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ARGUS NGL AMERICAS FORWARD CURVES

Contents:

Methodology overview	2
Argus NGL Americas methodology	2
Assessment timestamp	2
Assessment process	2
Verification of market data	3
Global Compliance Policy	3
Methodological definitions	3
Markets included in Argus NGL Americas	
Forward Curves	4

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The most up-to-date Argus NGL Americas Forward Curves methodology is available on www.argusmedia.com

Methodology overview

Argus aims to produce reliable, representative price assessments of commodity market values, free from distortion and representative of fair market values. Argus NGL Americas Forward Curves are assessments of market value for forward contracts and financial swaps contracts at predetermined time periods such as months, quarters and calendar years. Forward contracts allow for physical delivery of the product, and financial swaps settle against a published index. Forward curve prices are not forecasts of future values but instead are assessments of the price of delivery of a commodity at a future date if transacted today.

Argus NGL Americas Forward Curves are an essential tool to support mark-to-market accounting and numerous analytical applications such as value-at-risk, potential future exposure, deal valuation, regression analysis, scenario analysis, and valuing option premiums associated with forward NGL contracts.

Argus NGL Americas Forward Curves currently include balance of the month prices providing monthly granularity for time periods extending a minimum of three years forward from the spot year contract. Argus includes three futures contracts: CME's, Henry Hub (NG) Natural Gas, (CL) Light Sweet Crude oil (WTI) and Rbob Gasoline (RB) Futures Contracts. A complete product listing is included on page 4.

Argus NGL Americas Forward Curves are published on every trading day in which the CME's, Henry Hub (NG) Natural Gas, (CL) Light Sweet Crude oil (WTI), and Rbob Gasoline (RB) Futures markets are open for open outcry trading during normal business hours. Argus NGL Americas Forward Curves are not published on CME holidays.

Argus NGL Americas methodology

Subscribers are encouraged to review the [Argus NGL Americas Methodology](#), which contains more information on our editorial processes, policies and procedures, as well as detailed specifications on the physical indices underlying the forward contracts. The specifications for all forward and swap contracts traded forward are assumed to be the same specification as the underlying physical NGLs described in the [Argus NGL Americas Methodology](#).

Argus NGL Americas Forward Curves prices are assessments of market value at 2:30pm EST and are distinct from Argus assessments for physical NGLs, which represent the market throughout the trading day using a low, high, and volume-weighted average methodology as described in the [Argus NGL Americas Methodology](#).

Survey process

Argus price assessments are informed by information received from a wide cross section of market participants, including producers, consumers and intermediaries. Argus reporters engage

with the industry by proactively polling participants for market data. Argus will contact and accept market data from all credible market sources including front and back office of market participants and brokers. Argus will also receive market data from electronic trading platforms and directly from the back offices of market participants. Argus will accept market data by telephone, instant messenger, email or other means.

Argus encourages all market participants to submit all market data to which they are a party that falls within the Argus stated methodological criteria for the relevant assessment. Argus encourages all sources of market data to submit transaction data from back office functions when and where possible.

Assessment timestamp

Argus NGL Americas Forward Curves are produced on every trading day that the CME's, Henry Hub (NG) Natural Gas, (CL) Light Sweet Crude oil (WTI), and Rbob Gasoline (RB) Futures markets are open for open outcry trading during normal business hours. All Argus NGL Forward Curves are assessments of market value at 2:30pm EST based on information leading up to the time stamp, including transactions, bids and offers, and other market data. Occasionally, market trade data reported after 2:30pm EST is used in calculating final assessments. This is done so that the Argus NGL Americas Forward Curves correspond with the CME closing prices for any given trading day. In the event CME's open outcry trading session closes early, Argus will use market prices that correspond with the CME's Henry Hub (NG) Natural Gas, CME's (CL) Light Sweet Crude oil (WTI), and Rbob Gasoline (RB) Futures Contracts. Service delivery is 5:30pm CST.

Assessment process

Argus gathers and analyses information leading up to the time stamp, including transactions, bids and offers and other market data. Other market data will include spreads between NGL locations (locational spreads), spreads between different products (product spreads), spreads between different timings (timing spreads), multiple timing transactions (strip deals) and other information.

In many markets, the relevant methodology will assign a relatively higher importance to transactions over bids and offers, and a relatively higher importance to bids and offers over other market information. Certain markets however will exist for which such a hierarchy would produce unreliable and non-representative price assessments, and so the methodology must assign a different relative importance in order to ensure the quality and integrity of the price assessment. And even in markets for which the hierarchy normally exists, certain market situations will at times emerge for which the strict hierarchy would produce non-representative prices, requiring Argus to adapt in order to publish representative prices.

At times, Argus may use proprietary curve valuation models that use advanced statistical analyses to formulate forward curves in cases in which no market information is available for a particular product or term. For each illiquid product or term, Argus has identified at least one liquid reference product or term that has exhibited a strong historical correlation. For each reference product or term that Argus utilizes in producing its forward curves, historical correlations are used and calculated on a daily lognormal return basis.

Once reference markets and terms have been identified, Argus conducts historical regression analyses that are updated at least every week. Argus will typically only utilize regression results that yield an R^2 of at least 90pc. The resulting regression coefficients are then used to calculate daily price curves for illiquid markets. However, Argus does not automatically apply the regression formula results as its final curve value. The regression results are checked to make sure that the daily price change that would result is aligned with other markets and terms as calculated on an absolute price change basis and daily percentage basis.

Verification of market data

Reporters carefully analyse all data submitted to the price assessment process. This data includes transactions, bids, offers, volumes, counterparties, specifications and any other information that contributes materially to the determination of price. Specific to transactions, bids and offers, reporters seek to verify the price, the volume, the specifications, location basis and counterparty. When insufficient, inadequate, or no transaction information exists, Argus reporters will make an assessment of market value by applying intelligent judgment based on a broad array of factual market information.

The assessment process employing judgment is rigorous, replicable, and uses widely accepted valuation metrics. These valuation metrics mirror the process used by physical commodity traders to internally assess value prior to entering the market with a bid or offer. Applying these valuation metrics along with sound judgment significantly narrows the band within which a commodity can be assessed, and greatly increases the accuracy and consistency of the price series. The application of judgment is conducted jointly with the supervising editor.

Several tests are applied by reporters in all markets to transactional data to determine if it should be subjected to further scrutiny. Argus has established internal procedures that involve escalation of inquiry within the source's company and escalating review within Argus management.

For more information on this process, see the Argus NGL Americas Methodology.

Argus Global Compliance Policy

Subscribers and other stakeholders are encouraged to review the [Argus Global Compliance Policy](#) to understand the rigorous and transparent controls framework Argus has employed to govern its price reporting activities. The company's Global Compliance Officer oversees the compliance framework, including a rolling program of internal audits to ensure compliance with stated methodologies and policies.

Methodological definitions

The specifications and methodology for the underlying physical markets that the forward and swap derivative markets reference are included in the [Argus NGL Americas Methodology](#).

But certain methodological definitions are necessarily unique to the Argus NGL Americas Forward Curves and are described below.

CME Nymex Henry Hub (NG) Natural Gas Futures Contract

The natural gas forward curve futures prices used are from the CME (NG) futures contract daily settlement prices for the open outcry session as described on the CME website:

http://www.cmegroup.com/trading/energy/natural-gas/natural-gas_contract_specifications.html

CME Nymex Light Sweet Crude oil (WTI) Futures

The WTI forward curve prices used are from the (CL) CME Light Sweet Crude Oil (WTI) Futures contract daily settlement prices for the open outcry session as described on the CME website.

http://www.cmegroup.com/trading/energy/crude-oil/light-sweet-crude_contract_specifications.html

CME Nymex Rbob Gasoline (RB) Futures

The Rbob forward curve prices used are from the (RB) CME Nymex Rbob Gasoline Futures contract daily settlement prices for the open outcry session as described on the CME website.

http://www.cmegroup.com/trading/energy/refined-products/rbob-gasoline_quotes_settlements_futures.html

Markets included in Argus NGL Americas Forward Curves

Futures markets:

CME Nymex	Futures	Cushing WTI (CL)
CME Nymex	Futures	Henry Hub (NG)
CME Nymex	Futures	Rbob (RB)

Mont Belvieu:

EP Mix	Physical
Ethane	Swap
Propane LST	Swap
Propane Enterprise	Swap
Propane Targa	Physical
Butane LST	Swap
Butane Enterprise	Swap
Isobutane LST	Physical
Isobutane Enterprise	Swap
Natural Gasoline Enterprise	Swap

Conway:

EP Mix	Physical
Propane	Swap
Butane	Swap
Isobutane	Physical
Natural Gasoline	Swap

Edmonton:

Propane	Physical
Butane	Physical

Sarnia:

Propane	Physical
Butane	Physical
Isobutane	Physical

For a complete description of NGLs listed above please refer to the [Argus NGL Americas Methodology](#).