METHODOLOGY AND SPECIFICATIONS GUIDE
SHALE VALUE CHAIN

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INTRODUCTION

S&P Global Platts’ methodologies are designed to produce price assessments that are representative of market value, and of the particular markets to which they relate. Methodology documents describe the specifications for various products reflected by Platts’ assessments and indexes, the processes and standards Platts adheres to in collecting data, and the methods by which Platts arrives at final assessment values for publication. These guides are freely available on Platts’ website for public review.

Platts discloses publicly the days of publication for its price assessments and indexes, and the times during each trading day in which Platts considers transactions in determining its assessments and index levels. This schedule of publication is available on Platts’ website, at the following link: http://www.platts.com/HolidayHome.

The dates of publication and the assessment periods are subject to change in the event of outside circumstances that affect Platts’ ability to adhere to its normal publication schedule. Such circumstances include network outages, power failures, acts of terrorism and other situations that result in an interruption in Platts’ operations at one or more of its worldwide offices. In the event that any such circumstance occurs, Platts will endeavor, whenever feasible, to communicate publicly any changes to its publication schedule and assessment periods, with as much advance notice as possible.

All Platts methodologies reflect Platts’ commitment to maintaining best practices in price reporting.

Platts’ methodologies have evolved to reflect changing market conditions through time, and will continue to evolve as markets change. A revision history, a cumulative summary of changes to this and future updates, is included at the end of the methodology.

How this methodology statement is organized

This description of methodology for indexes and assessments is divided into seven major parts (I-VII) that parallel the entire process of producing price values for the specified market period (daily or monthly).

- Part I describes what goes into Platts Shale Value Chain calculations, including details on what market data is used.
- Part II describes any security and confidentiality practices that Platts uses in handling and treating data.
- Part III details the principles Platts uses in deriving its indexes and assessments and what Platts does with the data to formulate its SVC calculations.
- Part IV explains the process for verifying that published prices comply with Platts’ standards.
- Part V lays out the verification and correction process for revising published prices.
- Part VI explains how users of Platts assessments and indexes can contact Platts for clarification of data that has been published, or to register a complaint. It also describes how to find out more about Platts’ complaint policies.
- Part VII is a list of detailed specifications for the trading locations for which Platts publishes indexes or assessments in this commodity.

PART I: DATA QUALITY AND DATA SUBMISSION

Platts expanded its cross-commodity coverage of the US natural gas and natural gas liquids markets in May 2014 by launching innovative new calculations, collectively known as the Shale Value Chain (SVC).

Platts’ objective is to ensure that the submission of transactional information and other data inputs that editors use as the basis for their price index and assessments is of the highest quality to ensure maintaining the integrity of Platts’ various price assessment processes. Ensuring that data used in Platts’ assessments is of high quality is crucial to maintaining the integrity of Platts’ various price assessment processes.

The foundations of the Shale Value Chain calculations lie in the benchmark natural gas prices that Platts daily assesses, as well as its daily natural gas liquids (NGL) assessments. For details on the assessment processes for natural gas and NGL, including price reporting criteria, see the North American Natural Gas methodology guide and the Americas Refined Oil Products methodology guide, which are listed in the Methodology and Reference section on Platts.com.

PART II: SECURITY AND CONFIDENTIALITY

See the Methodology and Reference section on Platts.com for details regarding data security and confidentiality for Natural Gas and NGL prices.

PART III: CALCULATING INDEXES AND MAKING ASSESSMENTS

As a publisher owned by S&P Global, Platts places independence and impartiality at the heart of its price assessments. Platts has no financial interest in the price of the products or commodities on which it reports. Platts’ overall objective is to reflect the transactable value of the commodity assessed.

To ensure the indexes and assessments are as robust as possible, Platts editorial systems are backed by a strong corporate structure that includes managerial and compliance oversight. To ensure editors follow Platts methodological guidelines in a consistent manner, Platts staff are trained and regularly assessed in their own and each other’s markets. Platts prices are reviewed prior to publication and exercise of professional judgment is further discussed and verified during this process.
Platts publishes one component for each daily SVC calculation: a closing price. The closing price is a calculation based on the price differential between Platts natural gas indices as well as Platts NGL assessments, as is described in Part VII, and is published in cents/gallon and $/MMBtu.

**PART IV: PLATTS EDITORIAL STANDARDS**

All Platts employees must adhere to the S&P Global Code of Business Ethics (COBE), which has to be signed annually. The COBE reflects S&P Global’s commitment to integrity, honesty and acting in good faith in all its dealings. In addition, Platts requires that all employees attest annually that they do not have any personal relationships or personal financial interests that may influence or be perceived to influence or interfere with their ability to perform their jobs in an objective, impartial and effective manner.

Market reporters and editors are required to ensure adherence to published methodologies as well as internal standards that require accurate records are kept in order to document their work.

Platts has a Compliance function that is independent of the editorial group. Compliance is responsible for ensuring the quality and adherence to Platts’ policies, standards, processes and procedures. The Compliance team conducts regular assessments of editorial operations, including checks for adherence to published methodologies.

S&P Global’s internal auditor, an independent group that reports directly to the parent company’s board of directors, reviews the Platts risk assessment programs on an annual basis.

**PART V: CORRECTIONS**

Platts is committed to promptly correcting any material errors. When corrections are made, they are limited to corrections to data that was available when the index or assessment was calculated. Platts editors make their best efforts to verify prices based on information they have in hand at the time of deadlines.

Platts is committed to promptly correcting any material errors in published prices that result from human or computational mistakes. When corrections are made because of such errors, they are limited to corrections to data that was available when the index or assessment was calculated.

For specifics in regards to Natural Gas or NGL corrections, see their respective Methodology guides on Platts.com.

**PART VI: REQUESTS FOR CLARIFICATIONS OF DATA AND COMPLAINTS**

Platts strives to provide critical information of the highest standards, to facilitate greater transparency and efficiency in physical commodity markets.

Platts customers raise questions about its methodologies and the approach taken in price assessments, proposed methodology changes and other editorial decisions in relation to Platts’ price assessments. Platts strongly values these interactions and encourages dialogue concerning any questions a customer or market stakeholder may have.

However, Platts recognizes that occasionally customers may not be satisfied with responses received or the services provided by Platts and wish to escalate matters. Full information about how to contact Platts to request clarification around an assessment, or make a complaint, is available on the Platts website, at: [http://www.platts.com/ContactUs/Complaints](http://www.platts.com/ContactUs/Complaints).
**Shale Value Chain methodology**

**Gulf Coast Ethane Fractionation Spread**
The Gulf Coast Ethane Fractionation Spread is the price differential between prompt purity ethane at Mont Belvieu non-LST and the Houston Ship Channel daily natural gas price.

**Gulf Coast E/P Mix Fractionation Spread**
The Gulf Coast E/P Mix Fractionation Spread is the price differential between prompt ethane/propane mix at Mont Belvieu non-LST and the Houston Ship Channel daily natural gas price.

**E/P Mix Midcontinent to Rockies Fractionation Spread**
The E/P Mix Midcontinent to Rockies Fractionation Spread is the price differential between prompt ethane/propane mix at Conway, Kansas, and the CIG, Rocky Mountains daily gas price.

**E/P Mix Midcontinent Fractionation Spread**
The E/P Mix Midcontinent Fractionation Spread is the price differential between prompt ethane/propane mix at Conway, Kansas, and Natural Gas Pipeline Co. of America, Midcontinent.

**National Raw NGL Basket Price**
The National Raw NGL Basket Price comprises Mont Belvieu non-LST prices for purity ethane, propane, normal butane, isobutene and natural gasoline that are weighted by the general composition of a typical NGL barrel. The composition weighting currently applied to the National Raw NGL Basket Price is Ethane 42%, Propane 28%, Butane 7%, Isobutane 9% and Natural Gasoline 14%. Platts has derived this calculation basis through a broad market survey, and applies each of the weightings to Platts US LPG price assessments at Mont Belvieu. Platts will regularly update these proportions of purity productions within raw NGL as production profiles may change over time.

**National Composite Fractionation Spread**
The National Composite Fractionation Spread is the price differential between the National Raw NGL Basket Price and the Houston Ship Channel daily gas price.

**Natural gas and natural gas liquids methodology**
The methodologies for the daily gas prices used in the Shale Value Chain calculations are as follows:

**Houston Ship Channel (daily and monthly survey)**
Deliveries to end-users and pipelines that serve them in the Houston Ship Channel region, an industrial area extending from the east side of Houston to Galveston Bay and northeastward to the Port Arthur/ Beaumont area. Gas is delivered in this area by numerous pipelines, including Kinder Morgan Texas Pipeline, Kinder Morgan Tejas Pipeline, Houston Pipe Line and Enterprise Texas pipelines.

**CIG, Rocky Mountains (daily and monthly survey)**
Deliveries into Colorado Interstate Gas’ 20-inch, 22-inch and 24-inch mainlines in Wyoming and Colorado. Also included are deliveries into the Parachute to Natural Buttes segment in Uintah County, UT, and deliveries into CIG’s 16-inch lateral running from the Rawlins station in Carbon County, WY, to the Elk Basin station in Park County, WY. Not included are deliveries into CIG’s system at points south of Cheyenne, WY.

**NGPL, Midcontinent (daily and monthly survey)**
Deliveries into Natural Gas Pipeline Co. of America starting at compressor station 155 in Wise County, TX, west to the Amarillo mainline at station 112 in Moore County in the Texas Panhandle, and then north to the Trailblazer Pipeline interconnection in Gage County, NE. Included are deliveries into NGPL at all Oklahoma points west of station 801, as well as those in North Texas north and east of station 170 and in Kansas south of station 103.

The methodologies for natural gas liquids prices used in the Shale Value Chain calculations are as follows:

**Ethane (C2):** Platts publishes an assessment for non-LST purity ethane and another for non-LST and Conway ethane/propane mix. Ethane assessments reflect material with a specific gravity of 0.3546 and a boiling point of -89° C. Purity ethane is 95% pure or better. Ethane/ propane mix is comprised of 80% ethane and 20% propane.

For the purposes of the SVC calculations, the non-LST purity ethane price is used.

**Propane (C3):** Platts publishes assessments for LST, non-LST, Conway, Bushton, and Hattiesburg propane. The assessment reflects a specific gravity of 0.5077, boiling point of -43° C. Product specifications are the same for Mont Belvieu and Conway assessments.
Propane is assessed at Mont Belvieu on a non-LST and LST basis. For the purposes of the SVC calculations, the non-LST propane price is used.

**Normal Butane (C4):** Platts publishes assessments for LST, non-LST, and Conway normal butane. Specific gravity of 0.5844, Boiling point of -1° C. Product specifications are the same for Mont Belvieu and Conway assessments.

Butane is assessed at Mont Belvieu on a non-LST and LST basis. For the purposes of the SVC calculations, the non-LST normal butane price is used.

**Iso-butane (IC4):** Platts publishes assessments for LST, non-LST, and Conway iso-butane. Specific gravity of 0.5631, Boiling point of -12° C, Product specifications are the same for Mont Belvieu and Conway assessments. Isobutane is assessed on a LST and non-LST basis. For the purposes of the SVC calculations, the non-LST iso-butane price is used.

**Natural Gasoline (C5):** Platts publishes assessments for LST, Targa, non-Targa, Conway, and River natural gasoline. Specific gravity of 81 API, RVP of 12-14 PSI, Boiling point of 90° F, Sulfur of max 0.1%, Octane of max 73 (R+M)/2.

Natural gasoline is reported on a non-Targa and a Targa basis. For the purposes of the SVC calculations, the non-LST non-Targa natural gasoline price is used.

Platts assessments for liquefied petroleum gas (LPG) and natural gas liquids (NGLs) reflect trading in barrels for any days in the specified delivery month — also known as “any barrels” — and product loading at least three days forward from the date of publication. Wet and very prompt barrels are not reflected in Platts price assessments. Platts assesses the value of the current month, until three calendar days from the end of the month, before rolling its assessment forward by one month.

Platts US LPG/NGLs assessments are primarily published in cents per gallon, with dollars per barrel and dollars per metric ton equivalents provided using conversion factors, where needed.

**Volume:** Minimum of 5,000 barrels for all Conway Pipeline, Bushton, and Hattiesburg deals, minimum of 10,000 barrels for iso-butane

### Conversion Factors

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<th>Conversion Factor (¢/gal to $/MMBtu)</th>
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The minimum quality levels for natural gas liquids are as follows: 25,000 barrels at Mont Belvieu, and minimum of 25,000 barrels for all other LPG products and pipelines. Platts publishes assessments on a FOB Mont Belvieu, TX basis, and FOB Conway, KA basis for all gas liquids.
REVISION HISTORY

June 2017: Platts completed an annual updated to the Shale Value Chain methodology guide. In this update, Platts reviewed all content and made minor edits and annotations.

December 2014: Document modified according to Platts approved format.

May 2014: Document created upon SVC assessment launch.