |
| Cross-State Group 2 seasonal | 2022 | 1,900.00 | 2,700.00 | 2,300.00 | nc |
| Cross-State Group 3 seasonal | 2022 | 12,500.00 | 16,500.00 | 14,500.00 | nc |

| Weekly index, 17 Feb | | | | \$/allowance |
|----------------------|---------|-------|----|--------------|
| | Vintage | Index | ± | |
| SO ₂ | 2022 | 0.65 | nc | |

Delivered SO₂-adjusted coal prices

\$/st



| Texas Emissions Reduction Credit (ERC) program | | | | |
|--|---------------------------|---------------|-----------|---------|
| Date | Seller | Buyer | Amount st | \$/st |
| NO _x trades | | | | |
| 30 Aug 22 | Element Markets Emissions | Freeport LNG | 7.7 | 115,000 |
| 26 Aug 22 | Fathom Energy | Freeport LNG | 0.1 | 115,000 |
| 26 Aug 22 | Fathom Energy | Freeport LNG | 0.8 | 115,000 |
| 26 Aug 22 | Fathom Energy | Freeport LNG | 1.1 | 115,000 |
| 26 Aug 22 | Fathom Energy | Freeport LNG | 0.5 | 115,000 |
| VOC trades | | | | |
| 11 Jan 23 | Sandel Operating | Fathom Energy | 1.3 | 115,000 |
| 11 Jan 23 | Sandel Operating | Fathom Energy | 0.7 | 115,000 |
| 11 Jan 23 | Ponderosa Petroleum | Fathom Energy | 0.9 | 115,000 |
| 10 Jan 23 | Elliott Oil | Fathom Energy | 0.5 | 115,000 |
| 10 Jan 23 | Elliott Oil | Fathom Energy | 1.4 | 115,000 |

MONTHLY PRICE INDEXES

| Carbon markets, January | | | | Renewable fuel markets, January | | | |
|--|---------|-----------|---------|---------------------------------|---------|--------|--------|
| | Vintage | Index | ± | | Vintage | Index | ± |
| CCA prompt \$/t | 2023 | 28.30 | +0.31 | D5 RINs €/RIN | 2023 | 168.43 | -4.75 |
| CCA Dec 23 \$/t | 2023 | 29.93 | +1.97 | LCFS California \$/t | | 64.08 | -2.78 |
| CCA Dec 24 \$/t | 2024 | 31.92 | +2.02 | LCFS California 4Q \$/t | | 64.28 | -2.58 |
| RGGI CO ₂ prompt \$/st | 2021-22 | 12.74 | -0.48 | LCFS Oregon \$/t | | 120.70 | +2.41 |
| RGGI Dec 22 \$/t | 2021-22 | 13.44 | +0.24 | | | | |
| RGGI Dec 24 \$/t | 2024 | 14.22 | +0.20 | REC markets, January \$/MWh | | | |
| California regular Carbob €/USG | 2023 | 22.80 | +0.24 | | Vintage | Index | ± |
| California midgrade Carbob €/USG | 2023 | 22.75 | +0.25 | Massachusetts Class I | 2022 | 36.35 | +0.62 |
| California premium Carbob €/USG | 2023 | 22.71 | +0.25 | | 2023 | 37.70 | +0.18 |
| California distillate ULSD €/USG | 2023 | 28.97 | +0.31 | Massachusetts SREC I | 2022 | 338.35 | +1.85 |
| Quebec gasoline CA€/l | 2023 | 8.52 | -0.01 | Massachusetts SREC II | 2022 | 281.51 | -0.35 |
| Quebec diesel CA€/l | 2023 | 10.60 | -0.01 | Connecticut Class I | 2022 | 36.35 | +0.62 |
| | | | | | 2023 | 37.70 | +0.18 |
| Allowance markets, January | | | | NEPOOL dual-qualified | 2022 | 36.38 | +0.40 |
| | Vintage | Index | ± | | 2023 | 37.70 | +0.18 |
| SO ₂ Acid Rain Program \$/allowance | 2022 | 0.65 | nc | New Jersey Class I | 2023 | 29.73 | +1.33 |
| SO ₂ Cross-State Group 1 \$/st | 2022 | 3.00 | nc | | 2024 | 29.81 | +1.41 |
| SO ₂ Cross-State Group 2 \$/st | 2022 | 2.00 | nc | New Jersey SREC | 2023 | 225.08 | +0.06 |
| Cross-State annual NO _x \$/st | 2022 | 3.00 | nc | | 2024 | 214.80 | -0.05 |
| Cross-State Group 2 seasonal NO _x \$/st | 2022 | 2,325.00 | +403.57 | Pennsylvania Tier I | 2023 | 29.38 | +1.41 |
| Cross-State Group 3 seasonal NO _x \$/st | 2022 | 16,006.25 | -493.75 | Pennsylvania SREC | 2023 | 47.18 | +0.68 |
| | | | | Maryland Tier I | 2022 | 29.34 | +1.04 |
| | | | | Maryland SREC | 2022 | 60.05 | -0.44 |
| | | | | PJM tri-qualified | 2023 | 29.73 | +1.32 |
| | | | | | 2024 | 29.81 | +1.41 |
| | | | | District of Columbia SREC | 2022 | 390.53 | +14.10 |

Monthly indexes are calculated as the average daily price published for the named month.

| Low-carbon Fuel Standard Program Proposals | | |
|--|---|---|
| Region | Proposed carbon intensity reduction targets | State of Play |
| Canada | 14pc from 2016 levels by 2030 | Enforcement to begin in July 2023; registration for early credit generation underway |
| California | Tougher targets both pre- and post-2030 | Awaiting start of rulemaking |
| Oregon | 20pc by 2030 | Amendments adopted with 20pc by 2030 target |
| Washington | 20pc from 2017 levels by 2038 | First credits issued 1 April 2023 |
| New York | 20pc by 2030 | Legislation refiled in January 2023 |
| New Mexico | 20pc from 2018 levels by 2030 | Legislation failed to pass in 2022 session. |
| Minnesota | Under study | State agencies discussing LCFS with stakeholders as directed by governor |
| Michigan | No firm proposal | Climate plan includes LCFS. |
| Pennsylvania | 22pc by 2040 | No rulemaking or established policy. Contemplated as part of 2021 Climate Action Plan |

NEWS

CARBON

California carbon auction price rebounds

The clearing price at California and Quebec's latest carbon allowance auction rose, exceeding the price of the previous two auctions.

The Western Climate Initiative (WCI) market partners sold all of the nearly 56.4mn current vintage allowances offered at the 15 February auction for \$27.85/metric tonne.

The settlement price was \$1.05/t higher than the previous auction held in November and 85¢/t higher than the auction held in August. But this month's auction price was still \$3/t lower than the record-high set during the May auction last year.

The auction for vintage 2026 allowances sold all of the almost 7.6mn t offered for \$27.01/t, a \$1.01 bump from the previous auction.

Argus assessed prompt-month California Carbon Allowances (CCAs) yesterday at \$27.82/t, and the December 2023 CCAs at \$29.35/t.

December 2023 CCAs traded largely around \$29.30/t on the Intercontinental Exchange early in the day. Market activity surged after the release of the results, with December 2023 futures trading as high as \$29.99/t.

Parties covered by the California and Quebec cap-and-trade programs made up 87.1pc of the current vintage allowance buyers and 78.8pc of the forward allowance purchases, compared with 80.4pc and 83.3pc, respectively, at the November auction.

The California cap-and-trade program, which covers major sources of the state's greenhouse gas emissions, including power plants and transportation fuels, requires a 40pc cut in emissions from 1990 levels by 2030.

Quebec is aiming for a 37.5pc reduction from 1990 emissions by 2030.

By Tomas Russo

California issues more than 816,000 offsets

The California Air Resources Board (CARB) issued about 816,500 California Carbon Offsets (CCOs) in its latest round of new credits to four projects.

The CCOs went to two forestry projects, one mine methane capture project and one livestock project, according to data published yesterday.

The agency awarded more than 713,500 CCOs to the Holland M Ware Charitable Foundation for an improved forest management project in Georgia and Florida. The project has received nearly 4.9mn CCOs to date.

CARB issued more than 45,600 CCOs to Rowland Land Company for an improved forest management project near Beckly, West Virginia. The project has received almost 2.2mn CCOs to date.

The agency also awarded more than 41,600 CCOs to Keyrock Energy for a project that captures and destroys methane from an active coal mine in Crab Orchard, West Virginia. The project has received nearly 97,200 CCOs to date.

CARB issued over 15,700 CCOs to developer Maas Energy Works for a livestock project that captures biogas from manure and use it to generate electricity in Tipton, California. The project has received almost 26,300 CCOs to date and qualifies as providing direct environmental benefits to the state (DEBS).

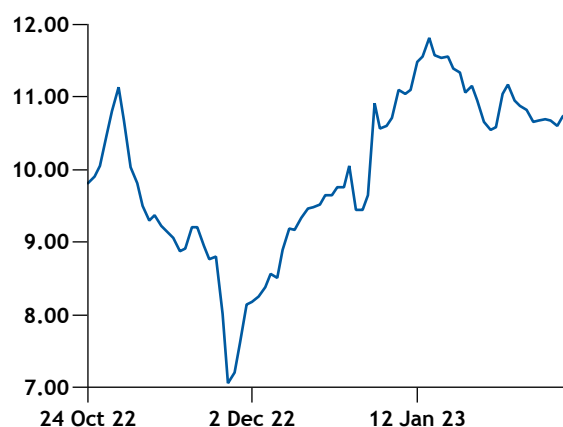
Each CCO represents a metric tonne of greenhouse gas (GHG) emissions reduced from eligible sources outside of California's cap-and-trade program.

California allows offsets from six types of projects: US forestry, urban forestry, livestock methane capture, destruction of ozone depleting substances, mine methane capture and rice cultivation practices.

The cap-and-trade program has issued nearly 220.4mn CCOs to date, not including early action credits. Approximately 84pc of the total has gone to forestry projects.

The program – which covers major sources of California's

CCA December delivery vs CCOG spread \$/t



NEWS

GHG emissions, including power plants and transportation fuels – requires a 40pc reduction from 1990 emissions levels by the end of 2030.

Facilities covered by cap-and-trade can use CCOs for 4pc of their compliance obligation through 2025 and 6pc starting in 2026, with a requirement that at least half come from DEBS-eligible projects.

All of the new offsets initially carry eight-year invalidation time frames.

Argus last assessed non-DEBS CCOs that carry an eight-year invalidation at \$17.95/t and the DEBS-eligible CCOs at \$23.55/t on 17 February.

By Tomas Russo

RENEWABLE FUELS

Oregon draws down CFP credits

Low carbon fuel supplies could not keep pace with new Oregon Clean Fuels Program deficits during the third quarter of 2022, according to the latest state data.

The third consecutive quarterly draw on unused credits may mean participants will empty the low-carbon fuel standard's (LCFS) reserve of available credits faster than originally thought.

The implied number of credits available for compliance with the LCFS fell by 15pc from the previous quarter to less than 600,000 t, according to quarterly data released today by the Oregon Department of Environmental Quality (DEQ). New deficits increased by 13pc during the quarter, while new credits fell by 1.7pc.

Rising, though not record, consumption of renewable diesel and an uptick in high-ethanol blends of gasoline could not offset a sharp drop in biodiesel credits during the third quarter. Higher gasoline and diesel consumption meanwhile racked up deficits.

LCFS programs require yearly reductions to the carbon intensity of road transportation fuels. Higher-carbon, conventional fuels that exceed the annual limit incur deficits that suppliers must offset with credits generated from the distribution of approved, low-carbon alternatives.

Oregon last year approved a 20pc reduction target for 2030 and 37pc for 2035.

Prices in California's LCFS program fell to six-year lows last

fall as unused credits built to a record 13.4mn t. The much larger, neighboring program has seen a steady rise in renewable diesel and biogas supplies that have easily outpaced flagging demand for CARBOB and petroleum diesel. Regulators there continued discussions this week on new program targets and other changes to lift credit prices and LCFS stringency.

Oregon spot credits have remained \$115-125/t for most of the past three years.

By Elliott Blackburn

RENEWABLE ENERGY CERTIFICATES (RECS)

Vermont bill would mandate 100pc renewables

A Vermont lawmaker is calling for the state to rely solely on renewables for its electricity within 12 years.

State representative Caleb Elder (D) yesterday introduced a bill, H. 320, that would overhaul Vermont's renewable portfolio standard (RPS) and require utilities to only use resources like wind and solar by 2035.

At present, Vermont's RPS mandate peaks at 75pc by 2032, at least 10pc of which must come from in-state distributed energy systems smaller than 5MW that came on line after 30 June 2015. The rest of the annual obligations are met by qualifying renewables that can be delivered into the grid overseen by ISO-New England without any restrictions on when the projects began operating.

Elder's proposal would change the underlying rules in the program, separating renewables into two categories: new and existing. Existing generation would include all qualifying renewable energy projects that began operating on or before 1 January 2010, while the "new" designation would apply to any eligible system within the ISO-New England territory that has come on line since.

The bill would also disqualify unbundled renewable energy certificate (REC) purchases from counting toward the RPS if the generator resides outside of the New England grid.

The changes would help promote new clean generation "both in Vermont and regionally," Elder said.

If lawmakers approve the updates, utilities will have to procure new renewable generation for 1pc of their electricity supply in 2025. From there, the target would increase by 2.9pc/yr until leveling off at 30pc in 2035 and beyond.

The proposal would also increase the requirement for new

NEWS

in-state distributed generation, starting at 5.8pc in 2025 and rising by 2.84pc/yr until reaching 20pc in 2030. At that point, it would increase by 2pc/yr until leveling off at 30pc in 2035.

Electric suppliers could not count RECs from the distributed category toward the separate new generation targets, putting Vermont on course to use generation built after 2009 for 60pc of utility purchases by the middle of the next decade.

The legislation would maintain requirements for older generation as the state increases its sourcing from new projects. The utilities would be required to secure 57pc of their electric purchases in 2025 from existing renewable sources. That requirement would increase by 1.5pc/yr through 2030, when it would reach 64.5pc.

At that point, the mandate would reverse course, dropping by 4.9pc/yr until plateauing at 40pc in 2035. Utilities could use new generation to satisfy the existing resource mandate, provided that the RECs retired toward the target do not overlap with credits used to meet the other obligations.

The bill would also have the effect of disqualifying unbundled RECs stemming from large, out-of-region hydro-electricity facilities, according to clean energy trade group Renewable Energy Vermont. The organization said that tweak would fix the "fundamental flaw" in the law – an "overreliance on existing renewables that failed to reduce regional carbon pollution."

By *Patrick Zemanek*

New Jersey solar starts 2023 slowly

New Jersey solar growth lagged in January, with the state adding only slightly more capacity than it did during the same month last year.

The state added 10.7MW of new solar capacity last month, down from the 32.5MW initially reported for December 2022, and only a little higher than the 10.3MW initially reported during January 2022, according to data published yesterday by the New Jersey Clean Energy Program

The tally will likely rise in subsequent reports as a result of new information becoming available. The January 2022 figures eventually surpassed 22MW due to later revisions.

Most of last month's capacity, about 7.9MW, linked with the administratively determined incentive (ADI) portion of New Jersey's SREC-II solar incentive program. Compensation levels for the ADI vary according to project type.

Another 2.8MW fed into the state's transition initiative,

which awards transition renewable energy certificates (TREC)s at a base rate of \$152/MWh. New Jersey obligates the state's four electricity distributors to buy those credits for the first 15 years of a system's operation. About 54pc of the transition program's overall generation comes from net-metered, non-residential rooftop and canopy projects, with another 25pc stemming from net-metered, residential rooftop and canopy systems.

None of the new capacity fed into the legacy solar renewable energy certificate (SREC) program. While the state Board of Public Utilities closed the initiative to new applicants in 2020, projects have occasionally qualified as SREC generators since then. But only 0.005MW qualified for the SREC program in 2022, all of which came on line last January.

The state also revised upward its total for 2022 by almost 7.6MW to roughly 440MW. New Jersey's strongest year for solar to date remains 2019, when it added more than 453MW of new photovoltaic capacity.

New Jersey now has 4,312MW of solar capacity operating. Almost 81pc of the capacity comes from smaller, behind-the-meter projects. Another 18pc and 1pc, respectively, originate from grid-scale and community solar installations.

New Jersey is attempting to increase generation from utility-scale projects through the second part of its SREC-II initiative, the competitive solar incentive program.

Through this competitive incentive, New Jersey is aiming to procure at least 300MW/yr through 2026. BPU is targeting up to 3,750MW of new photovoltaic capacity altogether.

The first solicitation, for which bids are due by 31 March, is targeting 140MW from basic grid-scale projects as typified by "greenfield" systems and most floating solar; 80MW from grid-scale projects on "built environments," locations built for purposes other than solar development; 40MW from grid-scale projects on "contaminated sites" or landfills and 40MW from non-residential, net-metered installations larger than 5MW.

By *Patrick Zemanek*

OTHER NEWS

Session end looms for Virginia utility proposals

Virginia lawmakers must hash out differences between two competing pieces of legislation that would change how the state regulates electric utilities, with just days until the end of this year's legislative session.

NEWS

The [two proposals](#) contain many similar provisions, including new requirements for the State Corporation Commission (SCC) to more regularly review rates set by Dominion Energy, the state's main investor-owned utility. But the version in the House of Delegates, backed by Republicans, would also set new requirements to be met before Dominion and utility Appalachian Power could retire power plants, which environmentalists say would undermine the state's greenhouse gas (GHG) emissions goals.

The House and the Senate today each requested to form a conference committee to resolve differences between the two proposals. This year's legislative session is scheduled to end on Saturday, giving lawmakers little time to work out an agreement.

"We are working to try to come up with something that everybody can agree with," Senate majority leader Dick Saslaw (D), who is spearheading the bill without any plant retirement language, said yesterday.

Under the proposal backed by House majority leader Terry Kilgore (R), no power plant owned by Dominion or Appalachian Power could retire unless specifically requested by its utility owner and approved by the SCC following an analysis of potential impacts on grid reliability. That would change existing law, which allows those utilities to petition the SCC to delay legally mandated retirements but otherwise says that they must retire coal-fired plants by 2024, biomass-fired facilities that do not co-fire with coal by 2028, and other fossil fuel-fired units by 2045.

A [bipartisan bill](#) headed to governor Glenn Youngkin's (R) desk would soften those requirements for biomass-fired facilities, suggesting that Democrats are open to some revisions to the mandates set by the state's Clean Economy Act. But they have opposed [larger changes](#) to the 2020 law, which paved the way for Virginia's entry into the Regional Greenhouse Gas Initiative power plant emissions cap-and-trade program and set a goal for the state to achieve zero-emissions in the electric sector by 2050.

Youngkin's office declined to comment on the competing utility regulation proposals today, but members of his administration have spoken out in favor of the Republican-backed plan and argued that giving the SCC more authority over plant retirements is necessary for grid reliability.

By Cole Martin

US pushes for World Bank climate finance focus

The White House is hoping that a change of guard at the World Bank later this year will push the global development institution to take a more active role in financing the energy transition and climate change mitigation and adaptation.

President Joe Biden today nominated financial industry executive Ajay Banga to replace David Malpass after he steps down from the World Bank presidency on 30 June. Biden praised Banga's experience in "mobilizing public-private resources to tackle the most urgent challenges of our time, including climate change."

Presidential climate envoy John Kerry said that Banga's experience in managing private companies can "help deploy the large sums of money necessary to reduce global emissions and help developing and vulnerable countries adapt, build resilience, and mitigate the impact of greenhouse gases."

Banga's nomination has also garnered unexpected praise from Biden's Republican critics, even though they criticized the White House for pushing the World Bank to undertake a greater role in climate change policies.

"Ajay Banga is well qualified to lead the World Bank," House of Representatives Financial Services Committee chairman Pat McHenry (R-North Carolina) said.

The World Bank, the IMF and other global financial institutions have made strides in incorporating climate change in their priorities, but for many governments and advocacy groups the World Bank has moved too slow on climate lending. And support for Malpass' continued tenure was undermined in September 2022 when he declined to say, during a public event, whether he agreed that burning fossil fuels was a critical contributor to climate change.

Banga currently serves as vice chairman at global growth equity group General Atlantic and chairman at financial holding firm Exor, following an earlier tenure as chief executive at financial services company Mastercard. General Atlantic's portfolio includes an investment in *Argus*.

The US, as the leading contributor of funds for the bank, typically makes the final decision in selecting the World Bank president, even though the nomination process includes consultations with other major shareholders in the bank. Biden in his statement today praised Banga, a dual national of the US and India, for his perspective on the opportunities and challenges facing developing countries.

By Haik Gugrats

MARKET TRADES AND DEALS

Carbon daily deals summary

| Market | Vintage | Delivery | Trades | Total tons | Range \$/t |
|--------|-----------|-----------------------------|--------|------------|---------------|
| CCA* | 2023 | Future (Feb 23) | 9 | 488,000 | 27.72 - 28.35 |
| CCA* | 2023 | Future (Mar 23) | 6 | 547,000 | 27.86 - 28.44 |
| CCA* | 2023 | Future (Dec 23) | 260 | 5,584,000 | 28.85 - 29.99 |
| CCA* | 2023 | ACP Current Future (May 23) | 1 | 200,000 | 0.12 - 0.12 |
| CCA* | 2023 | 40.00 call (Dec 23) | 1 | 200,000 | 0.50 - 0.50 |
| CCA* | 2023 | 35.00 call (Dec 23) | 3 | 500,000 | 1.00 - 1.20 |
| CCA* | 2023 | Spread (Mar 23/Dec 23) | 38 | 2,156,000 | -1.47 - -1.40 |
| CCA* | 2023 | Spread (Feb 23/Mar 23) | 15 | 2,577,000 | -0.14 - -0.10 |
| CCA* | 2023 | Spread (Feb 23/Dec 23) | 11 | 109,000 | -1.59 - -1.50 |
| CCA* | 2022/2023 | Spread (Dec 23) | 2 | 4,000 | 0.00 - 0.00 |
| CCA* | 2023/2024 | Spread (Dec 23/Dec 24) | 8 | 1,225,000 | -2.10 - -2.04 |
| RGGI* | 2023 | Future (Dec 23) | 5 | 108,000 | 13.23 - 13.28 |
| RGGI* | 2023 | Spread (Feb23/Dec23) | 2 | 175,000 | -0.61 - -0.61 |
| RGGI* | 2023 | Spread (Sep23/Dec23) | 2 | 100,000 | -0.17 - -0.17 |

RECs daily deals summary

| Market | Vintage | Delivery | Trades | Total MWh | Range \$/MWh |
|----------------------------|---------------|---------------------------------|--------|-----------------|---------------|
| MD Tier I* | 2022 | Futures (Feb 23) | 8 | 55,000 | 28.52 - 28.60 |
| MD Tier I* | 2023 | Futures (Feb 24) | 9 | 60,000 | 28.55 - 28.57 |
| MD Tier I* | 2024 | Futures (Feb 25) | 1 | 2,500 | 26.50 - 26.50 |
| MD Tier I* | 2026 | Futures (Feb 27) | 1 | 2,500 | 20.70 - 20.70 |
| PA Tier I* | 2024 | Futures (Jul 24) | 2 | 10,000 | 28.25 - 28.25 |
| PA Tier I* | 2023/2024 | Spread (Jul 23/Jul 24) | 1 | 2,500 | 0.00 - 0.00 |
| PJM Class I* | 2023 | Futures (Jul 23) | 2 | 75,000 | 28.55 - 28.65 |
| PJM Class I* | 2024 | Futures (Jul 24) | 6 | 30,000 | 28.60 - 28.70 |
| PJM Class I* | 2025 | Futures (Jul 25) | 3 | 12,000 | 28.50 - 28.60 |
| PJM Class I* | 2026 | Futures (Jul 26) | 1 | 2,000 | 26.60 - 26.60 |
| MD Tier II (CBL) | 2021 | Trade | 1 | 138 | 11.78 - 11.78 |
| PJM Class I/MD Tier I* | 2023 | Spread (Jul 23/Feb 24) | 4 | 12,500 | 0.00 - 0.00 |
| PJM Class I/MD Tier I* | 2023/2022 | Spread (Jul 23/Feb 23) | 5 | 20,800 | 0.00 - 0.00 |
| PJM Class I/PA Tier I* | 2023 | Spread (Jul 23) | 1 | 2,500 | 0.30 - 0.30 |
| PJM Class I (Nodal) | 2023 | Futures (Jul 23) | 1 | 2,500 | 28.60 - 28.60 |
| TX compliance, CRS (Nodal) | BH2023 | Futures (Mar 24) | 3 | 150,000 | 3.10 - 3.10 |
| TX compliance, CRS (Nodal) | FH2023 | Futures (Sep 23) | 4 | 250,000 | 2.55 - 2.80 |
| TX compliance, CRS (Nodal) | FH2023-BH2023 | 2-vintage strip (Sep 23-Mar 24) | 4 | 175,000/vintage | 3.00 - 3.10 |
| TX solar, CRS (Nodal) | FH2023-BH2023 | 2-vintage strip (Sep 23-Mar 24) | 1 | 50,000/vintage | 3.25 - 3.25 |
| ME Class IA (Nodal) | 2022 | Futures (May 23) | 1 | 1,900 | 34.50 - 34.50 |
| US Green-e wind | FH2023 | Trade | 1 | 100,000 | 2.60 - 2.60 |
| VA Solar (CBL) | 2022 | Trade | 1 | 1,297 | 20.50 - 20.50 |

*Represents deals executed and/or cleared on ICE

MARKET TRADES AND DEALS

| Renewable fuels daily deals summary | | | | | |
|-------------------------------------|---------|------------------------|--------|--------|-----------------|
| Market | Vintage | Delivery | Trades | Volume | Range |
| LCFS | | Forward (4Q 23) | 1 | 10,000 | 70.00 - 70.00 |
| LCFS* | | Spread (May 23/Jun 23) | 1 | 300 | 0.00 - 0.00 |
| LCFS* | | Spread (Mar 23/Dec 23) | 2 | 10,300 | -2.50 - -1.25 |
| LCFS* | | Spread (Mar 23/Apr 23) | 1 | 300 | 0.00 - 0.00 |
| LCFS* | | Spread (Jun 23/Dec 23) | 4 | 3,200 | -2.00 - -2.00 |
| LCFS* | | Spread (Apr 23/May 23) | 1 | 300 | 0.00 - 0.00 |
| LCFS* | | Futures (Dec 23) | 6 | 11,500 | 70.75 - 71.25 |
| LCFS* | | Futures (Dec 24) | 44 | 50,800 | 73.50 - 76.50 |
| LCFS* | | Spread (Dec 23/Dec 24) | 17 | 13,000 | -3.00 - -3.00 |
| LCFS* | | Spread (Dec 23/Dec 25) | 17 | 14,500 | -5.50 - -5.00 |
| LCFS* | | Spread (Dec 24/Dec 25) | 2 | 1,500 | -2.00 - -2.00 |
| D6 | 2022 | | 2 | 2,000 | 162.00 - 162.50 |
| D6 | 2023 | | 18 | 16,825 | 161.00 - 163.50 |
| D4 | 2023 | | 2 | 3,000 | 165.00 - 167.00 |
| D3 | 2022 | | 1 | 550 | 194.00 - 194.00 |
| D3 | 2023 | | 3 | 1,850 | 194.00 - 196.00 |

Trade volumes and values are shown in metric tonnes and \$/t for LCFS or total RINs and €/RIN

*Represents deals executed and/or cleared on ICE

| SO ₂ allowance transfers, 22 Feb | | | | | st |
|---|----------------------------|---------|--------|------|----|
| Transferor | Transferee | Vintage | Volume | Type | |
| Evolution Markets | Sandy Creek Energy Station | 2021 | 570 | ARP | |
| Minnesota Power (Allete) | Minnkota Power Coop | 2022 | 2337 | ARP | |

| Annual NO _x allowance transfers, 22 Feb | | | | | st |
|--|------------|---------|--------|------|----|
| Transferor | Transferee | Vintage | Volume | Type | |
| Dominion | | | | | |

| Seasonal NO _x allowance transfers, 22 Feb | | | | | st |
|--|-------------------------|---------|--------|---------|----|
| Transferor | Transferee | Vintage | Volume | Type | |
| Duke Energy | Aegis Hedging Solutions | 2022 | 3 | Group 3 | |
| CenterPoint Energy | Alcoa | 2021 | 99 | Group 3 | |
| CenterPoint Energy | Alcoa | 2022 | 172 | Group 3 | |

ANNOUNCEMENTS

Proposal to discontinue 2020 RINs

Argus is proposing to discontinue its 2020 vintage RIN assessments.

Under this proposal, Argus would terminate its RIN assessments for advanced biofuel (PA0027922), biomass-based diesel (PA0027921), cellulosic biofuel (PA0027923), and renewable fuel (ethanol) (PA0027920) on 3 April.

Argus is proposing this change because under the current Renewable Fuel Standard (RFS), the 2021 compliance period ends on 31 March.

For a complete list of affected pricing database (PA) codes, please contact datahelp@argusmedia.com.

Argus will accept comments on this proposal until 10 March 2023. To discuss comments on this proposal, please contact Jacqueline Reigle at jacqueline.reigle@argusmedia.com or +1 713 968 0062.

Formal comments should be marked as such and may be submitted by email to jacqueline.reigle@argusmedia.com by 10 March 2023. Please note, formal comments will be published after the consultation period unless confidentiality is specifically requested.

RENEWABLE GENERATION

| Adjusted heat rates and carbon cost | | | | |
|---|----------------------------|--------------------------|----------------------------|--------------------------|
| Marginal unit | NP15 | | SP15 | |
| | Heat rate mmBtu/ MWh | Carbon cost \$/MWh | Heat rate mmBtu/ MWh | Carbon cost \$/MWh |
| Gas-implicit | 9.55 | 15.13 | 11.15 | 17.67 |
| Carbon-adjusted | 8.65 | 13.70 | 9.90 | 15.69 |
| Western grid electric exports | | | | 12.75 |
| Bonneville Power Administration exports | | | | 0.52 |
| Powerex electric exports | | | | na |

| Adjusted spark spreads | | | | \$/MWh |
|------------------------|-------|-------|--------|--------|
| Heat rate | 7 | 8 | 10 | 12 |
| NP15 | | | | |
| Gas-implicit | 38.67 | 23.51 | -6.81 | -37.13 |
| Carbon-adjusted | 27.58 | 10.84 | -22.65 | -56.14 |
| Carbon cost | 11.09 | 12.67 | 15.84 | 19.01 |
| SP15 | | | | |
| Gas-implicit | 52.17 | 39.60 | 14.46 | -10.68 |
| Carbon-adjusted | 41.08 | 26.93 | -1.38 | -29.69 |
| Carbon cost | 11.09 | 12.67 | 15.84 | 19.01 |

| Associated day-ahead power and natural gas markets | | |
|--|--------|--------|
| | Mid | ± |
| Power NP15 peak price \$/MWh | 144.79 | +46.80 |
| Power NP15 off-peak price \$/MWh | 132.74 | +48.23 |
| Power SP15 peak price \$/MWh | 140.16 | +45.27 |
| Power SP15 off-peak price \$/MWh | 134.48 | +49.77 |
| Natural gas PG&E Citygates index \$/mmBtu | 15.16 | +6.71 |
| Natural gas SoCal Gas Co index \$/mmBtu | 12.57 | +5.17 |



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Lacon House, 84 Theobald's Road, London, WC1X 8NL
Tel: +44 20 7780 4200

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Christopher Flook

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Matthew Oatway

Global SVP editorial

Neil Fleming

Editor in chief

Jim Washer

Managing editor

Jim Kennett

Editor Michael Ball

Tel: +1 202 349 2861
airdaily@argusmedia.com

Customer support and sales:

support@argusmedia.com

sales@argusmedia.com

London, Tel: +44 20 7780 4200

Houston, Tel: +1 713 968 0000

Singapore, Tel: +65 6496 9966



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