ARGUS NORTH AMERICAN CRUDE OIL FORWARD CURVES

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The most up-to-date Argus North American Crude Oil Forward Curves methodology is available on www.argusmedia.com
Methodology overview

Argus North American Crude Oil Forward Curves deliver daily assessments of forward crude oil prices across North America.

Argus forward curves provide an independent view of forward prices, informed by a variety of data sources for both liquid and illiquid markets. Argus forward curves are not intended to be “predictive” and do not represent a forecast of what crude oil will be worth in future physical prompt markets. Prices are expressed as outright values and as differentials to settlement prices for CME Light Sweet Crude Oil (WTI), CME WTI financial futures, and Ice Brent.

Definitions and curve length

Argus assesses forward physical prices at some locations and forward financial prices (swaps) at others.

Forward physical prices reflect the market’s valuation of a standard volume of crude delivered ratably over the named period. For location and quality specifications, see Argus Americas Crude methodology.

Forward financial prices reflect the market value of a named swap settling during the named month. Swaps ultimately settle against an average of multiple crude price assessments published during the named period. Each assessment that settles the swap will reflect the value of crude delivering weeks after the named period.

Timing

Periods assessed

<table>
<thead>
<tr>
<th>Period</th>
<th>Number of periods assessed</th>
<th>Earliest period assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
<td>62</td>
<td>Concurrent to frontline Ice Brent</td>
</tr>
<tr>
<td>Balance of the year</td>
<td>1</td>
<td>Year of frontline Ice Brent</td>
</tr>
<tr>
<td>Calendar year</td>
<td>5</td>
<td>Year after balance of year</td>
</tr>
</tbody>
</table>

Ice Brent and Ice Brent-related assessments reflect prices during the Ice Brent settlement window, normally a three-minute period from 19:27 London time. WTI, WTI CMA, and WTI-related assessments reflect prices during the CME Light Sweet Crude settlement window, normally a two-minute period from 14:28 New York time.

Source data

Argus uses transactions, bids and offers, locational spreads and time spreads to derive forward prices. Market information is gathered from numerous sources, including brokers, traders, and mid and back offices of energy companies. Information that Argus cannot validate may be excluded from the assessment process. Transactions executed, bids placed and offers made after the settlement time for the respective basis instrument are not normally considered for that day’s assessments.

Means of assessment

Argus assesses each market at the midpoint of bid-offer spreads where possible. If the bid-offer spread is unusually wide by historic standards, Argus may assess the market elsewhere within the bid-offer range. If no bid-offer spread exists, Argus may base its assessment on the latest validated transaction. Argus may ignore transactions if they fall outside the bid-offer range prevailing at the Nymex close, are above a prevailing offer, or are below a prevailing bid. Argus may use conversion, box, and strip transactions to inform its assessments.

In the absence of bid, offer, and transactional data, Argus will assess a market on the basis of its relationship to a more liquid market, so long as that relationship shows a historical $r^2$ correlation of over 90%. Relationships are rechecked for a 90% $r^2$ correlation at least every two weeks. Argus may assess the illiquid market by:

- applying the historic spread between the two markets to its assessment of the liquid market
- applying the liquid market’s day-on-day change to the price at which it assessed the illiquid market on the last business day

If, on a given day, Argus publishes North American Crude Oil Forward Curves but not its Americas Crude report, differentials published in North American Crude Oil Forward Curves will be unchanged compared with the last business day.

Argus Sour Crude Index (ASCI) forward curves

Argus assesses the first month of the ASCI forward curve by weighting the front month of each ASCI component crude forward curve according to proportions outlined in the history of proportional assessment value table of its ASCI methodology document.

Currency and units of assessment

All assessments are made in US dollars per barrel ($/bl).
Corrections to assessments

Argus will on occasion publish corrections to price assessments after the publication date. We will correct errors that arise from clerical mistakes, calculation errors, or a misapplication of our stated methodology. Argus will not retroactively assess markets based on new information learned after the assessments are published. We make our best effort to assess markets based on the information we gather during the trading day assessed. If transaction information is submitted in error, and the company submitting informs Argus of the error within 24 hours of the original submission, Argus will make best efforts to correct the price data. After 24 hours, Argus will review both the material effect that the correction will have on the price data and the amount of time that has elapsed from the date of the published price data before deciding whether to issue a correction. After 30 days, data submitters are not expected to file corrections to submitted data.

Ethics and compliance

Argus operates according to the best practices in the publishing field, and maintains thorough compliance procedures throughout the firm. We want to be seen as a preferred provider by our subscribers, who are held to equally high standards, while at the same time maintaining our editorial integrity and independence. Argus has a strict ethics policy that applies to all staff. The policy can be found on our website at www.argusmedia.com. Included in this policy are restrictions against staff trading in any energy commodity or energy-related stocks, and guidelines for accepting gifts. Argus also has strict policies regarding central archiving of email and instant messenger communication, maintenance and archiving of notes, and archiving of spreadsheets and deal lists used in the price assessment process. Argus publishes prices that report and reflect prevailing levels for open-market arms length transactions (please see the Argus Global Compliance Policy for a detailed definition of arms length).

Updates to methodology

Argus methodologies are constantly updated and revised. The latest available methodology (which may supersede the one you are reading) is available at www.argusmedia.com.